

Planetary Partnerships and Their Role in Global Environmental Governance

by

Brenda Marie Kauffman

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
May 14, 2010

Keywords: Global public goods, globalization, trans-boundary environmental problems

Copyright 2010 by Brenda Marie Kauffman

Approved by

Anthony Tuo-Kofi Gadzey, Chair, Associate Professor of Political Science
Cynthia Bowling, Associate Professor of Political Science
Murray Jardine, Associate Professor of Political Science
Thomas Vocino, Professor of Political Science and Public Administration

Abstract

Finding solutions to global environmental problems has practical, scientific, theoretical, and academic importance. As a practical matter protecting the earth's bio-systems is necessary for human survival. As resources become increasingly scarce and health risks more prevalent many scientists and environmentalists argue that addressing global environmental problems is critical. Globalization has increased interdependence, requiring new strategies for balancing economic growth and improved quality of life with the fragile ecosystems of the planet. In this study I examine some of the strategies that have been used to manage global environmental problems. I explore different approaches that stem from two main world views: The power of the sovereign state and the belief in the superiority of the free market. While neither of these approaches has demonstrated efficient and effective global environmental governance independently, there is evidence to suggest that with greater collaboration and coordination between state and market actors solutions can be found and implemented. My findings imply a need for a major global shift towards planetary partnerships composed of the many various actors involved in global economic and socio-political transactions. The significance of this study is that it is both timely and vital for the global community.

Acknowledgments

I would like to apologize to my children for having been a student their entire lives so far. I appreciate their patience with me. I would like to thank Nathan for never letting me give up and sticking by me. I would also like to thank Dr. Gadzey for taking me on as a candidate and helping me to believe in myself. I am thankful for my sister who gave me continuous love, support and encouragement. I am grateful to my friend Michelle who had so much faith in me she booked her trip to my graduation months before I knew there would be a graduate. I would like to thank all those who helped me on this journey.

Table of Contents

Abstract	ii
Acknowledgments	iii
Chapter I: Introduction	1
Chapter II: Literature Review	14
State Centered Literature	14
Market Based Literature	35
Chapter III: Methodology	57
Chapter IV: Results	79
Chapter V: Discussion and Conclusion.....	107
References	116
Appendices.....	121

Governing the Environment: The Human Legacy

Humans continuously modify their surroundings. That is essentially how human progress is made. Governing the environment is amid our greatest contemporary challenges, particularly as we move ever increasingly into a globalized world. Globalization means, amongst other things, limitations on states and the Westphalian system as the models of solving global problems. This research explores a new model of governance for a more effective human stewardship of the environment. The purpose and focus of this study is to develop a new theory that is better suited to address global environmental problems. It is a study that is of course part of a broader context that includes a multi-disciplinary approach to finding solutions to environmental problems. The essential components of this research include a look at the traditional theories of sovereignty and market liberalism, the political and economic models, used to discuss the issues, their strengths and shortcomings, and why a new approach is needed. I will show that the major difficulty is the result of the pursuit of self interest through sovereign absolutism and market power. The imperatives of globalization demonstrate the need for the cast of global actors to shift from mainly nation-states acting through conventions and treaties to impose regulations, as well as market actors behaving in ways that disregard the importance of the state, to a system of partnerships that brings these two forces together. This type of cooperation can replace persistent collective failures and negative outcomes.

Expanding globalization exposes the vulnerability of selfish sovereign pursuits as well as brings greater awareness of collective gains which come through cooperation. The extent to which many of the contemporary forms of economic globalization are driven by non-state actors lays out the possibility for more cooperative measures for solving environmental issues which

are intricately interconnected with economic globalization. Environmental issues that are increasingly outside the parameters of any single nation-state require greater collaboration and co-ordination. Individual actions by states often do not yield the desired results, and actions by firms without the enforcement power of the state are equally ineffective. The more nation-states collaborate with non-state actors dedicated to environmental protection the more likely collective gains will be achieved. The structure of this study contains elements of game strategic thinking that will be laid out in greater detail to demonstrate traditional theoretical approaches for making predictions for likely outcomes concerning international issues. Then, by citing actual historical evidence of some states strategies and the resulting protocols and conventions I will show how the dominance of a single approach was ineffective in producing significant gains for the collective good of environmental protection.

