AALBORG UNIVERSITY

The Path to Change

- the Quest for Sustainability in Contemporary Mainstream Society Inspired by Traditional Knowledge Systems in Indigenous Societies

Final Master Thesis
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Abstract

This paper is written with the aim of finding ways to increase sustainability in contemporary mainstream society. This aim is based on the assumption that economic growth and market-economic values in mainstream society, such as profit maximization, consumerism and competition, are prioritized over environmental protection and ecological sustainability. Initially a description of the theoretical framework will be completed in order to be better equipped for a deeper analysis of why we have reached the current situation that is argued to be threatening the future and well-being of human beings and how we can facilitate a change towards a more sustainable society. Moreover, in this paper an extensive overview of the process of globalization and its impact on both inequality and environmental degradation is conducted in order to give a better idea of how unsustainable mainstream society has become. One of the main findings of the paper is that contemporary mainstream society is becoming increasingly more unsustainable, as natural resources are being depleted and biodiversity lost for the sake of generating economic profit. This finding is supported by the theoretical framework of ecological economics. The levels of unsustainability are furthermore illustrated with the chosen case study in this paper. This case study of a traditional society in Kumaun Himalaya in India shows how the integration into mainstream society has led to a loss of biodiversity and deterioration of the natural resources in the area. In the paper this is, among other things, explained with early political ecology thinking which emphasizes that the integration into mainstream society and the market-economic system could be a catalyst for the degradation of the environment. In this paper traditional knowledge systems, such as the one that prevailed in the traditional society highlighted in the case study, are seen as a central feature in the quest for sustainability, as a clear correlation between traditional knowledge and the level of sustainability can be found. Finally traditional knowledge, especially with regards to the deep understanding of resource management and the natural environment, can inspire the change that is needed, as a structural change of norms is regarded one of the only possible solutions in fulfilling the pressing sustainability criterion in contemporary mainstream society.

Keywords: ecological economics; globalization; political ecology; sustainability; traditional knowledge systems

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1. Introduction

Since the beginning of the industrialization process in eighteenth century Europe, the world has been modernized, though in some regions more profoundly and rapidly than in others. We have experienced the emergence and consolidation of science and technology, industry and commerce, Western dominance and capitalism (Zakaria, 2008). Over the past decades, other countries have experienced some of the economic growth that before mainly was a reality in the Western world. Even though a large amount of the global population is still living in extreme poverty, some scholars maintain that we are witnessing actual global growth (2008). According to the proponents of globalization, rich as well as poor and developed as well as developing countries can and will benefit from the process of globalization (Gilpin, 2003). The opponents of globalization, on the other hand, argue that it has led to growing inequality on a global scale, because it, in line with dependency theory, is a way for the rich core to exploit the poorer periphery (2003). Even if there have been many indications that the gap between rich and poor has become smaller over the past decades (2003), other forms of marginalization and inequality can be detected. Some scholars within the field of political science transform this debate into a "winners-versus-losers" debate (e.g. Altvater, 2004b). The winners are the ones exploiting the opportunities that economic globalization presents; the loser are the ones exploited (2004b).

The winners-versus-losers debate can be applied to various situations and does not only refer to humans. In this sense the negative impacts the process of modernization and mass material consumption has had on the environment can be seen this way. If economic growth is perceived to have been the main objective behind the process of modernization then many signs point to the fact that the protection of the environment has been the loser. Although, some scholars of mainstream economic thinking may argue otherwise, unsustainable growth cannot go on forever. If economic growth, based on natural capital transformed into human capital, is not seen in relation to the ecological settings it draws upon, then the picture is not complete (Daly, 1993). Ecological economics scholars pay attention to this link between ecology and the economic subsystem that they believe should be explained in relation to each other (1993). Over the past decades we have experienced a growing awareness with regards to the fact that economic growth can and is very likely to encounter limits (Meadows, Meadows & Randers, 1992). When the natural resources are disappearing faster than

their ability to regenerate themselves, then the economic growth that is strived for creates more costs than benefits. In the long run this is directly anti-economic, and, as it is generating more costs than benefits, it can be argued that it is making us poorer, not richer (Daly 1993). This anti-economic growth is what we nowadays often refer to as *unsustainability*. The production patterns as well as the management of natural resources are increasingly unsustainable, meaning that the growth that is created is not enduring. At one point or the other it is doomed to reach a limit and collapse. Although still considered controversial, an increasing amount of scholars forecast that if the current economic trends continue the natural resources will deplete and the population as well as the economy in terms of input and output will suffer the consequences (Meadows, Meadows & Randers, 1992).

Some may say that due to globalization, also awareness about the need for a more sustainable system to address the growing environmental problems on a global scale is being spread. This may be true, but while there have been indications that sustainability is on the international agenda, for example through the increased focus on sustainable development, not enough is being done. Furthermore, the fact that species are dying, natural resources running out and pollution increasing every day shows that whatever is being done it is not being done quickly enough. Nevertheless, scholars maintain that there is still time to become sustainable (Meadows, Meadows & Randers, 1992). In this process, these scholars puts emphasis on finding a balance between goals that are short-term and goals that are long-term (1992). In addition to this, a certain degree of harmony between man and nature has to be reconstructed, placing the focus on quality of life over unsustainable economic growth.

Some societies around the earth may be important to consider when the quest to become more sustainable begins. Some traditional, or indigenous, societies seem to live in harmony with nature and their resource management and production patterns are sustainable and inspiring. Furthermore, it seems that these societies have the answer to some of the main issues that are currently widely discussed in the literature and in national and international agencies within the field of development and the environment. These include management of natural resources, preservation of biodiversity and sustainability issues (Farooquee, Majila & Kala, 2004). Some indigenous societies seem to be able to deal with these issues in ways that mainstream

society lacks. Some scholars go as far as to argue that "[i]ndigenous knowledge, therefore, is of crucial significance if one wishes to introduce a cost-effective, participatory and sustainable development process" (Warren, 1991; in Farooquee, Majila & Kala, 2004, 34).

Yet, the indigenous societies are disappearing as they are being absorbed into mainstream societies and thereby directly or indirectly forced to live by the rules of the market economy (Farooquee, Majila & Kala, 2004) in the globalized system. In some cases, such a scenario can lead to conflict. This conflict can often be explained through a context of power relations. In this regard political ecology offers a framework for understanding the nature of these kinds of conflicts. Political ecology helps clarify the nature of environmental problems in traditional societies that are either in the process of or already has made the transition into mainstream society. Political ecology can explain that such problems are not necessarily "a problem of poor management, overpopulation, or ignorance" (Schmidt, 2004, iv), but that they might as well be caused by for example "political-economic constraints" (2004, iv). In this sense, traditional societies and indigenous tribes, existing independently from mainstream societies, may have methods to deal with environmental problems that are either impossible or undiscovered in modern societies. These methods are part of a traditional knowledge system, which is a long-lasting system of traditional culture and practices with strong emphasis on ecological sustainability present in many indigenous societies. From a sustainable development perspective, such methods may be significant to enhance sustainability in a global ecological system that is growing poorer every day.

To assist the aim of finding ways to increase sustainability in contemporary modern societies, following **problem formulation** is suggested:

From an ecological economics and political ecological perspective this paper seeks to reconstruct the link between nature and the human beings, existing in some traditional societies and neglected in modern mainstream society, in order to meet the pressing sustainability criterion.

The problem formulation is based on two overall assumptions that are supported by the literature in the fields of ecological economics, political ecology and sustainable development:

Assumption 1: In the current global economic system, natural resources and environmental protection are jeopardized for the sake of creating economic growth. This economic system is not sustainable as it ignores the relationship between economics and ecology.

Assumption 2: Some traditional societies living outside the framework of mainstream society seem to be concerned with sustainability. The natural resources on which these societies depend are not depleted faster than their ability to regenerate themselves.

With these assumptions in mind and with the assistance of the problem formulation, this project eventually aims to find out whether traditional knowledge systems, including the methods to manage natural resources and preserve biodiversity, employed in the traditional society looked at in this paper can be extrapolated and applied to mainstream society.

2. Methodology

This paper is divided into different parts that all aim to answer the problem formulation and clarify whether it is possible to increase sustainability in the current global system through extrapolating and applying production and management patterns in traditional societies. In the first part, a theoretical framework will be constructed in order to better clarify how we have arrived at the current state of affairs and also in order to analyze the next step in the process. The theories that are considered highly relevant in this case are the theories within the field of sustainable development. They can explain why it is so important to find a bridge between economic growth and preservation of the environment and most importantly how this has become a necessity. Sustainable development, besides from providing an explanation for the increasing integration of environmental thinking into international politics over the past few decades, addresses the need to preserve biodiversity and conserve natural resources without sacrificing economic growth. Ecological economics is in this paper considered one of the keys to understanding why the economy and ecology should not be considered two independent

disciplines, but rather they should be seen as integrated and in relation to each other. This theory enhances the comprehension that a certain balance between economic growth and environmental protection should be pursued. In mainstream society this balance is unclear and it seems that environmental protection is being sacrificed for the sake of fast and large-scale economic growth. On the other hand, some traditional societies seem to be living by the principles of such a balance. Nevertheless, these societies are often losing some of their main principles with regards to management of natural resources and ecological understanding upon integrating into mainstream society and this may lead to conflict. Political ecology can provide the basis for understanding such conflicts between some traditional societies that seem to have identified this link between the environment and economic output and mainstream society which is threatening the traditional methods of management. Furthermore understanding the nature of this conflict can be the key to determining the level of applicability of traditional methods of production and management of natural resources to deal with the contemporary problems of pollution and depletion of natural resources in mainstream society.

The second part of this paper is dedicated to clarify the current state of affairs. In this part, the road that has led to the current situation will be examined and hopefully it will provide an idea of how we have arrived to this point. On a global scale production patterns are largely destructive and natural resources are continuously depleted. These facts have contributed to an increasing amount of scholars' definition of the current global economy, which dominates modern societies around the world, as unsustainable. This includes an overview of the process of globalization and the effects this has had on for example poverty and inequality, but especially on the environment, which is believed to have suffered under the one-sided focus on economic growth. This paper intends to clarify how we have reached this situation and whether or not it is too late to change. Additionally, in this part of the paper alternative systems of management, different from the mainstream systems, will be looked at. Many of the alternative systems that have been observed during the research process are special because the management of the natural resources in the production processes is ecosystem-based. One case that is especially interesting and highly relevant to this study is the case of the "High Altitude Society in Kumaun Himalaya, India" (Farooquee, Majila & Kala, 2004, 33). The people of this indigenous society have over a long period of time managed to

maintain a high degree of sustainability in their management of natural resources, even under difficult conditions, such as high altitude. This paper sets out to determine which ecological norms and practices dominate this community. Furthermore, the concept of traditional knowledge and traditional knowledge systems will be examined. These systems are often seen as adding high levels of sustainability into the societies where they are found. Traditional knowledge systems have over the years received increased recognition in the international arena, and some attempts to solve the environmental problems in contemporary mainstream society through combining modern science with traditional knowledge have been seen. Therefore, it is in this paper assumed that some of the ways to meet the pressing sustainability criterion in mainstream society today can be found within the framework of traditional knowledge.

The final part of this paper will be dedicated to a deeper analysis of the conflict that can occur when traditional societies get integrated into mainstream society with everything that this entails, including the adaption of market-economic principles, such as profit maximization, competition and consumption. This can for example be seen in the case study of the Bhotiya people in the Kumaun region in India, which is looked at in this paper. Within the framework of political ecology this process of integration into mainstream society and the consequences it has implied for the indigenous people in the area will be analyzed. This is done in order to determine why the levels of sustainability have decreased as an effect of this and whether it is possible to change the structures that cause environmental degradation all over the planet. It will be decided whether it is too late to direct mainstream society into a more sustainable mode and some measures to facilitate this path will be mentioned in this part of the paper. Finally, it is determined whether traditional knowledge systems which are found in small-scale traditional societies, such is the ones in the Kumaun region in India, can be applied to mainstream society in order to improve ecological sustainability in this large-scale system. Perhaps some main features present in traditional societies can help improve the situation of unsustainability which threatens the future and well-being of human beings and ecosystems around the globe.

