

THE INTERCONNECTION OF ENVIRONMENT AND POVERTY: PROSPECTS  
FOR SUSTAINABLE DEVELOPMENT

By  
Emily Hetzler  
University of Colorado at Boulder

A thesis submitted to the  
University of Colorado at Boulder  
in partial fulfillment  
of the requirements to receive  
Honors designation in  
Environmental Studies  
December 2012

Thesis Advisors:

Joyce Nielsen, Sociology  
Michael Zimmerman, Philosophy  
Dale Miller, Environmental Studies, Committee Chair

© 2012 by Emily Hetzler  
All rights reserved

## Abstract

The global community is currently immersed in variety of environmental problems. One obstacle to promoting and furthering environmentalism in both developed and developing countries is poverty. Poverty poses a problem to the environmental and sustainability agenda because it is illogical to ask states constantly tied up in civil and local conflicts, whose governments struggle with corruption, and whose citizens are without very basic necessities and rights to be concerned about the environment and offsetting climate change. In order to further the sustainable development movement and increase the prospect of the movement being successful, it is necessary to establish and address the relationship between poverty and the environment. Through the examination of relevant background information and previously published literature on the relationship, a general understanding is formed. Four case studies all designed to determine the presence of poverty and environmental linkages in different countries and two current bottom-up approaches working on the linkages are reviewed and analyzed. Based on these analyses, it is concluded that issues arising from environment and poverty connections are varied area-to-area and must be addressed on a local basis. Factors such as governance, policies, and institutions can influence the connections as well. Local management of natural resources and local population involvement are key to solving issues stemming from the connections. It is recommended that due to the limited amount of empirical data there be increased encouragement of further case studies analyzing poverty and the environment among the sustainable development community as well as priority given to establishing more local-level programs to address the relationship.

<b>ABSTRACT .....</b>	<b>II</b>
<b>INTRODUCTION.....</b>	<b>1</b>
<b>BACKGROUND AND CONTEXT .....</b>	<b>4</b>
POVERTY .....	4
SUSTAINABLE DEVELOPMENT .....	7
Development .....	9
Sustainability & Definitions .....	10
Brief History .....	19
<b>LITERATURE REVIEW (THE ENVIRONMENT - POVERTY RELATIONSHIP) .....</b>	<b>24</b>
<b>CASE STUDIES .....</b>	<b>47</b>
CAMBODIA, LAO PDR, AND VIETNAM .....	48
UGANDA .....	51
GHANA .....	52
COLOMBIA .....	55
<b>PRESENT APPROACHES .....</b>	<b>57</b>
BANGLADESH .....	58
KENYA .....	59
<b>ANALYSIS .....</b>	<b>61</b>
CASE STUDIES .....	62
CURRENT APPROACHES .....	64
<b>RECOMMENDATIONS .....</b>	<b>66</b>
<b>CONCLUSION .....</b>	<b>68</b>
<b>BIBLIOGRAPHY .....</b>	<b>70</b>

## Introduction

In the age of globalization, technological advances, and growing global awareness, the interconnection of most things around the world is hard not to see; such is the situation with environmental concerns and poverty. Independently, each is a problem warranting attention and alarm of its own, but it is no longer logical to think that one can be addressed without addressing the other.

The global community is currently immersed in an onset of environmental problems: increasing extinction rates, deforestation, and the most attention-receiving problem, global climate change. Amid rising concerns over climate change and the unknown impacts it may have, focus in politics and many communities, businesses, and households around the world has therefore shifted to the environment and the impact our lifestyles have on the earth. Climate change is a global problem. Yet, the disproportional contributions of greenhouse gases (more from developed countries and less from developing) coupled with the prediction that developing countries will be the most vulnerable to climate change (of course, not discounting the impacts of climate change that will be felt by everyone) combined with various other factors means that many division lines are left when it comes to international environmental governance. Finding a solution for climate change through international governance makes sense, as it is an internationally-created and internationally-impactful problem. However, the world is divided into separate political entities, states, many of which are worried about sovereignty and promoting their own self-interests globally along with their own domestic problems.

Anyone living in the Western world, especially the United States is witness to how hard the transition, or prospect of a transition, to a “green” or “sustainable” society is. Once infrastructure, a successful economy, and morals, values, and desires of a society are in place, it is rather difficult to implement a drastic change. Developing countries still have a chance to break from the Western pattern and build their countries in a way that is better for the environment and puts themselves on a pathway that is sustainable. Yet, this is not to say that developed countries should take no action, but that their actions will differ in ways than the actions that developing countries need to take.

One obstacle of major concern to promoting and furthering environmentalism in both developed and developing countries is poverty. Poverty and social concerns, such as education, gender equality, welfare, and basic needs, are more widespread in Third World countries; however, well-being is not uniform across the developed countries. There remain pockets with higher poverty rates and where welfare and education lack. Poverty poses a problem to the environmental/sustainability agenda because it is illogical to ask states constantly tied up in civil and local conflicts, whose governments struggle with corruption, and whose citizens are without very basic necessities and rights to be concerned about the environment and offsetting climate change. Compounding this problem, many of these states see environmental problems as a product of developed countries and not their own. Environmentalism and the ability to be worried about the state of the environment is seen as a thing for the wealthy; this also holds true within developed countries as well. If one’s current livelihood is at stake, you are most likely not going to care about the livelihoods of those in the future. However, to move toward a future of a sustainable world and to better address environmental problems, the global

community must acknowledge the importance of resolving poverty. Addressing the basic needs and welfare of those in developing and developed countries is essential for the success of international environmental governance.

Throughout this paper, I seek to examine and answer the following questions: What is the relationship between environmental problems and poverty? What current approaches are being taken to address this relationship? What are or are there improved solutions to address the relationship to give better success to sustainable development?

In this project, I do not examine in great detail the economic side of sustainable development. I remain primarily focused on the environmental and social components. While policy processes and suggestions are briefly documented in the literature review section, I do not provide any new suggestions or adjustments to policies, instead concentrating more on reviewing and analyzing case studies and real-world examples that are directly addressing the poverty-environment relationship. I primarily look to literature sources for my information. In order to examine links between poverty and the environment, I begin by reviewing multiple definitions of development, poverty and sustainable development from several disciplines, as it is important to take into account the vagueness and wide variety of the terms. I choose the one definition that outlines sustainable development in a way that I see as the ideal path or goal for society to aim for. I continue on outlining an overview of the history of sustainable development and the poverty-environment connection, mainly through important United Nations' conferences. I then review the already published literature on the environment – poverty relationship to establish what is already known and being done in relation to the topic. The examinations of case studies provide the empirical data of the existence of poverty-

environment linkages in different regions of the world and identify what types of linkages are occurring. Analyzing two current programs connected to resolving poverty and environmental degradation provides evidence that these problems can be addressed and seemingly successfully so. In the end, I draw conclusions from these reviews and analyses and provide recommendations for furthering the environment-poverty movement.

## **Background and Context**

To better understand the complex relationship between poverty and the environment, and the impacts that could occur on sustainable development, an understanding of what poverty and sustainable development mean must first be developed. Part of the complexity of the relationship is that both terms can be interpreted many different ways and mean a variety of things to different people leading to many different interpretations of solutions.

### **Poverty**

Poverty, according to the Merriam-Webster dictionary, is “the state of one who lacks a usual or socially acceptable amount of money or material possessions” (Poverty, 2012). Based on this definition, poverty in the United States may be conceived or looked at differently than poverty in Africa or Central America. This causes examining poverty on a global scale to be rather difficult. One gauge of poverty often used deemed the poverty line or poverty level, is defined as “a level of personal or family income below which one is classified as poor according to governmental standards” (Poverty Line,

2012). Similarly, the headcount ratio measures the proportion of a population below a given threshold (Root, 2012). Thresholds may vary, examples including the absolute poverty line or median income (Root, 2012). Again, this basic definition may cause confusion when comparing poverty levels internationally.

Hagenaars and Praag (1985) address this confusion by breaking poverty down into absolute poverty and relative poverty. The level of well-being in a particular society determines relative poverty and absolute poverty is not taking into consideration a particular society, instead looking at the lack of a set of basic needs. Elizabeth Root (2012) echoes this distinction classifying absolute poverty as a person's inability to feed him/herself and relative poverty as a comparison to a decent standard of living in a certain society. According to Nunan et al (2002), poverty is equivalent to need, which is typically represented by income; however, the authors argue that because incomes change and not everyone earns an income (especially in Third World countries), a more accurate measure of poverty is consumption.

The United Nations Development Programme's definition of poverty is based on their Human Development Index, which goes beyond income and consumption in the consideration of poverty. Root (2012) describes the Human Development Index as an "arithmetic mean of life expectancy, education and GDP indexes." Another similar measure is the Human Poverty Index, which is a combination of the mean of lack of life expectancy, education and basic services (Root, 2012). Both measures judge poverty as impacting more than money such as longevity of life and education, which are crucial to a productive life. The UNDP defines that "poverty is deprivation in the most essential capabilities of life, including a long and healthy life, being knowledgeable, having



adequate economic provisioning and participating fully in the life of the community” (Nunan, 2002, p. 10). The United Nations Environment Programme and International Institute of Sustainable Development look at poverty and well-being as either possessing or lacking a number of factors: adequate nourishment, freedom from avoidable disease, an environmentally clean and safe shelter, adequate and clean drinking water, clean air, energy for cooking and warmth, availability of traditional medicine, continuing use of natural elements found in ecosystems for traditional cultural and spiritual practices, ability to cope with extreme natural events, and making sustainable management decisions that respect natural resources and enable the achievement of a sustainable income stream (Lawson, Gordon & Schluchter, 2012). To these organizations, health, social capabilities, and security all matter when evaluating poor populations, elements that many people who are better off may not even worry about in their daily lives.

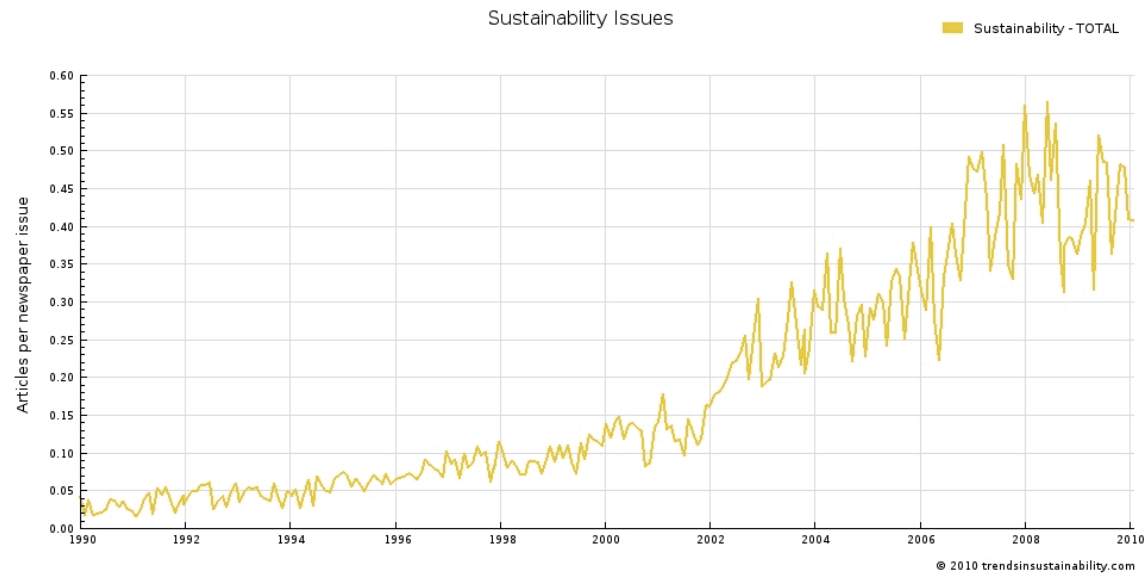
A couple other examples of definitions of poverty going beyond viewing it solely on a monetary basis are described following. J.B. Opschoor (2007) defines poverty as “a social relationship of competition among individuals, social groups and the state in a pursuit of wealth and power” (p. 33). He argues that addressing poverty involves changing the social relationship. This is a more abstract definition. According to Carr, Kettle and Hoskins (2009), human well-being is made up of human capital, social capital, natural capital, physical capital, and financial capital; it is when one or more of these capitals is missing that livelihoods are affected and various kinds of poverty arise. Poverty here is based on the access or lack of access to different assets.

Root (2012) examines the origins of poverty at the individual and country level. At the individual level, poverty occurs because people do not have access to income or

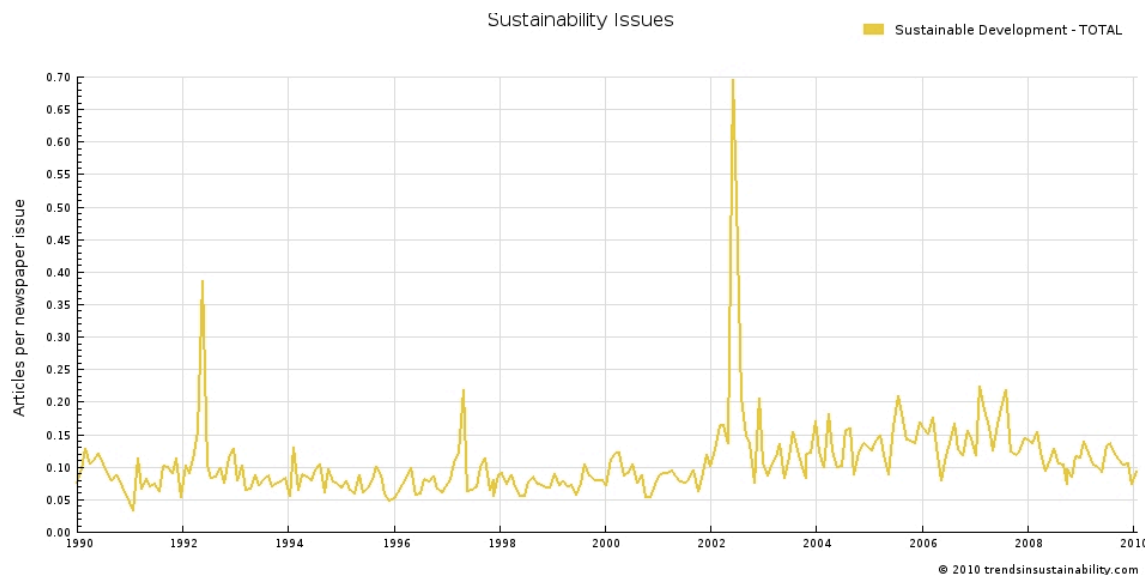
assets that allow them to achieve their basic needs, have weak say in institutions and society, and are vulnerable to shocks and have less security. Lack of assets may range from human assets that include education, skills and proper health to natural assets involving land and tenure to social assets comprising of network of contacts and participation in society (Root, 2012). At the country level, poverty transpires due to geography, institutions and trade. Geography influences poverty directly as climate, natural resources, etc has an effect on agricultural productivity and morbidity (Root, 2012). Many factors contribute to poverty and many factors aid, maintain, or ease conditions where poverty occurs. Level or type of poverty is going to vary place-to-place.