This research is significant because a new window into global environmental governance is necessary. I define governance as the ability to effect change and influence behavior through management. This is different from governing with a specific authority that comes from governments and leadership processes. In this work I refer to states, nations, nation-states, and countries to all mean the same thing. This new model for addressing global issues is both critical and timely. So much research has been done on the environment, however, most of it has centered on either policy or market theories and these approaches have been inefficient. The purpose and significance of this research is compelling not only because it contributes to academic study concerning various theoretical approaches to dealing with global relations, but because the larger impact is that it can have practical implications. The real problem being addressed is the need to bridge the gap between market and state models for global governance and this bridge can help global institutions cross the divides that have made previous attempts to

establish and implement true global environmental governance impossible. Thus, this research is capable of filling a gap in the literature dealing with global environmental problems.

As with most collective endeavors, promoting good stewardship of the environment takes its cue from our historical accomplishments, failures, and challenges. Around 500,000 BCE fire was domesticated by early Homo erectus. Wheat and Rye were cultivated in the Fertile Crescent somewhere near 10,000 BCE and by 3500 BCE humans, living in early Mesopotamian cities with irrigation and animal-driven plows, figured out how to use bronze and were on the way to smelting iron. This period also produced a need for the first environmental regulations. Ancient Babylonian and Israeli cities enforced strict hygiene laws to ensure community well being. In 1750 BCE the first civic laws, the Hammurbi Code, for governance were written. So much was happening and humans were continuously reshaping their lives and the environment around them. The use of, and dependence on, natural resources was growing every time the planet registered another birth. By 750 BCE, Aristotle was urging the Greek city-states to protect the forests and regulate wood use. By the 1300s England was attempting to regulate charcoal burning to protect its forests.

The relationship between humans and the environment, as with all of earth's living creatures, is a complex one. It is more complex for the planet's tool makers and species with the ability to transform nature's raw materials. As Rachel Carson astutely noted, "To a large extent, the physical form and the habits of the earth's vegetation and its animal life have been molded by the environment. Considering the whole span of earthly time, the opposite effect, in which life actually modifies its surroundings, has been relatively slight" (Carson 1962, 5). Human discoveries have been vast reaching from the tiniest particulates of the universe to the universe itself. In the 1600s both plant cells and observational astronomy were discovered. With Galileo

Galilei modern science emerged and far greater transformations in the human capacity for progress exploded like a distant star and spread rapidly throughout the world like the escaping stardust in the universe. Discovery and science have enabled humans to continuously change the way they interact with the environment.

Regulating human interactions with the environment is not new. It is not new at all. Throughout Europe and in the United States continuous efforts have been made to preserve timber lands and forests since at least the fourteenth century and eventually it was discovered that there is a need to regulate water and air pollution as well. Today countries all over the world have some form of environmental regulations. For thousands of years, humans have been manipulating natural resources and subsequently realizing there are times when they are misused to the point where human health, and more recently included plant and animal health, are endangered. Ultimately international accords to protect everything from atmosphere to whaling have emerged as attempts to establish coherent global governance for the environment.

During the Enlightenment there was a consummate attempt to uncover humanity. What type of creature is the human and how does it fit into this world became critical questions. Centuries later the questions remain. While the theorists John Locke and Adam Smith were trying to hammer out the nature of the state and of the economy, industrialization and rapidly changing technologies were drastically changing the landscape. It is important to understand this dynamic, the traditional theoretical focus occurring alongside real time politics, economics, and environmental changes, when trying to develop pragmatic theories for the future of global environmental governance. The political economy of the global environment can only be addressed from a variety of angles. Events do not occur in a vacuum nor do they occur in static form allowing completed theories time to remain relevant for long.

What is the best way to try and understand global environmental change? How serious is the peril? How are different problems related? In a world overloaded with information that is often contradictory, it can be difficult to make sense of the issues and to know what approach might be best for solving the myriad of problems. As Peter Dauvergne and Jennifer Clapp suggest, "It helps, we believe, to begin with the big picture, rather than delving immediately into in depth studies of particular environmental issues. Understanding this big picture, in our view, is necessary before we can fully understand the various interpretations of the specific causes and consequences of environmental problems" (Dauvergne and Klapp 2005, 2). Thus, a good place to start is to look at various worldviews or theoretical assumptions about how polities and societies should allocate resources and who should be responsible for it.