This paper will for the most part be based on qualitative data. Some data will be drawn from statistics, such as the profile of the community in Kumaun Himalaya in India. Yet, this only forms a small part of this paper and thus the research carried out is mostly

qualitative. The decision to conduct this form of research has been taken due to the fact that extensive research has already been conducted, especially when it comes to problems of sustainability and the global system, but also with regards to the knowledge of traditional and indigenous community within the field of ecology. Another reason for choosing a qualitative research strategy is that the researcher wishes to go beyond descriptive investigation and into deep analysis of the problems which mainstream society is currently facing with regards to the environment and the future of economic growth. Such an analysis can only be made if one looks at the general rhetoric in this debate as well as the behavior of mainstream society. This can help identify whether there is room for change and if so whether this change perhaps can be found in a harmony between nature and man existing in traditional societies. Thus, this paper is mainly relying on the use of secondary sources, such as academic articles from electronic databases and books.

Upon conducting the research, it is important to keep in mind that secondary sources may lose an amount of validity and a certain degree of criticism must therefore exist in the mind of the researcher at all times. Yet, if one assumes that the source is credible, looking at various sources with similar content may add to the validity of the arguments put forth in this paper, as they provide different perspectives to the same issue. Nevertheless, in order to improve validity and reliability of this paper, as a ground rule, the researcher must constantly be aware of biases, manipulated data and unthorough research.

Finally, although many people may agree that sustainability is necessary in the current global system, there are many different ideas to how this is achieved. The idea to reconstruct the harmony between nature and man is relatively detested in mainstream theory, as it is often portrayed as impossible or unrealistic. Yet, as the limits of the large-scale economic growth has been, or is very close to being, reached, it is worth looking at societies that have managed to coexist with the environment they live in and maintain the resources they use. Initially, this was one of the most important factors behind the decision to formulate this paper. It seems that we are approaching a inflection point in which it can be argued that it is time to increase sustainability in mainstream society and even if the knowledge and methods of traditional societies are not directly applicable, analyzing them may lead the way for a new kind of system in

which sustainability is possible, the limits of growth are recognized and quality over quantity is emphasized.

3. Theoretical Framework

3.1 Sustainability and Sustainable Development

Sustainability and sustainable development are two interlinked concepts that both became widely known in the literature and on the international arena after the Report of the World Commission on Environment and Development, also known as the Brundtland Report, was published in 1987 (McNeill, 2004). The main difference between the two concepts is that sustainability or a sustainable future is seen as the end goal of a longer process, sustainable development (Diesendorf, 2000). Thus, sustainability is the final destination and sustainable development is the means employed to get there. Yet, later on, in the 1980s and 1990s some debate was raised of whether sustainable development could function as a goal in itself (McNeill, 2004). According to McNeill (2004), this is due to the fact that most scholars within the field of development are "not concerned with describing the actual experience of one or more countries but are unambiguously concerned with the normative: what ought to be" (2004, 37). Although this shows that the two concepts are so closely linked to each other that they are often used interchangeably, in this project the view on sustainability as the final goal and sustainable development as the means to get there will be maintained in order to avoid confusion. In due course, it is important to keep in mind that if one aims at establishing a sustainable future a clear understanding of sustainability as well as sustainable development is demanded.

The concept of sustainability, which is now seen as undisputedly linked to the process of sustainable development, became widely known in 1972 when the scholars, Donella H. Meadows, Dennis L. Meadows, Jørgen Randers and William W. Behrens III, wrote the report *The Limits to Growth*, commissioned by the think tank, the Club of Rome (Meadows et.al, 1972), in which it was argued that the trend of economic growth cannot continue because the natural resources are bound to run out and therefore issues of sustainability should be put on the international agenda (Jenkins, 2010). In return, sustainable development as a concept became publically known a bit later after the publication of the Brundtland Report in 1987 and after the Conference in Rio in 1992,

which together proved to be "a massive and, to a large extent successful, agenda-setting exercise" (McNeill, 2004, 26). Since then the two concepts have dominated development thinking, both academically but also to an increasing extent on the international arena (Haque, 1999). The definition of sustainable development, derived from the Brundtland Report, which is widely used in developmental discourse, states that "[s]ustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, 43; in Jenkins, 2010, 381).

The theory of sustainability is based on the assumption that the durability of human activity and the impact of this activity on the depletion natural resources on which it is depending is uncertain (Jenkins, 2010). Literally the concept refers to the capacity to maintain something, for example an entity, a practice or a result, over time (2010). In large terms, the concept of sustainability "provokes reflection on the manner and purposes of global human society. Problems like biodiversity loss and climate change point to the global reach of humanity's powers and the scale of its risk" (2010, 380). These problems that are becoming increasingly apparent on a global scale in form of for example environmental degradation over time suggest that human activity is not exercised without consequences. Thus, problems, such as environmental degradation, can have a damaging impact on the continuance of "healthy economic, ecological, and social systems" (2010, 380).

The biggest issue related to the concept is its large scope of inclusion that makes it vague and ambiguous. Scholars, such as Jenkins (2010), for example, emphasizes that the term sustainability is used to argue both for and against different topics, such as environmental protection, the free market and climate treaties. It is due to this that some critics dismiss the concept as being politically useless (2010). Yet, Jenkins argues that sustainability provides an arena for discourse and whereas there are different opinions about what to sustain, it is by now mostly recognized that there is a "mutual feedback between humans and ecological systems" (2010, 381). Indeed, the fact that sustainability is even on the international agenda indicates that humanity shows a sense of responsibility towards the environment as well as its own future (2010).

At the core of the sustainability debate lays the assumption that environmental issues on a global scale can threaten the very future of humanity. Thus, the concept of sustainability focuses on what should be sustained in order for future generations to sustain themselves (2010). Yet, also this is ambiguous and unclear, because how do you decide what future generations need? And who are we referring to? Just humans? Or all species? All these questions need to be considered when one employs the concept of sustainability in analysis. In order to enhance clarity of the concept, it must therefore be useful to divide it into different models which cover the different spheres that one wishes to analyze. This is what Jenkins (2010), based on the assumption of previous scholars, has attempted to do. Jenkins (2010) has divided sustainability into three main types of models that are different from each other on some points and similar on other points. There are political models, economic models and ecological models (2010).

The political models are "concerned with the way in which local and global environmental problems jeopardize human dignity, these models focus on sustaining the environmental conditions of a fully human life" (2010, 383). The economic models of sustainability focus on the maintenance of opportunities through creating capital. In this sense, Robort Solow, who was the economist that formulated the classic definition of the model, argues that sustainability should be seen as an investment problem, and the profits generated through the use of natural resources should be used to create new opportunities (2010). Yet, this view clashes with the view of ecological economists, such as Herman Daly, that financial capital is not always equivalent to natural capital. Thus, the level of sustainability varies with the extent to which economies recognize that there are certain limits to natural resources and therefore find a way to include environmental thinking in the process of production (2010). This is an example of how the economic models of sustainability intertwine with the ecological models of sustainability. The ecological models suggest to preserve "biological diversity and ecological integrity" (2010, 383). According to these models, the key to sustainability lays not within neither prospect nor capital but rather in the well-being of the planet and all species that reside on it (2010).

Both the end goal, sustainability and the process we go through to reach this stage, sustainable development, are seen as disputable concepts, and both concepts have been widely criticized for being too vaguely or even wrongly defined (Jenkins, 2010;

McNeill, 2004). As in the case of other concepts within the field of social sciences, such as for example democracy it is quite difficult to reach an unequivocal definition of the concept. Yet, this also gives room for discussion and provides "a focus for contact between the contending positions" (Diesendorf, 2000, 21) and thus the concept has been vastly employed over the years by many agencies and organizations, on a local as well as international level (Jenkins, 2010).

McNeill (2004) argues that it is important to distinguish between description which ought to be "rich, informative, inclusive" (McNeill, 2004, 27) and actual definition, which should be "rigorous, minimal, exclusive" (2004, 27). McNeill (2004) also argues that different disciplines have different perspectives and different objectives and that it therefore is hard to reach a cross-disciplinary agreement as to the precise definition of the concepts of sustainable development and sustainability. For this reason, it seems that there are some limitations to the definition of the terms that can have consequences for the success of the policies developed using the sustainability discourse. All in all, McNeill (2004) argues that not only is the concept not defined thoroughly enough, it may also have biased implications depending on the position in the international system. Furthermore, he argues that in light of the contemporary global problems of global warming, sustainable development has become a means to secure the future of the rich on behalf of the poor in the present generations, as climate change is not a priority issue for the poorest people that have other more pressing needs, such as clean water and food (2004). Therefore, when utilizing the concept of sustainable development, one must take these factors into consideration. There is a need to deal with pressing environmental problems all over the planet, yet not on the behalf of the poorest. Thus, initiatives to sustainability and sustainable development must also take the ethical dimensions into perspective and in order to do this one could argue that the policies of sustainable development should not be imposed on the poor.

However, although it sometimes seems that the poor are being forgot in practice, sustainable development and sustainability were indeed intended to be inter-generational as well as intra-generational (Baker et.al., 1997). Furthermore, the Brundtland Report did not neglect to address the operational objective of sustainable development and linked the "achievement of sustainable development at the global level with a number of major political and social changes" (1997, 3), such as for example

"elimination of poverty and exploitation" (1997, 3) and "equal distribution of global resources" (1997, 3). Another thing that is sometimes overlooked is the fact that the Brundtland Report does not offer one single solution to how to implement sustainable development in practice. Policy-makers across countries, economic and social systems each need to translate the concept into practice (1997). Sustainable development may therefore look different from system to system.

Promoters of sustainable development often argue that "[t]he failure of the state adequately to address the problem of environmentally damaging activities affecting public welfare" (1997, 22) gives room for actors on lower levels to intervene. This opens up for the involvement of different groups on a more local level, and sustainable development policies can benefit from indigenous knowledge, for instance with regards to management of local resources (1997): "This is particularly important for resource management, as the practices of resource management, which characterize long-established local cultures, have usually evolved over extended time periods in an attempt to maintain local social and ecological system" (1997, 24). It can be argued that the success of a specific policy depends on how well this policy is implemented. In the context of sustainable development, it is therefore important to pay attention to the implementation process. Baker et.al. (1997) argues that a bottom-up process is to be preferred when dealing with issues of sustainable development. The actors that should be involved on a local level range from local governments and grassroots movements and citizen groups (1997). Indeed, it makes sense that local communities have a high understanding of the environmental settings they reside in. Furthermore, they have more to lose in case of environmental degradation on their land, as this may threaten their livelihoods and well-being. Thus, policies of sustainable development implemented on a local level by the locals can be understood not just as a way of protecting the environment but also a form of "societal continuation" (1997, 24).

It is clear that sustainable development can take many shapes and be implemented at different rates by various actors. It therefore makes sense to look at sustainable development as a tool to secure the livelihood of a society and the nature on which this society depends. This, furthermore, ensures the continuation of this society and therefore assists development. On a global scale, environmental degradation is threatening the future of the extensive economic growth that we are currently

experiencing. Sustainable development is therefore worth some degree of reflection. It does not deny economic growth, but it does esteem environmental protection a bit higher than it used to be, and it seems to provide space for a harmony between humans and nature that seems to have been missing in mainstream societies for quite a while.

3.2 Ecological Economics

The amalgam of ecological economics, formed as an attempt to fuse social and natural sciences, was created in the early 1970s by scholars that have come to be well-known within this field, such as Herman Daly, Joan Martinez, AnnMarie Jansson, Roefie Hueting and Robert Costanza (Goodland, 2009). These scholars created the International Society for Ecological Economics (ISEE), the ISEE Journal and the major textbooks on Ecological Economics (2009).

In the late 19th and early 20th century science was fragmented into separate, isolated disciplines for the sake of "increasing specialization and professionalization in science" (Costanza, 1996, 979). This made sense at the time, as science was becoming more complex and it was more easily understood when it was divided into smaller pieces. Obviously this led to a decrease in communication across the different disciplines of science (1996). By the 1970s when environmentalism was given more importance in a scientific perspective, economics was already specialized and the discipline had over the years become more and more distant from its past connections with natural sciences: "Textbooks at the time barely mentioned the environment and concentrated instead on the microeconomics of supply, demand, and price formation and the macroeconomics of growth in manufactured capital and gross national product (GNP)" (1996, 979).

