

ENVIRONMENTAL SOCIOLOGY



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Chapter One: Environmental Sociology

1.1. Introduction

Environment is our surrounding. This includes the living and the non-living things around us. The non-living components of environment are land, air and water. The living components are germs, plants, animals and people.

All plants and animals adjust to the environment in which they are born and live. A change in any components of the environment may cause discomfort and affect normal life. That means different plants and animals are found in different environments suitable to them. Hence, any change in that environment may affect their living. Sociologically speaking; however, the central point of discussion, as usually should be the case, is the social behavior, social action, social relations and social facts influencing the environment and vice versa. Therefore, let us now see the discipline called environmental sociology, which explains the aforementioned interconnected factors producing reciprocal relationships.

1.2. Meaning of Environmental Sociology

Environmental degradation is a central concern in today's world. Pressing concerns such as climate change, unsustainable patterns of consumption, and the proliferation of toxic chemicals must be approached as more than scientific and individual challenges; they must also be seen as social problems. As the study of human social phenomena and the changing pattern in society, sociology understands environmental problems from sociological perspective. Studying environmental issues from a sociological perspective means exploring the social dynamics that shape our interactions with the natural world, whether in terms of uncovering the driving forces behind environmental crises, dealing with the impacts of such crises, or in imagining and carrying out solutions. For example, climate change is one of the paramount social justice challenges of our time for a variety of reasons, including the disproportionate impact of climate

change on the world's poor. Environmental issues in sociological perspectives have only been given attention very recently as we will be discussing in the sections to follow. Although the environmental issues require interdisciplinary endeavors, there is a growing recognition to the paramount role being played by social sciences, especially sociology. The recognition basically stem from the change in awareness towards the fact that environmental problems are fundamentally social problems. The validity of the latter argument is not questioning, especially these days as the causes, consequences as well as mitigating mechanisms for the environmental problems are related to the human social behaviors- they are social problems, because they affect human society; their cause are again traceable into human social behaviors, and even the lasting solution to the problems require societal efforts.

It is very important now to familiarize ourselves with the emerging field of environmental sociology.

Environmental sociology is a sub discipline within the field of sociology that studies of the interactions between the physical environment, social organization, and social behavior. It is the study of the reciprocal interactions between the physical environment, social organization, and social behavior. Within this approach, environment encompasses all physical and material bases of life in a scale ranging from the most micro level to the biosphere.

Environmental Sociology is typically defined as the sociological study of societal-environmental interactions, although this definition immediately presents the perhaps insolvable problem of separating human cultures from the rest of the environment. Although the focus of the field is the relationship between society and environment in general, environmental sociologists typically place special emphasis on studying the social factors that cause environmental problems, the societal impacts of those problems, and efforts to solve the problems. In addition, considerable attention is paid

to the social processes by which certain environmental conditions become socially defined as problems.

These days, environmental sociologists aim to understand environmentalism as a [social movement](#); societal perception and level of awareness towards environmental problems, and human induced factors impact the environmental degradation. Another area of environmental sociological research is the unequal distribution of environmental hazards. These researchers work on how environmental hazard vulnerability conditions embed in a society as a result of various social conditions.

Environmental sociologists examine questions such as:

- How do social, political, and technological factors contribute to the pollution and wasteful use of resources that threaten [ecosystems](#), humans, and other species?
- How have burdens such as pollution, waste disposal, and resource extraction come to be unequally distributed among racial and ethnic groups, classes, genders, regions, and nations? How can these inequalities be reduced?
- How do societies respond to environmental risks and disasters, and how can we foster more effective and equitable strategies?
- How so social, political, and technological factors drive environmental degradation?
- How can communities, nations, and the international community build a sustainable relationship between humans and the environment?
- How public opinion about environmental issues is shaped and mobilized, and how do local, national, and international public opinion influence policy outcomes?
- What groups are most effective at influencing public policy, how do these groups organize, and what is the impact of their influence?
- How and why do citizens choose to join and support environmental organizations, and what determines the successes and failures of these groups?

Generally, present concerns include, the possible direction and compatibility or incompatibility of nature, technology, humanity, politics and health/well being.

1.3. The Emergence of the Discipline

The issue of *environmental concern*¹ has been intensified since the late 1960's and 1970's (first Earth Day) when a significant number of Americans were growing concerned about the environment, water quality, air quality, toxic chemicals, war and nuclear power.

In contrast to the larger society in the 1970s during the time when the idea of Earth Day represented the debut of modern environmental movement with millions of participants, mainstream sociology was almost unconscious of the significance of environmental problems. This blindness stemmed from a long period of neglect of environmental matters, stimulated by the misinterpretation and translation of early and classical sociological theories; societal context in which sociology developed as well as its unique disciplinary traditions.

First, according to Hannigan (2006) when Earth Day inaugurated the 'Environmental Decade' of the 1970s, sociologists found themselves without any prior body of theory or research to guide them towards a distinctive understanding of the relationship between society and the environment. Of course there were some sociological works, especially by prominent classical theorists such as Emile Durkheim, Max Weber and Karl Marx, who had an implicit environmental dimension in their works although left obscured, because American interpreters and translators favored social structural explanations to physical or environment ones.

Second, Catton and Dunlap (1978) argued that, Sociology left the study of material and physical environment aside, because it insisted on the view of humans as an exceptional or unique species, what they called '*Human exemptionalism Paradigm (HEP)*'. Accordingly, this view limited sociological perspective by focusing only on humans as

¹The visibility of the 20thC Earth Day and the Earth Summit, combined with media attention to issues such as the *Exxon Valdez* oil spill, tropical rainforest destruction and the environmental devastation found in Eastern Europe, resulted in an unprecedented level of societal interest in environmental issues - not only in the USA but throughout much of the world (Dunlap et al., 1993) - in the early 1990s (Dunlap, 1997 in Redcliff, M. and Woodgate, G. (1997). The International Handbook of Environmental Sociology. Edward Elgar Publishing Ltd. UK.

an independent rather than focusing on the material and physical aspects both of which affect or being affected by human behavior. They went on to strengthen their argument by using Emile Durkheim's theoretical analysis of society from the stand point of 'Social fact'² and the sociologists' lack of interest in using the earlier dominant biological and geographical 'determinism' perspective in their studies of human society both of which led sociologists to ignore the biophysical world where humans live. However, what distinguishes environmental sociology from the mainstream sociology is that the former recognizes that biophysical as well as purely social variables affect social structure and social change while the latter doesn't.

To legitimize sociology as a discipline, it was important to move away from explanations of, for example, racial and cultural differences in terms of biological and geographical factors, respectively. Yet in the process of developing distinctively social explanations for societal phenomena, sociology replaced older determinisms with sociocultural determinism. For example, as recently as the late 1970s, sociologists of agriculture argued that it was inappropriate to include factors such as soil type and rainfall in explanations of soil conservation adoption or farm energy use, because they were not social variables. The firm stand held above shows the distinct attempt to strengthen the disciplinary tradition of sociology.

Not surprisingly, the third reason that shaded early sociologists' attention to the study of physical environment was the emergence of sociology during the time of exceptional growth and development amplified by technological advancement and abundance of resources, which paved way for urban agglomeration and in due course limited the contact of man with nature. The latter has; however, led sociologists to believe that at least in industrial society, human life is independent of physical environment.

²A social fact is 'any way of acting, whether fixed or not, capable of exerting over the individual an external constraint' (Durkheim, 2002 [1895]: 117 cited in Hannigan, 2006:6). This constraint is normally manifested in the form of law, morality, beliefs, customs and even fashions. We can verify the existence of a social fact, Durkheim ventured, by examining an experience that is characteristic. For example, children are compelled to adopt ways of seeing, thinking and acting that they otherwise would not have arrived at spontaneously (Hannigan, 2006).

With modern, industrialized societies appearing to be increasingly disembodied from the biophysical world, sociology came to assume that the exceptional features of Homo sapiens—language, technology, science, and culture more generally—made these societies “exempt” from the constraints of nature and thus reluctant to acknowledge the societal relevance of ecological limits. However, changing circumstances such as the 1973-4 energy crisis that faced the world necessitated shedding the ‘blinkers’ imposed by the sectionalism and adopting an ecological paradigm or world view that acknowledges the ecosystem –dependence of all human societies.

Given sociology’s neglect of the biophysical environment—and tendency to equate “The environment” with the social context of the phenomenon being studied— it is not surprising that efforts to establish environmental sociology as an area of inquiry included a critique of the larger discipline’s blindness to environmental matters. Dunlap and Catton’s (1979a) effort to define and codify the field of environmental sociology was accompanied by an explication and critique of the “human exemptionalism paradigm” (HEP) on which contemporary sociology was premised. While not denying that human beings are obviously an exceptional species, these analysts argued that humans’ special skills and capabilities nonetheless fail to exempt the human species from the constraints of the biophysical environment. Consequently, Catton and Dunlap (1978, 1980) suggested that the HEP should be replaced by a more ecologically sound perspective, a “new ecological paradigm” (NEP), that acknowledges the ecosystem dependence of human societies.

The call for mainstream sociology’s dominant paradigm to be replaced with a more ecologically sound one proved to be a rather controversial feature of environmental sociology. While the exemptionalist underpinning of mainstream sociology has been increasingly recognized, the call for adoption of an ecological paradigm has been criticized for allegedly deflecting efforts to apply classical and mainstream theoretical perspectives in environmental sociology. Nonetheless, environmental sociologists are producing rapidly expanding bodies of both empirical literature on the relationships

between societal and environmental variables that clearly violates Durkheim's antireductionism taboo (who insisted that social systems could be studied independently of environmental factors because humankind was already becoming free from nature and would only be more so) and theoretical literature representing efforts to develop more ecologically sound theories that are not premised on the assumption of human exemptionalism. Both of these trends reflect the declining credibility of exemptionalist thinking within sociology.

To start with the history of environmental sociology, it is important to look at the original root of the discipline. Modern thought surrounding human-environment relations is traced back to Charles Darwin. Darwin's concept of natural selection suggested that certain social characteristics played a key role in the survivability of groups in the natural environment. Although typically taken at the micro level, evolutionary principles, particularly adaptability, serve as a microcosm of human ecology. Let's explore the views classical sociologists held on humans and their relation to their environment.

1.4. Classical Sociological Theories and the Environment

Theories play crucial role in constructing scientific knowledge, as they are important base for further inquiry and they are built from long term practical research endeavor. Theories built by prominent classical sociologists are playing significant roles in the growth and the changing trend of the discipline and in strengthening the current sociological discourses.

As a result of the scant attention of sociologists on the human habitat or the environment, to date, there is an ongoing debate on the major efficacy of classical sociological theories in the field of environmental sociology. The arguments against the real significances of the classical sociological theories are based on the claim that, these theories lack conceptual framework which possibly will lift up the understanding of the complex interactions between environment and society. The classical theories by Emile

Durkheim, Max Weber and Karl Marx are challenged by these contenders to have lacked adequacy in theorizing contemporary environmental problems. Some theorists however believe that the legacy left by the classical theories is very much mixed: some of the tools initially developed by the classical theorists are needed, but the overall thrust of the classical tradition was to downplay ecological questions and biophysical forces'.

Hannigan (2006) believes that the classical social theories by Emile Durkheim, Max Weber and Karl Marx serve the contemporary sociologists who want to engage in the environmental issues as source of inspiration. Hannigan, unlike those, who felt that these theories lack conceptual built-in, believes that these classical theorists incorporated the topic of environment and nature in their works though was implied to support the philosophical stance and scholarly debates held by them than as an intended per se.

1.4.1. Émile Durkheim (1858-1917)

Durkheim, the first French Sociologist, is one of the key personalities, who pioneered the study of society based on scientific ways-sociologically. Although his contribution is of great significances in the development of functional theory and macro level of societal analysis in sociology, Durkheim's contribution in the field of environmental sociology is least recognized vis-à-vis K. Marx and M. Weber. This is because he used social facts and downplayed 'facts of a lower order' (psychological and biological) as determining factor for human social behavior.

Durkheim believes that the study of human social behavior and experience as well as social phenomenon is studied using social facts most importantly, the 'antecedents of social facts'; is neither through the study of individual's psychology nor through the study of individual consciousness. Society cannot be reduced to its parts or individual level. Durkheim believes in and sought therefore to prove how the antecedent social

facts determine social phenomenon, rather than among the states of social consciousness.