Understanding, explaining, and measuring the allocation of resources has traditionally been part of economic studies. However, the existence of such things as public goods, those non-excludable goods like national defense or national parks, ultimately meant that politics, which is responsible for the allocation of such goods, be part of the study. The discipline of political economy was established to deal with these issues. Political economy provided a center for the discussion of how the forces of politics and economics operate, often in conjunction and sometimes in opposition with each other. Addressing global environmental problems within the framework of political economic theory is most useful because of the nature of countless environmental problems resembling public goods phenomena. This will be addressed in some detail in the chapters to follow. To introduce the idea of the spread of globalization it is necessary to review the evolution of global economic thinking.

Before the twentieth-century most economic thinking centered on Adam Smith's notion of laissez-faire economics, or market liberalism. The turn of century and the economic disasters

of the 1920s and 1930s, however, demonstrated major failures of laissez-faire economics. Where government had once been viewed as a great threat to liberty and individual freedom it was now seen as the only way to regulate what was otherwise an unstable economic situation. President Roosevelt and supporters of the New Deal believed that government was not necessarily a threat to individual freedom, but a protector of it. In order for people to truly enjoy their liberty they had to be able to make a comfortable living. In order to ensure each individual has an avenue to sufficient needs and protection for their property the government has to play an active role.

Things changed after the initial financial boom experienced following the war ended and inflation rose. A renewal in opposing government intervention in all matters economic, and ultimately social, occurred. Perhaps even more opposed to government intervention than Locke or Smith, the famous economist Milton Friedman wrote prolifically about the problems of too much regulation. For Friedman the market is where individual achievements take place and where the freedom an individual enjoys serves the variety and diversity of society. He believed that most problems could be solved through free market enterprises, environmental problems included. However, environmental problems were not being seriously considered during his time nor were the impacts that many industries were having on the environment until several decades later when both the economy and the environment were discovered to be in trouble. The 1970s experienced the height of inflation and the pain of government failures.

The 1970s were not only a time of inflation and of the first energy crisis, but it was also a time of growing environmental awareness. Private industry came under attack as instances of deliberate environmental pollution began to get media attention. Factory discharges of pollutants into water sources were discovered to be a major health hazard. Aside from the very public and

extremely damaging oil spills like that of Exxon-Valdez of 1989 or the one former Iraqi President Saddam Hussein intentionally released in 1991, more subtle troubles persisted, for example, the case from Hinkley, California. The case involved a natural gas pipeline owned by Pacific Gas & Electric which was hiding toxic pollution that turned out to be responsible for serious illnesses and death to people living nearby. This story was repeated in Niagara Falls, New York where toxic waste was buried in the Love Canal in the middle of a residential neighborhood. And of course, the very notable story of the Cuyahoga River in Cleveland Ohio catching on fire is a significant example of unregulated pollution (Layzer, 2006).

The air has fared no better. The world's major cities suffer all sorts of pollutions. Ranging from car exhaust to smokestacks, the air in many places is considered dangerous. Air pollution is difficult to regulate at regional levels because it travels and often the source is found in a different region of the state or country. Global warming is perhaps the most notable and widely debated outcome of toxic emissions. The burning of fossil fuels is cited as the most devastating problem the atmosphere faces. However, deciding who is responsible for it is one of the hardest questions to answer. Even when these issues are considered to be public goods or semi-public goods there is no clear indication who must provide for their protection or be responsible for their pollution.

Many corporations have been non-responsive or hesitant to take action to practice preventative pollution techniques because it is their purpose, as Friedman so passionately believed, to maximize profit and minimize costs. As a result, citizen groups and grassroots organizations are increasingly calling upon the government to take action to force industry to comply with new federal regulations. The 1970s produced many major environmental acts in the United States, including The Clean Air and Clean Water Act, as well as the establishment of the

Environmental Protection Agency. The first Earth Day was held in 1970 in the United States and is now a worldwide event drawing greater attention every year. The environmental movement has indeed spread across the globe.