Ecology, as it is somewhat younger than economics as a science, has worked more across disciplines. Ecology was split into two main directions: those who focused "on individual populations of organisms" (1996, 979), called population ecologists, and those who focused on the ecosystems as a whole system, called the system ecologists (1996). Although, many ecologists over the years have attempted to include humans in ecological thinking, the study of humans was left to the social sciences (1996). So economics lacked the study of nature and ecology lacked the study of humans. Therefore, ecological economics can be interpreted as an effort to understand how

human beings are an integral part of nature, ignoring neither the humans' position in ecology nor nature's position in social sciences (1996).

Ecological economics is not a new discipline, but rather an attempt to combine different types of knowledge derived from different fields in order to adequately deal with the increasing environmental problems that are a threat, not only to economic growth but also to the future and well-being of human beings (1996). Besides from being concerned about the well-being and survival of the human species, ecological economics also pays attention to all other life on planet earth (1996). This can largely be seen as the input of the discipline of ecology, as economists placed most attention on human beings over non-human species that were either seen as resources or instruments to increase growth (Daly, 1993).

According to Daly (1993), the fragmentation between economics and ecology, that was a reality until ecological economics came about, was a mistake. He argues that the two fields should be seen in relation to each other: "The economy lives off the environment in the same way that an animal does – by taking in useful (low-entropy) raw material and energy, and giving back waste (high-entropy) material and energy" (Daly, 1993, 811). In this way, manmade capital is dependent on natural capital (1993). Thus, scholars within the field of ecological economics see economics as a subsystem of a larger system, the earth (1993). Whereas the earth develops qualitatively but not quantitatively, meaning that it does not expand, the economy does expand quantitatively. This is one of the causes of the current problems related to the future of economic growth. If one recognizes that the economy is indeed a subsystem to the earth, then it should also adapt to the same pattern of what Daly defines as "development without growth" (1993, 813) or sustainable development. Mainstream economic analysis assumes that growth is unconstrained. The nature is simply regarded as a sub-sector of the economy which can easily be substituted by other sectors without having an impact on economic growth as a whole (1993). This view is derived from the fact that the economy is seen as an isolated system unlinked to any other system. However, if the economy is seen as a part of an overall structure within an ecosystem that is finite and that does not expand quantitatively then economic growth is also limited.

Another problem that occurs when one attempts to separate the disciplines of economics and ecology is the fact that unconstrained growth can have such a negative impact on the environment that the economic growth in the long run becomes antieconomic: "Since growth beyond the optimal scale increases ecological costs faster than production benefits it makes us poorer, not richer" (1993, 815). This assumption, which over the years have been supported by more and more scholars, is the reason why ecological economics as a field has gained more and more influence and importance over the years. It offers a way to understand the economy as a part of a larger system, the ecosystem, and it can explain why large-scale economic growth can lead to environmental degradation.

For ecological economists the ideal situation is one in which the economy is sustainable, meaning that it pollutes as little as possible and that it does not deplete natural resources faster than their capacity to regenerate themselves (1993). This economy, which does not overgrow the ecosystem of which it forms part, is ideally in constant balance with the environment. "Such an economy adapts and improves in knowledge, organization, technical efficiency, and wisdom; and it does it without assimilating or accreting an ever greater percentage of the matter-energy of the ecosystem into itself, but rather stops at a scale at which the remaining ecosystem (the environment) can continue to function and renew itself year after year (1993, 814). This is how an "economy in sustainable development" (1993, 814) would look like.

3.3 Political Ecology

One of the main objectives of ecological economics nowadays is to solve the growing clash between the economy and the environment (Martinez-Alier, 2002). As in the case of ecological economics, political ecology is also an attempt to combine different disciplines at the same time. The two largest disciplines, from which the name of the concept is derived, are political economy and ecology (Greenberg & Park, 1994). The term first came about in the 1970s (Walker, 2005). It was influenced by the studies of cultural ecology which looked at the integration of environmental and human systems across cultures. To a certain extent, it was also influenced by the hazards school "with its focus on perception adjustments and management of environmental hazards" (2005, 74).

Initially, political ecology focused on the conflicts that arose with the integration of local societies into the global market economy and power relations that were largely unequal. These two factors were in the writings of political ecologists seen as catalysts for the deteriorating relationship between humanity and the environment (2005). Political ecology saw the integration into the capitalist global political economy as a source of unsteadiness between society and their natural habitat (2005). The most precise definition of the concept of political ecology in its early stages is encompassed in Blaikie and Brookfield's definition from 1987: "The phrase "political ecology" combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself" (Blaikie & Brookfield, 1987, 17). The integration of local societies into the larger mainstream society and global market economy was seen as undermining local knowledge with regards to resource management and the environment in general (Walker, 2005). It was argued that adapting to these global markets often forced local societies to harm their environments (2005). This view, which was developed throughout the 1980s and early 1990s, is now termed as "the 'structuralist' phase of political ecology" (2005, 74). Characteristic for this period was the great emphasis on the ecological part of political ecology. Yet, later on, in the 1990s, the focus on ecology increasingly disappeared. This was an attempt to increase the focus on politics (2005).

Over time political ecology has been interpreted differently focusing on different aspects of the disciplines from which the concept derives. For many scholars the concept provides a theoretical framework for understanding the "environmental problems as the phenomenological interaction of biophysical processes, human needs and wider political systems" (Forsyth, 2003, 2). Another variation of the concept offers a platform for political activism and criticism of contemporary trends, such as capitalism and modernity (2003). A third way of using the concept is "as a metaphor for the interconnectedness of political relations" (2003, 3) which basically refers to the relations between political systems and the environmental surroundings. The fourth interpretation of political ecology, and also one of the most widely used ones, is related to Marxism and "has been defined as a more specific analysis of Marxist debates about materialism, justice, and nature in capitalist societies, with the view to achieving a fairer distribution of rights and resources" (2003, 3). This view puts a great deal of emphasis

on the relationship between humanity and nature and it criticizes the order of things (2003). It can for example be helpful to use this view in order to understand the relation between mainstream society and nature and it can help explain why it is so difficult to achieve sustainability in such a society (Altvater, 2004a). The fifth and last variation of the interpretation of the concept of political ecology that has been used over the years by scholars and in practice is one that refers to the political aspect of environmental problems with little inclusion of the ecological part of the concept (Forsyth, 2003). Besides from these different interpretations of political ecology which are generally used in the literature, other variations of the concept can occur.

Political ecology has often been criticized for being ambiguous and unclearly defined and for often neglecting the ecological aspect (Walker, 2005). Yet, the fact that it is rather loosely defined has led to the fact that the concept has developed into different directions and ecology has due to this been given increasingly more attention (2005). Though, the focus on the environment and ecology is still not as strong as it was when political ecology as a concept came about (2005). Nevertheless, focus should be placed on whether the theory is capable of explaining the conflicts related to nature and society. Because the problems of environmental degradation are increasing and threatening ecosystems as well as people living within them, it can be argued that there is a need to include both fields within political ecology: "Political ecology, as a field of enormous intellectual vibrancy and momentum, is positioned to make uniquely valuable contributions to understanding these threats – *and* to enhancing the prominence of the discipline of geography as a player in addressing these issues of major public concern" (2005, 80). Therefore, as the environmental problems are growing every day, there is an equally growing need to have a theory that is fully equipped to provide understanding of these problems.

3.3.1 Political Ecology & Power Relations

Over the years, scholars within the field of political ecology have found it necessary to focus on power relations, both between different actors but also between these actors and their physical environments (Schmidt, 2004). Power is one of political ecology's most defining features, especially when one looks at some of the core issues within the field, such as poverty, inequality, exploitation and justice (Walker, 2006). Another central view that forms the theoretical framework of political ecology is the fact that

power shapes the relation between humans and nature (2006). According to Takeda and Røpke (2010), and other scholars within the field of political ecology, power as a concept should be understood as three different, yet highly integrated, layers: "1) agency power, 2) institutional power and 3) structural power" (Takeda & Røpke, 2010, 179).

The first type of power, agency power, refers to the capability of certain agents to label problems within a specific society as political problems and thereafter, through the mobilization of resources, be able to come up with the most attractive solutions (2010). The agents can gain power through control of resources, such as for example financial and physical capital, but also resources in form of "prior experience, understanding of issues, and ability to initiate collective action" (2010, 179). The problem with this type of power is that it does not confront the existing system and structure, and thus change can only occur if it first happens on an institutional or structural level (2010). Institutional power is comprised of institutions that define the legitimacy of certain norms, how to raise issues and how to articulate interest, and thus it is basically a set of norms that decide the rules of the game (2010). On this level, change is possible if it is decided that some, or more, of the institutions are invalid (2010). The final layer of power, the structural power, represents "the macro-societal structures that shape the nature and conduct of agents" (2010, 179). It is present in cultural practices, such as language and moral order. These structures can inform the agents of whether their actions and ways of thinking are legitimate, and they give them or deny them the ability to use resources to attain their goals (2010). It often seems that structural power is difficult to overturn, yet, at the same time they are fragile and require great care to maintain (2010). Those disadvantaged by these structures can only change the structure by somehow creating new norms. However, this is very difficult and it demands major collective mobilization. Thus, "if a significant enough number of people confirm the new meaning, a capacity for action will be created relative to issues which previously lay outside the conditions of possibility. If successful, systemic change will eventually be forced upon those who try to maintain the status quo" (2010, 179). It is important to thoroughly understand the section of power that belongs to the overall field of political ecology in order to understand the conflicts that can occur between an ecosystem-based traditional society and the market-economic mainstream society. Political ecology also

provides a suitable framework for understanding the small amount of importance the environment has been given for the sake of large-scale economic growth and modernity.

3.3.2 Environmental Justice

Another important feature of political ecology is the social and environmental justice feature. The concept of social and environmental justice originates from theories on power, specifically social and political power, as well as from social movements (Byrne, Martinez & Glover, 2002). The supporters of environmental justice argue that environmental injustice should and can be explained through looking at aspects, such as class, social and political power, gender, race and culture (2002). It is argued that there are some disadvantaged groups that suffer in terms of health as well as ecologically due to environmental injustice (Kütting, 2004). All the scholars that relate to the concept of environmental justice can agree that equity is of great concern. Martinez-Alier, a prominent scholar within the field of ecological economics, adds a more ecological dimension to the concept, and in his writing he often refers to ecological conflict as being the starting point instead of environmental justice (2004). Martinez-Alier sees the collision between the economy and the environment as a cause of this ecological conflict that he refers to (2004). He argues that "[f]undamentally, the incommensurability of values between a social system based on accumulation of wealth and economic efficiency with the aim of unlimited growth is incompatible with a complex ecosystem" (2004, 120). Conflict can occur when groups resist the environmental degradation that has happened. In this sense, he acknowledges the large role of the environmental movements in bringing about change (2004).

Among the social groups that are engaged to some degree or the other with the concept of environmental justice it seems that the indigenous groups are the ones losing the most: "Unless solutions to conflicts involving 'commons' resources of land, air, and water use explicitly address their needs, indigenous ways of life are irrevocably harmed" (Byrne, Martinez & Glover, 2002, 7). This can be seen as a consequence of what is described further on in this project as capitalism's rapid expansion over time and space. Environmental justice can be seen as a method to battle unfair relations between the environment and the economy (2002). The environmental problems of global scale, such as decreasing biodiversity and climate change, also relates to environmental justice. Environmental degradation especially affects developing

countries and poorer societies as "they have fewer resources to respond to these problems (2002, 9). It is now increasingly agreed upon that environmental justice should be exercised on a global level, besides from the community and national levels that have been established by now (2002).

3.4 Political Ecological Economics: The Element of Political Economy

The element of political economy in both ecological economics and political ecology is crucial in order to understand the development of the theories over time. Political economy is generally defined as a "branch of social science that studies the relationships between individuals and society and between markets and the state, using a diverse set of tools and methods drawn largely from economics, political science, and sociology" (Balaam & Veseth, 2012). The field of political economy was original dominated by the neo-classical patterns of thinking, which can be seen in practice through the large focus on linear growth, deregulations and little concern for the environment (M'Gonigle, 1999). Ecological economics seeks to build a bridge between the premises of the classical view on the economy and environmental protection (1999). In order to better facilitate this compromise M'Gonigle (1999) suggests that there is a need to situate "the field of ecological economics within a larger ecological political economy" (1999, 12). The thoughts on ecological political economy have over time evolved into a merge of the fields of political ecology and ecological economics and given birth to the concept of political ecological economics (M'Gonigle, 1999; Takeda, 2003).