Though he contends that sociological analysis should focus on social determinism, Durkheim himself used biological concepts and metaphors in presenting his theory of societal transformation. In his evolutionary theory of *Division of Labour in a Society*, Durkheim being inspired by Darwinian evolutionary model describes modern human society through an organic analogue to have evolved from *mechanical solidarity* where tradition, homogeneity and strong societal cultural values held society together to *organic solidarity* where the social bond is interdependence resulted from complex division of labour.

Theory of division of labor in society by Emile Durkheim is understood as of an attempt to device solutions for the ecological disruptions likely to occur as a result of growing population in spite of the scarcity of resources. This is because the growing of population at the expense of the existing resources would create competition, and thus specialization and division of labour reduces the competition and eventually raises productivity.

Catton (2002: 93) says that Durkheim was doubly hobbled, both by his narrowly selective reading of Darwin and by the unavailability in the 1880s of our knowledge today of ecology and evolution. In the **first** instance, he mistakenly supposed that Darwin believed increasing diversity to be a way of minimizing competition for scarce resources. Rather, Darwin cautioned that co-evolution (two species evolving at the same time) could, in some cases, increase their resemblance to one another or result in one species bringing the other to extinction. In short, Darwin viewed specialization as a way in which one species could gain competitive advantage over another, not, as Durkheim believed, as a way of lessening rivalries and increasing mutual interdependence. **Furthermore**, Durkheim could not have been allowed to know the insights of modern ecology, which did not emerge as a sub-field of biology until the next century. Most

crucially, no one in Durkheim's time recognized that mutual dependence was symbiotic but not necessarily balanced. That is, some interactions in nature benefit both member populations (*mutualism*) but others benefit one without either harming or benefiting the other (*commensalism*); and yet others are beneficial to one and detrimental to the other, as with predators and parasites. The latter gives rise to power differences, something especially significant when you are dealing with human ecological communities.

What we are left with then is chiefly speculation on what might have been. Citing Talcott Parsons (1978: 217), Järvikowski (1996: 82) ventures that Durkheim would likely have written in a different way today about the relations between the social and physical environments because biological theory has undergone a profound process of change.

1.4.2. Max Weber (1864-1920)

Max Weber would probably have rejected this idea of the environment as a determining structure; he was concerned primarily with humans as a system unto themselves, their being constituted the only social reality. He did not believe that, sociologists (or anyone else) could discover some overarching structure that was universal to humankind. Ironically, Weber devoted much of his academic life to describing the alienation of the capitalist worker, where human agency was largely overruled by the hierarchical structures of instrumental rationality and bureaucracy. This disenchantment stems from the separation of the workers not from their capabilities for the use of agency, but from their implicit rejection of nature in favor of capitalist business practices. The bureaucratic structure may stifle the workers, but the true distance is between the surrounding environment and their desk jobs. Some may posit that this separation of humans from their environment is a product of the technology that is being employed in these workplaces, as if technology were something alien or unnatural. We must remember however, that humans are inherently both a part of and a product of nature; how then can human constructs be unnatural? They are simply an extension of our natural ability to use tools and to communicate with one another.

Weberian disenchantment is quite different, for it is the arbitrary construction of limits, punishments and rewards that make up the bureaucratic authority system. Is this really unlike the structure that we deploy against nature? Both are arbitrary, both possess too narrow a scope to assess all the complexities of a system and both impose control in a manner that tends to be destructive to the subject of the control. The worker becomes disenchanted; the environment becomes polluted.

1.4.3. Karl Marx (1818-1883)

The most "green" of the early social theories; Marxist thought usually sees any society as a system of societal relations. This allows for an understanding that social production of goods depends on relations between individuals as well as between people and nature. Marx did make a distinction between nature and society, nature was what provided the raw materials with which the laborers made their living and fed their families. Karl Marx, one of the greatest Political philosophers German has ever produced, saw science and society in rational terms, believing that science was a progressive and liberating force, one that would enable humankind to gain control over nature and therefore to better control their chosen path in life. According to Marx, the appropriations of natural resources in this manner were only possible in a specific social setting. He theorized that in the transformation of resources into goods for human consumption, humans themselves were transformed. Despite this, he thought that relations between humans and their environment was static, for they are both essentially social and common to each step of social existence. Therefore, the interactions between humans and their environment cannot provide a source of change in society; this can only occur between groups of people. Marxist ideology relies heavily on the idea that economic development under capitalism involves the creation of value as resources are transformed into commodities. The problem is, there cannot be creation without destruction. In order to create value, we must destroy and sully valuable natural resources; not valuable as commodities, but as a life sustaining matrix upon which we

all rely. The value of natural resources must always be weighed against the long term consequences of their use.

Chapter Two: Contemporary Theoretical Approaches to Environmental Sociology

Under the classical works on Environmental Sociology, we have briefly been highlighted to the early attempts by social theorists, who accentuated the relations of humans with their physical environment.

Under this section we will turn to focusing on the current research areas in environmental sociology and how the environmental sociological works have strengthened and broadened the investigation and the focus of societal- environment interaction or relationship. According to Hannigan (2006), since its emergence in 1970s as a separate discipline, environmental sociology has passed through two distinct stages. The first theoretical focus was to attempt to trace the key detrimental factors that contributed to the environmental degradation or destruction, and the second focus was to try to find out effective mechanisms to halt the problem that helps to chart societal-environment relationship benefiting both sides- harmonious relationship. Danlup and Marshall (2006) claim that, in addition to these Hannigan's theoretical approaches, environmental sociology research works or theoretical approaches focus on the impacts of environmental problems. The later focuses on the real and potential social impacts of energy and other natural resources and the issue of 'equity' with regards to energy shortage.

2.1. Theorizing Factors Responsible for Environmental Degradation or Destruction

The growing salience of environmental problems over the past decade stemmed, not only from increased attention to them by scientists, media and policy makers, but from discernible changes in the nature of the problems. Contemporary environmental problems differ from the earlier environmental problems such as litter, loss of natural areas and air and water pollution in a number of critical respects in: 1) *the scale*- local problems and their regional and global level impact (urban air pollution and pollution of rivers vis-à-vis acid rain, global warming and ozone depletion; 2) *pervasiveness/frequency*- contaminated water supplies and inadequate solid waste repositories

occur (and are reported in the media) with enough frequency for them to be seen as generalized problems 3) *more complex and riskier* – their origin is difficult to understand; consequences are difficult to detect and predict and results being riskier than the earlier ones 4) *Seriousness* – their impacts pose serious health and welfare consequences on humans(including the future generation) and other species and some of the consequences may be irreversible.

The contemporary attempts of theorizing the causes for environmental degradation will leave us with two theoretical approaches according to John Hannigan (2006). These include, the *ecological explanation model* of ‘competing environmental functions’ and *political economy explanation* as found in Alan Schnaiberg’s concepts of the ‘societal-environmental dialectic’ and the ‘treadmill of production’, both of which view (According to Buttel, 1987 cited in Hannigan, 2006) the social structure and social change being reciprocally related to the physical environment.

2.1.1. Ecological Explanation

2.1.1.1. Human Ecology

The ecological explanation for environmental destruction has its roots in the field of ‘human ecology’ that remained dominant within urban sociology from the 1920s to the 1960s. As you might remember from your Urban Sociology course, this theory by Robert Park of University of Chicago had gained reputation in 1920s and 1930s up until it faced challenges for being associated with the idea of Social Darwinism.

Park examines the "web of life," an interdependence of species sharing the same environment. Within the web of life, the active principle is the ‘struggle for existence’ in which the survivors find their ‘niches’ in the physical environment and in the division of labor among the different species. Park borrowed biological ecology principles, and applied them to explaining the human populations and community. In due course of explaining this; however, park notes with great caution that human ecology differs in many respects from plant and animal ecology. **First**, humans are not as immediately

dependent on the physical environment - largely the product of a world-wide division of labor and systems of exchange. **Second**, humans by means of inventions and technical devices have a great capacity to alter the physical environment and their habitat than to be constrained by it. **Finally**, the structure of human communities is more than just the product of biologically determined factors; it is governed by cultural factors, notably an institutional structure rooted in custom and tradition. Human society, then, in contrast to the rest of nature, is organized on two levels: the biotic and the cultural.

This portrait of the nature-society relationship clearly contravenes many of the tenets of Catton and Dunlap's New Ecological Paradigm. It emphasizes humans' exceptional characteristics (inventiveness and technical capability) rather than their commonality with other species. It gives priority to the influence of social and cultural factors (communication, division of labor) rather than biophysical, environmental determinants. Finally, it downplays the constraints imposed by nature by celebrating the human capacity to master it.

The human ecological principle was criticized for not giving recognition the importance of human values in residential choice and movement. This is because, when Park himself, his colleagues and his students, importantly McKenzie and Burgess applied their principles of human ecology to the processes that create and reinforce urban spatial arrangements, city was depicted as a territorially based ecological system in which a constant Darwinian struggle over land use produced a continuous flux and redistribution of the urban population. The 'zone in transition' can be an example here, as it went from a coveted residential district to a blighted area characterized by low rent tenants, deviant activities and marginal businesses.

The 1940's socio cultural critique of mainstream human ecology has highly influenced the American sociology. As a result of this, many works which were conducted in the discipline (e.g., Firey, 1947 and Jonassen, 1949) incorporated the idea of socio cultural

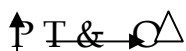
conditions, especially how values and sentiment affect the shape of the city and the choice of type of residential environment.

2.1.1.2. Cultural Ecology

While cultural ecology, per se, never became dominant, it did force more traditional human ecologists to take greater account of social organizational and cultural variables.

This was evident in O. D. Duncan's (1961) POET model (Population, Organization, Environment and Technology) which was depicted as an 'ecological complex' in which: (1) each element is interrelated with the other three, (2) a change in one can therefore affect each of the others. The POET model was a trailblazer in providing insight into the complex nature of ecological disruptions even if it failed to give sufficient weight to environmental constraints.

For example, in a causal sequence suggested by Dunlap (1993: 722-3), an increase in population (P) can create a pressure for technological change (T) as well as increased urbanization (O), leading to the creation of more pollution (E). While it was still rooted in orthodox human ecology; nevertheless, Duncan's POET model with its use of the human ecological complex at times 'came close to an embryonic form of environmental sociology' (Buttel and Humphrey 2002).

 ↑ P ↑ T & ↑ O ↑ E where ↑ P represents population, T represents technology, O is Urbanization (Social organization) and E represents pollution (environmental).

2.1.2. Competing Function of the Environment

Catton and Dunlap have probably best described the ecological basis of environmental destruction in their '*three competing functions of the environment*' model. As you have been highlighted briefly in the previous chapter, Catton and Dunlap's model specifically put into light the three general functions of the environment for human beings. These include, **supply depot**, **living space** and **waste repository**. As a supply depot, the environment is a source of renewable and non-renewable natural resources

(air, water, forests, and fossil fuels) that are essential for living. The over use of supply depot definitely results in a shortage or scarcity. The other service environment gives for human beings is its function for space of living or habitat. As it is a case these days, especially in urban areas, an overuse of this service leads to overcrowding, congestion and the destruction of habitats for other species³. With the waste repository function, the environment serves as a 'sink' for garbage (rubbish), sewage, industrial pollution and other byproducts. Exceeding the ability of ecosystems to absorb wastes results in health problems from toxic wastes and in ecosystem disruption.

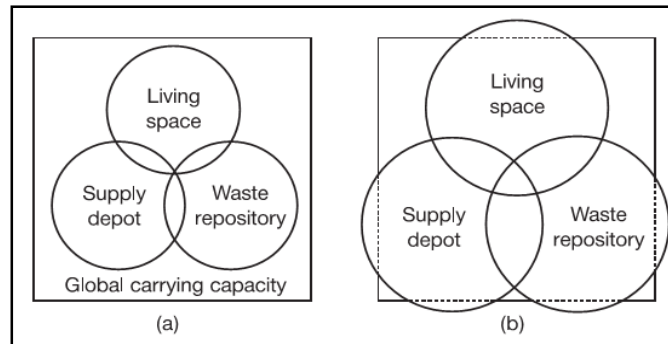


Figure 1: Competing functions of the environment: (a) circa 1900; (b) current situation. Source: Dunlap 1993 cited in Hannigan, 2006:19

The excessive use as well as pressures on the normal functioning of the environment has been aggravated recently than ever before, and as a result put humans in terrifying conditions.

Furthermore, each of these functions competes for space, often impinging upon the others. For example, placing a garbage landfill in a rural location near to a city both makes that site unsuitable as a living space and destroys the ability of the land to function as a supply depot for food. Similarly, urban sprawl reduces the amount of arable land that can be put into production while intensive logging threatens the living space of native (aboriginal) peoples.