In the last thirty years literally dozens of policies have been presented to and have passed through the United Nations General Assembly at various international conventions. So much regulation resulted that it required larger bureaucracies and international agencies to manage it all. However promising these acts were, thirty years later global warming, air pollution, water pollution, disappearing forests and species loss are still some of the major issues facing the world. Water pollution alone, for example, is so significant that millions of earth's citizens live in toxic environments where they do not have access to clean water. Probably the most obvious problem with regulation is implementation. It is often difficult to enforce even the best policy because of various factors such as its scope or cost.

Global leaders have found themselves in a position of uncertainty as to the best course of action. Many theories exist as to which would be the best way to address these problems. Looking at some of these theories from a big picture perspective they can be put into two general categories as discussed: private versus public or the market versus the state. The following chapters will look at why both of these approaches have been ineffective and why a new approach is needed. This new model is represented here as the planetary partnership for global environmental governance. The increasing interconnectedness among countries and their market-oriented productive, consumptive and distributive methods is particularly evident in the globalized nature of today's environmental problems. But are the changing global trends of environmental problems equally evident in the methods of their governance? Are state-centric methods of governing the environment, the supply of global environmental public goods and

regulation to reduce environmental public bads, efficiently going into our increasingly globalized world? Are markets able to manage the many environmental problems that are often linked to their methods for extraction of resources and production of goods?

This research examines the growing unparalleled development between market-based or pocketbook environmental problems and their methods of governance. It argues that the changing trans-boundary dynamics of environmental problems make state-centric solutions to the environment, not so much irrelevant but ineffective, if they continue to neglect and exclude other relevant actors. It is not to say that environmental problems are leading us to some dissolution of sovereignty, but rather towards new standards for managing the environment within sovereign territories. Global environmental problems require global methods of governance; and attachment to sovereignty and territoriality inhibits the discovery of this cooperative effort. Also examined are the early signs of this alternative global governance complex including particularly the public-private sector hybrids that would involve an increasing role for nongovernmental actors.

New developments in international relations suggest this fundamental shift away from strict sovereignty and territoriality towards both greater intergovernmentality as well as state-private sector cooperation. The inequalities for environmental standards have been aggravated across and within states and in many ways this is more of an economic than political issue. However, the solutions will have to incorporate both. A purely political approach is not adequate for understanding the nature of global environmental problems. Environmental problems do not recognize borders and must therefore be governed across such lines. Additionally, states are not the only regulators for environmental problems. Rather, non-state actors and market entities, in response to market forces, are increasingly tied to global environmental governance.

Market only theories, which arise out of classical and neo-liberal thinking, are equally inadequate for combating global environmental concerns. Firms are always working in conjunction with sovereign law. Often times the law forces the firm to behave in particular ways. Other times the firm has such influence over the state that the laws are bent to accommodate their needs. The role that markets have played in generating the myriad of environmental problems places them ultimately at the center for finding solutions. Firms behave in the same self-interested fashion as do sovereign states. Markets fail to prevent double standards for firms, especially when they can go wherever they want in the world and essentially choose the state standards to which they will adhere. Markets also fail to control the ecological impacts of trade and often do not support sustainable development.

The methodological approach employed in this research is based on a study of the political model, the pure economic model and the third alternative planetary partnership model for global environmental governance. I am using the Prisoner's Dilemma game strategic model to support my assertion that previous global efforts which have relied on the first two models have not worked. The analysis is based on the shortcomings of these models that have been demonstrated by their respective failures, discussed through historical examples, in dealing with ever increasing environmental problems. I intend to add to the growing literature a commentary on a more efficient formula for addressing global problems like the environment that have both policy and market elements. It is my hypothesis that by merging market and state processes and decision making at the global level, a more effective model for finding solutions will be provided.

What this research is not capable of doing is addressing the myriad of variables that must be considered in establishing a new approach for dealing with global issues. It is not simply a

matter of bringing together theories, but bringing together various real world forces and institutions that are responsible for the movement of social, political, and economic goods. Therefore, there are limitations to what any theory can accomplish on its own, but it does not diminish the importance or significance of the work. It also does not specifically address the unique effects that institutions like multi-lateral banks, commercial banks, and targeted assistance development programs have in implementing global environmental governance due to the need to focus on building a theoretical base.