M'Gonigle (1999) argues that ecological economics as a field contests "the market-based values and utilitarian assumptions of neo-classical economics" (1999, 13). In the literature it is sometimes argued that the only classical economist that has some degree of relevance with regards to the understanding of political economy in ecological economics is John Stuart Mill (Czech, 2009). Mill argued that after achieving a certain degree of well-being, the informed citizen could focus its attention on issues, such as social justice (2009). Furthermore, he argued that it was possible to obtain an economy in a stationary state that was neither declining nor growing (2009). This falls in line with the assumption of ecological economics that the economy is a subsystem of the larger ecosystem and that growth beyond the optimal scale is seen as uneconomic (Daly, 1993). Yet, the big picture shows us that the preoccupation with the

maximization of economic growth in mainstream economic thinking forced ecological economics to distance itself from this way of thinking and place itself within the context of a new kind of political economy.

Neo-classical thinking as well as Malthusian thinking, which centered the man's control over scarce resources and the focus on shortage respectively, was rejected by Marx early on (Altvater, 2004a). "The dissolution of the entirety of nature into an agglomeration of single natural resources, and then the application of a set of analytical instruments based on methodological individualism in order to rationally guide the management of resources is alien to the Marxian concept of ecological economics" (2004a, 3-4). Marx believed that instead of justifying individual rationality as the trend was in modern economics humans, society and nature were linked together (2004a). Marx criticized capitalism for expanding rapidly over time and space, that is what we now know as globalization and for it valorization of resources, separating valuable resources from non-valuable resources. The problem with this is that often the valuable resources get exploited faster than their ability to regenerate themselves. This has a devastating effect on the ecosystem as a whole. Thus, capitalism intrudes space yet there is an unevenness of time between the capitalist regime and the natural regime, as it for example may take a few days to cut down a forest but decades or even centuries for this forest to regenerate itself (2004a).

Furthermore, Marx understood the logic, which was later adapted by scholars of ecological economics, such as Herman Daly, with regards to the law of entropy. On one side it is possible to transform energy and matter of both living and not living nature into for example commodities. Yet, on the other side this has a degrading impact on the nature (2004a). According to Altvater (2004a), it is the Marxian concept of the relationship between man and nature that is most adequate in explaining the dynamic relation between society, the economy and the environment. The Marxian theory is according to Altvater (2004a) capable in explaining why it is so difficult to move towards a sustainable economy in a capitalist system, because it has been possible to free dependence on solar flows to create energy and instead use fossil fuels. As fossil fuels are easily transported and stored they are neither limited by time nor space (2004a). Yet this, according to Bunker (2003), will eventually lead to a collision

between globalization and the "inexorable natural limits of both space and matter" (Bunker, 2003, 254).

The field of political ecological economics sets itself apart from both the neo-classical and Marxian beliefs, mainly in not placing the human being at the center (M'Gonigle, 1999). The attributes derived from the field of political ecology highlight the need of moving towards a more sustainable society. It does so by pointing out the main problems related to contemporary modern society, for example the large focus on economic growth and the little room left for traditional and alternative cultures and systems (1999). The ecological economics aspect adds the assumption that the fact that we are running out of natural capital limits human ambitions with regards to limitless economic growth (1999). The objective of combining ecological economics with political ecology "is to facilitate an inquiry into the political processes and institutions involved in questions of unequal ecological flows and distribution" (Takeda, 2003, 41). This approach is especially important as it embraces the political economy aspect of the environmental problems which mainstream society is currently facing.

3.5 Summary of Theories and Applicability

Even though all the theories described above to a certain extent can be viewed as quite broad, comprehensive or ambiguous they are all, either individually or in combination with other theories, adequately shaped to address pressing issues, such as environmental degradation, on a global scale. Sustainability, despite its broad and inclusive conceptual nature, is much discussed both in the literature and on the international arena. It presents a platform to find a bridge between economic development and the environment. The central argument, nurturing the high position of the concept on the international agenda, is the fact that global environmental issues are a potential threat to the future of humanity. With regards to the depletion of natural resources, sustainability thinking has come to the conclusion that financial capital is not equivalent to natural capital. Natural resources can and will disappear if the production patterns are not changed. Thus, in order to become sustainable a certain degree of environmental thinking must be included in the production processes (Jenkins, 2010). On a global scale, mainstream society today is criticized by many scholars for not being sustainable. Natural resources are being depleted every day for the sake of economic growth (Meadows, Meadows &

Randers, 1992). It seems that so far little thought has been placed on the fact that not only can this situation of unsustainability pose a threat to the continuance of economic growth it also threatens the future of humanity. For these reasons it can be argued that sustainability thinking is applicable to the aim of this project. It helps shed light on the current problems threatening the continuance of the current situation of unsustainable economic growth in mainstream societies and it offers some suggestions to what needs to be done in order to change. It can for example assist the understanding of why the traditional society that will be examined in this paper is sustainable and whether these features can be applied to mainstream society in order to meet the pressing sustainability criterion.

Sustainable development draws upon the features from sustainability thinking. Sustainable development refers to the process of development that takes the present needs into consideration without sacrificing the future generations' ability to ensure their own needs (Jenkins, 2010). In short, it seeks to bridge economic development and environmental protection. Although the concept of sustainable development has been criticized for simply being a means of the rich to secure their future on behalf of poor people in the present, it does address the pressing issues of environmental degradation. Thus, it can be applied to this project, as it can be interpreted to emphasize the link between humans and nature. Especially the sustainable development concept adds some credit to the protection of the environment without sacrificing economic growth as a whole. It is therefore more highly esteemed by mainstream society, as it suggest gradual change over drastic change.

Furthermore, sustainable development is deemed applicable to this project as it, especially in the early stages of the development of the concept, emphasizes the importance of the local level in the implementation process. In this project it is argued that local communities have an interest in protecting their physical environment, as environmental degradation may threaten their livelihoods and well-being. It is therefore possible to argue that policies of sustainable development are best implemented on a local level by the local people. In this project, a specific case study of a traditional society in the Himalayas supports the reasoning that traditional knowledge with regards to the management of natural resources falls in line with sustainable development thinking at its early stages. Sustainable development is also important because it can be

implemented differently in practice from place to place. It can therefore vary in the way it is expressed in different societies, yet sustainability can be increased no matter where and how it is implemented. With regards to this paper, it can help increase the understanding that sustainability is obtainable even in contemporary mainstream society that currently is seen as highly unsustainable.

Instead of being criticized for being too broadly defined, as in the cases of sustainability and sustainable development, the theory of ecological economics came about due to the inability of the two disciplines individually to explain the relation between economics and ecology. The field of economy and the field of ecology both lacked understanding of the relationship between humans and nature. Only when ecological economics emerged as an integrated theory in the 1970s this problem was solved. Through combining the knowledge from the two fields, ecological economics seems to be adequately capable of addressing the problems of environmental degradation that threaten the future of economic growth as well as the future and well-being of the human beings (Costanza, 1996). What it adds to the theories of sustainability and sustainable development is a concern for all species and life on planet earth. It focuses on the economy as a subsystem of the larger ecosystem. In this sense economic growth that depletes the resources of the larger system of which it is a part will in the long run become antieconomic (Daly, 1993). In this project this very assumption defines the view of the global market economy, which over the time arguably has created and continues to create more ecological costs than economic benefits. On the other hand, some traditional societies seem to have a great amount of ecological knowledge and the ability of natural resources to regenerate themselves before they are depleted is considered in the production process. The theory of ecological economics is thus applicable in the case study as well, as it helps increasing the understanding of the current situation of unsustainability in the global economic system. Furthermore, it will be applied to the analysis of the applicability of traditional knowledge to solve the problems of unsustainability in mainstream society. It also functions as one of the main theoretical frameworks when it comes determining what it takes for mainstream society to move into a more sustainable mode.

Unlike the inclusive theories of sustainability and sustainable development and the increasingly successful bridging of two major fields comprised by ecological

economics, political ecology has been criticized for neglecting either one of the two disciplines in its name. Nevertheless, the fact that it has been rather loosely defined, similarly to the concepts of sustainability and sustainable development, has contributed to the creation of different interpretations of the concept and there are now a variety of views that emphasize different aspects within the broad field of political ecology (Walker, 2005). Yet, the validity of the theory is measured in its capacity to explain the relation and possible conflicts between society and nature. In this project, political ecology can be used to understand the conflicts that can occur with the integration of local societies into the global market economy. It also enhances comprehension of why local knowledge related to management of natural resources is undermined in this process. Finally, political ecology is applied in this project to understand why the environment has been given such small attention in comparison with economic growth and modernity. This, in return, can explain why conflicts occur between traditional ecosystem-based societies and mainstream societies dominated by the global market economy, especially when the traditional society is integrated into the market-economic system as seen in the case study of the Bhotiya people in the Darma and Byans valleys in Kumaun Himalaya. The aspect of power within political ecology is also applicable in this paper, especially when it comes to the analysis of the unequal relationship between the Bhotiya people and the authorities that decided that it was time to integrate remote areas of India into mainstream society guided by market-economic values. Furthermore, through understanding the current power structure it may be possible to find a prospect for change. With regards to this, political ecology offers a significant framework for analysis.

Together the theories described in this part support the aim of the project to find a bridge between humans and nature, which already exists in traditional societies but seems to be distant in our contemporary mainstream society. This is done in order to meet the pressing sustainability criterion that is placed highly on the list of international agenda due to the discovery that there may be limits to the current economic growth and that environmental degradation may have an impact, not only on this growth, but also on the future and well-being of human beings.

4. From Prosperity and Growth to a Situation of Unsustainability

4.1 Capitalist Globalization and Inequality

Since the beginning of the eighteenth century when the industrialization process began in Western Europe, a process of capitalist modernization has taken place in many parts around the world (Zakaria, 2008). In this period, we have experienced the consolidation of technology, science, industry and the concepts of Western dominance and capitalism (2008). Looking at the major trend it is now apparent that we are living in a highly globalized world. In economic terms the concept of globalization refers "to the increasing linkage of national economies through trade, financial flows, and foreign investment (FDI) by multinational firms" (Gilpin, 2003, 61). It has often been argued that globalization is a force of global growth and equalization (Cornia, 1999). Nevertheless, many scholars have, despite the classical economic predictions that everyone will get richer, argued that the gap between rich and poor has widened over time as a consequence of the process of globalization (Seligson, 2008): "The income gap between rich and poor countries has grown dramatically since World War II" (2008, 1). This is seen from a relative point of view, and thus the poor have not become poorer in absolute terms. Yet, in comparison with the rich, there is a large gap of inequality (2008). This gap does not only exist between the rich countries and the poor countries, it has also been growing between rich and poor people in both developing countries (2008) and in the rich countries (Leiserowitz, Kates & Parris, 2005). The poorest of these people are facing marginalization on a national scale as well as on an international scale (Seligson, 2008), as they are not only among the poorest in their own country but also among the poorest in the world.

Globalization is a broadly defined concept that goes across different disciplines (el-Ojeili & Hayden, 2006). When one looks at growth, inequality and poverty one often draws on the economy-focused definitions that link the concepts of the free market and capitalism to the overall process of globalization (2006). The general definition of the term conceptualizes globalization as "'[a] catch-all term for the expansion of diverse forms of economic, political, and cultural activity beyond national borders'" (Calhoun, 2002; in el-Ojeili & Hayden, 2006, 13). It is also often described as a compression of time and space and it gives rise to a new feeling of global interconnectedness (2006). The economic dimension of globalization is the most debated one in the literature

(2006). The global economy that is a reality today is based on neoliberal policies and the emanation of capitalist values centered around concepts, such as the generation of profit, competition and the market (2006). According to the neoliberals, expressed by the writing of scholars such as Milton Friedman and Friedrich von Hayek, the market would be able to regulate itself without the intervention of the state and "freedom is closely linked to capitalism" (2006, 52). Since the 1970s neoliberalism has, in the process of globalization, spread around the world and it has often been referred to as a "'worldwide religion'" (2006, 52).