### **Sustainable Development**

Over the past four decades, there has been increasing interest and news coverage of sustainability and associated issues. Looking at data provided by the Trends in Sustainability Project, the prevalence of newspaper articles discussing sustainability and sustainable development since 1990 are documented. These data are shown in the following two charts.



**Figure 1:** Chart depicting the occurrence of ‘sustainability’ newspaper articles since 1990 (Jason, 2011).



**Figure 2:** Chart depicting the occurrence of ‘sustainable development’ newspaper articles since 1990 (Jason, 2011).

These charts show that articles relating to sustainability and sustainable development have grown over the past two decades. Increasing coverage of sustainability and related issues is important to generating interest and momentum to the sustainable development movement. It is important to note that articles about sustainable

development peak greatly after 1992 and 2002. The timing of these peaks allows for the logical assumption that they are due to the Earth Summit in 1992 and the World Summit on Sustainable Development in 2002. This is a clear demonstration of the attention conferences may call to environmental and sustainable issues. However, it also shows that the impact is not long lasting. The trends on the charts also make it obvious that with higher documentation of these terms; there is greater need to understand what exactly sustainability and sustainable development are and what they aim to do. To fully understand the complexity of sustainable development, the definitions, brief history and ideas of sustainability and sustainable development must be explored, beginning with a brief overview of development.

## Development

Before discussing the background of sustainability and sustainable development, a general understanding of the idea of development is needed. The dictionary definition of development is “the act or process of developing” (Development, 2012). The definition of develop is “to bring out the capabilities or possibilities of; to a more advanced or effective state,” and “to cause to grow or expand” (Develop, 2012). These basic definitions of develop and development can be applied in many ways to many things. The questions, what do we want to grow and what do we want to advance, are brought up. There are several different types of development: human development, economic development, etc. (Soubotina, 2004). Globally, many companies, countries, and people find themselves concerned about economic development and increasingly economic growth. Success is typically judged based on economics. Human development, on the

other hand, is correlated with life expectancy, adult literacy, access to education, as well as income (Soubotina, 2004). Thus, it is important when thinking about and discussing development to know what is being advanced or developed. As previously mentioned, society currently focuses on economic growth as the main measure of development; however, sustainable development looks to address issues and concerns with solely focusing on economics.

### **Sustainability & Definitions**

One of the first documented uses of the term “sustainability” was written in the National Environmental Policy Act in 1969 as environmental sustainability and simply stated, “contain and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations” (U.S. EPA, 2012). In the 1980s, one of the most popular and widely-spread definitions arose from the “Our Common Future” report by the World Commission on Environment and Development. The Brundtland Report defined sustainability as meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (1987, p. 24). This definition has two main aspects: meeting needs and compromising ability. It makes the distinction that it is needs that must be met, not wants and that meeting current needs not interfere with or hinder meeting needs for generations to come. This is important as it promotes the future and responsible resource use, consumption, etc as vital points in the concept of sustainability. Though it remains vague (an issue with many of the definitions), needs cannot uniformly

be described (i.e. what one person feels s/he needs varies) leaving up for debate what exactly meeting needs entails.

James Speth (2004) follows along similar lines of the Brundtland definition, defining sustainable development as seeking “to meet the needs and aspirations of the present without compromising the ability to meet those of the future” (p.141), and as a “development path that simultaneously alleviates poverty and sustains environmental resources” (p. 141). Thomas Friedman (2009), on the other hand, writes: “something is environmentally or ecologically sustainable when it protects, restores, or regenerates the environment rather than degrades it” (p. 52). He continues on to elaborate defining sustainability as an outcome and as a practice. Therefore, sustainability is not only a lifestyle or steps that need to be taken but also an end point to aim for.

Hapwood, Mellor and O’Brien (2005) observe that there are various beliefs about and multiple approaches to sustainable development, which they regard as an anthropocentric idea, meaning it is at the core a human-centered idea. Criticizing the Brundtland report as vague and loosely-defined, Hapwood, et. al write, “Brundtland’s ambiguity allows businesses and governments to be in favour of sustainability without any fundamental challenge to their present course” (Hapwood, Mellor and O’Brien, 2005, p. 40). A vague definition leads to vague actions and loose judging of what being sustainable means. Another author cited by Hapwood, Mellor and O’Brien (2005) regards sustainable development as revolving around five main points all concerning equity: futurity (inter-generational equity), social justice (intra-generational equity), trans-frontier responsibility (geographical equity), procedural equity (people treated openly and

fairly), and interspecies equity (biodiversity). Essentially this description promotes equity within generations, between generations, for nature, for people, and across the landscape.

Based on these and other various viewpoints, Hapwood, Mellor and O'Brien conclude that people can be divided into three different groupings in regards to sustainable development as status quo, reform or transformation. The status quo grouping usually includes people who perceive the need for change but do not interpret environmental or societal problems to be of any major concern. This grouping also considers development, economic growth, and business as the primary methods of achieving sustainability and reducing poverty; though, they do not have any overwhelming anxiety about poverty, hunger or the environment (Hapwood, Mellor and O'Brien, 2005). People in the reform grouping do acknowledge problems facing the environment and society but do not judge the problems to be that of an alarming extent or that deep change needs to be enacted. Also, thinking in this group typically does not find fault of the problems to fall on current society and believes that the environment can be protected through technology (Hapwood, Mellor and O'Brien, 2005). On the other hand, the transformation group observes growing environmental and societal problems arising from aspects of present society, the interactions among people, and between people and the environment. This group calls for a transformation of society and the way it interacts with the environment. Hapwood, Mellor and O'Brien (2005) distinguish two different types of transformation, one that involves sustainable development and one that does not. Transformation that lacks sustainable development is seen as deep ecology, where major concentration is the well being of the environment. Deep ecology is an extreme environmentalist viewpoint that advocates putting the earth and environment first;

basically getting rid of anthropocentric thinking in relation to the environment. In contrast, transformation that incorporates sustainable development addresses both environmental and human social concerns, believing that a “commitment to social equity, with a view that access to livelihood, good health, resources, and economic and political decision making are connected” (Hapwood, Mellor and O’Brien, 2005, p. 46). This transformation advocates a holistic approach to solving problems. In many ways, the first two groupings (status quo and reform) include where the majority of people’s thoughts presently reside, and the sustainable transformation grouping is supported by a minority but will require a majority for sustainable development to succeed.

Concluding that the Brundtland definition is too general, Joseph Tainter offers the following alternative: “maintaining, or fostering the development of, the systemic contexts that produce the goods, services, and amenities that people need or value, at an acceptable cost, for as long as they are needed or valued” (2006, p. 127). Tainter’s definition focuses on the economic side of sustainable development with primary concern in developing system that results in the products that people require. His definition leaves room for the goods that are needed to change over time. There are a few questions that can be raised about Tainter’s definition; the terms value and acceptable cost are vague. What one person values may not be of the same value to someone else depending on socioeconomic circumstances, religious beliefs, lifestyle choices, culture, etc. Similarly what is an acceptable cost to some may not be acceptable to others. For example, one group of people may believe it is all right to destroy sections of the rainforest or pay workers in developing countries low wages if it results in cheaper goods that people value. Tainter (2006) maintains that social issues are not a concern of sustainability. There is



“tendency to confuse sustainability with social improvement – this dilutes the concept of sustainability and leaves it vulnerable to political attack” (p. 128). This thinking fits with his definition focusing solely on the economic aspect of sustainable development.

Jehan and Umana (2003) designate that sustainable development is comprised of four types of sustainability: political, social, economic and environmental. Economic and environmental sustainability are the most identifiable types as they are most commonly associated with sustainable development with goals of sustaining economic production and distribution and natural resources. Political and social sustainability are less considered but just as important factors in sustainable development. Political sustainability is the reproducibility of power structures and governance (Jehan & Umana, 2003). Social sustainability considers the social structure, social cohesion, and social norms and values (Jehan & Umana, 2003). Jehan and Umana find that high inequality, gender disparity and social exclusion all put constraints on the progress of sustainability, not only individually but in enforcement of each other as well.

Looking at a few international definitions of sustainable development, a definition taken from the United Kingdom’s document detailing the national strategy for sustainable development identifies sustainable development as “a better quality of life for everyone, now and for generations to come” (DFID, 2000, p. 10). A rather vague outline as a better quality of life can be described very differently by different people. The European Foundation for the Improvement of Living and Working Conditions characterizes sustainable development as “the achievement of continued economic and social development without detriment to the environment and natural resources – the quality of future human activity and development is increasingly seen as being dependent on

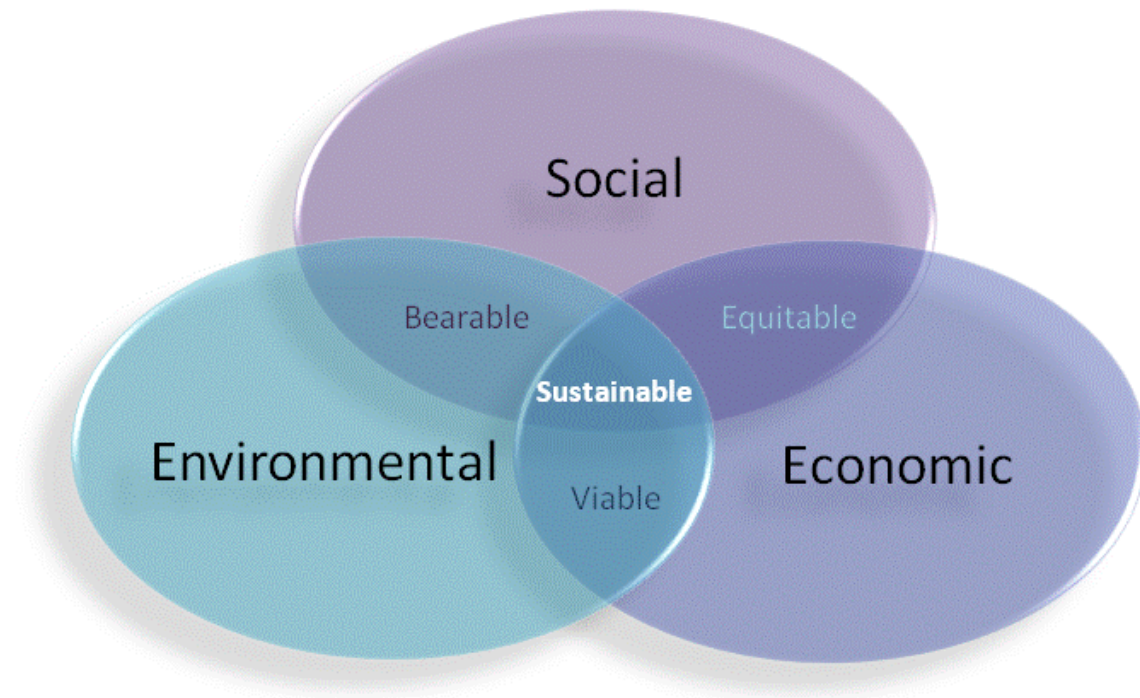
maintaining this balance” (Sustainability Reporting Program, 2000). Overall, a more specific idea highlighting the importance of multiple factors in sustainable development; however, loose in what any of the terms, like detriment to the environment, mean. A definition from the World Business Council for Sustainable Development describes that, “sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality, and social equity – companies aiming for sustainability need to perform not against a single, financial bottom line but against this triple bottom line” (Sustainability Reporting Program, 2000). Formatted more toward businesses, this definition encourages companies to include social and environmental concerns in their business strategies.

Sustainability definitions differ across various academic disciplines, placing emphasis on different aspects. From a more philosophical standpoint, sustainability is about moral obligations and responsibility to future generations. Partridge (2001) defines sustainability as the obligation to “leave for the future, not necessarily the resource, but the opportunity to obtain whatever it is we use the resource for.” Robert Solow first examines the definition of “leave things exactly as they are” and decides that this is impossible instead deciding on “leave to the future the option or capacity to be as well off as you are now” (Solow, 1991, p. 181). Both of these definitions do not see trying to maintain this exact society, world, etc. For the future, but instead making sure that people can live at a similar capacity even if the methods are different.

One issue with sustainability is the conflict between the well-being of future generations and the well-being and developmental aspirations of those currently in poverty. This is called the paradox of sustainability by Robert Solow. Solow maintains

that “sustainability is about distributional equity” (Solow, 1991, p. 183), which he describes simply as “who gets what” and that this distribution extends from the current population to the future populations. Enter the paradox. According to Solow, to be worried about the population presently in poverty and to want to help them develop is to generate more consumption, which is not showing concern for the future (Solow, 1991). The paradox echoes other thinking that for the poor to rise out of poverty, development must occur. Increased development, though, could further environmental problems and equity. It raises the question of who deserves more concern, those currently struggling to survive or those future generations yet to come? It also brings up questions about what type of world that should be provided for the future, a world that is “sustainable” full of inequality or a world that is sustainable with equity among people.

Sustainability is also occasionally described in the form of diagrams. The three overlapping circles of economy, environment, and social typically represent sustainability and are viewed as the three major components of sustainable development; the standard diagram for sustainability is shown in Figure 3.



**Figure 3:** The representation of sustainability incorporating environmental, social, and economic aspects (Sustainable Development, 2012).

The correct interconnections of these three concepts should make the world sustainable. Similarly, a balancing of environment and economic components result in a viable world or society, balancing of environment and social produce a bearable world, and balancing of social and economic make an equitable world (Sustainable Development, 2012). There are multiple variations of the diagram demonstrating different interpretations of the interconnections. The simplicity of the three components show what is at the foundation of sustainable development and should be built upon.

Jonathan Harris (2000) sees sustainable development as development that protects the environment and helps social justice progress. In examining the Brundtland definition and the three pillars of sustainable development, he concludes that only one pillar can be adequately addressed at a time but also believes both the individual components and the

overall system of sustainable development must be functional. He proceeds to examine each of the pillars separately. Sustainability in terms of economics, to Harris, means efficient resource allocation, while ecological sustainability translates into maintaining the resilience of ecosystems. Within the social component, Harris believes a human development approach needs to be taken focusing on basic needs and equity. Another definition similar to the definition by Harris is one given by J.B. Opschoor (2007). Sustainable development is classified by J.B. Opschoor as “a synthesis of concerns over the ecological sustainability of natural resource use and of considerations of the need for development and economic growth, in order to meet societal needs and aspirations now and in the future” (p. 10). This definition also identifies all three pillars of sustainable development as being important. According to Harris (2000), “social equity, the fulfillment of basic health and educational needs, and participatory democracy are crucial elements of development, and are interrelated with environmental sustainability... A moderate level of consumption, together with strong social institutions and a healthy environment represents a better ideal than ever-increasing consumption” (p. 19). The inferences from Harris sufficiently line up with the main ideas of this paper. Without the social component of sustainable development receiving as much attention as the other two components, an overall successful system of sustainability will not be achieved. Societies cannot address only one or two pillars and expect a victory in sustainable development.