The following chapters include a look at the main thinkers in dealing with environmental problems. Some authors have written exclusively in support of state centered theories while others do not accept the theory that state choices are the most effective for dealing with problems that cut across borders. While others have argued that the market is capable of providing its own kind of environmental protection. Is it possible for states to provide solutions to global environmental problems? How can states with varying self-interests design plans that would provide equitable and collaborative partnerships for protecting the environment? Can international firms mark the way forward through their technological advancements and efforts for conservation of resources?

Whereas global environmental governance is essential for global environmental protection and increased well-being, sustainable global integration requires co-operation, collaboration and supervision. The difficulty, however, is that there are many ways to supervise environmental governance and states and firms may differ on their preferred co-ordination point because potential solutions will always vary in their costs and benefits according to varying needs and desires. This research attempts to develop a theory of the kind of co-ordination

between states and private power that will be most efficient and effective and best able to manage global environmental problems.

The history of liberalism in western political thought has left us in a perpetual debate between laissez-faire market forces and regulation. From Adam Smith and John Locke to Franklin Roosevelt and Milton Friedman a range of ideas about the role of government in the economy and other spheres of human interactions have emerged and attempted to provide guidelines for how society is to be arranged. As the issues changed and the world seemed to get smaller, the debate carried on amongst those whose faith in the free market never wavered and the expanding bureaucracies and other government proponents. Domestic concerns became international and global challenges grew ever more complex. In the meantime, many of the world's nations are still trying to capitalize on industrialization and catch up to the world's richest countries. These nations operate with the technologies they can afford often with little regard to global warming and other environmental concerns. The whole issue of environmental depredation is irrelevant to many nations whose economies are non-existent. Thus the interconnectedness between political, economic and environmental issues is even more apparent. Most often when natural resources are the only means for economic gains then the value placed on them is generally one of consumption.

As Judith Layzer points out, "Because human life depends on what the earth provides, one might think environmental protection would be uncontroversial. Yet bitter disputes have erupted over proposals to preserve undeveloped land, save endangered species, protect or restore ecosystems, clean up toxic dumps and spills, reduce air and water pollution, conserve energy, mitigate human-caused changes in the global climate, and ensure an equitable distribution of environmental hazards" (Layzer 2006, 1). According to Layzer, the two basic elements of

environmental issues that most often determine how they will be addressed are first of all, the way they are defined and secondly, the differences in values people have about the issues.

Fundamental differences exist in the way issues are defined and how they are viewed.

These differences are sometimes subtle and other times oppositional. For example, one might wish to protect the rainforest for its own sake, another might wish to preserve it to make the quality of life for humans better and yet another, for the possible financial gain from potential medicines that are often originated from plants, while others might see harvesting the trees as a much better use or value for the forest. Thus, problem definition becomes difficult. Rights of ownership are unclear. Simply declaring such things as public goods and protecting them in the interest of protecting the commons cannot be wholly effective when so many different values conflict. Yet, these conflicts are over protecting the environment not sustainable for the long term health of life on this planet and we must find resolution. Additionally, no one state is an island of responsibility and decision making for economic matters. No one state can provide for the protection of global environmental resources. Therefore, a close examination of the major conflicting theories is needed in order to make significant progress in finding viable solutions to global environmental problems.

Chapter II Literature Review

State centric literature

One approach to managing global environmental problems is the political approach. In this model nation states are the primary actors. This is the most traditional approach in International Relations (IR) for dealing with a host of different global issues including the many diverse global environmental problems. Even though some states may fail to regulate private enterprises in regards to the environment, ideally the state is still the only agency capable of confirmatory regulations or enforcement. Thus, the method for dealing with global environmental problems is one that relies on countries to come together in conventions to craft policies that they must then implement. This model upholds the sovereignty, or ultimate authority, and supreme power of the nation-state.