Scholars, critical towards the globalization process, argue that it gives rise to the extension of the power of multinational corporations and developed countries over Third World countries (Borzutzky, 2003). The governments of the less developed countries (LDC) "have found themselves deprived of the means and mechanisms that would allow them to control their economic policies" (2003, 26). Borzutzky (2003) argues that the fact that they have had to adapt neo-liberal policies in these countries has "had a negative effect on poverty, inequality, and rates of economic growth" (2003, 25). The effect of this has been an increase in the gap between rich countries and poor countries along with a general increase in wealth over time (2003). Besides from in East and Southeast Asia where the poverty has gone down, in other LDC the number of poor people has gone up (2003). Furthermore, "[i]n 1980, median income in the richest 10% of countries was 77 times greater than in the poorest 10%; by 1999, that gap had grown to 122 times" (Weller, Scott & Hersh, 2003, 32). Recent statistics looking at the development of income from the 1980s to 2010 show that forty-two percent of the global income goes to the richest ten percent of the world's population, while the poorest ten percent only makes one percent (The Conference Board of Canada, 2011). Weller, Scott and Hersh (2003) also attribute this trend of global inequality and continuing poverty to neo-liberal policies, such as trade liberalization.

In the same way that inequality and poverty are abiding problems on a global scale, also access to a variety of aspects seen as crucial to ensure the well-being of the population seem to be absent and declining in many places of the world, thus adding fuel to these problems (Leiserowitz, Kates & Parris, 2005). This includes access to for example natural resources, education, housing and employment, which have decreased with the implementation of market-based policies (2005). Nevertheless, this trend does not only

apply to the less developed countries but also to fast developing countries, such as China and Russia, and even to Central Europe, especially with regards to the quality of health care and education and the access to employment. The incapacity to battle poverty and the maintenance of inequality on a global as well as national scale contributes to the negative connotations that are sometimes associated with globalization. Some scholars, for example, argue that globalization can be seen as "a transition into a state of less security, more instability and therefore an increased necessity for people to protect themselves against the destabilising consequences of global processes on a global scale" (Altvater, 2004b, 173). In a winner-versus-losers context, the people that enjoy benefits from the process of globalization, which refers to the small amount of people that increasingly get richer, are seen as "winners" (2004b, 173), whereas the people that are being exploited are seen as the "losers" (2004b, 174). The winner-versus-losers debate, thus, refers to the inclusion of some and the exclusion of others in the process of globalization and it can be detected on a global as well as national level (2004b).

4.2 Globalization and Environmental Degradation

If one views the process of globalization as a means of the developed countries and multinational companies to exercise control over the developing and poor countries and one assumes that the neoclassical principles at this point have prevailed, then the consequences attributed to this are not only identified as increased poverty and inequality, but also the environment is losing in this regard. The future and well-being of the human species is now being threatened by the depletion of natural resources and gradual environmental degradation. Scholars argue that this is a consequence of the one-sided focus on economic growth (Constanza et.al., 1997; in Takeda, 2003). Thus, even though the process of globalization has brought about economic growth, especially for the small amount of active participants, it came with an increase in economic inequality and environmental problems (Borghesi & Vercelli, 2003).

Some scholars argue that environmental problems, such as "[g]lobal warming, thinning of the ozone layer, loss of biodiversity, depletion of natural resources, widespread deforestation and desertification are examples of global environmental deterioration that emerged and worsened while the process of globalisation accelerated after the World War II" (2003, 82). Nevertheless, Borghesi and Vercelli (2003) maintain that a

correlation between globalization and environmental degradation does not necessarily mean that there is a causal relationship between the two factors. Though, a causal connection can be found if one looks at four interrelated categories of globalization identified by the scholars as: "(1) technological, (2) economic, (3) demographic and (4) cultural" (2003, 82). The technological category is related to the industrial revolution and points to the input of natural resources in the production process, leading to the depletion of the resources as well as pollution. Economic growth led to the increase in production which brought about a deterioration of the environment in progression with an increase in income per capita. Technological innovation and economic growth led to an increase in the global population, which has also had a negative effect on the environment. Lastly, a cultural globalization with the wide distribution of free-market values and consumerism made it clear that economic growth was favored over environmental protection (2003).

Although it is sometimes argued that environmental problems are not directly caused by globalization, especially among the promoters of the process, the critics agree that "economic globalization generates or exacerbates many environmental problems" (el-Ojeili & Hayden, 2006, 74). The main features, such as the prioritization of economic growth as a part of neoliberal philosophies are an inherent part of globalization and therefore a link between globalization, especially the economic aspect of the process, and environmental degradation can be detected. One of the main components behind the generation of economic growth on a large and global scale is the exploitation of natural resources. As the resources are being used by the humans faster than their ability to regenerate themselves they are gradually being depleted. Thus, global competition for the natural resources is created, as all the competitors on a globalized market are in the game for the same price: economic growth and prosperity (Najam, Runnalls & Halle, 2007). Depletion of natural resources may have serious consequences for people whose survival directly depends on these. For these people, globalization is seen as a "marginalizing phenomenon" (2007, 15). Globalization does not only threaten the livelihood of certain people that are not an integrated part of the process, it also has an impact on this people's ability to cope with environmental problems (2007). Thus, "[t]he combined effects of globalization-related marginalization and environment-related marginalization can wreak havoc on whatever resilience poor communities might otherwise have possessed" (2007, 16).

It is sometimes argued that the rapid economic growth of some newly developing countries, such as for example China, contributes greatly to the global environmental problems that we face today (2007). Yet, one must keep in mind that when one refers to China as the "factory of the world", one must also ask who the customer is. A large amount of the current problems related to environmental degradation were caused by the already industrialized countries, and it can thus be argued that they must take more responsibility in coping with them. Another factor that contributes to environmental deterioration on a global scale is consumption, especially the consumption of energy (2007). The developed countries consume more than the developing countries: A study shows that "in 2000, one American consumed as much energy as 2.1 Germans, 12.1 Columbians, 28.9 Indians, 127 Haitians or 395 Ethiopians" (2007, 22). Furthermore, the fact that the global population has grown dramatically and doubled from 1950 to 2004 has added to the increase in the consumption of natural resources (2007). Yet, this must also be attributed to the increase in consumption by the already developed countries and the new fast developing economies that rose in this period.

The debate over what is causing the environmental problems that we are facing nowadays is ongoing and deep. Different theories associate the problems with different factors, for example economic growth and increase in population, which according to the neo-Malthusian environmentalists is to be blamed (Acselrad, 2006). Yet, others claim that the wealthy countries put more pressure on the resource base as they consume more per capita, thus arguing that environmental problems can be seen as an distributional issue (2006). Whether the current environmental problems can be seen as a result of economic growth or population growth or a mixture of both, one may need to focus on the potential solutions to the problems. Yet, the fact the consumption has increased so much in the wealthy countries in relation with the economic growth have had an impact on both depletion of natural resources all over the world as well as increased pollution. One cannot deny that the impact of this trend on the environment has been long-lasting and it may be possible to argue that the developed world ought to take more responsibility when it comes to facing the environmental challenges (Najam, Runnalls and Halle, 2007). In order to do this, a focus on consumption over the growth of population may be suggested, at least initially.

According to Najam, Runnalls and Halle (2007) the solution to these problems can be found in technological development. Technology has been one of the key elements behind the process of globalization and to a large extent it has resulted in many of the environmental challenges that we are facing today. At the same time, technological advancements have also helped us cope with these problems, for example through the development of cleaner methods of production (2007) and renewable energy technologies (Leiserowitz, Kates & Parris, 2005). Yet, it is important to keep in mind that with regards to the future increase of global consumption "[t]echnology cannot change the demands or help us satisfy all of them but it can, through globalization, help meet these demands in a more planet-friendly way" (Najam, Runnalls & Halle 2007, 23). This debate of the role of technology in battling environmental problems and issues of sustainability in mainstream society is deep and complex, especially because there are so many different opinions expressed by different scholars in the field. In this paper it is therefore considered to be one among other factors that need to be taken into consideration when attempting to address the growing environmental problems in mainstream society today. This approach is taken, among other things, because some scholars argue that it takes a complete societal change towards sustainability in order to battle these environmental problems (Milbrath, 1996). Nevertheless, in order to understand this change it is important to understand the nature of the situation that is currently a reality in contemporary mainstream society.

4.3 Unsustainable Economic Growth

In the report *The Limits to Growth*, written by Donella H. Meadows, Dennis L. Meadows, Jørgen Randers and William W. Behrens III in 1972, it was already argued that the limits to growth, not only economic growth but also growth in population, pollution, exploitation and depletion of natural resources and food production, would have been reached (Meadows et.al, 1972). The study was commissioned by the Club of Rome to come up with some analytical solutions to the environmental problems (Turner, 2008), which were given increasingly more attention at this point than it had been given before, both in the academic literature and in international forums and conventions. The fellow analysts used a computer model, named World3, created at the Massachusetts Institute of Technology, to manage the data and be able to predict possible scenarios for the impact of growth in the future (Meadows, Meadows & Randers, 1992). One of the main conclusions of the report "was that delays in global

decision making would cause the human economy to overshoot planetary limits before the growth in the human ecological footprint slowed" (Randers, 2010, 1). In other words, the global trend with regards to growth "in world population, industrialization, food production, and resource depletion" (Meadows, Meadows & Randers, 1992, xiii) will, under the assumption that it is continued, reach its limit within the next century (1992).

In the literature, two main reasons for why the growth cannot be sustained in the future are generally encountered. The first reason is that we are running out of natural resources. Combined with the present rates of consumption there will simply not be enough resources to sustain an increase in the global population (Milbrath, 1996). The second reason is global warming and climate change caused by the emission of greenhouse gases, such as carbon dioxide, methane and nitrogen oxides (1996). Scientists argue that the earth is warming and this will undeniably have an impact on the climate patterns and on the environment, and Milbrath (1996) even argues that "[c]limate change and loss of ozone layer will injure ecosystems all over the planet and reduce their productivity at the very time all those new humans will be looking for sustenance" (1996, 187). According to Milbrath (1996) if the global population continues to grow as it is growing, which the trend predicts that it will, it will create a demand for an increase in economic output. This will lead to a rapid depletion of the natural resources and high levels of pollution that would have a large impact on the ecosystems of the planet (1996). Milbrath (1996) argues that the solutions to these problems are not to be found within technology, but rather within major societal changes towards sustainability. This involves avoiding some of the main values that modern mainstream society consist of, such as "economic growth, consumption, efficiency, productivity, jobs, competitiveness, takings risks, power, winning" (1996, 188). He emphasizes that either modern society takes the decision to transform into a sustainable mode or the change will be forced upon it through the forces of nature (1996).

This was also the recommendation given in *The Limits to Growth* in 1972 when the authors of the report argued that the limits to growth in modern societies would be reached within the next hundred years (Meadows, Meadows & Randers, 1992). Even though, they in 1972 claimed that it would be possible to move towards a more

sustainable system, they found that the situation in 1992, when they wrote their second book, *Beyond the Limits*, had deteriorated severely (1992). They "realized that in spite of the world's improved technologies, the greater awareness, the stronger environment policies, many resource and pollution flows had grown beyond their sustainable limits" (1992, xiv). The new book added to and strengthened the already established conclusions from *The Limits to Growth*. For example it was argued that if energy and material flows are not brought down we will experience a strong decline "in per capita food output, energy use, and industrial production" (1992, xvi). Nevertheless, this can be avoided by revising practices and policies that support growth in consumption as well as in population, and by increasing efficiency when using energy and materials (1992). The analysts argue that it is possible and still reachable to transform mainstream society into a more sustainable society. Yet, making this transition is a choice that has to be made (1992).

In 2004 Meadows, Meadows and Randers published the most recent update of their research, called *Limits to Growth – The 30-Year Update* (Meadows, Randers & Meadows, 2004). In this book the three analysts show how the predictions initially made by the World3 computer in 1972 with regards to environmental degradation have come true (2004). They warn that if the trend of growth is not being addressed, society as we know it will face a collapse. The conclusions drawn are not only based on the results from the computer but also on looking at the behavior with regards to growth that has been persistent over time. Three trends have continued since they first predicted that the current system would be likely to collapse: "erodible limits, incessant pursuit of growth, and delays in society's responses to approaching limits" (2004, xviii). The fact that they have written this update underlines the importance of the conclusions in 1972 and 1992. In addition to this, it stresses that although a warning was out that limitless growth could eventually lead to the collapse of the system, nothing has been done (2004). Yet, most importantly, the scholars argue, just as they did in 1972 and 1992, that there is still hope if the necessary measures are taken (2004). They argue that "[h]umanity has the knowledge necessary to maintain adequate levels of final goods and services while reducing greatly the burden on the planet" (2004, 9). Furthermore, they claim that there is a large variety of ways to decrease the ecological footprint on a global scale.