## Brief History

As previously mentioned, the notion of sustainability has been around since the near conception of the environmental movement. Looking at the history of sustainable development and sustainability over the past 40 years is best done through the examination of the relevant United Nations conferences. These conferences provide a good idea of the growing importance of environmental degradation and poverty reduction on the international stage. Starting with the United Nations Conference on the Human Environment in 1972 through the UN Conference on Sustainable Development in 2012, a brief overview of the conference and the resulting document(s) is given, with specific attention given to the context of sustainable development and poverty.

### *United Nations Conference on the Human Environment, 1972*

The Conference on the Human Environment was held in Stockholm in 1972. It resulted from the problems with acid rain and pollution in Europe and is considered the first conference calling attention to international environmental problems (Heinrich Boll Foundation, 2003). Several documents were established at the conclusion of the conference including the Action Plan for the Human Environment which includes the Framework for Environmental Action, Recommendations for Action at the International Level and Education, Informational, Social and Cultural Aspects of Environmental Issues, and the Declaration of the United Nations Conference on the Human Environment. The declaration consisted of 26 principles. It stated that “through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in an environment more keeping with human needs and hopes” (UNEP, n.d.). It advocated being more

aware of how human actions affect the environment in which we live. The primary principle of the document of relevance is Principle 4. Principle 4 outlines that, according to the conference, under-development is the root of environmental problems in developing countries (UNEP, n.d.). Therefore, the principle recommends that countries place focus on development.

### *World Commission on Environment and Development and Our Common Future*

In 1983, the United Nations formed an independent commission whose main missions was the following: “re-examine critical environmental and development problems around the world and formulate realistic proposals to address them, strengthen international cooperation on environment and development issues, and aim to raise the level understanding of and commitment to sustainable development on the part of individuals, organizations, businesses and governments” (U.S. EPA, 2012). This clearly linked environment and development together as well as the need to examine them jointly. One of the main reflections of the commission was that a global plan must be developed around the idea that sustainable development and environmental quality are not inseparable notions. Before releasing the resulting document, the commission spent three years holding public meetings around the world in various areas (U.S. EPA, 2012). In 1987, the WCED released “Our Common Future,” otherwise known as The Brundtland Report, which summarized a course to reach global sustainability. One of the most influential aspects of the report was the defining of sustainability, which as previously discussed has become one of the most widely-known descriptions.

### *UN Conference on Environment and Development and Agenda 21*

In follow-up to the Brundtland Report, the United Nations Conference on Environment and Development, also known as the Earth Summit, was held in 1992. The Rio Declaration on Environment and Development contained 27 principles. Principle 5 stated, “all states and all people shall co-operate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world” (UNESCO, 1992, p. 2). Poverty is stated here as being a crucial requirement to solve in the promotion of sustainable development. Another document that resulted from the Earth Summit was Agenda 21 (Agenda for the 21<sup>st</sup> Century), which was designed to be an outline for global partnership.

After the Earth Summit in Rio, the Commission on Sustainable Development was formed to monitor the implementation and progress of Agenda 21 as well as the documents and plans resulting from any following conferences (DSD, 2009).

### *World Summit on Sustainable Development, 2002*

The World Summit on Sustainable Development held in Johannesburg, South Africa in 2002, came a decade after the Rio Earth Summit and Agenda 21 in 1992 (UN DSD, 2006). It sought to renew the commitment by the global community to sustainable development and determined five main areas including water, energy, health, agriculture, and biodiversity as areas of concern (U.S. EPA, 2012). As a result of the Summit, the Johannesburg Declaration on Sustainable Development was published. Listed in the declaration, under the “Challenges We Face” section, two points pertain to poverty. Number 11 discusses the necessity for sustainable development of protecting natural



resources, changing consumption and production, and eradicating poverty (UN DSD, 2004). Basically, outlining the importance of addressing the environment and elements that impact natural resource degradation. Number 12 highlights the gap existing between rich and poor individuals as well as rich and poor countries as being problematic to international well-being (UN DSD, 2004). This relates back to inequality and the necessity of creating a more equal world.

### ***United Nations Conference on Sustainable Development (Rio+20)***

The United Nations Conference on Sustainable Development, also deemed the Rio+20 as it fell twenty years after the Rio Earth Summit, was held in Rio de Janeiro in the summer of 2012. Once again, the conference established the international community's continued commitment to sustainable development (United Nations, 2012). The resulting document, "The Future We Want," immediately states that, "eradicating poverty is the greatest challenge facing the world today and an indispensable requirement for sustainable development" (United Nations, 2012, p. 1). This placement highlights the urgency behind the issue. Also mentioned in the relative beginning of the document is the plan to remain on track to meeting the Millennium Development Goals in 2015, as well as the perception that people are the core of sustainable development and as a result, sustainable development must aim to make society equitable and inclusive (United Nations, 2012). "The Future We Want" goes on to discuss the commitment to maintaining and implementing previous declarations and documents, a green economy and green economy policies as a step in sustainable development, and a framework for sustainable development.

## *The Idea of Sustainable Development*

As the United Nations Conferences demonstrate, sustainability has moved to the forefront of environment and development thinking in addition to the increasing acknowledgement that equity among people is a vital step in this thinking. After all, there are not only multiple interpretations of what sustainable development means, but also of what it looks like and what changes it is will take to get there. Transforming the world to a sustainable one will not be easy or simple, especially when it takes a combination of economics, environment, and society, which often appear in contention of one another. With a vast global population, there are many viewpoints maintaining different feelings and values about economics, society and the environment. Not everyone cares about climate change or saving endangered species; not everyone cares about income equality as long as they are economically successful themselves. Not everyone cares about civil rights and basic needs of others as long as theirs are taken care of.

Society, so far, has been approaching sustainability at the lowest levels. We are helping the environment by recycling more, increasing energy efficiency, and buying more environmentally-friendly products, activities which should be encouraged and continued. However, in the scheme of things, such practices will do little to actually solve the bigger problems. Sustainability is not straightforward nor are the factors that contribute to it uncomplicated.

The Department for International Development (DFID, 2000), out of Britain, presents a list of common points for strategic planning for sustainable development: putting people at the center, securing high-level political commitment and influential lead institution, orienting the strategy to focus on process and outcome, building country/local

ownership, building on existing processes and strategies, adopting a comprehensive approach which integrates economic, social and environmental dimensions, ensuring effective monitoring, learning and improvement, setting targets and priorities, and strengthening capacity. The DFID finds that when developing a national plan for sustainable development, those plans that are most successful address or include the points just listed.

These strategies begin to look at the bigger picture of what it is going to take to increase true sustainability. One step that may lead to better clarification and more success in expanding sustainable development is looking to address the relationship between the environment and poverty.

## **Literature Review (The Environment – Poverty Relationship)**

The connection between poverty and environmental issues is not a novel idea. According to Carr, Kettle, and Hoskins (2009), the realization of a connection between the environment and poverty dates back to the 1700s when Thomas Malthus discussed that “short-term focus of the poor led to resource degradation” (p. 88). The spotlight has particularly turned onto the connection since the 1980s.

Viewpoints on the environment and poverty relationship differ. Some see the poor and those in poverty as damaging to the environment. Others argue that in many cases people in poverty have demonstrated concern and protection for the environment and are affected more by environmental degradation. Then there is the thinking that the relationship between the environment and poverty is not one of cause-and-effect but a cyclic relationship where both factors influence each other. From United Nation

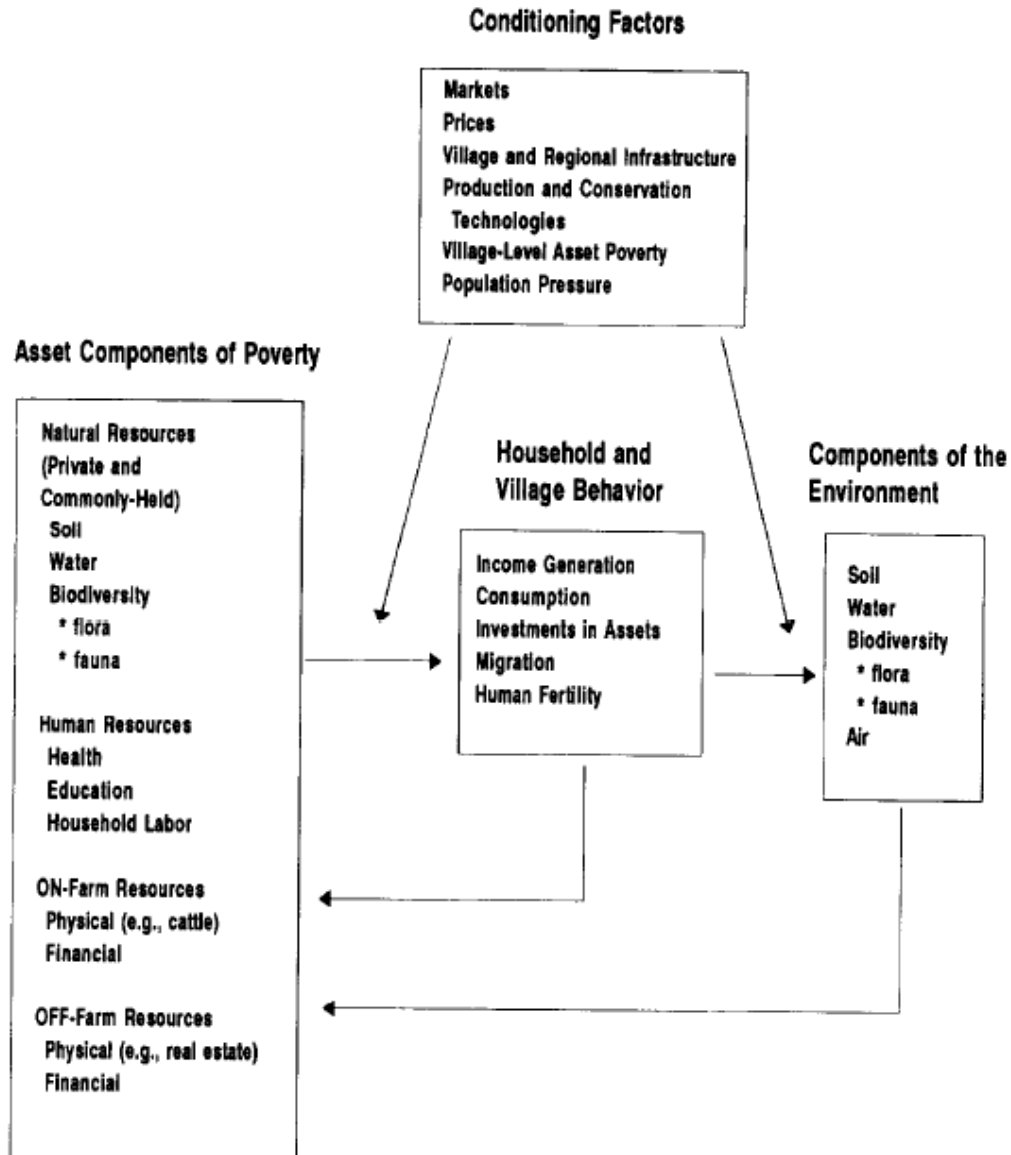
programs to academic papers to policy strategies the relationship of environment and poverty has been examined in different ways.

Several United Nations programs involve or revolve around the environment and poverty. One program run by the United Nations, the Poverty – Environment Partnership, runs on three basic ideas: “the environmental quality of growth matters to people living in poverty, environmental management cannot be treated separately from other development concerns, and people living in poverty must be seen as part of the solution rather than part of the problem” (DFID, EC, UNDP and World Bank, 2002, p. 2). The United Nations Millenium Development Goals (MGDs) are the following eight goals: end poverty and hunger, universal education, gender equality, child health, maternal health, combat HIV/AIDS, environmental sustainability, and global partnership (United Nations, n.d.). Each goal is measured by certain indicators and has a detailed target to obtain by 2015. Many of these goals are connected to environment and poverty issues. The most obvious two being the goals to end poverty and hunger and environmental sustainability; however, as it will be discussed factors such as gender equality, education, and health also play a role in the environment-poverty relationship.

Robin Broad (1994) takes issue with the typical perception that people in poverty are harmful to the environment; instead, she proposes that some in poverty, in fact, are protectors or sustainers of the environment and when examining the poor and the environment better distinction needs to be made. Primarily, she argues that the term “poor” is too general and should be divided into “merely poor” and “very, very poor.” It is the very, very poor who may be harmful to the environment in their struggle for survival. Broad (1994) lists three cases in which impoverished people will care for the

environment: the natural resource base from which people draw their livelihoods is being damaged by environmental degradation, connection to an area due to length of time lived there or other sense of permanence, and an effective civil society. Two of the cases involve some sort of link to the land, whether it is dependence on or a feeling of responsibility to the environment.

Reardon and Vosti (1995) think similarly to Broad in that they see many theories about the environment-poverty relationship as too general. These authors suggest that the type of poverty and the type of environmental problem impact the interconnection (1995). As Broad does, though using different categories, Reardon and Vosti break poverty down into two sections: investment poor and welfare poor. Welfare poverty is measured off the more conventional markers of poverty such as income, consumption, and nutrition; whereas investment poverty is defined as “the ability to make minimum investments in resource improvements to maintain or enhance the quantity and quality of the resource base – to forestall or reserve resource degradation” (1995, p. 1496). The authors state that not all investment poor are welfare poor, but most welfare poor are investment poor. That is to say that one may have enough income to get by, but not enough invest in natural resources. The diagram below depicts the connections between the environment and poverty according to Reardon and Vosti (1995).



**Figure 4:** Diagram demonstrating the influences of different components on the environment and poverty relationship (Reardon & Vosti, 1995).

Simply put, the relationship of the environment and people in poverty, according to the authors, revolves around assets or the lack thereof. Changes to or impacts on the environment, consisting of soil, water, biodiversity and air, will impact the different aspects of poverty. Poverty or the level of poverty is affected by access or lack of access to natural resources, human resources, on-farm resources and off-farm resources. The

type of poverty is then determined by which of the poverty components are absent as well as what specific environmental problem is occurring. Poverty type and level of impact the behavior of households and the community. These behaviors in turn influence the condition of the environment and aspects of poverty. This relationship is then a cyclical process. Coming from outside the circle, other factors such as markets, prices, infrastructure, technology, etc. also impact the process by affecting how poverty influences behavior and how the environment is influenced by behaviors.