International Relations (IR) is essentially the study of the affairs and interactions amongst states. More recently it has expanded to include things like inter-governmental organizations (IGOs), non-governmental organizations (NGOs), and Multi-National Corporations (MNCs), but the primary decision-making unit remains with the state. In many ways this has made establishing international cooperation for dealing with global issues difficult. This is in part because any attempt to establish international regimes, whether they are aimed at environmental protection or trade laws, must always be subject to the will of the various states. The economist Charles Kindleberger (1986) suggested that through hegemonic stability one state could be such a powerful influence on the others that there would be a greater likelihood or incentive for states to comply with the policies of international regimes. However, historical failures of global compacts, like the Kyoto Treaty of 1992, demonstrate that hegemonic power might be waning in

the modern era and as Immanuel Wallerstein (1998, 2003) argues, America, for example, thought to be in a position of unprecedented global supremacy, is actually in a state of decline. More recent events like the continuing struggles in the Middle East, the inability to properly address the conflicts on the African continent, the growing power of Multi-National Corporations, and global environmental problems further illustrate the lack of a hegemonic power able to be influential enough.

Regardless, this is not to say that there is no value in forming international regimes as is evidenced by the increasing number of them. As Robert Axelrod and Robert Keohane (1985) have argued, international regimes affect the behavior of states and despite global anarchy there are quite often high levels of international cooperation. Even without a hegemonic power there is still a significant role for international regimes and the various benefits they can provide to states. These regimes are especially important for dealing with global environmental problems. The issue that remains problematic is balancing sovereignty with international cooperation.

While there is a growing field of international environmental politics in response to a greater awareness of global environmental crises, there is little discussion of how these environmental problems challenge state sovereignty. As Thom Kuehls (1998) points out, "The recognition of the penetrability of sovereign space has been the most problematic relationship between environment and sovereignty raised over the last thirty years" (Kuehls 1998, 32). Discussions of the issue of sovereignty have been raised by political scholars for centuries. Jean Jacques Rousseau (1712-1778), for example, believed sovereignty was about the rule of law and government was the apparatus charged with managing the political economy (Kuehls 1998). Ultimately, however, the environment is not bound by the laws of sovereignty nor to any of the many principles of regime theory like national rule of law or national political economic policy.

The primary assumption that has dominated regime theory is that the state is the sole actor in international affairs and maintains sovereignty and territoriality for all internal concerns and therefore this concept must be included in any analysis of global politics or attempt to develop a theory for global governance. Identifying the political economic culture, often a statement of its level of power, of a state will demonstrate the tendencies the state may exhibit when part of an international regime. If a state has the resources and the legitimacy to ensure a variety of public goods within its own borders it may be more likely to do so in an international context. However, sometimes when a state becomes a welfare state, usually found in rich democratic countries, it may not have the resources to participate in providing public goods beyond its own borders or may reject the idea of helping to provide for people on the outside.

Literature relating the public goods problem was begun by Adam Smith when he worked out his economic design in the eighteenth century. In it he allowed for a limited role for government which was to provide for those goods that could not be provided for in the market. For Smith the three duties of government were to first protect society from invasion through the use of military force. Second, the role of the sovereign is to protect each member of society from the other members. Finally, the third and last duty of the government is that of creating and providing for those institutions and public works, which although they may be in the highest degree advantageous to society, are, however, of such a nature, that the profit could not repay the expense (Smith, 1776). The world of Adam Smith was quite different than the world today and the types of problems and concerns over environmental degradation were quite unimaginable to him. Additionally, for Smith concerns over public consumptive goods were bound by national borders and under the care of state leaders. Contemporary global environmental problems are not bound by such things, yet they still require provisions from outside the market, beyond

individual competence. The argument in favor of placing environmental problems into the sphere of public goods, placing it under some kind of political control, ultimately relies on the ability to enforce global environmental regulations and manage some type of government provisions. However, this has not proven to be a viable solution for environmental governance because of problems of definition as well as the lack of authority, the latter being especially true for managing both compliance and free riders. Additionally, there is often a great deal of resistance from corporations and states to classify environmental issues as public goods as opposed to private, profitable, goods.