One such effort would be the focus on need over the focus on mere consumption and growth. This type of focus is found in traditional knowledge systems in indigenous societies and tribes. In these communities, natural resources are used as a means of survival of the people and they are conserved in order to ensure their continuance (Farooquee, Majila & Kala, 2004). This demonstrates a focus on need. In order to change mainstream society towards a more sustainable path it is important to look at the main features of a sustainable society. This is what the indigenous knowledge systems can teach us. That is why it is important to include a case study from such a society in which a harmony between the humans and nature can be found and in which sustainability is the number one rule. This case study will help the reader understand whether the pressing sustainability criterion really can be met in mainstream society. Some societies exist on this planet alongside mainstream society and they are not guided by a constant strive for growth, but rather by a balance between needs for survival and conservation of the ecosystem and biodiversity. This was a reality before modernization in mainstream society and it is crucial for the future not only for the people living within this society but for the future and well-being of the human species as a whole (Costanza, 1996).

5. Indigenous Knowledge and Sustainable Systems

5.1 Traditional Knowledge Systems

Indigenous knowledge, often interchangeably termed as traditional knowledge (TK) (Kothari, 2007), can be identified as being the type of knowledge possessed by a local community of indigenous people, "or local knowledge unique to a given culture or society" (Berkes, Folke & Gadgil, 1995). The knowledge is usually based on various traditions, practices and wisdom that have been passed on from generation to generation (Kothari, 2007). Over generations, traditional knowledge has been and is being conveyed through, for example, songs, rituals, stories and, in some cases, even laws (2007).

The main difference "between TK and modern or "western" knowledge is that unlike the latter, TK does not separate "secular" or "rational" knowledge from spiritual knowledge, intuitions, and wisdom. It is often embedded in cosmology, and the distinction between "intangible" knowledge and physical things is often blurred" (2007,

4). Thus, traditional knowledge can often be understood within a cultural and natural context, and it should be understood as a combination of knowledge, beliefs, traditions and practices (Berkes, Folke & Gadgil, 1995). Traditional knowledge is not necessarily a static concept, but rather it has been developing over time and continues to do so in a dynamic way affected by the internal as well as external environment (Kothari, 2007). Traditional ecological knowledge (TEK) refers to the traditional knowledge of an indigenous society's knowledge within the fields of ecology and resource management (Berkes, Folke & Gadgil, 1995). These traditional ecological knowledge systems are expressed through the fact that many of the indigenous societies are located in territories that hold most of the planet's biodiversity (Sobrevila, 2008).

Various studies have been conducted to describe traditional ecological knowledge in indigenous and tribal societies (Berkes, Folke & Gadgil, 1995). One advantage that has been identified by many of the scholars that have studied traditional knowledge systems is the fact that the traditional ecological knowledge is based on "long time-series of observations on particular local and regional ecosystems" (1995, 283). On the contrary, Western science, due to its relatively short history of existence, is based on short time-series (1995). Even though traditional ecological knowledge systems have gained prominence in the literature over the years when it comes to enhancing sustainability in modern societies, the place of traditional ecological knowledge in modern scientific research is relatively small. This is regardless of the fact that it is argued that indigenous knowledge systems understand and pay attention to the complexity of the ecosystem, and this therefore explains why both biodiversity conservation and sustainable management of natural resources are important values in these traditional societies (1995).

In the literature the disappearance of traditional knowledge systems is often referred to, but rarely have these systems been used as examples for modern societies to follow (1995). Nevertheless, in recent years the concept of traditional knowledge is becoming more well-known on the international arena, for example within the United Nations that in the recent years has come up with various initiatives to recognize the importance of and encourage traditional knowledge systems (Kothari, 2007). However, until recently the importance of protecting the systems of traditional knowledge was based on preserving the traditional practices and culture of the indigenous people and in

accepting "the role of TK in the "traditional" or primary sectors of the economy" (2007, 6).

Only lately it is increasingly recognized that traditional knowledge could possibly play a great role in battling environmental problems, such as climate change (2007). The ability of the indigenous societies to adapt to environmental changes is the key to this recognition. It is claimed that traditional knowledge could potentially "provide the alternatives needed to build towards a more sustainable way of dealing with our atmosphere" (2007, 6). In the traditional communities it is possible to detect a variety of indicators measuring sustainability. These indicators include "[w]ater flows, the presence/absence or appearance/disappearance of certain species, the behaviour of domestic or wild animals, and other kinds of changes in their surrounds" (2007, 7).

In the context of contemporary sustainable development proposals, traditional knowledge is increasingly referred to. It was for example proposed by UNESCO and the International Council of Science in 2002 that in future scientific research, principles derived from modern science as well as traditional knowledge should be incorporated when attempting to find sustainable models for the future (ICSU, 2002). Besides from recognizing the rights of the indigenous people to express their culture, traditional knowledge should be included in "sustainable development policies, plans and programs" (2002, 19). This proposal was offered as a basis for cooperation between indigenous communities and scientists from mainstream society in order to facilitate sustainable development. Nevertheless, if such a partnership should bear fruit it is important that the dominant system of knowledge does not overrule traditional knowledge and absorb it into its system through a process of commercialization (Kothari, 2007).

On the other hand, it is argued that traditional knowledge "is so integrally connected to the way of life of the traditional peoples themselves, that it only makes sense *in situ*, when used and evolved by such peoples" (2007, 10). It makes sense to see traditional knowledge in relation to the physical environment in which it has developed over time. Therefore, if one assumes that certain indigenous societies are sustainable whereas the mainstream system is unsustainable then traditional knowledge derived from this sustainable system cannot be directly applied to the mainstream system. It is thus

possible that the traditional ecological knowledge systems cannot be directly applied to the situation of unsustainability in mainstream society today. Yet, it may be able to inspire overall changes in order to meet the pressing sustainability criterion. Before drawing any conclusions, a sustainable system that employs ecosystem based management of natural resources, located in Kumaun Himalaya, will be examined. This will make the discussion of whether it is possible to apply traditional models of sustainability to modern mainstream society more comprehensive.

5.2 Traditional Ecological Knowledge in Kumaun Himalaya, India

The Himalayas are known for holding a major part of the planet's biodiversity (Rawat, 1999; Sobrevila, 2008). The area of Kumaun, also written as Kumaun, is located in the Himalayas in India. The Indian Himalaya covers around 590,000 km^2 and is about 2500km long and 250 km wide (Farooquee, Majila & Kala, 2004). Although the Indian Himalaya only comprises 18% of the total area of India, it holds over 50% of the forests of the country and around 40% of the species that are found in India (2004). The 21,003 km^2 region of Kumaun is located within the state of Uttarakhand (Gangwar, Deepali & Gangwar, 2010). It extends a territory of around 155 km from east to west and around 235 km from north to south. It borders internationally with Nepal in the east and Tibet in the north (Rawat, 1999). Kumaun is a region with generally high altitudes and it holds more than 20 peaks that are higher in altitude than 600 meters (1999).

In this paper, two societies, namely the "Darma and Byans valleys of Dharchula block in Pithoragarh district" (Farooquee, Majila & Kala, 2004, 34), will be looked at. The Pithoragarh district is located in the eastern part of Kumaun and it borders with both Tibet in the north and Nepal in the east (Rawat, 1999). The people that reside in this region are Bhotiyas which is a community with Mongoloid ethnic origin that originally "were traditional trans-border traders, and traded between India and erstwhile Tibet now China and Nepal till trans-border was terminated in 1962 due to Sino-Indian conflict" (Farooquee, Majila & Kala, 2004, 34). Now they mostly work in agriculture and pastoralism (2004). The residents move between two altitudes. Between May and October they reside in an altitude of about 4100 meters. The rest of the year they are, due to heavy snowfall in the winter time, forced to migrate down to an altitude of about 1200 meters (2004). Their production systems, especially in the summer, are agropastoral and due to their seasonal movement they have taken use of diversified

methods of production. The fact that they move from place to place has also contributed to the fact that they are familiar with a wide range of natural resources and with the different plants and flora that exist in the areas where they reside (2004). Because the communities are highly dependent on the natural resources and especially because there is little availability of plants in some areas the people have learned to conserve what they need in order to survive (2004). These include ethno-medicinal plants and flora (Gangwar, Deepali & Gangwar, 2010).

Due to the high altitude location of the Bhotiya people, associated with some degree of difficulties when it comes to diversity of production, they have generally had to base their income on the resources available in the area (Farooquee, Majila & Kala, 2004). Their economy, which Farooquee, Majila and Kala (2004) define as a subsistence economy, consists of the production and sale of agricultural products, medicinal herbs and wool from the livestock raised (2004). The natural resources that are being used in production are based on their utility, "availability, suitability, longevity and eco-feasibility (2004, 35). The traditional knowledge of the Bhotiyas, especially with regards to the medicinal plants, is extensive mainly because it has been developed over a long period of time, but also because of the variety of plants that are found in the areas of settlement (2004).

The main way for the Bhotiya people to make decisions with regards to the use and maintenance of the natural resources in the area has normally been through forming small councils for each matter. The decisions made help shape the norms and practices of the community with regards to the physical environment in which they live: "Their community organizations such as the village council (*gram panchayat*), forest council (*van panchayat*) water council (*pani panchayat*), youth forum (*yuva dal*) and women organization (*mahila mangal dal*) have evolved norms and practices to regulate individual and collective behaviour (vis-à-vis nature)" (2004, 37). These councils have been preserved through time and they are to some extent still relevant today, as they decide how to extract what can be extracted from the natural resources without exhausting them for future use. The norms that have continued for generations have been adapted by the community as a whole and have with time become socially binding (2004). This has helped maintain a certain balance between the needs of the community

and the well-being of the ecosystem (2004). Important in this aspect is the deep respect and feeling of belongingness the community feels towards the ecosystem (2004).

Due to the remote location of the Bhotiya community they were historically not directly integrated into the mainstream market system. They have therefore not been an integral part of the global trend of interdependence and until recently they were mainly depending on the natural resources in their habitat for survival (2004). They therefore did not have to implement modern technology in their production processes, but relied on the protection of the natural resources (Samal, Dhyani & Dollo, 2010). In this sense they were closely related to their natural surroundings, something that has "contributed to the better understanding of the limitations and potential of their resources" (Farooquee, Majila & Kala, 2004, 38). The relationship between the Bhotiya community and the ecosystem and the traditional knowledge system that has evolved over the years with a focus on the survival of the community as well as conservation of the natural resources are some of the main reasons behind why it has often been described as a sustainable society (Samal, Dhyani & Dollo, 2010). As focus was mainly placed on resource preservation, the Bhotiya people adjusted their needs according to the availability of resources (Farooquee, Majila & Kala, 2004), and not the other way around as seen in modern societies guided by market-economic values (Daly, 1993).

5.3 Market-Economic Integration

Although the Bhotiya people nowadays carry on their way of living with everything that this entails, including the importance of the traditional knowledge system, they have for the past decades been experiencing an increasing threat from the forces of globalization. This especially involves a growing dependence of the community on for example external food supplies instead of dealing with this need internally (Farooquee, Majila & Kala, 2004). This trend started after 1962 when roads were being constructed in the Himalayas leading to the intended integration into mainstream society. The governments and authorities started taking control over the small societies and increasingly they started controlling many different aspects, such as "resources and mandates that traditionally belonged to the people" (2004, 39-40). As in other places of the world this process led to a transformation of the traditional society disrupting the traditional system of management (2004).