³The booming population growth these days is primarily responsible for the overuse of earth's resources and in the destruction of habitats. This is visible especially in some rural areas of Ethiopia, where people encroach in wildlife habitats and create irreversible problems. The declining number in the Endemic Ethiopian Wolf (*Canis Simensis*) specie in some of the national parks in Ethiopia is basically related to the destruction of their habitats as humans create huge pressure in search of environmental services- habitat, grazing and timber. Therefore, human's overuse creates impact on wildlife habitats and eventually leads to their extinction.

2.1.3. Political Economy Explanation: *The 'societal-environmental dialectic' and the 'Treadmill of Production'*

Within environmental sociology, probably the most influential explanation of the relationship between capitalism, the state and the environment can be found in Alan Schnaiberg's book, *The Environment: From Surplus to Scarcity* (1980). Drawing on strands of both Marxist political economy and neo-Weberian sociology, Schnaiberg outlines the nature and genesis of the contradictory relations between economic expansion and environmental disruption.

Alan Schnaiberg is the influential theorist in the political economic cause for environmental problems. He started his analysis by critiquing the works by many theorists most importantly, biologists such as Ehrlich and Commoner. Schnaiberg criticized Ehrlich's view by noting the enormous variation in environmental impact between populations of rich and poor nations as well as between the wealthy and poor sectors within individual nations, emphasized that population growth is interrelated with factors such as poverty—which induces poor people to have more children for work-force and security reasons. Similarly, Commoner's perspective was criticized for viewing technology as an autonomous force, ignoring the degree to which technological developments are driven by political and especially economic forces— particularly the need for profit and capital accumulation.

Besides demonstrating the oversimplification involved in attributing environmental degradation to either population or technology, Schnaiberg also critiqued a third factor widely mentioned as a cause—the wasteful lifestyles of consumers. Schnaiberg distinguished between the production and consumption spheres of society, arguing that the former is the more crucial contributor to environmental degradation. Attributing environmental degradation to the affluence of consumers ignores the fact that decisions made in the production realm (e.g., as to what types of transportation will be available to consumers) are far more significant than are the purchasing behaviors of individual consumers.

Consequently, Schnaiberg has explained the political economy of environmental problems and policies as being organized within the structure of modern industrial society, what he called “*treadmill of production*.” He emphasized that, in the treadmill of production the inherent need of market-based economic systems to grow and the powerful coalition of capital, state, and labor supporting such growth, as the most fundamental contributor to environmental degradation.

This economic system seeks to maximize profit by creating consumer demands for the new products, even at the expense of physical limits of the ecosystem and its ‘carrying capacity’. The consumer demand for the new product is fuelled by advertising, which convinces people to buy new products as much for reasons of lifestyle enhancement as for practical considerations.

According to Schnaiberg, politicians are key actors in the treadmill of production. They respond to the environmental fall-out created by capital intensive economic growth by mandating policies that encourage yet further expansion. For example, resource shortages are handled not by reducing consumption or adopting a more modest lifestyle but by opening up new areas to exploitation.

Schnaiberg detects a *dialectic tension* that arises in advanced industrial societies as a consequence of the conflict between the treadmill of production and demands for environmental protection. He describes this as a clash between ‘*use values*’; for example, the value of preserving existing unique species of plants and animals, and ‘*exchange values*’ which characterize the industrial use of natural resources. As environmental protection has emerged as a significant item on the policy agendas of governments, the state must increasingly balance its dual role as a facilitator of capital accumulation and economic growth and its role as environmental regulator and champion.

While Schnaiberg’s analysis, which he has continued to update and refine, has become highly influential within environmental sociology, it has proven difficult to translate

into concrete empirical research, particularly on macro level, beyond local case studies of organized opposition to treadmill processes.

2.1.4. Constructivism and Materialism

Perhaps one of the most fundamental concepts within environmental sociology is the idea that 'the environment' is *socially constructed* (Hannigan 1995). This concept does not refer to the transformation of 'pristine' nature by humans into 'artificial' or 'built' environments, but to the ways in which our understandings of nature, the environment, and environmental problems are shaped by intrinsically social processes of knowledge generation and communication. This requires us to recognize that the terms we use to describe our environments do not refer to universally applicable objective features of those environments but to socially valued categories and understandings that are liable to change across space, time and social groups. This can be illustrated by asking some simple questions.

Why, for example, are 'wilderness values' so highly prized by Western environmental movements and seen to provide a scientific baseline on environmental condition by natural resource management agencies? Following from this, why is the state of ecosystems immediately before European colonization in Australia, the United States and elsewhere in the 'New World' considered 'natural' despite millennia of ecological transformation at the hands of indigenous peoples? These values are not the reflection of absolute truths but of social conventions; that is, they are the result of a consensus between environmental groups, management agencies and scientists that the state of the pre-European ecosystem offers a convenient baseline against which to measure environmental degradation.

To the constructivist, there is no socially unmediated position from which to apprehend material reality. In its most extreme form (what is known as the 'strong program'), social constructivism argues that there is no reality whatsoever outside the symbolic world-building activities of humans and no way of knowing about that reality that is, in principle, any better or worse than any other way of knowing (Hannigan 1995).

Science is simply more powerful than other ways of knowing. Rather than moving us ever and ever closer to 'the truth', science merely represents the perceived interests of dominant groups. Not surprisingly, the 'strong program' in social constructivism has been subjected to

considerable criticism from the perspective of *materialism* (Mariyani-Squire 1999). From the materialist perspective, nature is attributed a pre-given objective reality that exists quite independently of human knowledge or action. Humans may learn about nature, and our interference may upset its balance to the detriment of particular species (including our own), but the basic material reality of nature is seen as something that cannot be changed. Those researchers taking a materialist perspective often accept 'scientific' statements about the state of environments and thence investigate why people damage them even though we 'know' the dangerous long-term consequences of this activity and, quite likely, have a number of solutions. Acting otherwise to the prescriptions of 'enlightened' scientists appears either irrational or impossible.

The majority of social constructivists, however, accept the seemingly less extreme proposition that there *is* a pre-given and objective material reality that exists independently of humans, but that our knowledge of that reality is necessarily shaped by human categories, theories, projects, interests and power relationships (Greider&Garkovich 1994; Hannigan 1995). The relevance of this perspective is plainly evident in the example given above. Social constructivism does not suggest that imposing the category of 'wilderness' on landscapes that have been transformed by indigenous people provides a scientifically invalid baseline for measuring environmental change. What it does do is highlight the manner in which these categories deny any active role that may have been taken by indigenous people in transforming and managing those landscapes and the consequences this denial may have for contemporary struggles over cultural heritage, land rights, natural resource management, and so on. Social constructivism reminds us that the language we use to categorize and understand even the apparently 'objective' material reality of nature has political and cultural consequences for real people.

While the 'weak program' in social constructivism appears widely accepted, there is a degree of pragmatism in its response to the criticisms of materialism that might be considered unsatisfactory.

The 'weak program' accepts the premises of materialism but offers no clear articulation of how the two perspectives may be accommodated. Instead, it simply focuses on those aspects of environmental issues amenable to semiotic analysis such as how issues are conceptualized by different groups, how the issues are represented in the mass media, and so on. The theoretical

perspectives discussed in the following sections all attempt, in some way, to deal simultaneously with the insights of both the constructivist and materialist perspectives.

Chapter Three: Environmental Discourse

In recent years, discourse analysis has emerged as an increasingly influential method for analyzing the production, reception and strategic deployment of environmental texts, images and ideas. Although closely identified with social constructionism, nonetheless, discourse analysis has been practiced with good results by subscribers to other 'schools' of environmental theory and research, most notably, critical theorists, political ecologists and international policy analysts.

Discourse is defined as 'a specific ensemble of ideas, concepts and categorizations that is produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities'. Or, put more succinctly, discourse is an interrelated set of 'story-lines' which interprets the world around us and which becomes deeply embedded in societal institutions, agendas and knowledge claims. These story-lines have a triple mission: to create meaning and validate action, to mobilize action, and to define alternatives.

Some rhetoricians have drawn the ire of critical realists by insisting that we can *only* conceive of nature and the environment through the discursive language that we have developed to talk about the natural world. However, a more temperate view is that the environment as it exists in the public policy sphere is the product of discourse about nature established by scientific disciplines such as biology and ecology, government agencies, bestselling books such as Rachel Carson's *Silent Spring*, and the messages disseminated by environment activists. Discourse analysts have; however, also been criticized for overstating the importance of discourse in environmental politics and policy-making. This is because, politics of discourse, is not merely about 'expressing power-resources in language, but it is about the actual creation of structures and fields of action by means of story-lines, positioning, and the selective employment of comprehensive discursive systems'.

1.1. Studying Environmental Discourse

Within environmental studies, discourse has been visualized in a variety of ways, ranging from a 'story-line' that provides a signpost for action within institutional to a social movement 'frame' that enables the practices of environmental movement organizations, to an environmental 'rhetoric' constructed around words, images, concepts and practices.

One basic attempt to organize the analysis of environmental discourse comes from Herndl and Brown (1996). Their 'rhetorical model for environmental discourse' takes the shape of three circles, each of which is located at the tips of a triangle. At the top of the triangle is what they call *regulatory discourse*– disseminated by powerful institutions that make decisions and set environmental policy. Nature here is treated as a resource. At bottom right of the triangle is the *scientific discourse* where nature is regarded as an object of knowledge constructed via the scientific method. Policy-makers routinely ground their decisions here, relying in particular on technical data and expert testimony. Finally, directly opposite this on the bottom left is *poetic discourse* that is based on narratives of nature that emphasize its beauty, spirituality and emotional power. Nature writing is one example of this. Herndl and Brown stress that these three powerful environmental discourses are not mutually exclusive or pure, however, and often end up being mixed together. In such cases, what we best look for are 'dominant tendencies'. Technical data and expertise testimony.

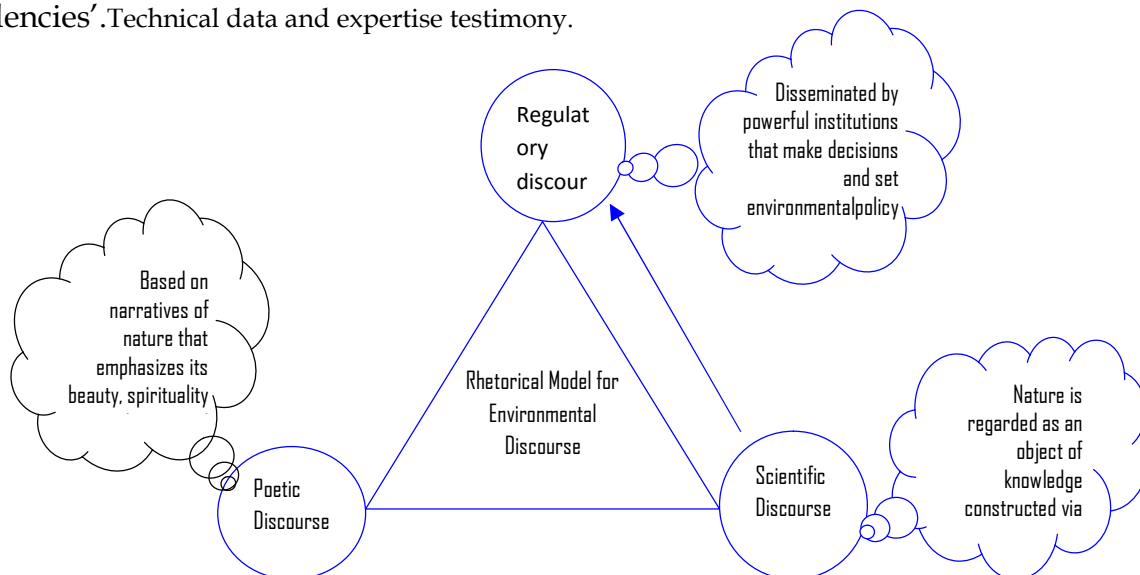


Figure 2: Rhetorical Model for Environmental Discourse by Herndl and Brown (1996)

Another effort directed at the classification of environmental discourses is Brulle's (2000) typology of discursive frames adopted by the US environmental movement. Drawing on the environmental philosophy literature and on his detailed reading of the history of American environmentalism, Brulle came up with nine distinct discourses: *manifest destiny* (exploitation and development of natural resources gives the environment value that it otherwise lacks); *wildlife management* (the scientific management of ecosystems can ensure stable populations of wildlife remain available for leisure pursuits such as sport hunting); *conservation* (natural resources should be technically managed from a utilitarian perspective); *preservation* (wilderness and wildlife must be protected from human incursion because they have inherent spiritual and aesthetic value); *reform environmentalism* (ecosystems must be protected for human health reasons); *deep ecology* (the diversity of life on earth must be maintained because it has intrinsic value); *environmental justice* (ecological problems reflect and are the product of fundamental social inequalities); *ecofeminism* (ecosystem abuse mirrors male domination and insensitivity to nature's rhythms); and *ecotheology* (humans have an obligation to preserve and protect nature since it is divinely created).