Reardon and Vosti (1995) conclude that environment-poverty connections are affected by the following: level of poverty, type of poverty, type of environmental problem, distribution of poverty across households, and income, investment, and land use strategies of rural households and communities. Therefore, a one-size fits all policy will not be successful as cases will need to be addressed specifically (Reardon & Vosti, 1995). Solutions require lots of knowledge about local locations and conditions along with local behaviors. One last key point made by Reardon and Vosti (1995) is that a reduction of environmental degradation will not occur everywhere as a result of poverty reduction. This is consistent with the thinking that the environment and poverty relationship is complex and must be examined on specific levels and within certain contexts. It is also important to remember that the wealthy and consumption of the well-off have a great impact on natural resources as well. When considering the poverty and environment relationship, which is deemed the environment-poverty nexus, Jehan and Umana (2003) define it as being a two-way relationship with the environment and environmental conditions influencing poverty, and poverty having an impact on the environment. The environment interacts with people in poverty by being a primary manner of livelihood for

many, influencing health, and affecting vulnerability. On the other side, poverty interacts with the environment by pushing people to degrade environmental resources, driving governments to prioritize economic development and harming the environment to do so, and causing environmental issues to receive decreased attention. Jehan and Umana (2003) also find it important to note that environmental problems, such as pollution, desertification, natural disasters, landfills, factories and production plants, and loss of biodiversity, usually have an unequal impact on the population, being most damaging to impoverished people.

Understanding the environment-poverty nexus also means understanding myths and misunderstandings about the relationship between the two. According to Jehan and Umana (2003), there are three popular myths: poor people are the principal creators of environmental damage, population growth leads to environmental degradation and the poverty-environment nexus basically stems from low incomes. While in many ways, the poor are thought of as being environmental destructive because of their large reliance on the environment and natural resources to survive; however, in comparison to people who are wealthy, their impact is much less. The wealthy generate more pollution and more waste, and live lifestyles that add more to global climate change and the degradation of the environment (Jehan & Umana, 2003). The connection between population and environmental degradation is more complex than a cause-and-effect relationship. In the beginning as the population of an area increases, degradation may increase as well. However, population growth is not necessarily directly correlated with environmental degradation; what is more important to examine is population density of an area and degradation. A high population density is essential for environmental sustainability



(Jehan & Umana, 2003). The environment-poverty nexus is a very complex interaction. To simplify the relationship to being caused only by low incomes omits all the other factors that impact the interaction. Ownership of natural resources, access to common resources, strengths or weaknesses of communities and institutions, way information about entitlements and rights to resources is shared, and way people cope with risk and uncertainty are all factors that affect the way that people and especially people in poverty behave in relation to the environment (Jehan & Umana, 2003).

There are four major theories on the environment-poverty nexus analyzed by Jehan and Umana (2003): the downward spiral hypothesis, the environment Kuznets curve, the Beckerman hypothesis, and the Porter hypothesis. One of the most important theories in context of the environment and poverty is that of the downward spiral hypothesis. The downward spiral refers to an idea put forth by the World Commission on Environment and Development in 1987 that as natural resources are consumed as a means for survival, the environment is degraded and that this degradation leads to more poverty (Opschoor, 2007). Thus, creating a downward spiral of the impoverished and the environment. Jehan and Umana believe that this can occur; though they also admit it is not a simple interaction and thus, cannot be promoted as an inevitable occurrence. This arises from the fact that environmental degradation cannot always be directly linked to poverty. Jehan and Umana also raise concern about policies being formed on the basis of the downward spiral hypothesis because the hypothesis may promote either policies address poverty at the cost of the environment or address the environment at the cost of those in poverty.

The environmental Kuznets curve is based on the premise that at the start of economic growth, pollution (environmental degradation) will increase. As economic growth continues, pollution will continue to increase until at some point when the society is prosperous enough, pollution will start to decrease as environmental concerns are addressed (Jehan & Umana, 2003). Jehan and Umana assert that it must be observed that policies and institutions maintain a role in the curve; therefore, the removal of harmful subsidies, internalization of externalities and identification of property rights are central to influencing the relationship between income levels and environmental degradation. Again, environmental degradation and income do not solely interact with each other.

The Beckerman hypothesis “maintains that as growth provides accumulated assets can be used to ameliorate environmental degradation, it makes sense to degrade now and pay later to put things right” (Jehan & Umana, 2003, p. 63). Several concerns come up about this hypothesis. First, it cannot be assumed that the benefits from continued growth will go to fixing environmental degradation (Jehan & Umana, 2003). Second, the hypothesis also lessens the importance of policy interventions and the intergenerational equity concerns. The Porter Hypothesis states that “high levels of environmental protection are compatible with high levels of economic growth and may encourage innovation that supports growth – environmental protection may contribute positively to economic growth” (Jehan & Umana, 2003, p. 64). Jehan and Umana find that this hypothesis would encourage environmental standards to be placed on trade and that this would be inefficient.

Barrett (1996) does not specifically examine the environment and poverty, but instead studies fairness, stewardship, and sustainable development, which are very

similar concepts. He mentions a few points relevant to poverty and environmental degradation, primarily establishing that he sees the two as having a cause and consequence relationship. In other words, poverty affects environmental degradation and vice versa. To make communities successful in tackling these problems, according to Barrett (1996), they need to have authority and the responsibility over the problems, financial and technical resources that are needed to combat the problems, increase in socio-political empowerment, increase in accountability of governments, and observation in household energy use, specifically biomass sources. Barrett (1996) states that socio-political empowerment, accountability of governments, and household energy use are factors that must be given more attention when looking at poverty and the environment, while the factors of population and land titling are given too much attention.

J.B. Opschoor (2007) examines the poverty-environment nexus within the environment-development system. He outlines six theories in context of the nexus. The first theory, which Opschoor labels the “agents perspective,” is the common connection that environmental degradation is caused by poverty. This theory is debated. While some support it, saying that there is evidence of degradation based on a need for survival, many argue that this theory is generally untrue. From another perspective, the second theory deemed the “victims-view,” finds those in poverty suffer or are harmed by environmental degradation. Opschoor states that this theory finds general widespread acceptance. The third theory is the Downward Spiral Hypothesis, which was described previously. Opschoor maintains that this theory does have backing and evidence based on analysis and models derived from actual situations. Not much in-depth detail or discussion is given about the fourth theory, which accounts for the role of population in the nexus.

Opschoor asserts that population growth impacts both poverty and degradation of the environment.

The fifth theory is connected to the second theory – it is considered the “political ecology-inspired victims-view.” In this theory, “the poor are being victimized in a dynamic setting and the rich are blamed” (Opschoor, 2007, p. 14). Simply put, the actions of the rich degrade the environment, which is felt most by the poor. The discussion about the fifth theory involves observing the Environmental Kuznets Curve. The Environmental Kuznets Curve is one way of looking at the relationship between economic development and environmental quality, and was previously discussed but is described in more depth here. David Stern (2003) writes that the curve proposes that environmental degradation and pollution will increase during the beginning stages of development, measured by income per capita. As the level of income per capita rises, at some point environmental degradation will slow and environmental improvement will start (Stern, 2003). The Environmental Kuznets Curve is controversial and often questioned. Opschoor (2007) believes that it is misleading when used from a policy standpoint; he states that the irreversibility of some damage is non-existent. However, there is evidence from real-world situations, such as forests in Nepal, that the Environmental Kuznets Curve exists (Opschoor, 2007). As previously discussed, the relationship between environmental degradation and poverty is more than income. This is a very simplistic view.

The final theory involves institutional failure; much like the population model theory, information on this theory is brief. It is simply put that poverty and environmental degradation are both negatively affected by institutional failure (Opschoor, 2007). Institutional failure seems likely to have an impact on the environment-poverty

relationship; the success or failure of institutions is linked to information spreading, social services support, access to vital resources, etc.

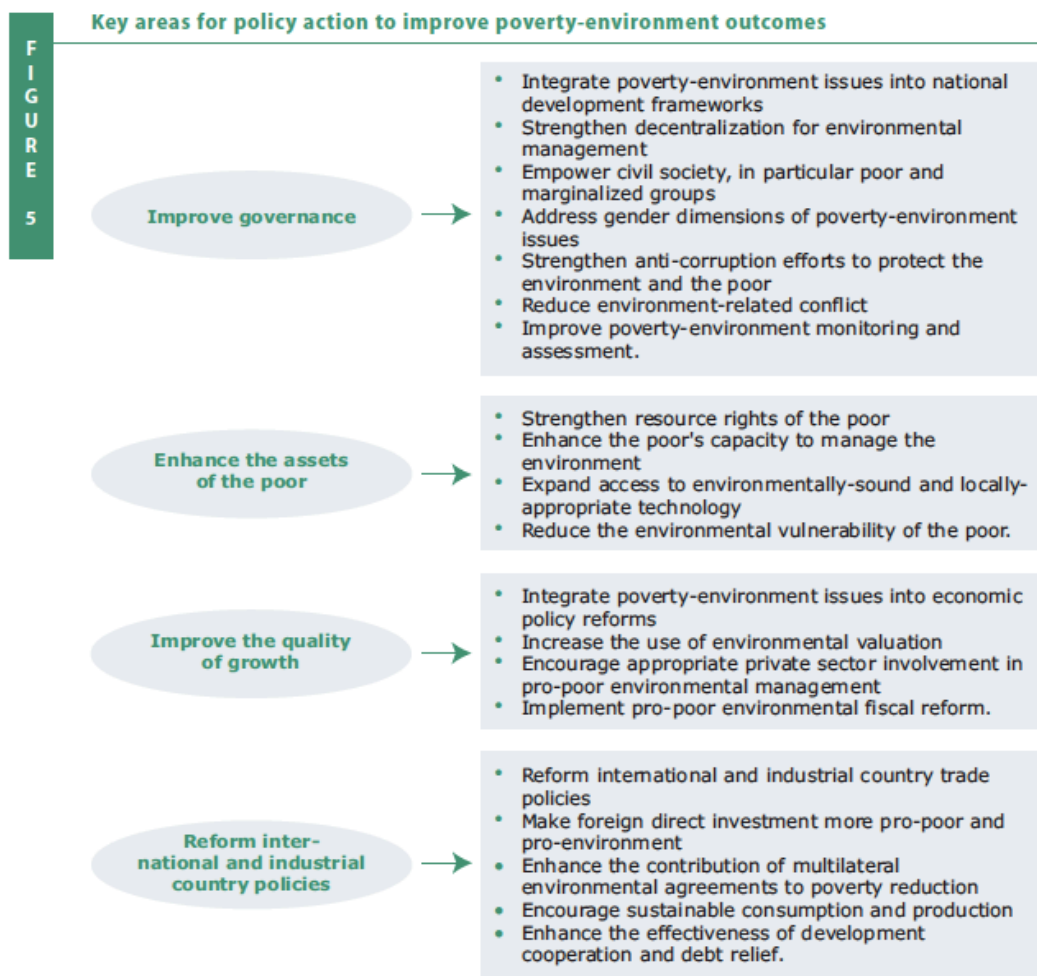
Drawing on work by Ekbom and Bojo, Opschoor (2007) argues those in poverty are subjected to environmental degradation more than the rich. Here, he connects the second and fifth theories. Opschoor writes that the “poor live in areas with low environmental quality and lack resources to relocate to better places... the poor are more vulnerable to loss of soil resources,” and in relation to political ecology, “the poor may relatively more dependent [on the environment], but the rich consume relatively more” (Opschoor, 2007, p. 17).

In the end, J.B. Opschoor (2007) finds five “emerging perspectives” on the environment and poverty, institutional change as poverty and degradation, sustainability livelihood strategies, the capabilities approach to human and ecological functioning, rights-based sustainable development, and resources as assets of the poor and a source of environmental income.

Chambers (2001) determines that to solve environmental degradation problems the needs of those in poverty must be put first by stabilizing population, reducing distress migration, fending off core exploitation and taking the long view. Two requirements for stabilizing poverty are better health conditions and sufficient livelihoods. In order to decrease distress migration, the poor need to have resource and livelihood access that is secure. Increasing and securing the rights of impoverished people in the legal, political and physical sense will allow them to be more stable in fighting core exploitation. Clarification must be made that corporations, businesses and governments rather than the majority of poor people primarily exercise resource degradation based on a short-term

viewpoint. The exception to this is the distinction between poor and desperately poor; the desperately poor may be forced to overly degrade the environment on the basis of survival. To get to the point of addressing what people in poverty want as a way to combat environmental degradation, Chambers (2001) suggests switching from environmental thinking or development thinking to sustainable livelihood thinking. Sustainable livelihood thinking puts poor people at the center and seeks to not only address short-term needs but long-term needs as well; “It seeks to enable them to get above, not a poverty line defined in terms of income or consumption, but a sustainable livelihood line defined to include abilities to save and accumulate to adapt to changes, to meet contingencies, and to enhance long-term productivity... This will stabilize use of the environment, enhance productivity, and establish a dynamic equilibrium” (Chambers, 2001, p. 63). This puts sustainability as improving when those in poverty have control and security in their lives.

As part of the 2002 World Summit on Sustainable Development, four organizations came together to offer a report on poverty reduction and environmental management. The DFID, EC, United Nations Development Programme and World Bank produced “Linking Poverty Reduction and Environmental Management: Policy Challenges and Opportunities”. The report lays out four main areas that are important in the realm of institutional and policy changes and proceeds to elaborate on each. This is shown in Figure 5.



**Figure 5:** The four key policy areas and recommendations concerning the environment-policy relationship (DFID, EC, UNDP and World Bank, 2002).

The four areas are improving governance, enhancing the assets of the poor, improving the quality of growth, and reforming international and industrial-country policies (DFID, EC, UNDP and World Bank, 2002). Before discussing the key points in-depth, the report overviews a few other points in relation to the Millennium Development Goals, poverty reduction and the environment. To address poverty reduction and environmental management, it is crucial to understand that people in poverty need to be thought of as not part of the problem but part of solutions, impoverished people care about environmental quality of growth, and development concerns and environmental

management must be addressed together (DFID, EC, UNDP and World Bank, 2002).

These main ideas were previously mentioned as the main principles of the Poverty-Environment Partnership.

It is also important to identify the ways in which people in poverty are impacted by the environment through livelihoods, health, and vulnerability (DFID, EC, UNDP and World Bank, 2002). The environment affects livelihoods of the poor when natural resources are degraded. This degradation influences agricultural systems, which many depend on for survival (DFID, EC, UNDP and World Bank, 2002). The report notes that environmental degradation can include a range of problems including soil erosion, deforestation, overgrazing, water scarcity, and the state of fisheries. The environment in which one lives affects one's health. Lack of safe water and sanitation, indoor air pollution and exposure to disease vectors all greatly impact health (DFID, EC, UNDP and World Bank, 2002). A major health concern in developing countries is disease; the disease burden in these countries is 10x greater due to environmental risks and 2x greater than the burden in developed countries (DFID, EC, UNDP and World Bank, 2002). Disease and poor health affect productivity and ability to generate income. Vulnerability of the poor to the environment involves exposure to environmental hazards, environment-related conflict, environmental disasters, environmental degradation, and possible migration resulting from the before-mentioned (DFID, EC, UNDP and World Bank, 2002).