The Bhotiya people have somewhat been able to continue their traditional practices, yet they are experiencing an increasing dependence on the market forces and are being introduced to changes that threaten their traditional methods. Earlier, for example, "money was not required in their traditional mode of production and resource utilization, barter exchange of goods and services was more common and prevalent in their society" (2004, 40). Although some positive effects of the encounter with mainstream society, such as increased education and urbanization that implied more employment opportunities, especially for the younger generations, in terms of biodiversity and sustainable management of natural resources the effects were mostly negative (2004). One of these effects of the integration into the market-economic system has been the gradual disappearance of the traditional knowledge system and declining respect for natural resources (2004). This, among other things, can be seen as a consequence of a competition among societies for only certain types of resources and thereby leading to their depletion and to a loss of biodiversity in the Himalayan region (2004).

A great amount of biodiversity has been lost in the valleys of Darma and Byans and the Bhotiya people are becoming more and more dependent on external food supplies (2004). Over the years "there has been a loss of huge quantity of traditional knowledge of wild and domesticated plant and animal resources, traditional arrangements of resource sharing, traditional cohesiveness of the society, social concern over their natural ecosystems and social, cultural and religious affinity" (2004, 41). Thus, although some of the traditional knowledge and institutions still exist in the Bhotiya society the integration into the market-economic system threatens its future existence (2004). Therefore it can be argued that something has to be done (2004) before this sustainable society becomes a part of a larger system in a circle of unsustainability in terms of loss of biodiversity and complete depletion of natural resources. It has been argued that traditional knowledge systems should be preserved for the sake of enhancing sustainability (Kothari, 2007). This is why the traditional society of the Bhotiya people is so important to look at in order to determine whether the key to sustainability truly can be found in the understanding that there is an inseparable link between humans and nature.

6. Economic Growth or Ecological Knowledge: Seizing Sustainability

6.1 Recent Changes and Political Ecology in Kumaun Himalaya

The initiatives that have been taken in the recent years from the side of the central government of India to integrate the region of Kumaun into the market economy have had serious impacts on the natural ecosystems and biodiversity (Farooquee, Majila & Kala, 2004). The entire Himalayan region has been placed under a development criterion that has influenced the physical environment in this area: "Continuous population growth, faulty planning and ever increasing demand on natural resources have altered the landscape, with little or no concern for its long term environmental consequences and threats posed to biodiversity in Kumaon Himalaya" (Rawat, 1999, 168). Ecological diversity is being sacrificed in the name of development. Rawat (1999) argues that one of the only options that are available for the people in the Kumaun region is to conserve what is still left. Yet, this may prove to be quite difficult from a political point of view, as the political autonomy of the region is in the hands of central government agencies (Farooquee, Majila & Kala, 2004).

According to the theory of political ecology, conflicts generally occur when traditional societies are forced to integrate with the global market economy and especially when the power relations are unequal (Walker, 2005). This integration is seen as undermining local knowledge, not only with regards to resource management but with regards to the environment in general. In some cases the local communities were even forced to harm their environments in order to live up to the demands of the market economy (2005). In the case of the Bhotiya people this is what has happened over the recent years. Their traditional knowledge system and natural resources are now being threatened for the sake of adapting to the demands of mainstream society. In many ways they have had to transform their traditional self-sufficient economy into a market, money and competition based economy. The resources that before were scarce but conserved are now increasingly depleted, as competition between different societies over a small variety of resources has sharpened (Farooquee, Majila & Kala, 2004). Thus, as a consequence of a process of integration into mainstream society, the Bhotiya people have been forced to give up on some of the main features of their traditional society, such as the preservation of a variety of natural resources that they were dependent on for survival. A great deal of the resources that they are now dependent on are being

imported from other places. Thus, the variety of natural resources has gone down and the ecosystem has become less diverse and it has been replaced by a more homogenous system with focus on efficiency, competition and money over traditional ecosystem-based management of natural resources.

The loss of biodiversity all over the Himalayan region is increasingly visible (2004). This trend has an impact on a global scale as well, as a large amount of the planet's biodiversity is found in the Himalayas. In general there is a "high degree of overlap between indigenous territories and areas of exceptionally high biodiversity" (Sobrevila, 2008, 5), and this is also the case in the mountainous areas of the Himalayas (2008). Studies show that biodiversity has not only decreased in this area but that it has been decreasing gradually for decades in all areas. The Amazon forests in Brazil have, for example, been suffering greatly since they have become a part of the market-economic system. The World Bank actually found that areas populated by indigenous people had improved preservation of the Amazon forests, and thus they argue that this proves that there is a correlation between the protection of the environment and natural resources and the presence of indigenous people (2008). Thus, if it is assumed that these traditional societies are sustainable on their own, then their integration into mainstream society with the consequent damages on natural resources and loss of biodiversity can be seen as damaging to the environment. Not only are the indigenous societies relatively weaker than the overall mainstream society that they are integrated into but they are also forced to adapt to the rules of the global market economy and leave behind traditional knowledge of ecosystem-based management. It is due to this fact that this integration into the capitalist global political economy is seen as a catalyst for the deterioration of the previously strong bond between the humans and the environment in these societies.

In the process of integrating the indigenous societies into mainstream society, power is unquestionably a significant factor. Within the framework of political ecology it is often argued that power shapes the relationship between the human beings and nature (Walker, 2006). The problem with regards to power is the fact that the indigenous society, in the case study of this paper the Bhotiya people of the Darma and Byans valleys in Kumaun Himalaya, is being forced to adapt to the principles and structures of mainstream society. This first started when roads began to be constructed in this remote area of India which before had a certain degree of autonomy to at least manage the

natural resources in the area. The construction of the roads led to the increased control of central government agencies over the specific territory and with time these authorities even controlled the natural resources (Farooquee, Majila & Kala, 2004). All this was seemingly done in order to develop these areas and integrate them politically and economically with the mainstream system that was argued by the Indian governmental authorities would bring about welfare and prosperity. This is a clear example of how the government authorities exercised their relative power over the traditional Bhotiya people and tried to absorb them into a system that is not only dominant on a national basis but also on a global scale.

The logic of the market economy and neo-liberal principles have for some time now been considered the dominant form of logic that now determines the rules of the game. In this way, the traditional methods of ecosystem-based management of natural resources and indigenous knowledge systems with regards to environmental protection are being disregarded because they are not given legitimacy within the existing system and structure. If one assumes that the current structure of mainstream society is founded on market-based values, such as profit maximization, consumerism and competition, over environmental protection and ecological sustainability then the only way of changing this structure would be through the creation of new norms. Yet, as already mentioned, this is very difficult and it calls for large-scale collective mobilizations.

Nevertheless, the fact that traditional knowledge systems are being mentioned more and more, both in the literature and on the international arena, in the recent years may indicate the beginning of a change in the overall norms. The traditional knowledge systems have for some time been recognized and the importance of preserving them emphasized within the framework of international institutions, such as the United Nations (Kothari, 2007). It is even argued that traditional knowledge could play a significant role in the battle against environmental problems and negative impacts from climate change (2007). The norms that are emphasized in traditional knowledge systems, present especially in indigenous communities and societies, are, among others, a deep respect and feeling of belongingness towards the ecosystem and protection of natural resources that are used according to needs and availability and therefore not overexploited. This can also be described as ecological sustainability.

According to some of the literature in the field of development one of the most important factors that should be completed in order to direct mainstream society into a more sustainable mode is a societal change of norms (Milbrath, 1996). Some scholars, such as Milbrath (1996), even go as far as to argue that if mainstream society does not develop into a more ecologically sustainable society, then it may have negative impacts on the future and well-being of the human species as a whole (1996). Yet, he emphasizes that no one, including powerful governments, can enforce such a change on society: "Meaningful and permanent social change occurs when nearly everyone learns the necessity and wisdom of accepting the change" (1996, 1993). This refers to the change of the overall structure through collective mobilization and thereby changing the norms that are now dominant in mainstream society. The norms that Milbrath (1996) and others refer to are also some of the basic norms within many indigenous societies guided by traditional knowledge systems, and there is therefore reason to think that some degree of collaboration between those striving for change and the indigenous societies would be possible. One could argue that such collaboration would be beneficial for these traditional societies because they thereby get to maintain their traditional culture and practices which have helped preserve the ecosystems in their areas for centuries. If they are integrated into mainstream society they need to adapt to the overall structure of norms present here. In this paper, it has been argued that it is only possible to change this structure through collective mobilization. The necessity of collaboration is therefore unambiguous.

The Bhotiya people were aware that through integrating into mainstream society they would lose a certain degree of control, especially because they would become more dependent on market forces (Farooquee, Majila & Kala, 2004). Their traditional methods and knowledge systems are threatened by a need to live up to the demands of competitiveness of the market system (2004). There has been a loss in biodiversity, as traditional plants all over the Himalayan region have increasingly been replaced with crops that yield more and therefore bring about more profit (2004). Seen from a political ecological perspective the tribes that are being absorbed into a larger context often lose some of their traditional practices in order to gain new ones. Yet, when it comes to indigenous groups the principles of environmental justice emphasize that more is being lost. If the conflicts that occur with the integration into mainstream society are not solved, the traditional society may end up losing much more than land and the rights to

manage the natural resources according to traditional methods, they may lose their entire identity and ways of life (Byrne, Martinez & Glover, 2002).

It is likely that it is within the context of environmental justice that a solution to this conflict has to be found. Often small groups, such as the Bhotiya people, do not have the means to resist against strong forces, such as the dominant mainstream society based on market-economic values. Thus, if the problem should be solved, the small groups must ally itself with other groups that resist the same problems. In this case, issues related to environmental degradation can and should be dealt with on a global level as it affects everybody. Yet, as environmental degradation primarily and especially has an impact on developing countries and poorer societies, it seems that there may be some difficulties involved with applying environmental and social justice on a global scale. It therefore continues to be a struggle, especially for the indigenous societies affected but also for the groups, organizations and agencies that decide to take on their case. Nevertheless one must keep in mind that while environmental problems, such as climate change and decreasing biodiversity may have a more devastating effect in poorer places initially, a large-scale disaster will ultimately affect all of us, especially when one considers the time-and-space compressing character of globalization.

6.2 The Path to Sustainability: Changes in Mainstream Society

It increasingly becomes evident that fulfilling the sustainability criterion is necessary in order to ensure the future and well-being of human beings all over the globe. In all three reports written to the Club of Rome by Meadows, Meadows and Randers on the limits to growth in 1972, 1992 and 2004 respectively, the authors argue that it is indeed possible to amend society into a more sustainable mode. Even though they initially argued that the growth trend in terms of population and human activity, increasing the ecological footprint, was not tackled and that it would likely lead to a collapse of society as we know it within the next century, they also emphasized that there was a way out. Even when they, in 1992 and 2004, realized that the growth had been larger and more comprehensive than they first foresaw, their message remained the same. The movement to sustainability begins with revising practices and policies that supports growth in consumption and population, but primarily it begins with a mindset change, one that can lead to an overall societal change. They emphasize that humanity is in possession of the knowledge that is needed in order to take the next step.

In this project, it is argued that an effort that would be able to assist the change that is necessary in order for mainstream society to increase sustainability would be the shift in focus from mere consumption and growth to a focus on need. In order for a society to be sustainable, it must focus on using the natural resources as a means to survive and not over-exploiting and depleting them faster than their ability to regenerate themselves. Since 1972 when the first report on future growth limits came out, sustainable development has been on the international agenda. Yet, as it shows in the reports following the initial one, this line of thinking has not been exercised in practice. Nevertheless, it can be argued that the fact that the impact of environmental issues is of global scale, humanity may be forced to pay the concept of sustainability increased attention. Furthermore, it is important to keep in mind that not only humans are being affected by environmental degradation, but also other species and entire ecosystems are being influenced. It can be argued that they should also be included in the sustainability formula, not only because they are a living part of this planet, but also because decreasing biodiversity can have a devastating impact on the ecosystems which consequently have a negative impact on the future and well-being of the human species. As mentioned in this paper, it is important to emphasize that sustainable development does not deny economic growth in the future, yet it does offer some space for environmental protection, trying to find a balance between these two variables in the future.