Brulle argues that this multiplicity of discourses has resulted in the fragmentation of the US environmental movement, preventing it from speaking with a single, unified voice to a wide national audience. Adherents of each discursive frame talk past each other 'in a process of mutual incomprehension and suspicion'. As do Schnaiberg and his entourage, Brulle concludes that there can be no meaningful environmental action without real structural change. This is unlikely to occur as long as discourses about the environment continue to block or mask the social origins of ecological degradation and proclaim a coherent vision of the common environmental good.

A third work that explicitly utilizes the typological method is John Dryzek's (2005) book *The Politics of the Earth: Environmental Discourses*. Here, Dryzek identifies four main discourses: *survivalism*, *environmental problem solving*, *sustainability* and *green*

radicalism. He organizes these along two dimensions: prosaic vs. imaginative and reformist vs. radical. Prosaic dimensions are those that require action but do not point to a new kind of society, while imaginative departures from the long-dominant discourse of industrialism seek to dissolve old dilemmas and refine the relationship between the economic and the environmental. Each of these can be either reformist (adjusting the status quo) or radical (requiring wholesale transformation of the political-economic structure). According to this typology, problem solving is prosaic/reformist; survivalism is prosaic/radical; sustainability is imaginative/reformist; and green radicalism is imaginative/radical. Each of these four types is, in turn, subdivided. Problem solving, for example, comes in three forms: administrative rationalism, democratic pragmatism and economic rationalism, while sustainability has two flavors: sustainable development and ecological modernization. For the most part, this typological exercise is helpful, although at an empirical level it requires some discriminating judgment calls on the part of the analyst as to what is imaginative and radical and what is not.

In addition to the environmental discourses, there are ecological and environmental justice discourses; Discourse, Power Relations and Political Ecology in today's environmental discourse study.

Chapter Four: The social Construction of Environmental Issues and Problems

Central to the social construction of environmental issues and problems is the idea that these do not rise and fall according to some fixed, asocial, self-evident set of criteria. Rather, their progress varies in direct response to successful claims-making by a cast of social actors that includes scientists, industrialists, politicians, civil servants, journalists and environmental activists.

Environmental problems are similar in many ways to social problems although there are some differences. Social problems frequently cross over from a medical discourse to the areas of public discourse and action. Environmental problems draw much of their rhetorical power from scientific findings and claims. Environmental problems have also a more imposing Physical basis than social environment, which are more rooted in personal troubles that become converted into public issues.

The constructionist explanation of the environment rooted in sociology of social problems. In 1973 Malcolm Spector and John Kitsuse come up with an article entitled "Social problems: a reformulation." Though this article and subsequent book (1977), they challenged the structural functional approach to social problems that dominated the field. For functionalists the existence of social problems (crime, divorce, and mental illness) was the direct product of readily identifiable, distinctive and visible objective conditions. Spector and Kitsuse argued that social problems are not static conditions but rather sequences of events that develop on the basis of collective definitions. They defined social problems as the activities of groups making assertions of grievances and **claims** to organizations, agencies and institutions about some putative conditions. From this point of view, the process of **claim making** is treated as more important than the task of assessing whether these claims are truly valid or not. For example, rather than documenting a rising crime rate, the social problems analyst is urged to focus on how

this problem is generated and sustained by the activities of complaining groups and institutional responses to them. Social construction has increasingly moved towards the core of social theorizing, generating a critical mass of theoretical and empirical contributions both within the social problems area and across sociology as a whole.

1.1. Constructionism as an Analytic Tool

Best (1989) has noted that constructionism is not only helpful as a theoretical stance but also that it can be useful as an analytical tool. In this regard, he suggests three primary foci for studying social problems from a social constructionist perspective: the claims themselves; the claims-makers and the claim making process.

1.1.1. Nature of Claims

As initially conceptualized by Spector and Kitsuse, claims were complaints about social conditions which members of a group perceived to be offensive and undesirable. According to Best (1989), there are several key questions to be asked when analyzing the content of a claim. What is being said about the problem? How is the problem being typified? What is the rhetoric of claims-making? How are claims presented so as to persuade their audiences? Of these, it is the third question that has generated the most interest among contemporary social problem analysts. **Claim makers** are individuals or groups who make a claim and **claim-making process** are the process in which claims are made. Rhetorical statements contain three principal components or categories of statements: grounds, warrants and conclusions

Grounds or data furnish the basic facts that shape the ensuing policy-making discourse. There are three main types of grounds statements: definitions, examples and numeric estimates. *Definitions* set the boundaries or domain of the problem and give it an orientation, that is, a guide to how we interpret it. *Examples* make it easier for public bodies to identify with the people affected by the problem, especially where they are seen as helpless victims. Atrocity tales are one especially effective type of example. By *estimating the magnitude of the problem*, claims-makers establish its importance, its potential for growth and its range (often of epidemic proportions).

Warrants are justifications for demanding that action be taken. These can include presenting the victim as blameless or innocent, emphasizing links with the historical past or linking the claims to basic rights and freedoms. For example, in analyzing the professional literature on 'elder abuse', Baumann (1989) identified six primary warrants: (1) the elderly are dependent; (2) the elderly are vulnerable; (3) abuse is life-threatening; (4) the elderly are incompetent; (5) ageing stresses families; (6) elder abuse often indicates other family problems.

Conclusion spell out the action that is needed to alleviate or eradicate a social problem. This frequently entails the formulation of new social control policies by existing bureaucratic institutions or the creation of new agencies to carry out these policies.

1.1.2. Claims-makers

In looking at the identity of claims-makers, Best (1989b: 250) advises that we pose a number of questions. Are claims-makers affiliated to specific organizations, social movements, professions or interest groups? Do they represent their own interests or those of third parties? Are they experienced or novices? (As we have seen, this can influence the choice of rhetorical tactics.)

Many studies that have been undertaken in the social constructionist mode have pointed to the important role played by medical professionals and scientists in constructing social problems claims. Others have noted the importance of policy or issue entrepreneurs –politicians, public interest, law, firms, civil servants – whose careers are dependent upon creating new opportunities, programmes and sources of funding. Claims-makers may also reside in the mass media, especially since the manufacture of news depends upon journalists, editors and producers constantly finding new trends, fashions and issues.

The cast of claims-makers who combine to promote a social problem can be quite diverse. For example, Kitsuse et al.(1984) identify three main categories of claims-

makers in the identification of the *Kikokushijo*⁴ problem in Japan, that is, the educational disadvantage of Japanese school children whose parents have taken them abroad as part of a corporate or diplomatic posting: 1) officials in prestigious and influential government agencies; 2) informally organized groups of diplomatic and corporate wives; and 3) the 'meta' – a support group of young adults who have been victims of the *kikokushijo* experience.

It is also important to keep in mind that not all claims-makers are to be found among the grassroots or civil society. For example, it has been suggested that the contemporary 'obesity crisis' has been captained by 'a relatively small group of scientists and doctors, many directly funded by the weight-loss industry, [who] have created an arbitrary and unscientific definition of overweight and obesity'.

1.1.3. Claims-making Process

The collective definition of social problems is reflected by three interacting sub processes: *animating the problem*(establishing turf rights, developing constituencies, funneling advice and imparting skills and information); *legitimizing the problem*(borrowing expertise and prestige, redefining its scope, e.g. from a moral to a legal question, building respectability, maintaining a separate identity); and *demonstrating the problem*(competing for attention, combining for strength, i.e. forging alliances with other claims-makers, selecting supportive data, convincing opposing ideologists, enlarging the bounds of responsibility). These are overlapping rather than sequential processes which together result in a public arena being built around a social problem. Claims makers or 'operatives' are said to deliberately adapt their social problem claims to fit their target environments; for instance, by packaging their claims in a novel, dramatic and succinct form or by framing claims in politically acceptable rhetoric.

⁴*Kikokushijo* is a Japanese term that represents 'repatriate children'- children who are educated abroad and returned back to Japan. In the 1970s, these children were viewed as problem children who needed assistance in readjusting into Japanese society, because they did not represent the unique Japanese culture as they were too Westernized and individualistic. These children ironically are called educational orphans.

1.2. Key Tasks/Processes in the Social Construction of Environmental Problems

In order for the environmental problems to get societal attention and provoking action, claim makers must do various activities including a collective definition of potential problems, and collective action necessary to tackle them. This is because environmental problems do follow a certain temporal order of development as they progress from initial discovery to policy implementation.

In considering the social construction of environmental problems, it is possible to identify three key tasks: assembling, presenting and contesting claims, which are overlapping rather than sequential processes; that is, they interact with one another rather than operate independently.

Another environmental problems construction scheme is more concerned with the political fate of environmental concerns. William Solesbury notes the 'continuing change in the agenda of environmental issues' that may be partly accounted for by changes in the state of the environment itself and partly through changing public views as to which issues are important and which are not. All environmental issues, he states, must pass three separate tests: commanding attention, claiming legitimacy and invoking action.

In considering the social construction of environmental problems, it is possible to identify three key tasks: assembling, presenting and contesting claims.

Please see the table in the following page concerning a summary of key tasks in constructing environmental problems.

	<i>Task</i>		
	<i>Assembling</i>	<i>Presenting</i>	<i>Contesting</i>
<i>Primary activities</i>	discovering the problem naming the problem determining the basis of the claim establishing parameters	commanding attention legitimizing the claim	invoking action mobilising support defending ownership
<i>Central forum</i>	science	mass media	politics
<i>Predominant layer of proof</i>	scientific	moral	legal
<i>Predominant scientific role(s)</i>	trend spotter	communicator	applied policy analyst
<i>Potential pitfalls</i>	lack of clarity ambiguity conflicting scientific evidence	low visibility declining novelty	co-optation issue fatigue countervailing claims
<i>Strategies for success</i>	creating an experiential focus streamlining knowledge claims scientific division of labour	linkage to popular issues and causes use of dramatic verbal and visual imagery rhetorical tactics and strategies	networking developing technical expertise opening policy windows

Table 1: Key Tasks in Constructing Environmental Problem

1.3. Audience for Environmental Claim

In addition to the skill of claims-makers and the severity of the underlying condition itself, the success of a putative environmental claim may also be tied to the magnitude of audiences that are mobilized around that claim. That is, a groundswell of audience support not only marks the rising of a problem but also can constitute a valuable resource in the effort to capture political attention. Most importantly, the environmental

claims attract audiences more than the other based on four key factors of the claims: uniqueness/distinctiveness⁵; relevance⁶; stature⁷ and familiarity⁸.

1.4. Necessary Factors for the Successful Construction of an Environmental Problem

There are six general factors that determine the success of the construction of environmental problems.

1. First, an environmental problem must have scientific authority for and validation of its claims.
2. Second, it is crucial to have one or more scientific 'popularizers' who can transform what would otherwise remain a fascinating but esoteric piece of research into a proactive environmental claim
3. Third, a prospective environmental problem must receive media attention in which the relevant claim is 'framed' as both real and important
4. Fourth, a potential environmental problem must be dramatized in highly symbolic and visual terms.
5. Fifth, there must be visible economic incentives for taking action on an environmental problem.
6. Finally, for a prospective environmental problem to be fully and successfully contested there should be an institutional sponsor who can ensure both legitimacy and continuity

⁵Uniqueness refers to the extent to which the public perceives a problem as separate from others of a similar nature.

⁶ Relevance is to the degree to which a particular environmental problem matters to the ordinary citizen.

⁷ Stature refers to the attitudes of the public towards the place or people or species under threat.

⁸Familiarity refers to how well-known a particular problem is to an audience.

Chapter Five: Media and Environmental Communication

Media is playing a crucial role in environmental communication in many ways. Some of the importances of media in this regard can range from increasing public awareness to policy level action. Hence, media is important in moving environmental problems from conditions to issues to policy concerns. In addition, communication about the environment in and through a broad array of news, advertising, art and entertainment media serve us sources of public and political understanding of definitions, issues and problems associated with the environment. Further, media and communication processes are central to how we come to know and understand the environment as well as how environmental problems are defined contested, addresses and responded to. Finally, Media can be the channels for the environmental communication (how media portray the environment, such as through science journalism, film treatments, web sites) and the content of environmental communication(how to design media and message for affecting environmental policy, educating interested stakeholders about the environment, and improving access to environmental information and experiences).