Those same general ideas are discussed in another report prepared by the Department for International Development (DFID), a department with the British government that deals with development and reducing poverty. This report, "Achieving



Sustainability: Poverty Elimination and the Environment”, examines international development targets in relation to economic well-being, social and human development and environmental sustainability and regeneration. The environment and the condition of the environment affect the livelihoods of impoverished people. Many poor rely on the environment to survive through agricultural practices whether that consists of farming, fishing, or some other reliance on the environment for a food source. When the environment is degraded through deforestation, soil degradation, biodiversity loss, or destruction of mangroves or coral reefs, productivity of ecosystems are impacted and livelihoods are threatened (DFID, 2000). Environmental risks come from natural disasters or environmental conflict. Those in poverty are more vulnerable to these risks as they usually lack the resources to prepare or recover as well as others who may be better off. While environmental conditions or stresses may not directly cause conflict, they can affect political, social or economic conditions that may instigate conflict (DFID, 2000). The primary intersection of environment and health is the lack of access to clean and safe water and proper sanitation for those in poverty. Diarrheal diseases are still of major concern and one of the major causes of health issues in developing countries (DFID, 2000). There appears to be a consensus that interconnections between poverty and the environment primarily influence livelihoods, health, and vulnerability.

Returning to the DFID, EC, UNDP and World Bank (2002) report, to better understand the poverty-environment relationship, the following points need to be addressed: most environmental degradation is caused by the non-poor, population growth does not necessarily lead to increased degradation, the poor are capable of investing in environmental improvement, and poor people often have the technical knowledge for

resource management (DFID, EC, UNDP and World Bank, 2002). The first primary policy area is improving governance. In some areas, decentralization is occurring and the management over environmental resources is being transferred to local governments. This could be either a good thing for environmental degradation and poverty reduction or it could be a bad thing (e.g. short-term exploitation for more profit). The report states that two factors can help ensure exploitation does not occur, the fact the benefits from correctly managing the resource will stay locally and outside financial assistance (DFID, EC, UNDP and World Bank, 2002). Other aspects of improving governance consist of cooperation between different social organizations which can promote access to information, addressing the gender roles especially with women in the issues, and reducing corruption.

Enhancing the assets of the poor is the next policy area. Assets are listed as being the five different types of capital: natural, social, human, physical, and financial (DFID, EC, UNDP and World Bank, 2002). One main focus in enhancing assets is property rights and establishing land tenure, which promotes environmental preservation more than situations where ownership lacks or is vague. A related idea and mentioned in the previous policy area is the management of natural resources at the local level, increasing human and social capital will help support this management. Increasing capital also impacts vulnerability of impoverished people in natural disaster situations and their ability to cope (DFID, EC, UNDP and World Bank, 2002). Another policy area is improving the quality of growth. This area revolves primarily around making economic growth equitable and environmentally friendly. The final policy area concerns reducing international and industrial-country policies. The report finds that there is a need for

better unity in environmental and economic policymaking at the international level (DFID, EC, UNDP and World Bank, 2002).

In its conclusion the report states that the primary connections between the environment and poverty are the burden of disease and the dependence of the poor on natural resources and ecosystem services (DFID, EC, UNDP and World Bank, 2002). While the report does not layout specific recommendations, it acknowledges that “better environmental management is key to poverty reduction,” and strategies must be formed locally (DFID, EC, UNDP and World Bank, 2002, p. 62).

“Mainstreaming Poverty-Environment Linkages in Development Planning: A Handbook for Practitioners” was published by the United Nations Development Programme and the United Nations Environment Programme joint-collaboration, the Poverty-Environment Initiative, in 2009. The document was designed for those engaged in the process of attempting to address poverty-environment issues but also provides good insight into understanding the poverty-environment interaction and ways in terms of policies and strategy plans to remedy the issues.

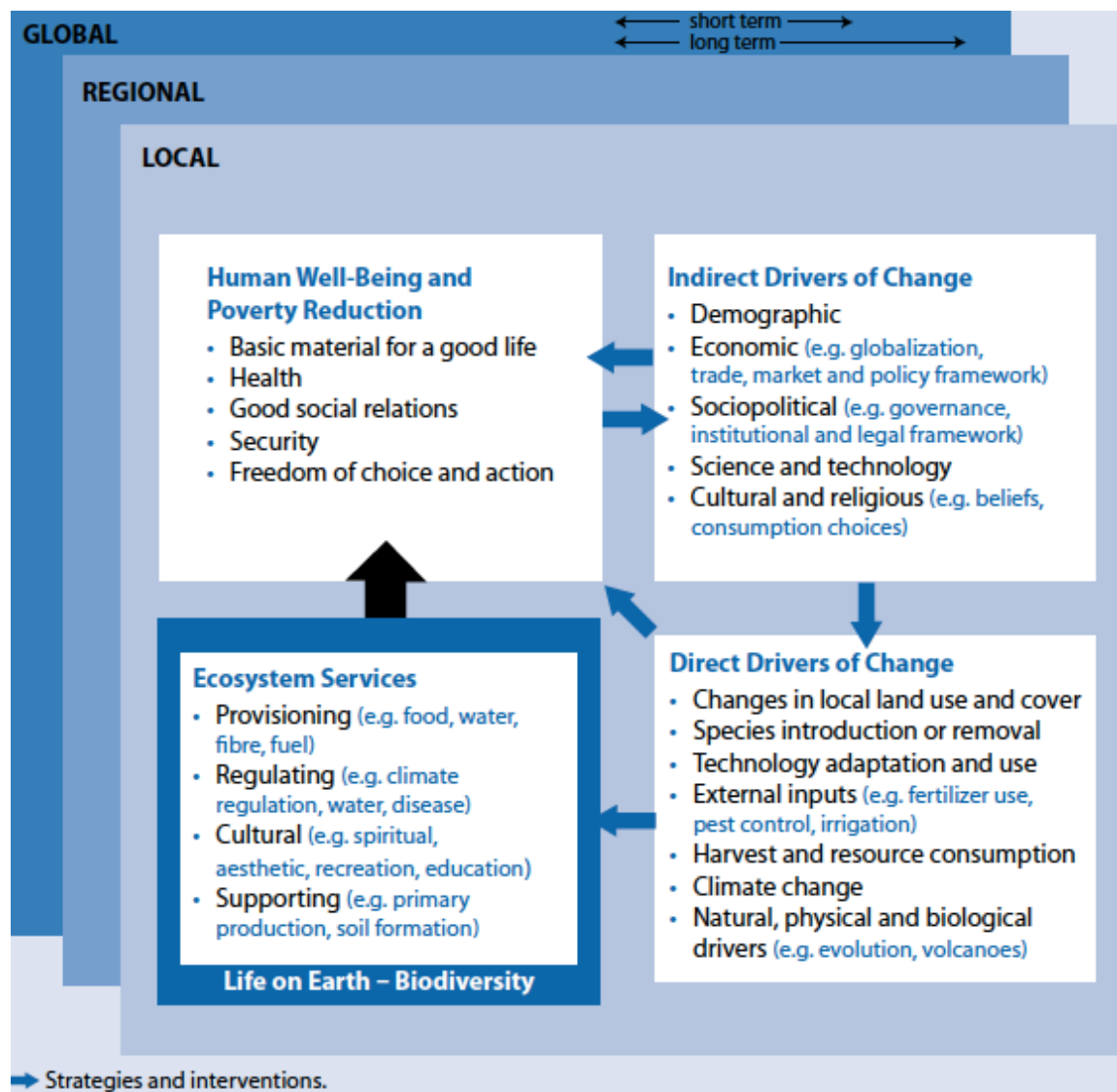
The publication primarily revolves around the idea of poverty-environment mainstreaming. Poverty-environment mainstreaming builds onto environmental mainstreaming. Environmental mainstreaming is including the environment and environmental concerns into decision-making; poverty-environment mainstreaming is defined as “the iterative process of integrating poverty-environment linkages into policymaking, budgeting, and implementation processes at national, sector and subnational levels – it is multi-year, multi-stakeholder effort that entails working with government actors, non-governmental actors and development actors” (UNDP-UNEP,

2009, p. 6). In other words, poverty-environment mainstreaming is concentrated on establishing the priorities and needs of poverty-environment issues within a policy context.

To demonstrate the reliance on natural resources/natural capital in developing countries and why addressing the correlation between poverty and the environment is necessary, wealth is compared between low-income and high-income OECD countries. In high-income countries, natural capital is \$9,531 per capita and 2% of overall wealth. In contrast, natural capital is \$1,925 per capita and 26% of overall wealth in low-income countries (UNDP-UNEP, 2009). With natural resources being a significant portion of wealth in developing countries, it is apparent to see that environmental problems and degradation could present supplementary problems to countries that are already struggling to survive. From another viewpoint, it shows the importance of conservation efforts to maintain this aspect of wealth. Therefore, it is crucial to identify and make an effort to attend to problems that arise from poverty-environment linkages. Recognized linkages between poverty and the environment are identified as the following: livelihoods (e.g. environment as income), resilience to environmental risks, health (e.g. environmental conditions affect health) and economic development (UNDP-UNEP, 2009). These linkages are consistent with the before-mentioned impacts on livelihoods, health, and vulnerability.

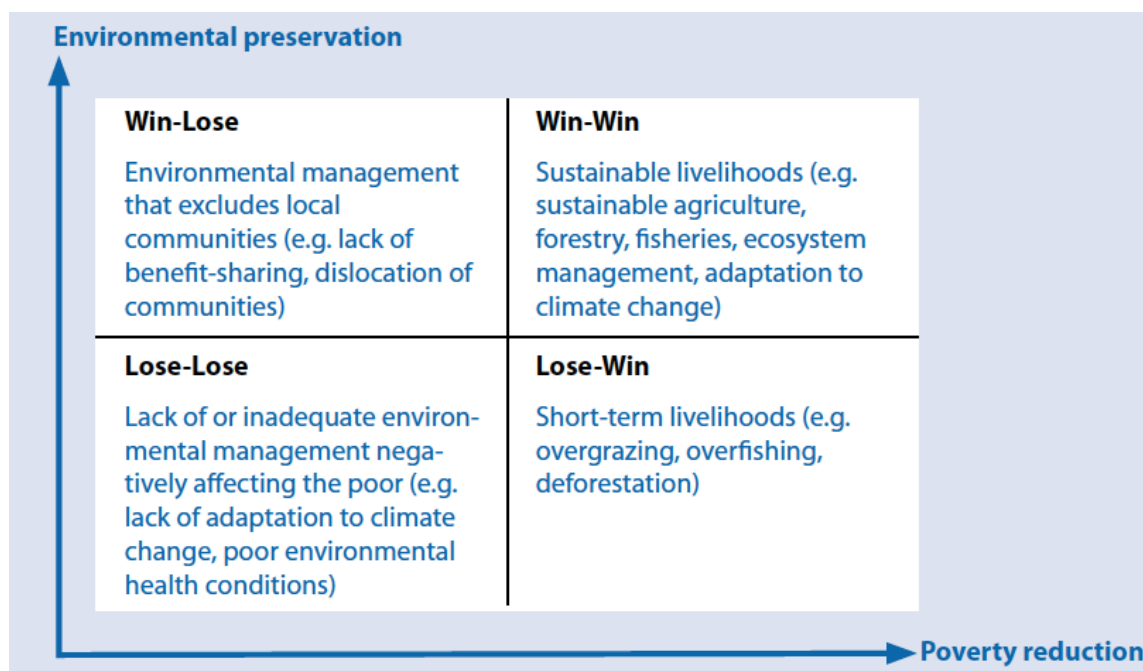
The handbook contains several well-designed charts and diagrams that clearly explain the poverty-environment linkages and outcome scenarios for environmental preservation and poverty reduction, according to the UNDP and UNEP (2009). The following diagram, Figure 6, shows the environment and poverty relationship. Indirect

drivers of change, such as economic factors and governance, influence the direct drivers of change, which may be resource consumption, land use change, or use of new technology. These direct drivers of change then impact ecosystem services and human well-being and poverty reduction; ecosystem services also have an impact on human well-being and poverty reduction. These interactions occur at the local level but are included and influenced by occurrences at the regional and global level as well.



**Figure 6:** Poverty and environmental connections (UNDP-UNEP, 2009).

The following chart depicts the fact that depending on what actions are taken, environmental preservation and poverty reduction will either both lose, both win, or one will win while the other loses. To get to a place where both win, sustainable livelihoods must occur.



**Figure 7:** Scenarios in environmental preservation and poverty reduction (UNDP-UNEP, 2009).

Much like the diagram provided by Reardon and Vosti (1995), Figure 6 presents the complexity of the poverty-environment relationship. External factors influence the relationship just as much if not more than environmental and poverty factors. Figure 7 gives a look into the future but with uncertainty about what outcome will occur; hopefully, if environment and poverty are addressed together, the situation will be win-win.

A brief overview of the policy steps the handbook outlines shows that there are three steps involved in the process of poverty-environment mainstreaming and each step

has its own subset of steps and in-depth detail (UNDP-UNEP, 2009). Finding the entry points and making the case is the beginning step that collects the necessary information and data, making it possible for the next step to occur. The next level is mainstreaming poverty-environment linkages into policy processes. This step continues to collect more specific information as well as starts getting involved in the policy process and integrating poverty and environment problems into policies (UNDP-UNEP, 2009). Now that poverty-environment issues have been incorporated into policies, the final step is meeting the implementation challenge. It calls for monitoring poverty-environment indicators, establishing financing for the mainstreaming, and continuing to integrate poverty-environment into the policy processes (UNDP-UNEP, 2009). The steps and what is suggested or needed at each step is explained in great detail in the handbook as mentioned before; however, for the purposes of this topic, a brief overview of proposed policy strategies for the environment and poverty relationship is all that is needed.

Looking beyond simply understanding the interaction of poverty and environment or formulating policy strategies, it is necessary to analyze typical ways of measuring the interaction. Carr, Kettle and Hoskins (2009) raise concern that when studies examine the poverty-environment relationship, many utilize indicators that look at the poverty and the environment separately. The authors evaluate the poverty-environment indicators, otherwise known as the PEIndicators, which were designed to measure the relationship between poverty and the environment together; however, it is noted that the PEIndicators make simplifications including only observing the influence of environmental conditions on poverty and not the reverse relationship. PEIndicators engage the factors of human health, livelihoods, and environmental risk (Carr, Kettle and Hoskins, 2009). Due to the

complex nature of the poverty-environment relationship, Carr, Kettle and Hoskins (2009) question the simplicity of the PEIndicators, especially the fact that only three factors are evaluated and the lack of incorporating the political economy. In the end, the authors judge that for the PEIndicators to be successful for sustainable development, there must be more data collected at various levels to allow for complete and accurate analysis

Similarly to J.B. Opschoor, the authors call attention to political ecology. Carr, Kettle and Hoskins (2009) assert “political ecology therefore relocates causality in poverty-environment interactions from local degradation by smallholders to large-scale processes driven by wealthy individuals and institutions” (p. 89). The idea, once more, that consumption and production of goods by the wealthy have more of an impact on the environment than the actions of the poor do. As discussed before, the environment-poverty relationship operates within the context of many, varied influences. Consumption and behaviors of developed countries as well as wealthy citizens of developing countries cannot be discounted when considering the relationship.