In this paper it argued that if one takes the principles of ecological economics into consideration it facilitates the movement towards a more sustainable society. It can be argued that one of the main problems in contemporary mainstream society is the over-prioritization of the economy over other values as for example environmental protection. The current system largely ignores the fact that the economy is a subsystem of a larger system, the earth. In fact, a large amount of economic activity is allowed for because the economy lives of the environment in a similar way in which an animal lives of it (Daly, 1993). It is therefore a problem when economic growth as well as growth of consumption and population is seen as limitless. As Daly (1993) emphasizes the earth can develop qualitatively but not quantitatively, meaning that it does not get any bigger. Yet, in contemporary mainstream society the economy expands quantitatively without further thought to the fact that it might grow beyond its capacities. Therefore it is argued in this paper that in order for mainstream society to become more sustainable the

economy must be viewed as a subsystem of the larger ecosystem, thereby giving the environment more attention. This may appear to be quite simple, but as it has been pointed out in this paper, unconstrained economic growth may have a negative impact on the environment, as the growth in consumption, especially of natural resources and energy, seems to have had an influence on environmental deterioration over the years. Another problem has been the loss of biodiversity, both because natural resources are being depleted due to consumption but also because societies with high biodiversity are forced to specialize and increase competitiveness upon integrating into mainstream and thereby prioritize cultivation of a few sorts instead of many different sorts as these may not be demanded outside this society.

Within ecological economics it is even argued that an economic growth that has a negative impact on the environment becomes antieconomic, because the ecological costs in the long run are larger than the economic benefits (Daly, 1993). It is this assumption that has brought scholars to focus on sustainability and change. In mainstream society the limits to growth is close to have been reached and future growth "in world population, industrialization, food production, and resource depletion" (Meadows, Meadows & Randers, 1992, xiii) without consideration for the environment can have a negative impact on the future and well-being of the human beings (1992). As long as the economy is seen as an independent system from the ecological system, it is hard to change this trend. For decades, scholars, such as Meadows, Meadows and Randers, have been emphasizing that if the trend of growth is not addressed society as we know it will face a collapse (1992). Humanity can, if this is prioritized, rebuild society into becoming more sustainable. This would mean finding a balance between economic growth and environmental protection.

In order to have a sustainable economy, it must first be acknowledged that the economy is a subsystem to the larger ecological system, and that in order to generate growth ecological costs should not be created. This may be easier said than done, as we are talking about a structural change of norms and practices in contemporary mainstream society. Nevertheless, as argued in this paper, this change is necessary for sustainability to be achieved. Focus must be shifted away from features of modern society, such as consumption, competitiveness and economic growth and on to values such as protection of the environment and ecological sustainability. A societal change can only come after

such a shift in focus. Thus, increased ecological awareness in mainstream society would be the key to shifting the focus from unsustainable practices aimed at expanding economic growth towards a sustainable system in which a balance between growth and environmental protection is maintained.

6.3 From Traditional Knowledge to Sustainability

When one assumes that a change is necessary in mainstream society in order to increase sustainability, it may appear absurd that traditional societies lose a certain degree of sustainability upon integrating into the market-economic system. Nevertheless, this is what the case study of the Bhotiya people in the Darma and Byans valleys in Kumaun Himalaya has illustrated. Upon integration into the market-economic system, these people were and are forced to give up some degree of sustainability in terms of the continued use of traditional knowledge and practices. This has, for example, led to a loss in biodiversity, as mainly crops that are competitive in the market system are being grown, but also because goods that are highly demanded are being depleted faster than their ability to regenerate themselves. Even though the Bhotiya people conducted a sustainable living prior to the integration into mainstream society, imposed by the central authorities in India, they have been forced to adapt to the market forces. Therefore, although some of the traditional practices have been kept, parts of the before so rich traditional knowledge system have been lost. This can be seen as one of the negative effects of the process of integrating into mainstream society. If it is assumed that sustainability is an objective in mainstream society, it can be argued that in order for this society to become sustainable it should adopt sustainable methods and practices and not enforce and spread methods and practices that are unsustainable.

It can be argued that the loss of traditional knowledge and practices detected in the Darma and Byans valleys has contributed to making the community less sustainable. There must therefore have been a correlation between traditional knowledge and practices in this society and the level of sustainability. Traditional knowledge systems are especially based on a deep understanding of the natural environment and resource management and it has been shown that indigenous societies which employ the traditional knowledge that has been developed there over the years, hold most of planet earth's biodiversity (Sobrevila, 2008). Essentially, traditional knowledge systems build on similar assumptions to those highlighted within ecological economics, and many

similarities can be found between this modern scientific fusion of two major disciplines and the traditional system of culture and practices. Ecological economics and traditional knowledge systems both recognize and emphasize the importance of the ecological system on which it is believed that the economy and the entire society respectively depend. As ecological economists also traditional knowledge systems hold the assumption that human beings are an integral part of nature. It can be argued that it is in this assumption the deep respect and feeling of belongingness, which can be detected in traditional societies, can be found.

For decades, scholars occupied with ecological economics have tried to shift focus from a strong emphasis on economic growth to including ecological knowledge. Traditional knowledge systems distinguish themselves in that they have focused on this type of knowledge for many years, as it has been passed on from generation to generation. Furthermore, as the economic, and especially the market-economic, feature is largely missing in traditional societies that are not in contact with mainstream society, the traditional knowledge systems focus entirely on the environment and natural resources. The main characteristic of these traditional societies is that they are based on needs and not on values, such as profit maximization, competition and over-consumption. In this paper, it is argued that some of this knowledge should be applied in mainstream societies in order to meet the sustainability criterion.

The idea of applying traditional knowledge as an instrument to battle environmental problems and increase sustainability in contemporary mainstream society has been highlighted in the international community in the recent years. It is not only the traditional methods and practices that express high levels of sustainability but also the ability of the indigenous societies to adapt to environmental changes that has inspired this growing recognition (Kothari, 2007). Nevertheless, even though there have been attempts to combine traditional knowledge and modern science, it seems that in practice mainstream society has no room for traditional knowledge systems. This is expressed by the fact that traditional methods and practices derived from the traditional knowledge systems disappear when traditional societies are integrated into mainstream society. This argument is further supported by the case study of the Bhotiya people in Kumaun Himalaya, showing that the traditional knowledge system and traditional practices were negatively impacted by the integration into mainstream society. Furthermore, it seems

that in the current mainstream system other things are still valued higher than the values promoted within traditional knowledge systems. In this sense values, such as maximization of growth, competition and consumption, receive a higher priority than the protection of ecosystems and biodiversity, and therefore a societal change in norms may be needed in order for traditional knowledge systems to be successfully implemented in mainstream society.

It has sometimes been argued that traditional knowledge systems cannot be applied to other societies than the ones that they are derived from. This is due to the fact that it is tied to the way of life of the people in the place where this knowledge has developed over the years (2007). It is therefore debatable whether traditional knowledge developed in a sustainable society can be applied to the contemporary mainstream system, which in this paper has been found to be largely unsustainable. Yet, it has also been argued that in order for mainstream society to make the change towards a more sustainable mode the main norms and values first have to undergo a change. Traditional knowledge systems and sustainability in traditional societies, such as the one of the Bhotiya people in Kumaun Himalaya prior to their adaption to mainstream society, may be able to inspire such a change.

Therefore, it can be argued that in order to induce this societal change, efforts towards changing values, norms, attitudes and behavior in mainstream society must be made. This initiative may be more successful if it is founded on already established values, such as some of the economic values that still influence a vast amount of activity in mainstream society. This is where ecological economics becomes crucial. If the ecological aspect is integrated with the economic aspect in practice, and not only theory, it may present itself as a good starting point. With the assumption that the economy cannot outgrow the ecosystem off which it lives, we will see a shift in focus from quantitative growth to qualitative growth. This will also leave room for more focus on environmental problems, such as climate change and its negative effects on the future and well-being of human beings and entire ecosystems. One thing is certain, and in some way it has been since 1972, and that is the fact that there is a limit to the patterns of growth in mainstream society. Therefore, the world as we know it is bound to change. Finally, research shows that this change will happen either through a collapse of

the current system or through systemic efforts to actively change norms and behavior in contemporary mainstream society.

7. Conclusion

This paper set out to fulfill the growing sustainability criterion in contemporary mainstream society. To a large extent, this aim was inspired by the assumption that traditional societies and their knowledge systems with regards to the environment are highly sustainable. In contrast to this, it has been increasingly argued over the years that contemporary mainstream society is highly unsustainable due to the strong emphasis on economic growth and consumption and relative neglect of the environment on which this growth and consumption in reality depend. The paper was ultimately constructed around the assumption that an imbalance between the environment and growth which may threaten the future and well being of human beings exists in mainstream society and therefore sustainability must become a necessary alternative to the current practices of over-consumption, pollution and exploitation and depletion of natural resources.

In this paper it was argued that the unsustainable situation present in mainstream society today has developed with the spreading of capitalist and neoliberal values through the process of globalization. These values include a priority of concepts, such as profit maximization, competition and consumption over the protection of natural resources and ecological sustainability. Through the theoretical framework of ecological economics, in this paper, it was concluded that the mainstream economic system does not pay enough attention to the ecosystem off which it lives. As the economy, which should be seen as a subsystem to the larger ecosystem, expands quantitatively while the ecosystem remains the same, it will eventually outgrow it. Yet, this is physically impossible and it is argued that this situation will sooner or later become anti-economic as the ecological costs exceed the economic benefits (Daly, 1993). Thus, it was emphasized in this paper that if the transition to a more sustainable mode in mainstream society is not made, the unsustainable situation, which is worsening as the economy expands, will ultimately lead to the collapse of society as we know it and threaten the future and well-being of human beings all over the world.

The fact that the limits to growth are close to have been reached was argued already in 1972 when the report *The Limits to Growth* was published under the commission of the

global think tank, the Club of Rome. In this report and in the two follow-up reports from 1992 and 2004 it was emphasized that unless the growth patterns with regards to resource depletion, food production, world population and industrialization in contemporary mainstream society are amended, society as we know it may face a collapse (Meadows, Meadows & Randers, 1992, xiii). Thus, these scholars call attention to the importance of increasing sustainability in society and their findings support one of the main conclusions of this paper; that change is necessary. Mainstream society needs to be directed into a more sustainable mode in order to deal with the growing environmental problems with regards to depletion of natural resources, loss in biodiversity and pollution.

In this paper it was found that traditional societies with highly sustainable practices with regards to management and conservation of natural resources in their ecosystems may lose a certain degree of sustainability upon integrating into mainstream society and adapting to market-economic forces. This was exemplified with the case study of the Bhotiya people in the Darma and Byans valleys in Kumaun Himalaya, India. Their integration into the market economy for example led to a loss in biodiversity, as they had to become competitive and therefore focused on crops that were in demand. This led to the disappearance of other crops and depletion of a variety of natural resources, as demand exceeded the crops' ability to regenerate themselves. Thus, unsustainable practices replaced many of the sustainable practices that had characterized their society before. The integration into mainstream society negatively impacted their traditional knowledge system that before had been a rich and integral part of their society. In this paper, a correlation between traditional knowledge and practices and the level of sustainability was found. This is also seen as one of the main reasons to why sustainability decreased when the Bhotiya people were integrated into mainstream society and their traditional knowledge system was less prioritized than the new market-economic values.

Traditional knowledge systems present in traditional societies outside the influence of market-economic forces, similar to the one of the Bhotiya people, especially prior to their integration into mainstream society, have in this project been identified as being useful in fulfilling the sustainability criterion in mainstream society. The traditional knowledge systems especially build on a deep understanding of the natural environment

and resource management. In this paper it can be concluded that this understanding has to be reconstructed in mainstream society in order to raise the levels of sustainability. Thus, increased ecological awareness may be the key to reconstructing the link between humans and nature, because it can even out the imbalance that currently exists between economic growth and environmental protection.

It is important to emphasize that the change that is necessary in order to fulfill the sustainability criterion and increase ecological awareness in mainstream society is comprehensive and structural. It has, within the framework of political ecology, been argued in this paper that the only way to change the overall structure in contemporary mainstream society in which market-based values, such as profit maximization, consumerism and competition, are a priority, would be through the creation of new norms. Yet, this requires large-scale collective mobilization. Nevertheless, it can be concluded that if these new norms that may include traditional ecological values, such as a deep respect for and understanding of the natural environment on which we depend, are to be created, it may be able to fulfill the pressing sustainability criterion and reconstruct the link between human beings and nature. A deeper analysis of the changes necessary in order to fulfill the sustainability criterion in mainstream society, besides from the structural change of norms which must precede these changes, can be recommended for future research in this field.

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