Notwithstanding the crucial importances being played by media in environmental communication to date, the concerns of media over environmentalism have never been that much rapid. As Schoenfeld et al. (1979) have demonstrated the daily press in the United States was initially slow in grasping the basic substance and style of environmentalism, leaving it to issue entrepreneurs in colleges and universities, government and public interest groups to mobilize concern outside of the media net. In local environmental conflicts, media claims are often viewed skeptically, refracted as they are through the prism of residents' own practical everyday experiences and knowledge. Rather than actively sparking a response to environmental problems, the media often seem to be a millstone weighing down public discussion of environmental

topics in a technical-bureaucratic discourse that excludes interest groups and non-official claims-makers.

It does not mean that there had not been efforts made to communicate about environment in the past. Experiences, however show that activities such as, landscape painters, early photographs and filmmakers attempted to portray their surroundings in both formalized and unique ways. It was the wonder of reproducing environmental landscapes in early stereoscopes, panoramas, and serial motion photography that communicated a sense of spiritual reverence for splendor and beauty of nature as well as the will to behold and preserve it.

On television, there are now several cable networks and programmes dedicated to the coverage of environmental issues including the discovery Channel, Animal planet and National Geographic internationally. In Ethiopia too, the environmental related television programmes have been given attention both by the Government media Corporations as well as private media corporations including the Ethiopian Broadcasting Corporations (EBC); the Ethiopian Broadcasting Services (EBS) and other regional government television programmes, such as the Oromia Television and Amhara Television. These television channels have their own environmental related programmes that are designed to raise public awareness.

Chapter Six: Risk

Risk, Environment and Society

Risk and Culture

The first notable challenge to this position came from a British social anthropologist, Mary Douglas, and an American political scientist, Aaron Wildavsky, who published a provocative book in 1982 entitled Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers.

Risk and Culture asks two simple but fundamental questions. Why do people emphasize certain risks while ignoring others? And, more specifically, why have so many people in our society singled out pollution as a source of concern? The answers, Douglas and Wildavsky insist, are embedded in culture.

In their view, social relations are organized into three major patterns: the individualist, the hierarchical and the egalitarian. *Individualist* arrangements are based on the laws of the marketplace, while *hierarchical relations* are epitomized by government bureaucracies. *Egalitarian groups* are aligned in a 'border zone' on the margins of power at the political economic centre of society where the other two modes of social organization are normally located.

Egalitarian groups have a cosmology or world-view that is more or less equivalent to the 'New Ecological Paradigm' discussed by Catton and Dunlap. Unbridled economic growth is frowned upon, the authority of science is questioned and our boundless faith in technology is declared unwise.

Douglas and Wildavsky's central thesis is that the perception of risk varies considerably across these three forms of social organization. Market individualists are primarily

concerned with the upswing/downturn of the stock market, hierarchists with threats to domestic law and order or the international balance of power and egalitarians with the state of the environment. This leads them to conclude that the selection of risks for public attention is based less on the depth of scientific evidence or on the likelihood of danger but rather according to whose voice predominates in the evaluation and processing of information about hazardous issues.

In this view, the public perception of risk and its acceptable levels are 'collective constructs'. No one definition of risk is inherently correct; all are biased since competing claims, each arising from different cultures, 'confer different meanings on situations, events, objects, and especially relationships'. Here, they are making the important point that competing definitions of what is risky are ultimately moral judgments about the proper way to organize society.

Unfortunately, at this point, Douglas and Wildavsky's cultural theory of risk slips off the rails on to spongier ground. Environmental egalitarians, they suggest, are the secular equivalents of religious sects such as the Anabaptists, the Hutterites and the Amish. Obsessed with doctrinal purity and the need for unquestioned internal loyalty, sectarians are seen as having to create an image of threatening evil on a cosmic scale. It is therefore necessary and 'functional' for environmental sectarians such as those found in Friends of the Earth constantly to identify new risks ranging from nuclear winter to global warming. Each new crisis is chosen, they maintain, 'out of the necessity of maintaining cohesion by validating both the sect's distrust of the center and its apocalyptic expectations'. This explains why they turn their back on local causes in favour of global issues so vast in scale as to warrant a sense of general doom. Pollution and other risks are wielded by these sectarian challengers as a way of holding their membership together and for attacking the establishment groups of the centre, which they oppose.

Risk and Culture has provoked much interest and a torrent of criticism. Much of the latter focused on the authors' claim that environmentalists mobilize for solidarity rather than for purposive reasons. That is, rather than view environmentalism as part of a moral response to a very real societal crisis, they have chosen to treat risks as merely bogeymen which serve the same purpose as certain food prohibitions among tribal peoples. Environmentalists, therefore, are not regarded as rational actors but rather as 'true believers' open to manipulation by ecological prophets such as David Brower and Edward Abbey.

Karl Dake, a member of the Douglas-Wildavsky research circle, has insisted that this criticism is overstated and that the cultural school of risk never meant to imply that perceived dangers are simply manufactured: People do die; plant and animal species are lost forever. Rather, the point is that world views provide powerful cultural lenses, magnifying one danger, obscuring another threat, selecting others for minimal attention or even disregard.

Sociological Perspectives on Risk

Sociologists of risk generally adopt a more moderate position than that of Douglas and Wildavsky, insisting that while risk is certainly a sociocultural construct, it cannot be confined to perceptions and social constructions alone. Rather, technical risk analyses are an integral part of the social processing of risk.

Dietz et al. (2002) observed, in preparatory work, that the main currents in the sociology of risk have followed three separate but complementary directions which are bound together by an underlying emphasis on the social context in which individual and institutional decisions about risks are made.

First, sociologists have been concerned with the question of how perceptions of risk differ across populations facing different life chances and whether the framing of choices stems primarily from power differences among social actors. Thus,

Heimer(1988) points out that the residents of Love Canal saw the risks from chemical dumps differently from executives of the Hooker Chemical Company and from bureaucrats in the state government and various state agencies which deal with public health and the environment. Similarly, workers and bosses see environmental health risks in the workplace in a different light. To a certain extent, this issue overlaps the social distribution of risk, although the emphasis here is on how social location affects the perception of risk rather than on how it alters the likelihood of being exposed to hazardous conditions.

Second, sociologists of risk have proposed a model that re-conceptualizes the problem of risk perception by taking into account the social context in which human perceptions are formed. That is, individual perception is powerfully affected by panoply of primary influences (friends, family, co-workers) and secondary influences (public figures, mass media) which function as filters in the diffusion of information in the community. This is captured in the concept of 'personal influence' that was central in the mass communication research of the 1950s and 1960s.

Third, risks, especially those of technological origin, have been conceptualized as components of complex organizational systems. This is exemplified in Perrow's (1984) analysis of 'normal accidents' in which an estimated probability of failure is built right into the design of technologies with high catastrophic potential. Once implemented, however, such systems severely limit any further human ability to manipulate risks since the source of the risk is now located in the organization itself.

Ulrich Beck's Sociological Analysis of Risk and Society

Beck argues that society now lives in an age of 'manufactured risk', one in which risk is no longer an 'act of God' but one in which science-based intervention in the natural world (one originally designed to solve social and economic problems) is now accidentally creating new problems and hazards. Science and politics in our 'second modernity' is therefore largely preoccupied with dealing with the risks created by

earlier over-optimistic interventions. 'Chains of problem solution and problem production' are set up, whereby scientific interventions aimed at overcoming environmental problems finish up creating new crises.

The risk society thesis is also important as regards current and future forms of social stratification. Beck suggests, for example, that much contemporary 'manmade' risk is 'democratic' insofar as it affects all social strata. Recent developments such as 'Mad Cow Disease' and a range of food scares are possible examples of risk in this new kind of modernity. Perhaps the best example is the radioactive cloud made by the accident in the Chernobyl power plant. It affected wide sectors of the population. Perhaps this is a sign of things to come, with the new environmental hazards affecting the life-chances of *all* the population.

Beck's solution to the risk society is 'cosmopolitan citizenship.'(2006). The nation state, he argues, is redundant as a scale of politics in any sense useful. Cosmopolitan citizenship is one in which people reconstitute themselves as not just members of a particular nation but also as members of a global community. A new form of consciousness is needed which embraces not only the context in which environmental crises are generated but the wider context in which they are experienced and reacted to.

Beck's analysis points very accurately to a number of important tendencies in modern society, especially the often problematic role of science. His views have been enormously influential in policy-making as well as academic circles. Nevertheless, for some sociologists he is not sufficiently critical of the society causing environmental degradation.

Arenas of Risk Construction

It is unlikely to influence collective risk decisions or policies directly. Instead, social definitions of environmental risk must be followed up by political actions designed to mitigate or control the risk that has been identified. Building on the work of Hilgartner and Bosk (1988), Renn (1992) argues that political debates about risk issues are

invariably conducted within the framework of 'social arenas'. The term social arenas is a metaphor to describe the political setting in which actors direct their claims to decision-makers in hopes of influencing the policy process. Renn conceives of several different (theatre) 'stages' sharing this arena: legislative, administrative, judicial, scientific and mass media.

The concept of the social arena combines elements from the organization-environment perspective in the field of complex organizations, Goffman's dramaturgical model of social relations and the symbolic models of politics as developed by Murray Edelman (1964; 1977) cemented together by a social constructionist compound.

While some elements of risk construction may occur in the public domain beyond their parameters, the most important action takes place in arenas that are populated by communities of specialized professionals: scientists, engineers, lawyers, medical doctors, corporate managers, political operatives, etc. Such technical experts are the chief constructors of risk, setting an agenda that often includes direct public input only during the latter stages of consideration. Hilgartner and Bosk (1988) note that these 'communities of operatives' often function in a symbiotic fashion, the operatives in each arena feeding the activities of operatives in the others. Environmental operatives (environmental groups, industry lobbyists and public relations personnel, political champions, environmental lawyers, journalists and bureaucrats) are notable examples of this; by virtue of their activities they both generate work for one another and raise the prominence of the environment as a source of social problems.

Within the social arena of risk, the process of defining what is acceptable and what is not is often rooted in negotiations among several or multiple organizations seeking to structure relations among themselves. In such cases the institutional assessment of risk is a claims-making activity in which corporations and agencies both compete and negotiate to set a definition of acceptable risk.

From a theatrical vantage point therefore, social arenas of risk are populated by sundry groups of actors. Palmlund (1992) proposes the existence of six 'generic roles' in the societal evaluation of risk, each of which carries its own dramatic label: *risk bearers, risk bearers' advocates, risk generators, risk researchers, risk arbiters and risk informers*.

Risk bearers are victims who bear the direct costs of living and working in hazardous settings. In the past, those who are impacted most have rarely asserted themselves and have therefore remained on the margins of risk arenas. More recently, however, as can be seen in the rise of the environmental justice movement, risk bearers have become empowered and must increasingly be regarded as notable players. Risk bearers' advocates ascend the public stage to fight for the rights of victims. Examples include consumer organizations such as those headed by Ralph Nader and Jeremy Rifkin, health organizations, labour unions and congressional/parliamentary champions. They are depicted as protagonists or heroes. Risk generators – utilities, forestry companies, multinational chemical and pharmaceutical companies, etc. – are labeled as antagonists or villains since they are said by advocates to be the primary source of the risk. Risk researchers, notably scientists in universities, government laboratories and publicly funded agencies are portrayed as 'helpers' attempting to gather evidence on why, how and under what circumstances an object or activity is risk-laden, who is exposed to the risk and when the risk may be regarded as 'acceptable'. On occasion, however, risk researchers have become identified with risk generators, particularly if their findings support the latter's position. Risk arbiters (mediators, the courts, Congress/Parliament, regulatory agencies) ideally stand off-stage seeking to determine in a neutral fashion the extent to which risk should be accepted or how it should be limited or prevented and what compensation should be given to those who have suffered harm from a situation judged to be hazardous. In reality, risk arbiters are rarely as neutral as they should be; instead, they frequently they tend to side with risk generators. Finally, risk informers, primarily the mass media, take the role of a 'chorus' or messengers, placing issues on the public agenda and scrutinizing the action.

Chapter Seven: Biodiversity Loss

The Successful 'career' of a Global Environmental Problem

Along with global warming, the conservation of biodiversity was one of the two major issues at the June 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. It was called the 'hottest' environmental topic of 1993 (Mannion 1993) with a burgeoning academic and popular literature devoted to exploring its parameters.