Lawson, Gordon and Schluchter (2012) find that natural resources are crucial to poverty reduction by providing food security, health improvement, income generation, reduced vulnerability and ecosystem services. These are similar linkages as noted by other previous authors. Natural resources can play many roles in relation to poverty by being a driver, maintainer, potential exit route or effective escape mechanism of poverty (Lawson, Gordon & Schluchter, 2012). The majority of the time natural resources act as drivers or maintainers of poverty, according to the authors, but if used or sustained correctly natural resources could help push people out of poverty.



Bucknall, Kraus and Pillai (2000) establish an outline of a strategy for addressing poverty and the environment. The authors believe that goals to lessen environmental degradation should be revised to aim for promoting environmental actions that see a reduction in poverty. Before a solution to issues can be found, information needs to be collected. It is crucial to fully comprehend people in poverty, who they are, what their lives are like, and how they survive (Bucknall, Kraus and Pillai, 2000). Indicators must be chosen and the most beneficial indicators will be ones that are influenced the most by the environment. Bucknall, Kraus and Pillai (2000) then propose distinguishing possible interventions that would affect poverty reduction and would promote economic growth and improve the social sectors. Once all the information is collected, individual countries can set up their own indicators and goals for improvement (Bucknall, Kraus and Pillai, 2000).

Based on previously published and established literature in various forms on the interconnection of environment and poverty, I conclude that a number of commonly mentioned and/or important points stand out. While there may be differing opinions on the exact relationship between environmental issues and poverty, most studies agree that a relationship exists, whether it is an influence going one way or both ways. The most vital aspect about the interaction between the environment and poverty is that the interaction is very complex and influenced by many different factors and those factors are constantly changing. Another aspect of the interaction is the general consensus that the primary linkages between poverty and the environment are livelihoods, health and vulnerability. A majority of the poor population relies on natural resources as an income and a food source. The degradation of needed resources negatively impact impoverished

people as struggle to survive even more, potentially forcing them to degrade even more. Environmental conditions greatly influence health, and health and wellness impact individual productivity and for people in poverty, it can be hard to afford healthcare to recover from illnesses. Natural disasters and problems arising from environmental degradation affect the poor population proportionately more because they tend to live in the more environmental vulnerable areas and lack the resources to prepare or recover as well from disasters that may occur. These linkages are important to keep in mind when examining or studying a potential area with an environment-poverty nexus. In terms of promoting a solution to potential poverty-environment issues, the involvement of local people and local knowledge along with local management of resources seems to be key for success.

One last important item to note, brought up by J.B. Opschoor (2007), is that there is a lack of work done in examining poverty and environment in urban areas. This area still needs further research and holds potential for case studies and analysis.

## **Case Studies**

After examining a substantial amount of the documents and articles written about the interconnections between environment and poverty, it is important to look at real-world examples involving the interconnections. As was written by many of the authors, when considering the dynamics of poverty and the environment it has to be done on a more local and site-specific manner for there are many influences and factors that contribute to the dynamics that are varied village to village and country to country. The

following case studies, in Cambodia, Lao PDR, Vietnam, Uganda, and Ghana, look for empirical data on the environment-poverty relationship.

### **Cambodia, Lao PDR, and Vietnam**

Dasgupta, Deichmann, Meisher and Wheeler (2005) gathered data in Cambodia, Lao PDR and Vietnam in order to establish if a poverty-environment nexus existed in these countries. Establishing if a nexus existed was relevant because, according to the authors, it has bearing on how policies are designed; if no nexus was present then poverty and the environment did not need to be treated as one subset.

In order to test the presence of the nexus, Dasgupta, Deichmann, Meisher and Wheeler (2005) quantified absolute poverty and environmental problems. Absolute poverty was classified at the provincial or district-level by the number of residents who in their daily consumption of food were not able to have an intake of more than 2,000 calories along with very basic nonfood spending. Five separate indicators, deforestation, fragile soils, indoor air pollution, access to clean water and sanitation, and outdoor air pollution measured environmental problems. The deforestation indicator compared the rates of deforestation and forested areas with the population density of people in poverty as well as the overall population. Looking at soil erosion and degradation on steeply-sloped hillsides determined the fragile soil indicator. An important note made by the authors relevant to this indicator was the ability of people in the area to migrate or not; the ability to migrate from an area of poor soil lessened potential environmental damage compared to non-migration areas. Indoor air pollution, access to clean water and sanitation, and outdoor air pollution all impact health and productivity of people; indoor air pollution also was linked with wood fuel consumption.

The examination of the poverty-environment nexus in Cambodia was done on the district-level. After running a regression analysis on the data from the country, Dasgupta, Deichmann, Meisher and Wheeler (2005) drew several conclusions. Deforestation in Cambodia was not directly correlated with impoverished people; in fact, it was correlated more with general population pressure. Fragile soils/soil erosion was also not related to people in poverty here. The authors found no huge groupings of poor people located near areas with steep hillsides. However, there was strong correlation between people in poverty and the use of wood fuel, and people in poverty and lack of access to clean water. Both these relationships could have respiratory and disease impacts on people that are already struggling in their day-to-day lives. In Cambodia, the authors found the poverty-environment nexus in relation to two of the five indicators.

In Lao PDR, the poverty-environment nexus was tested on the provincial level. Once the data was collected and run through regression analysis, Dasgupta, Deichmann, Meisher and Wheeler (2005) found that a nexus was much more present in this country than in Cambodia. The authors state that there was a significant correlation between absolute poverty and all five of the environmental problem indicators; therefore, in Lao PDR potential policies should encompass poverty reduction and environmental preservation as one.

Vietnam was examined for the poverty-environment nexus the same as Lao PDR, at the provincial level. However, unlike Lao PDR, the nexus was not as far spread here. A significant positive correlation was found between fragile soils (i.e. steep hillsides) and populations of poverty as well as poverty and wood fuel use/indoor air pollution. The

correlation between absolute poverty and the other three environmental indicators was found to be either negligible or weak.

Dasgupta, Deichmann, Meisher and Wheeler (2005) examined the data from all three countries and drew some further conclusions. Looking at Cambodia and Lao PDR, the authors noted a positive correlation between poverty and the use of wood fuels while also noting a weaker correlation between poverty and deforestation. These two countering observations led the authors to conclude that while indoor air pollution was influenced by poverty, using wood fuel and deforestation did not strongly influence poverty. Analyzing the data from Cambodia and Lao PDR once again, the authors conclude that in both countries there is a correlation between people in poverty and the lack of access to clean water and sanitation. The authors perceived that diseases related to unsanitary water will further impoverish already poor people as diminished health conditions lower productivity and impact household financial burdens in terms of healthcare. Turning to Vietnam, the authors deemed that the weak correlation between poverty and lack of access to clean water and sanitation was due to governmental intervention in terms of a public health and education. This example showed that there are solutions to the poverty-environment nexus.

At the end, Dasgupta, Deichmann, Meisher and Wheeler (2005) determined that as the poverty-environment nexus was varied in each country that the strategies and policies that each country needs to focus on is varied as well; the authors offered suggestions on the course of focus for the individual countries. The nexus in Cambodia was seen as affecting the household-level; therefore, any strategies need to focus on household-level environmental equality and poverty. The authors also noted that in

Cambodia it would be beneficial to the country's entire population to address the rate of deforestation. As previously mentioned, in Lao PDR, there was a substantial poverty-environment nexus in deforestation, fragile soil, indoor air pollution, lack of access to clean water, and urban air pollution. Strategies in this country should be most favorable for people in poverty to approach these connections from a combined poverty-environment standpoint. Fragile soil and soil erosion in steep hillsides was the primary correlation of nexus in Vietnam. The authors suggested here strategies or policies should revolve around living conditions in the households in the hillside areas.

The poverty-environment nexus differed country to country and thus, it was illogical to design a general strategy for all countries (Dasgupta, Deichmann, Meisher and Wheeler, 2005). Yet, to the authors, this did not mean that neighboring countries could not communicate successful programs; for example, the public health and education program in Vietnam to reduce the link between poverty and unclean water.

## Uganda

Aggrey et. al (2010) sought to study the connections between environmental problems and poverty levels in East Africa. Specifically, the study focused on the Katonga Basin in Uganda at the district level. The environmental problems in this area were vast, ranging from deforestation and soil erosion to pollution. Many of these problems arose due to high population density and bad farming methods as well as land clearing and overgrazing. To evaluate the environment-poverty connections, Aggrey et. al measured poverty at the district level by the percentage of the population who were under the national poverty line. Four environmental indicators were identified to measure the environmental problems, deforestation, wetland conversion, indoor air pollution, and

water pollution. The authors then ran regression analyses on the poverty indicator and environmental indicators. Aggrey et. al (2005) hypothesized that not only would they find that poverty caused environmental degradation in the Katonga Basin, that they would find that environmental degradation also impacted poverty. The authors stated that if environmental degradation was significantly correlated to high population areas then there was a poverty-environment nexus in the Katonga Basin.

A positive correlation was seen of poverty on deforestation and of deforestation on poverty. In other words, poverty affected deforestation and deforestation impacted poverty. Aggrey et. al (2005) stated that this data was conclusive with the downward spiral hypothesis and thus, it should be thought that a reduction in poverty would most likely lead to a reduction in poverty-driven deforestation. Another positive correlation was analyzed of poverty on wetlands degradation; poverty impacted wetland conversion. However, insignificant correlation was found between poverty and indoor air pollution relating to use of charcoal and access to an electricity variable as well as an insignificant correlation between poverty and water pollution (e.g. access to clean water and toilets).

In conclusion, Aggrey et. al (2005) find that a relationship exists between poverty and two of the four environmental indicators. The authors suggest that to solve these environment and poverty problems, strategies focus on addressing poverty, deforestation, and wetland degradation together.

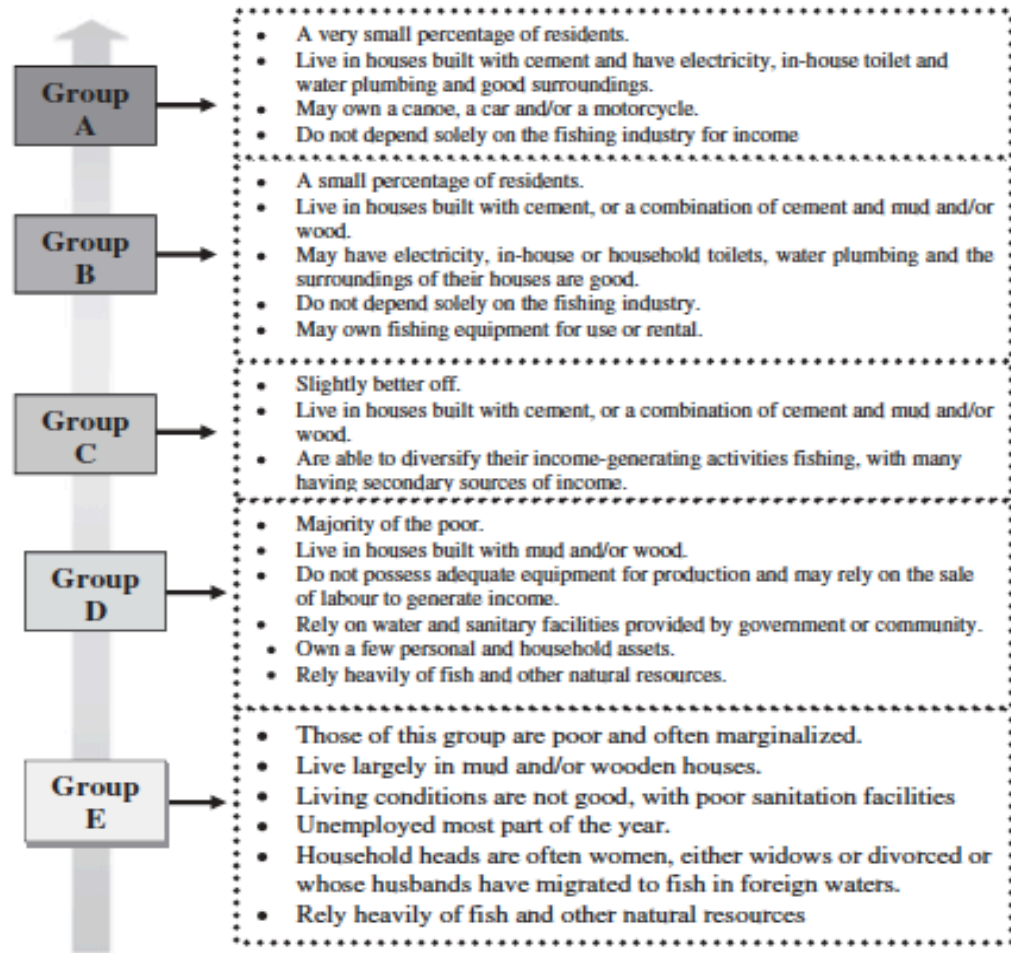
## Ghana

Lawson, Gordon and Schluchter (2012) examined the relation between poverty and the environment in the coastal region of Ghana. People living in the coast zone relied primarily on marine resources and the majority of incomes revolved around the fishing

industry. While the coastal zone only represented 6.5 percent of the land area of Ghana, almost 25 percent of the population lived in this area. This high population density and increasing urbanization just added to the variety of environmental problems occurring, such as loss of land, wetland degradation, loss of fish stock, displacement of people due to tourism, and poor sanitation (Lawson, Gordon and Schluchter, 2012).

To examine the poverty-environment relationship, the authors surveyed two communities and 304 women in those communities in different regions of the coastal zone. As part of the data collection efforts, the women were asked to define and classify poverty based on livelihood patterns, living conditions and dependence on natural resources; this is shown in Figure 8 below.





**Fig. 2.** Continuum of poverty groups in Bortianor and Moree. Source: After Pittaluga et al. (2004).

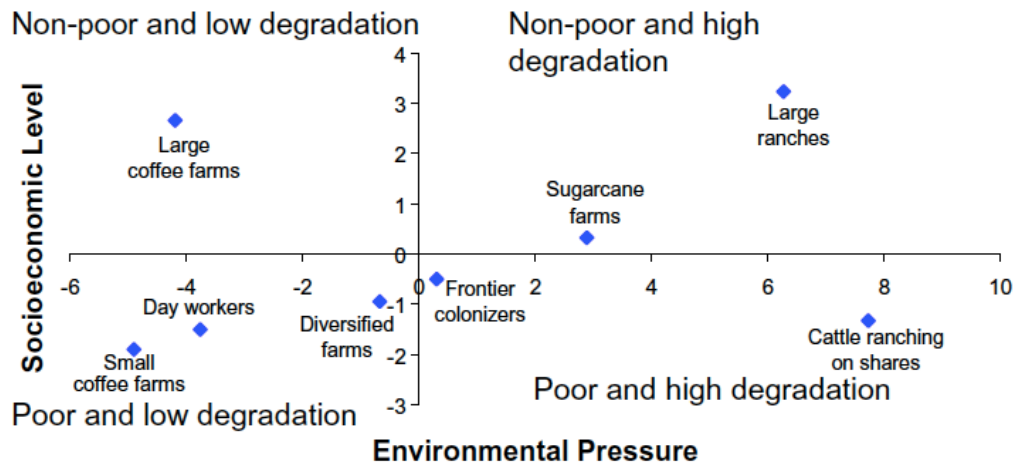
**Figure 8:** Poverty classifications based on Ghana survey participants (Lawson, Gordon and Schluchter, 2012).

Based on the participants' responses, the authors note that the primary difference, to the women, between people in poverty and people who were better off was the dependence on fish as only source of income (Lawson, Gordon and Schluchter, 2012). The participants were also asked to list the reasons that they thought influenced them being in poverty. The main reason stated by the women was the declining fish stocks. Lawson, Gordon and Schluchter (2012) found that natural resources produce goods and

services that can make up to 35 percent of their total income. In the survey, the participants were also questioned on what they perceived as being crucial to the ability to overcome poverty; the majority of the women answered more control and security over the resources that affect their livelihoods as most important.

## Colombia

Agudelo, Rivera, Tapasco and Estrada (2003) looked to establish the connection between poverty and environmental degradation in a hillside zone of the Colombian Andes. Steep slopes, heavy rainfall and fragile soil were common features in the hillside environment. Agriculture in this area was primarily coffee growing along with some subsistence crops. The authors collected data through surveys of 165 families that included a questionnaire and bio-physical measurements of the corresponding farmland. They chose the following environmental degradation indicators: firewood consumption, wood gathered, deforestation, burned areas, and hunting. Farm area, resident labor availability, labor sales, capital invested, and net income were used as measurements of income or wealth in the area. From these indicators, two artificial variables were calculated, socioeconomic level and environmental pressure, and graphed on a Cartesian plane, which is shown in Figure 9 (Agudelo, Rivera, Tapasco and Estrada, 2003).



**Figure 9:** The graph depicts the relationship between socioeconomic level and environmental pressure of multiple household types in Colombia's Andean hillside. (Agudelo, Rivera, Tapasco and Estrada, 2003).

Based on these variables, eight household types in the area were characterized, small coffee growers, medium-sized diversified farmers, day workers, large coffee growers, sugarcane growers, frontier colonizers, cattle ranchers on shares, and large livestock ranchers. After classifying the types of households, the authors ranked the types on their environmental impact. Small coffee growers, medium-sized diversified farmers, day workers, and large coffee growers were shown to have a low impact on natural resources (Agudelo, Rivera, Tapasco and Estrada, 2003). The low impact occurred mainly due to the use of other sources of materials rather than wood for fuel; however, these households did have an affect on soil erosion. On the other end of the spectrum, large-scale ranchers and cattle ranchers appeared to have a major impact on natural resources, in particular because of soil erosion, big areas of burned land, and use of wood for fences (Agudelo, Rivera, Tapasco and Estrada, 2003). Sugarcane growers and frontier colonizers fell somewhere in the middle of the two previous categories.

Based on the data gathered from this study, several areas of policy intervention arose depending on the environmental problem being addressed. For example, if deforestation was the issue in focus, it would be most beneficial to work with medium-sized diversified farmers, day workers, and frontier colonizers. On the other hand, if erosion reduction was the primary goal, cattle ranchers and medium-sized diversified farmers need to be the main focus. However, Agudelo, Rivera, Tapasco and Estrada (2003) maintained that medium-sized diversified farmers and frontier farmers need attention in any case.

Agudelo, Rivera, Tapasco and Estrada (2003) determined through a graphical analysis that socioeconomic status and environmental issues did not have a significant linear relationship in this area of Colombia. Instead, the authors resolved that environmental issues are influenced more by household asset type than income level (Agudelo, Rivera, Tapasco and Estrada, 2003). In conclusion, the authors stated that income and assets influenced the productive activity of a given household; this productive activity then impacted environmental management.

## **Present Approaches**

The existence of poverty and environment connections is now substantially established in different regions of the world based on the previous case studies. To gain a better understanding of real-world applications of solutions to poverty-environment problems, it is crucial to overview a couple examples.

## Bangladesh

Poverty is widespread in Bangladesh. Four-fifths of people in the country live on less than two dollars per day (Lappe & Lappe, 2003). Many of the problems in Bangladesh are founded in a history of colonialism and the subsequent war for independence. Additionally, the country is subject to recurring massive flooding. For these and other reasons, the country is continually defined as a hopeless case (Lappe & Lappe, 2003). One organization that fights against this stereotype is the Grameen Bank, which is popularly known for its micro-credit work.

A program initiated by the Grameen Bank involves the restoration of ponds in Bangladesh. Before the colonial period in the country, ponds were communally used and maintained, acting as a stable food source and part of rural lifestyles. However, when colonial rule occurred, the ponds were placed under private control and maintenance began to falter, rendering the ponds useless (Lappe & Lappe, 2003). Due to the consistent flooding issues, Western aid organizations sought solutions through the creation of dams and embankments, which while curbing the flooding concern, the consequential change in water flow affected the native species of fish (Lappe & Lappe, 2003). Many local people relied on fishing as a primary food source. When the embankments and dams impacted the flow of fish, it impacted the people depending on the regular flow of fish. Another problem arose when foreigners encouraged the establishment of exotic species of fish, which introduced new diseases to the native fish population (Lappe & Lappe, 2003). After the colonial rule ended, the country's government was unsuccessful in regenerating the ponds. Therefore, the Grameen Bank

established a long-term, low-priced lease of 800 of the ponds from the government (Lappe & Lappe, 2003).

The Grameen Bank formed over 900 fishing groups that helped bring these ponds back to life. Ability to use the ponds as a food source and as an additional income source, through selling the additional catch at market, have transformed some of the lives of people in the fishing groups. Members spoke about not only being able to eat three meals a day, but also being able to afford other food, clothes, and the ability to send their children to school (Lappe & Lappe, 2003). The founding father, Muhammad Yunus, of the Grameen Bank asserts that, “we have to go to the root of the creation of poverty and that’s what institutions are... So I’m trying to create new institutions – ones by and for the poor (Lappe & Lappe, 2003).” The Grameen Bank’s program not only helped people better their lives, but also helped restore the environment by giving the poor control and power.

## Kenya

Beginning in the 1970s, Wangari Maathai started noticing severe desertification in Kenya. In fact, only 5% of Kenya’s original forests still remained (Lappe & Lappe, 2003). Wangari Maathai became increasingly concerned about this problem and especially the government’s lack of successful action. Desertification in Kenya promoted a continuing cycle of forest loss, desertification, and a community’s lack of ability to feed its people (Lappe & Lappe, 2003). One main cause of unease related to this problem was the fact that continued deforestation meant women in particular had to walk further to obtain water and firewood. Desertification meant trees were located further and further

away, and the trees helped hold water. After observing this evidence, Maathai started the Green Belt Movement. The Movement promoted tree planting by women near their homes. Twenty years after the movement began, almost 6,000 groups were registered, each maintaining their own nursery, and over 20 million trees had been planted (Lappe & Lappe, 2003).

Lappe and Lappe (2003) question why planting trees when deforestation and desertification began was not a natural reaction to the local people. This answer they find, is due to corrupt governance and Western influence; a term they deem “learned helplessness” and having been promoted during the Kenyan period of colonialism by the British (Lappe & Lappe, 2003). The Green Belt Movement, according to Lappe and Lappe, is attempting to change this by promoting knowledge and rights of citizens. Another problem that has become dominate in Kenya is the focus on growing cash crops, especially coffee trees. This form of income for people is very instable and primarily unbeneficial as middlemen and the cost of pesticides and fertilizers leave farmers with very little at the end moreover people cannot survive on the coffee tree as a food source (Lappe & Lappe, 2003).

The Green Belt Movement’s influence goes beyond just tree planting, it empowers women to be successful outside the home as well as encouraging the reestablishment of traditional crops as a method of food security. Traditional crops possess the ability to withstand and thrive during drought conditions, unlike most cash and import crops. A return of traditional crops would give people more food security in times of drought. The Movement also maintains a stance of discontinuing use of pesticides and fertilizers on crops, and emphasize on relearning traditional methods

(Lappe & Lappe, 2003). As spoken by Wangari Maathai, “civic education is really the entry point,” of the Green Belt Movement (Lappe & Lappe, 2003, p. 184). Maathai sees planting trees as learning one’s environmental rights and standing up for those rights, which helps encourage understanding one’s other rights and eventually standing up for those rights as well. She wants to initiate a personal transformation in individuals that allows them to stop perceiving themselves as victims (Lappe & Lappe, 2003).

Wangari Maathai also discusses the implications of foreign debt on people in poverty in Kenya. Under pressure and prioritizing the payment of foreign debt, often means that the government pulls funding from public services such as education and health care (Lappe & Lappe, 2003). Funding cuts to education translate into an increase in school fees, which effectively limits who can afford to attend school. This is detrimental to people in poverty and severely impacts their prospects in life. The Green Belt Movement looks to combat a major environmental problem while aiding the improvement of women’s lives.

## Analysis

Four case studies, determining the exact environment-poverty relationships in Cambodia, Lao PDR, Vietnam, Uganda, Ghana, and Colombia, and two current approaches to addressing poverty and environment issues, located in Bangladesh and Kenya, were previously overviewed. The following section provides analysis of the case studies and current approaches in relation to one another as well as in consideration of ideas drawn from the literature review.



## Case Studies

Two of the case studies documented the correlation of environmental indicators and poverty. In the other two case studies, one did determine income and environmental indicators but used them to analyze natural resource impact by household type, and the other did not utilize indicators but used survey and participant self-definition instead. The table below lists all five case studies and the environmental indicators used in each along with the correlation with poverty; Ghana and Colombia are included but listed as non-applicable.

Country	Environmental Indicators	Correlation with Poverty?
CAMBODIA	Deforestation	No
	Fragile Soils	No
	Indoor Air Pollution	Yes
	Access to Clean Water	Yes
	Outdoor Air Pollution	No
LAO PDR	Deforestation	Yes
	Fragile Soils	Yes
	Indoor Air Pollution	Yes
	Access to Clean Water	Yes
	Outdoor Air Pollution	Yes
VIETNAM	Deforestation	No
	Fragile Soils	Yes
	Indoor Air Pollution	Yes
	Access to Clean Water	No
	Outdoor Air Pollution	No
UGANDA	Deforestation	Yes
	Wetland Conversion	Yes
	Indoor Air Pollution	No
	Water Pollution	No
GHANA	N/A	
COLOMBIA	N/A	

**Figure 10:** This table lists the results from the four case studies in terms of correlation of poverty and an environmental indicator.

Several conclusions can be drawn from comparing the case studies. The case studies show that while the poverty and environment relationship is not the same everywhere and some areas have more poverty-environment correlated issues than others,

an environment-poverty interaction occurs in every country and/or region that was examined. A positive environment-poverty correlation in one location can be a negative correlation in another area and vice versa. This is the case with poverty and indoor air pollution when comparing the results of the case studies done in Cambodia, Lao PDR and Vietnam, and Uganda. Indoor air pollution is correlated with poverty in the first three countries but not in the last country. Deforestation is correlated with poverty in two of the countries but not in the other two. These differences correspond precisely with the presentation in the literature review and in the case studies that environment-poverty linkages are very site-specific and vary due to a wide range of factors.

Comparing the case studies, it is also clear to see that there are different approaches to measuring and quantifying the poverty-environment relationship. Using poverty and environmental indicators in some capacity appears to be more popular than surveys and questionnaires; though, Agudelo, Rivera, Tapasco and Estrada (2003) use a combination of a questionnaire and indicators in their study in Colombia. In terms of being able to compare among case studies and occurrences and types of environment-poverty interactions, case studies that analyze with indicators make the process easier. While the case studies are done on different scales within the individual countries, therefore making the data not absolutely comparable, it is manageable to get a general overall feel for similarities and differences among them. Participant surveys are more difficult to compare and contrast especially with empirical data from other case studies; however, addressing environment and poverty-related issues requires input and involvement of the local people and the people being impacted. Understanding their

viewpoints on poverty, the environment, and what they perceive to be problematic can be very helpful when trying to plan strategies for solutions to problems.

### **Current Approaches**

The two current approaches examples reviewed appear to be functioning well in their prospective areas. Neither program could be deemed perfect and without issues, but environmental and social programs rarely can. The programs in Kenya and Bangladesh have very similar components; both involve local management of the natural resources, tree nurseries and fishing ponds respectively. This aspect was highly supported in the literature, though it was warned to be wary about possible short-term exploitation of resources; exploitation did not appear to be happening in either of these cases. Both programs focus primarily on women and also on empowering individuals. These two aspects, gender and empowerment, were also deemed important in the literature when dealing with poverty-environment connections. Women generally have greater interaction with the environment than men because of household duties such as firewood and water collection, etc.

Generating empowerment and more social capital for people in poverty is incorporated as a crucial part of not only solving poverty-environment problems but as a key aspect of sustainable development overall. People with security and control in and over their lives can make better decisions and have more informed behaviors. The Green Belt Movement in Kenya and the Grameen Bank fishing group program in Bangladesh combat both environmental problems and try to reduce poverty; yet, both programs are about more than just poverty reduction or environmental protection. They also involve

social aspects and attempt to change or transform social norms. For example, the women in Kenya highly valued having the weekly meetings because it allowed them to get out of the house and have a support group. Addressing issues arising from the environment and poverty takes more than solving solely environment or poverty problems, it takes addressing factors that influence the problems as well.

Neither of the example programs in Kenya or Bangladesh could really be used to address a poverty-environment correlation found in one of the case studies. Both programs are good bases to start from in planning a local poverty-environment strategy or program, but as discussed before, would need to be revised and formatted to fit the specific relationship.

Returning to the definitions of poverty and sustainability, poverty throughout the examination of the environment and poverty was thought of as more than just income but also considering well-being, education, health, etc. as well. Sustainability or sustainable development was looked at as not only being development of economic growth and conditions, but social and environmental conditions as well (Harris, 2000). Specifically, sustainability was contemplated with the following idea in mind, “social equity, the fulfillment of basic health and educational needs, and participatory democracy are crucial elements of development, and are interrelated with environmental sustainability... A moderate level of consumption, together with strong social institutions and a healthy environment represents a better ideal than ever-increasing consumption” (Harris, 2000, p. 19). These two program examples support and represent these ideas.

## Recommendations

While the current approaches reviewed are not examples of the environment-poverty relationship being addressed in a policy format as is endorsed in several literature sources, it is important to realize that in order to sufficiently combat these issues top-down and bottom-up approaches must both be exercised. It is debated whether bottom-up approaches can be successful without supplementary top-down policies to shape institutions and infrastructure; however, it seems illogical to think that top-down policies will be beneficial without taking into account bottom-up examples. To depend on top-down approaches means policies are subject to opposing opinions, slow implementation, and frankly put, very little actual action.