Valiveronen (1999: 404) characterizes it as 'the latest "big" environmental issue, comparable to acid rain, ozone depletion and climate change'. Yet twenty years before, the term biodiversity was unknown and it was not to be found in any compendium of threats to the environment. The skyrocketing career of biological diversity loss is a good illustration of how a 'transnational epistemic community' can assemble, present and successfully contest a global environmental problem.

As a concept, biodiversity is multi-layered with various levels of meaning. Officially, it has been defined as 'the variability among living organisms from all sources, including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part'. More simply, it is an umbrella term for nature's variety – ecosystems, species and genes (Environmental Conservation 1993: 277).

Biodiversity is generally acknowledged to exist at three distinct levels: ecosystem diversity; species diversity; and genetic diversity.

Ecosystem diversity refers to the variety of habitats that host living organisms in a particular geographic region. This variety is said to be shrinking in the face of accelerating economic development. Udall (1991: 83) uses the metaphor of a ripe pumpkin that has been hollowed out to describe the damage to our ecosystems which has been inflicted by trapping, ploughing, logging, damming, poisoning and other

forms of human intrusion. With the rapid pace of development, land ecosystems are described as increasingly taking the form of 'habitat islands'; for example, a patch of tropical forest surrounded by croplands.

Species diversity refers to the variety of species that are found in an ecosystem. While there have been notable episodes of species extinction in the past, the scale of loss today is judged to be unprecedented in the history of humankind. Much of this is attributable to loss of ecosystem diversity; as a broad general rule, reducing the size of a habitat by 90 per cent will reduce the number of species that can be supported in the long run by 50 per Cent.

Genetic diversity refers to the range of genetic information coded in the DNA of a single population species. Biologists value genetic diversity because it is seen as the basis for permitting organisms to adapt to environmental change. For example, in agriculture, wild strains of plants are valued because they often contain genes that are vital in fighting off pests or disease, unlike domesticated 'monocultures' which are much more vulnerable. In the animal world, inbreeding among a population stranded by habitat loss or commercial exploitation leads to an inability to survive in the long term; for example, this is the situation of the grizzly bears in Yellowstone Park in the American West.

When all three levels are viewed together, biodiversity loss appears to be a newly minted environmental problem. However, as Barton (1992: 773) has observed, there have long been a variety of treaties governing individual elements such as the Convention International Trade in Endangered Species(CITES), regional conservation and the conservation of particular species. For example, the Migratory Birds Convention signed in 1917 by the United States and Canada, which Ethiopia too is signatory, was a key piece of legislation in the campaign during the first part of this century to save birds. And in 1911, six years earlier, a major international agreement, the Convention for the Protection and Preservation of Fur Seals, had been signed.

Contextual Factors

There are three major developments that set the stage for the rise of biodiversity loss as a major environmental problem in the 1980s and 1990s.

First, the growing economic importance of biotechnology meant that a greater financial value was increasingly being placed on genetic resources, a value that was recognized through intellectual property rights. Of special importance here was a landmark decision by the US Supreme Court (*Diamond v. Chakrabarty*) that allowed for the first time the patenting of a genetically engineered microbe, in this case an oil-eating bacterium developed by a General Electric research scientist named AnandaChakrabarty.

Also of significance was the passage a decade earlier of the US Plant Variety Protection Act (PVPA) that set up a patent-like system to govern the seed industry under the auspices of the US Department of Agriculture rather than under the more rigorous requirements of the US Patent Office. These events were significant for two interrelated reasons.

By raising the monetary stakes involved in the development of genetic resources, a conflict was fanned between the developed nations who wished to ensure open access to plant and animal genes and the less developed nations in which the bulk of these genetic materials were actually to be found. The latter began to see the genetic prospecting of the multinational pharmaceutical and chemical companies headquartered in Northern nations as a form of 'plundering' for which compensation should be paid.

At the same time, genetic diversity also became an international development issue due to the entry of several well-known rural activists (Cary Fowler, Pat Roy Mooney) to the debate over plant patenting. Fowler, a farmer from North Carolina, had worked with food activists Frances Moore Lappé and Joe Collins on the national bestselling book, *Food First*, an indictment of the world food system. Fowler became a one-person lobby

opposing changes to the seed patent laws. In the 1979 debate over a proposal to amend the PVPA so as to add six 'soup vegetables' theretofore excluded from the act, Fowler: turned his mailing list loose on Congress, went to the Press, wrote articles about the issue, and travelled around the country alerting other groups to the 'seed patenting' issue. Fowler rallied scientists and church interests and wrote to the Secretary of Agriculture, Bob Bergland, urging him to consider the impact of rising seed costs on small farmers.

Mooney, a Canadian from the province of Manitoba, helped to internationalize the seed issue both by his participation in a network of activist scholars working on Third World issues and also through his widely circulated paperback book, *Seeds of the Earth*, published in 1979 for the Canadian Council for International Cooperation and the International Coalition for Development Action.

Second, the emergence of conservation biology in the late 1970s as an academic specialty provided a nesting spot for research on biodiversity. Conservation biology is an applied science that studies biodiversity and the dynamics of extinction. It differs from other natural resource fields such as wildlife management, fisheries and forestry by accenting ecology over economics (Grumbine 1992: 29). The role of the conservation biologist is to provide 'the intellectual and technological tools that will anticipate, prevent, minimize and/or repair ecological damage' (Soulé and Kohm 1989: 1). Conservation biology is thus a 'crisis discipline' that draws its content and method from a broad range of fields within and outside of the biological sciences.

Third, a legal and organizational infrastructure was being assembled in the 1970s within the United Nations and other NGOs dealing with various elements of the biodiversity problem. In 1971, the Convention on Wetlands of International Importance Especially as Waterfowl Habitat was agreed upon with the dual purpose of designating environmentally sensitive areas for migratory waterfowl and facilitating trans-border cooperation among countries situated along their travel routes. This agreement was

staffed by a secretariat provided by the Inter-national Union for Conservation of Nature (IUCN).

The Convention Concerning the Protection of the World Cultural and Natural Heritage (held in Paris in 1972), prepared under UNESCO (United Nations Economic, Social and Cultural Organization) supervision, established exceptional World Cultural Sites such as Serengeti National Park in Tanzania, the Queensland Rainforests in Australia, Great Smokies National Park in the United States, Simen Mountains National Park in Ethiopia(now being in a serious disturbance and create dilemma whether to continue as a world heritage site or to be cancelled out) some of which rated quite highly in biological diversity.

The agreement established a world heritage fund to assist nations that may have difficulty in paying for the protection of these unique sites. It was signed by 150 countries. However, this treaty is extremely limited in scope and has had minimal success both in slowing the rate of species loss on a global scale and in assuring the protection of designated sites.

In 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was proclaimed in Washington with a secretariat staffed by the United Nations Environment Programme (UNEP) located in Lausanne, Switzerland. This convention established lists of endangered species for which international trade is to be controlled via permit systems. CITES was limited, however, insofar as it was directed at individual species rather than the habitats in which they resided. Furthermore, it is primarily a trade agreement that does not guarantee protective status or conservation programmes within the states in which vulnerable species reside. Finally, the monitoring and enforcement of CITES has been marred by a series of 'exceptions', for example the 'tourist souvenir exception' (allows rare specimens to be imported as personal or household effects) and the 'transshipment exception' (permits specimens passing through a third country to avoid regulations of the convention).

These exceptions have been used to smuggle protected species under the pretence that the exceptions apply.

Finally, the Convention on Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention provided a framework for international cooperation among states that hosted animals whose travels regularly take them across national boundaries. A central aim of this convention was to coordinate research, management and conservation resources such as habitat protection and hunting regulation affecting migratory species.

These international legal agreements were supplemented by a number of regional measures, for example, conventions on the conservation of nature, natural resources, wildlife and natural habitats pertaining to the South Pacific (1976), Africa (1968) and Europe (1976), and by the designation of Biosphere Reserves under a UNESCO programme. Taken as a whole, such measures were not only useful in their own right as a means of fostering, if not enforcing, useful cooperation among nations in conserving biological diversity, but they also put into place a global system upon which more far-reaching and stringent international legislation to conserve biological diversity could be modelled. Furthermore, they established epistemic networks of research, communication and coordination that were vital in moving biodiversity along to its status today as a major environmental problem.

Why are we concerned about Biodiversity Conservation?

Biodiversity conservation has multifaceted benefits to human beings, who are also the dominant factors for the extinction of biodiversity. Humans need the existence of biodiversity and healthy ecosystems that may not otherwise be available without a good management of the former. The ecosystem services, including hydrology can only exist when the plant diversities are conserved and made free from anthropogenic factors.

The aim of conserving biodiversity can be targeted at preserving their '*Exceptional Resource Values*'. Exceptional Resource Values (ERVs) are the biophysical features of an area that are considered to be particularly important in maintaining the unique ecological character and functions of an area and that provide outstanding benefits (social, economic, aesthetic) to local, national and international stakeholders.

The social importances of conserving biodiversity include, maintaining environmental goods and services such as non timber forest products, like honey production and medicinal values of plants. Organic forest coffee can be one of the important aspects of conservation that widely benefit the local communities. The conservation of biodiversity at higher altitudes plays a paramount social importance for people living at the lower areas who may experience poverty and shortage of water.

The economic returns biodiversity conservation provides for the countries nowadays through ecotourism and sport hunting, attracts politicians to pay attention to the sector. In addition the medicinal value biodiversity provides does also support the economic sector, in addition to its importances in social values. The other important economic value is the idea of carbon trade for countries that are able to conserve their forests. Ethiopia since very recent time has paid huge attention to carbon trade and the country has made institutional arrangements by establishing a department solely responsible for this task under the Ministry of Forest and Environmental Protection.

The biodiversity should also be conserved for intrinsic value. This is related to the natural values of biodiversity that biological diversities should be conserved because they have an inherent right to exist.

Generally, our life is knitted to the wellbeing of biodiversity and their products. We get oxygen, water, medicine, housing, tools to mitigate natural disasters from conservation of biodiversity. The natural disasters though are socially constructed realities, can be mitigated by conserving the biodiversity conservation together with their habitat. Land slide, flooding and desertification are resulted from mistreat of the biodiversity.

Chapter Eight: New Directions in Environmental Sociology

Environmental Attitudes and Behaviors

Values are important life goals or standards and are generally viewed as influencing attitudes and behaviors. Values are determinants of attitude, which, in turn, shape behavior. Values might be distinguished from attitudes in that values are broader and less clearly integrated into an interconnected ecosystem. Attitudes are commonly believed to be important concept in the environment. Attitudes have been directly related to behavioral change. Behavioral change is a function of change in behavioral intention. Changes in behavioral intentions are related to changes in attitudes. Attitudes are a major determinant of behavior. Environmental attitudes are important predictor of ecological behavior.

An attitude is a hypothetical construct about a mental state which is inferred from verbal reports and behavioral observation. As a concept, attitude takes its reality from our own introspection. We believe in attitudes and find them useful for understanding the behavior of others. We know them to be powerful because changes in social structure, such as a law which requires an environmental impact statement, or stabilities, such as the continued reliance on the single person auto mobile, often seem to be influenced by public attitudes.

The attitude of people of the world toward the environment is not uniform. Different societies have their specific expression of nature and they know exactly how they should manage their land, river, meadows and other resources. Some researchers reveal that the value and attitude of Japanese people are different from that of the western society. Some writers describe Asian people, including Japanese people as people living with nature. The word environment even has different meanings in different societies. Humans concern for the environment is also different.

Public concern over ecological problems and technological risk has grown considerably in western industrial societies since 1980s. Concerns for the environment have become more or

less institutionalized in different fields of action: research and politics, economic management, product advertisement, education and private life.

As industrial societies have developed, and as absolute scarcity has been conquered and most basic material needs have been met, public concerns tend a definite hierarchy of needs to a point where there is an articulation of post material values. Respect for the nature and interest in the quality of life rather than in quantity of material good are seen as the prototypical post-material values. These values in turn predispose citizens to support movements such as ecology.

The work of environmental pressure groups such as NGOs and green political parties in 1980s increased the awareness of the public on environment. The even exerted power to the extent environmental issue is incorporated to curriculum of schools. The awareness of public towards environment also increased. However, subsiding environmental issue started in 1990s.

By the late 1980s, increased societal attention was gained focus on what humans were doing to the environment as was true when environmental quality emerged as a social problem in the late 1960s. Medias started to pay attention to environmental issues. In 1988 and 1989 alone, in the US three major News Magazines – Time, news Week and US News and World Report-carried several cover stories on environmental problems such as the contamination of the Atlantic Coast with hospital wastes, acid rain, ozone depletion, rain forest destruction and global warming(Mazur and Lee,1993). The exceptionally hot summer of 1988 applied to validate the notion of global warming in the eyes of public, as much as the 1973-4 energy crisis had done to for the limits to growth.

Why did concern for Environmental issue rise in 1980s in Europe?

There are two reasons offered for this. This are first, the established political parties diffused the argument of pressure groups by adapting many of the ideas and branding them as their own. Second, the more extreme green policies, commonly known as dark or deep green political thought, proved too radical for the middle-ground electorate.

Environmentalism and Environmental Movement

Environmentalism is a perspective that encompasses a broad range of views concerned with the preservation, restoration, or improvement of the natural environment; it covers from radical Arne Næss's biospheric egalitarianism called Deep Ecology to more conservative ideas of Sustainable development often discussed at the United Nations. Environmentalism often includes explicit political implications, and thus can serve as political ideology.

Since environmental issues are considered as outcomes of modernity, environmentalism often has a critique of modernity, which includes critical evaluations of the culture of mass-production and mass-consumption. Since environmental issues exist in the nexus of social, cultural, economic, political and natural spheres of human life, a narrow single ideological perspective cannot provide an adequate solution. The collaboration of scholars and professionals from diverse disciplines is indispensable in order to cope with the multifaceted complex problems of today. The study of practical environmentalism is generally split into two positions: the mainstream "anthropocentric" or hierarchic, and the more radical "ecocentric" or egalitarian.

The term "environmentalism" is associated with other modern terms such as "greening," "environmental management," "resource efficiency and waste minimization," "environmental responsibility," and Environmental Ethics and Justice. Environmentalism also entails emerging issues such as global warming and the development of renewable energy.

The natural world exists according to the principles of interdependence and balance. Environmentalists call attention to the effects of the rapid development of modern civilization that have disrupted the balance of the earth.

Environmental Movement

What do you understand by the concept environmental movement?

The Environmental movement (a term that sometimes includes the conservation and green movements) is a diverse scientific, Social, and political movement. In general terms, environmentalists advocate the sustainable management of resources, and the protection (and restoration, when necessary) of the natural environment through changes in public policy and individual behavior. In its recognition of humanity as a participant in ecosystems, the

movement is centered around ecology, health and human rights. Additionally, throughout history, the movement has been incorporated into religion. The movement is represented by a range of organizations, from the large to grassroots, but a younger demographic than is common in other social movements. Due to its large membership which represents a range of varying and strong beliefs, the movement is not entirely united.

Modern Technology and its Impact

The role of Modern Technology and Science is increasing and has major impact on day-to-day lives of today's people, as it will in the future. One way or another, advancements in Science and Technology are affecting people all around the world, both developed and developing countries. Technology affects people's lives by improving medicines, provides better treatment for diseases and insures a longer life. It improves transportation by helping people move from one corner of the world to other in hours by using transportation services such as Airways, Railways, or even Bus Transportation.

Modern Technology changed people's lifestyle and the way they live. For example, now it's possible to surf Internet on TV, watch programs, pause Live TV, and even playback live shows. Internet surfing is a technology revolution. Because of that technology, a person could know what is happening on the other side of the world, chat with others about different matters and even talk using Instant Messaging Services. Watching TV on computers too is possible. Due to Internet, it is now possible to say that the world is at your fingertips.

Recent discoveries and scientific breakthroughs such as Cracking the DNA code and Mapping the Genome may completely change the way people look even before they are born. Parents can change color of their unborn son's eye from blue, black or brown. Diseases that are passed through generations, like diabetes, chronic diseases may be eliminated from the unborn child. Such changes will create a child who is disease free and completely immune from world diseases. This might be helpful, as people would be healthier than before. Due to genetic alteration it maybe possible to extend human life expectancy; therefore, an average person may possibly live up to 150 years healthily.

These are few and best examples that Modern Technology and Science have greater impact on Human beings and the Earth than anything else mankind has done before. Even though with these many Scientific and Technological advancements, there are huge backdrops and

disadvantages, Scientific and Technological advancements are improving our way of life, but in this conquest of knowledge, this advancement is hurting the Earth and also acting in a negative way people live. Development of Nuclear Arsenals is one such example, which could seriously harm Earth's environment. Chernobyl blast is the best example of how these Nuclear Plants could lead to death of millions of lives now and in the future. Use of chemical and destructive weapons might one day bring the world to a dead end where there is no more humanity because of people's quest for knowledge. Other matters of concern are continuous use of limited resources such as oil and coal, and increase in pollution in atmosphere due to these minerals. Therefore, Scientific Advancements may also make the world worse. If after 10 years, Genetic Mutation is made possible to extend life expectancy, people will live longer and death rate will decrease thus creating a serious problem where more resources will be consumed and lead to eventual destruction of forests and natural habitats to make way for people.

Therefore, Scientific and Technological advancement is not always good even if it is making the lives of people better and their lives healthier. It is also making social condition and Earth's environment worse. In conclusion, Modern Technology has great impact on our day-to-day life and also shapes our future.

Political Economy of the Environment and Environmental Politics

The distribution of wealth and income are treated as a peripheral issue in much of economies, but in political economy it is a central issue. Distribution is relevant both normatively, in judging the desirability of economic outcomes, and positively, in understanding how economy works.

Nature underpins human livelihoods both as a source of raw materials and as a sink for the disposal of our wastes. The quality of the natural environment can be affected by how we distribute power and wealth among ourselves. The earth is the home and common heritage of all human kind, but some people claim more of its bounty than others. Access to natural capital—a phrase lately in vogue among economists—is filtered through our political and economic institutions. Those people who are relatively wealthy and powerful generally reap more of the benefits from uses of the environment, and bear fewer of the costs from its abuse, than do those who are relatively poor and powerless.

Poor people and minorities are more likely than other groups to live in polluted neighborhoods. They live closer to hazardous waste facilities and landfill and live closer to large air polluters. Environmental benefits and hazards are not fairly distributed.

To conclude, some people are more access to natural resources than others. Everyone may have also the same right to pollute the air and water, but not everyone have equal means to do. This indicates the role of power in environment.

The following are sources of the disproportionate pollution burden borne by disadvantaged groups. These are:

1. Disadvantaged groups have less political power. Consequently, they may be less successful at lobbying government agencies to block polluting facilities in their neighborhood.
2. Disadvantaged groups may live in more polluted areas for the simple reason that to be poor means not having the resources to purchase the good things in life-including a clean environment.
3. Some communities have features that are attractive to both disadvantaged households and polluting firms. The poorer households and polluting facilities may be mutually attracted by low-skilled labor market.

Power is the determinant factor as you see from the above explanation of environmental degradation. Power is important in analyzing the ability of different economic actors to appropriate resources, to discharge the wastes into environmental sinks and to prevent other from doing so. There are five dimension of power. These are:

- i. **Purchasing power:** is the ability and willingness of individuals to pay for various goods and services determined what gets produced. It is the foundation for the valuation of environmental goods and services –such as biodiversity conservation or cleaner air—in the shadow markets of benefit-cost analysis that are meant to underpin public-sector decision-making in a world of optimal planning free of distorting political influence.
- ii. **Decision power:** is the ability to prevail in contests where different people prefer different outcomes—is the most evident non-economic dimensions of power. For example, a government's decisions as to what pollutants to regulate, and how strictly to regulate them, is typically based not only on dispassionate calculations of the social costs

and benefits of pollution control, but also on the relative strength of the lobbying efforts b proponents and opponents of regulation.

- iii. **Agenda power:** is the ability to determine which issues enter into the arena of public decision-making at all. This is a more subtle dimension of power, in that it can shape outcomes before decision power comes into play.
- iv. **Value power:** is the ability to influence what others want, what they themselves will choose if given the opportunity to decide. This is an even subtler dimension of power, for it raises the possibility that people's wants can be shaped by the society in which they live, so as to work against their interests.
- v. **Event power:** is the ability to alter the circumstances in which people make choices, rather than directly determining the choices themselves. Externalities are an example.

Chapter Nine: Environmental Problems and policy of Ethiopia

Introduction

Overgrazing, deforestation and poor agricultural practices have contributed to soil erosion so severe substantial areas of farmland have been lost to cultivation. The largest proportion of acres of arable land was washed away each year. Ethiopia's forests are also endangered. The nation's water supply is also at risk. The Ethiopian government adopted an environmental policy to reduce the environmental degradation and achieve sustainable development. You will learn in this unit environmental degradation and rural livelihood crises, the issue of environmental and population and Ethiopia's environmental policy.

Environmental Degradation and livelihood Crisis in Rural Ethiopia

Human livelihood is directly or indirectly linked with the environment. Thus, environmental degradation which includes deforestation, soil erosion and related problems of decline in soil fertility and loss of biodiversity challenges an attempt of people and government to improve livelihood of Ethiopian society.

Ethiopia is a country of great geographical diversity with and rugged mountains, flat-topped plateau, deep Georges, incised river valleys, and rolling plains. It is a country with wealth of natural resources and biodiversity.

This diversity of ecosystems and the geographically isolated highlands and arid lowlands to the east mean that Ethiopia harbors unique and diverse biological diversity.

Discuss the status of environmental degradation in your area? Do you think that it has an impact on the productivity of farmers? How?

Environmental degradation is severe in Ethiopia. It is one of the major challenges facing Ethiopia in striving for development. It is manifested in the form of the degradation of land and water resources as well as loss of biodiversity.

Environmental problem is high in rural areas. Environmental problems facing the rural population include issues such as fuel wood consumption pressure, watershed management and biodiversity. In addition, deforestations, drought, climate change etc are the major problems. Soil erosion and degradation remains one of the most serious environmental issues affecting Ethiopia, despite repeated soil and water conservation campaigns throughout the country. These problems affect the livelihood of the rural population whose economy is dominantly agriculture.

Agriculture is the dominant economic activity of Ethiopia. The majority of the population of the country earn their livelihood from agriculture and rural. However, rural Ethiopia is marked by abject poverty and environmental degradation. They face a complex set of economic, social, environmental and health crises that impair their lives and development prospects. Food insecurity and malnutrition distress countless rural households and communities.

Rural poverty, food insecurity, population growth and natural resource degradation are inseparably related in rural Ethiopia. The country is caught up in a poverty-environment degradation and food insecurity circle. This is a complex and multi-dimensional problem with no single cause.

Land degradation, manifested in terms of soil erosion and loss of soil fertility greatly affects agricultural productivity and production. Population of the country is growing at a rate of 2.6% (CSA, 2007). This requires growth of agricultural production, which may come through either expansion of farm land or increasing productivity.

Land Degradation in Ethiopia: Deforestation, accelerated soil erosion, and land degradation are serious problems in Ethiopia. Land degradation is a great threat for the future and it requires great effort and resources to ameliorate. The major causes of land degradation in Ethiopia are the rapid population increase, severe soil loss, deforestation, low vegetative cover and unbalanced crop and livestock production. Inappropriate land-use systems and land-tenure policies of the past regimes have also enhanced desertification and loss of agro biodiversity. In addition, utilization of dung and crop residues for fuel and other uses disturbs the sustainability of land resources.

Agriculture and Land Degradation in Ethiopia

Agriculture is the dominant sector of the Ethiopian economy, with 85 percent of the population living in rural areas. Agriculture provides about 52 percent of the country's gross domestic product, 80 percent of its employment, and 90 percent of its export earnings (World Bank 2000; CIA 2001). Ethiopia's economy is largely dominated by subsistence agriculture, and crop and livestock farming are the principal practices. Mixed farming dominates the highlands, with crop and livestock farming practiced in the same management unit. The production system is mainly rain fed, subsistence-based, and smallholder-oriented.

Crops such as barley, teff, wheat, and beans are grown in the higher altitudes, while sorghum and maize are the principal crops in the mid and low altitudes. In addition, coffee, sweet potatoes, chat, various vegetables, fruits, and groundnuts are extensively cultivated. Cattle, sheep, and goats constitute the livestock in the highlands. Crop and livestock yields in the highlands are very low, and the recent drought and land degradation have aggravated the situation. Furthermore, population pressures have decreased the size of holdings, including both arable and pasturelands, leading to conversion of forested and marginal areas into agricultural lands (Hoekstra, Torquebiau, and Bishaw 1990; Bishaw 1993).