The literature, case studies, and current approaches all promote or support empowerment at the local level as an element of high relevance in solutions to environment-poverty problems. Empowerment could be encouraged through changes in policies or governance or institutions, but as seen in the Kenya example, empowerment also requires personal transformation. Personal transformations are not easy to initiate without a scaled-down level, social norm changing approach. I, therefore, recommend that more local-level, real-world applications of the poverty-environment interface be endorsed.

Without opportunities for trial-and-error in establishing applicable programs, improvements can never occur. Solutions must be found locally and this can be difficult when being dictated at a larger-policy level. As mentioned multiple times before, the relationship between the environment and poverty is influenced by many contexts and situations and thus, is not the same everywhere. This is not to suggest that sharing

program ideas and strategies could not be extremely useful. It was said by Muhammad Yunus, founder of the Grameen Bank that, “no one idea can be transferred wholesale from one place to another... To learn from one another, we must discover the essence of the other’s experience” (Lappe & Lappe, 2003, p. 136). Communication and spreading of knowledge is key to every movement and transformation, and searching for successful solutions to the complex problem of poverty and the environment is no different.

Only acknowledging the existence of some form of an environment-poverty nexus, regardless of opinion of the exact interaction, can proceed so far. The recognition of the close correlation of environmental degradation and poverty reduction at United Nations Conferences and in international documents and declarations is crucial to maintaining the correlation as a priority to be concentrated on. Yet, it can get lost in the seemingly endless list of other important elements to be attended to in relation to environmental problems, social problems and sustainable development. Simply put, there is a lot of talk but not a lot of action to back it up.

Almost every case study mentioned the relatively limited amount of empirical data supporting poverty-environment connections; this is primarily due to the difficult obtaining data. I also recommend then that further case studies in environment-poverty linkages be encouraged as well as research into improved methods for collecting data. Case studies in areas of extreme poverty and environmental degradation should be prioritized. The interaction between urban poverty and urban environmental problems also calls for increased research. Promoting and creating programs to solve the issues arising from interconnections of environment and poverty will be more successful and beneficial if the types of interconnections and the poverty in the area are determined prior

to a program being established. Perhaps more local, bottom-up programs would be created if more case studies were available.

## Conclusion

United Nations conference documents now highlight that poverty reduction is increasing in its importance to the sustainable development movement and environmental preservation. This is exciting to see. The greater attention brought to the issue, the more likely more research and innovations will occur in the area of environment, poverty, and sustainable development.

In this project, I set out to address the following three questions. What is the relationship between environmental problems and poverty? What current approaches are being taken to address this relationship? What are or are there improved solutions to address the relationship to give better success to sustainable development? The relationship between poverty and the environment was shown to exist but has to be specifically classified on a site-by-site basis. Different areas have different issues. It is a complex relationship involving many factors. It was found that the primary linkages between the poverty and environment to involved livelihoods, health, and vulnerability. Current approaches that are addressing the relationship are few as much work is still being done to gather empirical data. However, current approaches address problems through local control and empowerment along with encompassing better social conditions in ways that have a positive impact on poverty reduction and the environment. In terms of improved solutions, I recommend that more case studies of environment-poverty linkages be researched and the prioritization of increasing local programs addressing the linkages

be encouraged. When information and knowledge increases, better understanding and improved solutions can increase too.

If supporters of the environmental and sustainable development movement want to secure a future of sustainability and improve the way society interacts with the environment, attention must begin to include social factors, specifically issues related to the environment-poverty relationship. Only once these factors are addressed can an environmental agenda be successfully promoted.



## Bibliography

- Aggrey, N., Wambugu, S., Karugia, J., & Wanga, E. (2010). An investigation of the poverty- environmental degradation nexus: a case study of katonga basin in uganda. *Research Journal of Environmental and Earth Sciences*, 2(2), 82-88. Retrieved from <http://maxwellsci.com/print/rjees/v2-82-88.pdf>
- Agudelo, C., Rivera, B., Tapasco, J., & Estrada, R. (2003). Designing Policies to Reduce Rural Poverty and Environmental Degradation in a Hillside Zone of the Colombian Andes. *World Development*, 31:11, 1921-1931. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0305750X03001505>
- Athanasίου, T. (1998). *Divided planet: The ecology of rich and poor*. Athens, Georgia: University of Georgia Press.
- Barrett, C. (1996). Fairness, stewardship and sustainable development. *Ecological Economics*, 19:1, 11-17. Retrieved from <http://www.sciencedirect.com/science/article/pii/092180099600047X>
- Brand, S. (2009). *Whole earth discipline: An ecopragmatist manifesto*. New York: Viking Penguin.
- Broad, R. (1994). The poor and the environment: friends or foes? *World Development*, 22(6), 12.
- Bucknall, J., Kraus, C., & Pillai, P. (2000). Poverty and environment. *World Bank*. Retrieved from <http://info.worldbank.org/etools/docs/library/36496/PovertyEnvironment.pdf>
- Carr, E. R., Kettle, N. P., & Hoskins, A. (2009). Evaluating poverty–environment dynamics. *International Journal of Sustainable Development & World Ecology*, 16:2, 87-93.
- Chambers, R. (2001). Sustainable livelihoods: the poor's reconciliation of environment and development. In J. Harris, T. Wise, K. Gallagher and N. Goodwin (Ed.), *A Survey of Sustainable Development* (pp. 61-64). Washington, DC: Island Press.
- Collier, P. (2007). *The bottom billion: Why the poorest countries are failing and what can be done about it*. New York: Oxford University Press.
- Dasgupta, P. (2003). Chapter 5 population, poverty, and the natural environment. In K. Mäler and J. R. Vincent (Ed.), *Handbook of Environmental Economics* (pp. 191-247). Elsevier.

- Develop*. Retrieved February 23, 2012, from <http://dictionary.reference.com/browse/develop?s=t>
- Development*. Retrieved February 23, 2012, from <http://dictionary.reference.com/browse/development>
- DFID. (2000). Achieving sustainability: poverty elimination and the environment. Retrieved from [http://webarchive.nationalarchives.gov.uk/+/http://www.dfid.gov.uk/pubs/files/tsp\\_environment.pdf](http://webarchive.nationalarchives.gov.uk/+/http://www.dfid.gov.uk/pubs/files/tsp_environment.pdf)
- DFID, EC, UNDP, & World Bank. (2002). Linking poverty reduction and environmental management policy: policy challenges and opportunities. Washington, DC: International Bank for Reconstruction and Development/The World Bank. Retrieved from <http://www.unpei.org/PDF/Linking-poverty-red-env.pdf>
- DSD. (2009). *About the UN commission on sustainable development (csd)*. Retrieved on October 15, 2012 from [http://www.un.org/esa/dsd/csd/csd\\_aboutcsd.shtml](http://www.un.org/esa/dsd/csd/csd_aboutcsd.shtml)
- Forsyth, T., & Leach, M. (1998). Poverty and environment: priorities for research and policy. *Institute of Development Studies*, 1-49. Retrieved from [http://eprints.lse.ac.uk/4772/1/Poverty\\_and\\_environment-priorities\\_for\\_research\\_and\\_study.pdf](http://eprints.lse.ac.uk/4772/1/Poverty_and_environment-priorities_for_research_and_study.pdf)
- Friedman, T. L. (2009). *Hot, Flat, and Crowded: Why We Need a Green Revolution--and How It Can Renew America*. New York: Picador.
- Harris, J. M. (2000). Basic principles of sustainable development. *Global Development and Environment Institute*. Retrieved from
- Heinrich Boll Foundation. (2003, July 18). *1972: The beginning – the Stockholm conference on the human environment*. Retrieved September 6, 2012 from <http://www.worldsummit2002.org/index.htm?http://www.worldsummit2002.org/guide/stockholm.htm>
- Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: mapping different approaches. *Sustainable Development*, 13, 38-52.
- Jason. (2011, March 18). News trends in sustainability, development issues. Retrieved September 22, 2012, from Global Sherpa: <http://www.globalsherpa.org/news-trends-sustainability-development-issues>
- Jehan, S., & Umana, A. (2003). Environment - poverty nexus. *Development Policy Journal*, 18.

- Langhelle, O. (2000). Sustainable development and social justice: expanding the rawlsian framework of global justice. *Environmental Values*, 9, 295-323.
- Lappe, F. M., & Lappe, A. (2003). *Hope's edge: The next diet for a small planet*. New York: Jeremy P. Tarcher/Putnam.
- Lawson, E., Gordon, C., & Schluchter, W. (2012). The dynamics of poverty–environment linkages in the coastal zone of Ghana. *Ocean & Coastal Management*, 67, 30-38. Retrieved from <http://www.sciencedirect.com/science/article/pii/S096456911200138X>
- UNFPA. (2005). Linking poverty, population, and development. Retrieved 02/09, 2012, from <http://www.unfpa.org/pds/sustainability.htm>
- Nelson, G., Campbell, S., & Wozniak, P. (2012). *Beyond earth day: fulfilling the promise*. Madison, WI: University of Wisconsin Press.
- Nunan, F., Grant, U., Bahiigwa, G., & Muramira, T. (2002). Poverty and the environment: measuring the links. *Environment Policy Department*, (2), 77.
- Opschoor, J. B. (2007). Environment and poverty: perspectives, propositions, policies. *Institute of Social Sciences*, 1-38. Retrieved from <http://repub.eur.nl/res/pub/18757/>
- Partridge, E. (2001). Future generations. Retrieved October 3, 2012, from <http://gadfly.igc.org/papers/futgens.htm>
- Poverty*. Retrieved February 13, 2012, from <http://www.merriam-webster.com/dictionary/poverty>
- Poverty-Environment Partnership. (2005). Sustaining the environment to fight poverty and achieve the mdgs: the economic case and priorities for action. New York, NY: United Nations Development Programme.
- Poverty line*. Retrieved February 13, 2012, from <http://www.merriam-webster.com/dictionary/poverty>
- WCED. (1987). Our Common Future. United Nations.
- Reardon, T., & Vosti, S. (1995). Links between rural poverty and the environment in developing countries: Asset categories and investment poverty. *World Development*, 23:9, 1495-1506. Retrieved from <http://www.sciencedirect.com/science/article/pii/0305750X9500061G>
- Root, E. (2012). Poverty and Health [Powerpoint slides]. Retrieved from: <https://learn.colorado.edu/>

- Sachs, W. (2001). Global ecology and the shadow of development. In J. Harris, T. Wise, K. Gallagher, and N. Goodwin (Ed.), *A Survey of Sustainable Development* (pp. 94-97). Washington, DC: Island Press.
- Solow, R. (1991). Sustainability: an economist's perspective.  
Retrieved from  
[http://graduateinstitute.ch/webdav/site/political\\_science/users/elena.gadjanova/public/Issues%20in%20Env%20Politics%202010/Solow%201991.pdf](http://graduateinstitute.ch/webdav/site/political_science/users/elena.gadjanova/public/Issues%20in%20Env%20Politics%202010/Solow%201991.pdf)
- Soubbotina, T., & Sheram, K. (2000). *Beyond economic growth: meeting the challenges of global development*.  
Available from <http://www.worldbank.org/depweb/beyond/beyond.htm>
- Soubbotina, T. (2004). *Beyond economic growth: an introduction to sustainable development* (2<sup>nd</sup> ed.).  
Available from <http://www.worldbank.org/depweb/english/beyond/global/beg-en.html>
- Speth, J. G. (2004). *Red Sky at Morning: America and the Crisis of the Global Environment*. New Haven: Yale UP.
- Stern, D. (2003). The environmental kuznets curve. *Internet Encyclopaedia of Ecological Economics*. Retrieved from <http://www.ecoeco.org/pdf/stern.pdf>
- Sustainable development*. Retrieved 02/13, 2012, from  
[http://www.iru.org/en\\_policy\\_development](http://www.iru.org/en_policy_development)
- Sustainability Reporting Program. (2000). *Defining sustainability*. Retrieved April 12, 2012, from <http://www.sustreport.org/background/definitions.html>
- Tainter, J. A. (2006). Rational Sustainability. In E. Laszlo and P. Seidel (Ed.), *Global Survival: the Challenge and Its Implications for Thinking and Acting*. New York: Select.
- UN DESA. (2011). The global social crisis: Report on world social situation 2011. New York: United Nations.
- ul Hag, M. (2001). The human development paradigm. In J. Harris, T. Wise, K. Gallagher, and N Goodwin (Ed.), *A survey of sustainable development: social and economic dimensions* (pp. 58-61). Washington, DC: Island Press.
- United Nations. (n.d.). *Background*. Retrieved April 12, 2012, from  
<http://www.un.org/millenniumgoals/bkgd.shtml>

- United Nations. (2012). Report of the united nations conference on sustainable development. New York: United Nations. Retrieved from <http://www.uncsd2012.org/content/documents/814UNCSD%20REPORT%20final%20revs.pdf>
- UNDP. (2011). Sustainability and equity: a better future for all. Virginia: Colorcraft. Retrieved from [http://hdr.undp.org/en/media/HDR\\_2011\\_EN\\_Summary.pdf](http://hdr.undp.org/en/media/HDR_2011_EN_Summary.pdf)
- UNDP-UNEP Poverty-Environment Initiative. (2009). Mainstreaming poverty-environment linkages into development planning: a handbook for practitioners. UNDP-UNEP Poverty-Environment Facility.
- UNEP. (n.d.). *Action plan for the human environment*. Retrieved September 6, 2012, from <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1492&l=en>
- UNEP. (n.d.). *Declaration of the united nations conference on the human environment*. Retrieved September 6, 2012, from <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1503&l=en>
- UNESCO. (1992). The rio declaration on environment and development. Retrieved from [http://www.unesco.org/education/information/nfsunesco/pdf/RIO\\_E.PDF](http://www.unesco.org/education/information/nfsunesco/pdf/RIO_E.PDF)
- UNFPA. (2011). State of world population 2011: People and possibilities in a world of 7 billion. New York: United Nations Population Fund.
- UN DSD. (2004, December 15). *Johannesburg declaration on sustainable development*. Retrieved September 6, 2012, from [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POI\\_PD.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm)
- UN DSD. (2006, August 24). *Basic information*. Retrieved September 6, 2012, from [http://www.un.org/jsummit/html/basic\\_info/basicinfo.html](http://www.un.org/jsummit/html/basic_info/basicinfo.html)
- U.S. EPA. (2012, October 16). History of sustainability. Retrieved April 12, 2012, from <http://yosemite.epa.gov/r10/oi.nsf/Sustainability/History>
- Wise, T. A. (2001). Overview essay. In J. Harris, T. Wise, K. Gallagher, and N. Goodwin (Ed.), *A survey of sustainable development: social and economic dimensions* (pp. 47-57). Washington, DC: Island Press.