Soil degradation in Ethiopia can be seen as a direct result of the past agricultural practices in the highlands. The dissected terrain, the extensive areas with slopes above 16 percent, and the high intensity of rainfall lead to accelerated soil erosion once deforestation occurs. In addition, some of the farming practices within the highlands encourage erosion. These include cultivation of cereal crops such as teff (*Ergrotistef*) and wheat (*Triticumsativum*), which require the preparation of a finely tilled seedbed, the single cropping of fields, and down-slope final plowing to facilitate drainage. Furthermore, sociopolitical influences, especially insecurity of land- and tree tenure in the past, have discouraged farmers from investing in soil conservation practices.

Soil degradation is thus the most immediate environmental problem facing Ethiopia. The loss of soil and the deterioration in fertility, moisture storage capacity, and structure of the remaining soils all reduce the country's agricultural productivity. Soil erosion is greatest on cultivated land, where the average annual loss is 42 tons/ha, compared with five tons/ha from

pastures. As a result, nearly half of the soil loss comes from land under cultivation, even though these lands cover only 13 percent of the country. Not surprisingly, the highest average rates of soil loss are from formerly cultivated lands that are currently unproductive because of degradation and little protective vegetative cover (Hurni 1990).

The present status and rate of soil erosion in Ethiopia call for immediate action to retard and reverse this degradation process. However, the present population growth rate of 2.9 percent, in comparison with the annual agricultural growth rate of 2.4 percent (Hammond 2001), will lead to even more intensive use of cultivatable and pasture land to produce more food and feed for the growing human and livestock populations. Hence, it is clear that intensification of land use must be accompanied by technological innovations that will lead to increased productivity, while simultaneously conserving the soil resource.

5.3. Population, Development and Environment Nexus in Ethiopia

There is increasing recognition of the linkage between rapid population growth and the quality of environment. Population growth and the resultant human activities generate pressure to the natural environment and man-made environments. Of course there is controversy on the linkage between population growth and environment. In the past, rapid population growth was seen as destructive to the environment and scholars hold the view that measures have to be taken to control population growth. Rapid population growth was seen as destructive intruders to the environment. It causes environmental degradation and poverty in the early view of development literature. The argument behind it is that the growth of population and its resultant consequence-increase in consumption of natural resources lead to affect the carrying capacity of the ecosystem. They recommend strong environmental conservation strategies and many countries tried it. Armed guards were used to protect the environment. Other scholars, on the other hand, argue that human population and the environment have very strong complementary linkages and relationships. In actual fact, environmental conservation efforts can only sustain if the local population and the public support them in general.

The population of Ethiopia is growing very fast. It is only since the early 1990s that fertility started declining from rates about 7.5 on the national level. Combined with slight

improvements in the control of mortality since the 1960s, high fertility is responsible for population growth rates up to 3 percent annually until recently. According to 2007 population and Housing census, the population of Ethiopia is growing at a growth rate of 2.6 percent. This is still the highest.

Food insecurity, poverty and environmental degradation are the major problems of Ethiopia. Ethiopia's population is growing fast. It is growing at 2.6 percent (CSA Housing and Population census, 2007). High population growth contributed not only to low economic and social situation, but also to the country's environmental degradation, especially in the densely populated highlands.

Land is limited and not expands. The growing population cultivates the existing land. The farmers also involve in deforestation to expand their farm land and feed the growing population. As the population increases, more and more land is deforested and over-farmed. Forest coverage has declined from 40percent 75 years ago to only 3 percent today. People must travel farther and farther to find firewood, the principal fuel, which reduces time spent farming. Without firewood, many resort to burning animal dung, instead of using it to fertilize their depleted soil. Without trees to help hold it in place, the soil erodes from the steep highlands. As a result, many previously habitable areas have now been transformed into dry lands and deserts.

This vicious cycle exacerbates the effects of Ethiopia's droughts, leading to severe and ever more frequent crises. The 2003 famine affected more than 13 million people, and at least 6 million people now suffer from permanent food insecurity. Ethiopia "faces famine when we have a bumper harvest and when we have drought" since the amount of arable land per person is so low (1/2 hectare for 8 people). Ethiopia's population growth compromises its ability to achieve the productivity gains necessary to break the cycle and eradicate extreme poverty and hunger.

The impact of population growth on development is not inherently negative or positive. When accompanied by rapid and technological advances, population growth can actually contribute to national development.

In 2006, it was estimated that Ethiopia is the third most populated country in Africa- with 72 million people-gains almost 2 million a year in highly unfavorable economic and unfavorable environment. Even if drastic measures slow the rate of population growth, the population will continue to increase as the country's current 47 million youths under the age of 24 raise their own families. According to the United Nations Conference on Trade and Development (2002), in technologically advanced technology lead to rapid rate of employment generation population growth need not necessarily have detrimental environmental and poverty implications.

Ethiopia's economic and social indicators are declining as the population grows. Its industrial and agricultural output is low, export income is minimal, and the country is highly dependent on foreign assistance. Per capita income is low and over 44 percent of population lives below poverty line. The majority of Ethiopian population is inactive; over half are too young or too old to work, and only half of the working age population is employed full time. That means only small working population must provide for a large number of unemployed young people, creating disproportionately high dependency that inhibits investment in future. Agricultural sector is less productive. Arable land is overcrowded, over cultivated, and under-maintained. Eighty percent of the population lives in high lands, which cover only 45% of the country and suffer from widespread erosion, deforestation, and loss of nutrients, further reducing the per capita share of arable land. Suffering from prolonged cultivation, lacking modern production techniques and overly dependent on rainfall. Apart from this, the country's arable land has completely lost its ability to produce food. Moreover, it is also argued that the land tenure system, under which the government owns and redistributes farmland, creates a climate of uncertainty that discourages personal investment and thus reduces productivity.

Population growth and population malaise combine to create a dangerous situation for the health of Ethiopia's residents. Life expectancy is less than that of even developing countries where as infant mortality is high. Malnutrition is a chronic problem: about half of children under five years stunted and underweight. According to the World Food Program (2004), the average daily calorie intake of the population is 2,037 per day lags behind the minimum recommended intake of 2,300 calories. Ethiopia's health infrastructure is not keeping in pace with population growth

Ethiopia's unsustainable population growth contributes not only to its dire economic and social situation, but also the country's environmental degradation especially in the densely populated highlands. These sloping lands, occupied since immemorial, are severely deforested, over cultivated, eroded and nutrient-poor. As population grows and people over cultivate scarce land, its nutrient value is reduced and erosion takes toll. Erosion has seriously degraded over 50% of Ethiopia's arable land and projected a grim future. While the soils in the Ethiopian highlands have a high inherent fertility, the continuous removal of nutrient without replacement as well as the steep and dissected terrain with extensive areas of slopes of over 15 percent, coupled with high intensity of rainfall, have led to accelerated soil erosion reaching up to 400 tons/hectare/ annum. About 20,000-30,000 hectare of cropland in the highlands is being abandoned annually since cropping can no longer be supported by the soil. It is projected that land degradation at the present rate could destroy the farmlands of highland farmers by 2010. Population, deforestation and erosion are part of a vicious cycle. Less than three percent of the country is forested. As population pressure increase, particularly in highlands, farmers intensively exercise deforestation. This will leave farmlands and grazing lands exposed to erosion, followed by massive land degradation. At the current rate of deforestation of over 150,000-200,000 hectares per year, it will be completely deforested in less than 20 years unless drastic measures are taken to reverse the trend. Why such a high rate of deforestation? Inhabitants are totally dependent on forest wood for construction and fuel, and over cultivate and overgraze the land. Deforestation is most pronounced in the highlands due to the highly concentrated population, but even in the more favorable lowlands, clearing forests and pastures for new migrants, coupled with archaic farming techniques, is rapidly destroying the ecosystem.

Environmental Policy of Ethiopia

Natural resources are essential conditions for development of a country. Natural resources can be divided into renewable and non-renewable natural resources. Renewable natural resources include water, land forests and trees and as well as other forms of biodiversity are important sources of food, clothing and shelter or basic needs. These natural resources are deteriorating from time to time. In Ethiopia, an estimated of 80000 to 200000 hectors of land are deforested. Soil erosion, deforestation and other environmental degradations are decreasing the productivity and production. This affects the attempt of government and society to improve

livelihood of the citizens of the country and realize sustainable development. This requires a successful environmental management or a natural resource policy.

Environmental sustainability is a key to development of a country. Much emphasis, however, was not given to environmental issues. In 1931 constitution, there was no article that deals with environmental problems. Of course, the revised constitution (1955) stated the status of natural resources. According article 130 of this constitution, all natural resources (water, forest, land, air, lakes) are State domain and sacred trusts for the benefit of all. Exploitation of the resources should be only with the principle of conservation. In 1944 a decree that reserved 3.4 million ha of land as a wildlife protection zone was enacted.

The economic policy of the Imperial regime allowed the expansion of farm land to forest lands. Legislation about the principle of conservation was not materialized until 1965. In 1965 a comprehensive forest law was issued. However, the implementations of the policies are poor and the forests of the country are extremely degraded.

In 1975 the imperial regime was changed and another economic, social, political system was introduced to Ethiopia. The land tenure system was completely changed. Land and all natural resources were nationalized. The military government introduced a Ten Year Perspective Plan (1984-94) in the field of natural resource management and rehabilitation of degraded land. The policy of the military government was influenced by ideology and inclined to socialism. The forest of the country was demarcated into state and kebel forests.

Government change occurred in 1991. The government change was followed by a contrasting policy shift in economic, administrative and rural development directions, though no radical change has been made in the property of land and natural resources.

The government introduced environmental policy. The goal of the policy is to improve livelihood of all Ethiopians by improving environmental management of the country. The goal of the policy is stated in the policy as follows:

The overall policy goal is 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.

The specific objectives of the policy are as stated in the policy document:

- To preserve the ecosystem
- To ensure the sustainability of benefit of non-renewable resources and to minimize the negative impacts of their exploitation
- To identify and utilize natural resources currently under utilized
- To consider the environmental issues in planning of development programs, projects, policies etc
- To improve the environment of human settlements to satisfy the physical, social, economic, cultural and other needs of their inhabitants on a sustainable basis,
- To prevent land, air and water pollution in a cost effective ways
- To conserve, develop and manage Ethiopia's diverse cultural heritage
- To empower and participate people in environmental management activities, and
- To raise public awareness and promote understanding of the essential linkages between environment and development.

The guiding principles of environmental policy of Ethiopia are:

- Every person has the right to live in a healthy environment,
- Empowering people to make their own decision on matters that affect their life and environment to ensure environmental sustainable,
- The development, use and management of renewable resources shall be based on sustainability'
- The use of non-renewable resources shall be minimized and where possible their availability extended (eg. Through recycling)'
- Appropriate and affordable technologies which use renewable and non-renewable resources efficiently shall be adopted, adapted developed and disseminated'
- When a compromise between short-term economic growth and long-term environmental protection is necessary, then development activities shall minimize degrading and polluting impacts on ecological and life support system. When working out a compromise, it is better to err on the side of causation to the extent possible as

rehabilitating a degraded environment is very-expensive, and bringing back a species that has gone extinct is possible,

- Full environmental and social costs (or benefits foregone or lost) that may result through damage to resources or the environment as a result of degradation or pollution shall be incorporated into public and private sector planning and accounting, and decisions shall be based on minimizing and covering these costs;
- Market failures with regard to the pricing of natural, human-made and cultural resources, and failures in regulatory measures shall be corrected through the assessment and establishment of user fees, taxes, tax reductions or incentives;
- Conditions shall be created that will support community and individual resource users to sustainably manage their own environment and resources;
- As key actors in natural resource use and management, women shall be treated equally with men and empowered to be totally involved in policy, programme and project design, decision making and implementation;
- The existence of a system which ensures uninterrupted continuing access to the same piece(s) of land and resource creates conducive conditions for sustainable natural resource management;
- Social equity shall be assured particularly in resource use;
- Regular and accurate assessment and monitoring of environmental conditions shall be undertaken and the information widely disseminated within the population;
- Increased awareness and understanding of environmental and resource issues shall be promoted by policy makers, by government officials and by the population, and the adoption of a "conservation culture" in environmental matters among all levels of society shall be encouraged;
- Local, regional and international environmental interdependence shall be recognized;
- Natural resource and environmental management activities shall be integrated laterally across all sectors and vertically among all levels of organization;
- Species and their variants have the right to continue existing, and are, or may be, useful now and/or for generations to come;
- The wealth of crop and domestic animal as well as micro-organism and wild plant and animal germplasm is an invaluable and inalienable asset that shall be cared for; and

- The integrated implementation of cross-sectoral and sectoral federal, regional and local policies and strategies shall be seen as a prerequisite to achieving the objectives of this Policy on the environment.