Essentially, the public good argument is that people in a market economy will not pay enough for those things that may be enjoyed by all and diminished by none and therefore only government can provide these things. Adam Smith's understanding of public goods may have been limited in scope due largely to his smaller worldview, but in the centuries that have passed several schools of thought have tried to capture the importance of public goods provision. Paul A. Samuelson expanded upon the idea of public consumptive goods in his 1954 article, "The Pure Theory of Public Expenditure." In it he described public goods as those things in which an individual's consumption does not diminish consumption for another. Clean air is a public good because no matter how much one individual consumes it does not exclude anyone else from doing so. However, air pollution as a result of factories and exhaust from cars has diminished the quality of air and the market is unable to provide any incentive for cleaning it. If a corporation were willing to use smokestack scrubbers and invest in clean technologies and greatly improve air quality, there is no way for them to charge people to breathe the clean air and prevent those who do not pay from doing so. This type of public good far exceeds national boundaries and is a much greater task than providing for a public good such as military protection or for a

lighthouse. Such global public goods pose a more serious problem in the absence of an international government structure.

Inge Kaul defines a global public good in this way: "Global public goods are public goods whose benefits reach across borders, generations and population groups. They form part of the broader group of international public goods, which include as another sub-group, regional public goods" (Kaul 2000). For example, the eradication of widespread diseases benefits all people in all places including future generations. Likewise, managing the hole in the ozone layer is advantageous to all people including those not yet born. However, the debate over what environmental concerns should be included in the category of public goods is not easily defined. It is more complicated than the traditional method of defining public goods by separating the competitive private goods from those that are non-excludable or non-rivalous and not likely to be provided for by the market. David Pearce (1997) adds that the global atmosphere and the ozone layer come closest to being pure global public goods because both are jointly consumed and have strong non-exclusion properties. It would appear that reducing the risk of global climate change would fall into a category of mutual benefit for everyone, but instead consensus over how the problem of climate change should be managed has not been easy to achieve.

It was easier for Adam Smith to limit his list of public goods to national defense, law and order, and public works, considering the very limited role of government he imagined. He also expected that the geographical boundaries of nations would limit the issues of concern. Because nations are essentially groups of people living within certain borders who discriminate their tastes and preferences, including what they consider to be public goods, they act behind and alongside the governments that provide them. In other words, it seems that before recognition of the trans-boundary nature of environmental problems providing for public goods was

appropriately assigned to state institutions. But globalization brought new concerns and new problems that were not likely to be provided by private actors. For example, as Richard Cooper suggested (1989), most economists began to extend the list of international public needs to include implementing standards to reduce transaction costs, such as weights and measures, language and money in response to emerging globalizing trends.

Charles Kindleberger (1986) noted that despite this recognition there are some economists who argue that open markets and even money are not and can never be public goods because countries can be excluded from them and these arguments remain powerfully in opposition to state intervention in market affairs. In this sense some might argue in a similar vein that the world's forests, lakes and streams can never exist in a non-excludable manner. Therefore, it will always be within the domain of the territory to control these things. This definitional barrier is a clear problem for charting the future for global environmental public goods. It transcends into the bigger problem that despite agreement on definition for things like clean air, clean water, and forests to be considered as public goods, who shall provide for them or protect them from negative externalities like pollution or depletion. In the meantime many natural resources are considered private goods owned by states or corporations who have secured rights.

Private goods, on the other hand, are often described (Smith 1776, Samuelson 1954, Pearce 1997, Kaul 2000, Kindleberger 1986) as those things that are traded in a market. This description is useful for understanding public goods as those things that are not tradable. Natural resources, like trees, oil, coal, water, or other minerals, are under current practices bought and sold for profit. Presently as concerns such natural resources, the industrial, commercial, and financial corporations, are in a sense in possession of the planet; either directly or indirectly, with the support of governments and international agencies like the World Trade Organization

(WTO). Redefining these seemingly private goods as public goods would be a step towards greater collective management. Distinguishing the natural world from those things that can be bought and sold for a price, by first placing them into the realm of public goods, and also by adding to their cost the environmental externalities that result from transforming valuable resources into products for consumption, are two important steps in the process.

Public goods are not profitable like private goods that drive self-interested individuals to pursue them and provide them in the market. Adam Smith believed this selfish pursuit for private goods would ultimately provide for the common good by creating a competitive market place. He believed that only those things that were of a good quality and price would survive in the market. Each individual's selfish pursuits would force producers to meet such demands and ultimately benefit everyone with the quality goods at acceptable prices. For example, if demand for clean energy technology were dominant in the market then the available products would reflect this need. However, not all things produced by the market are good and the costs of these public bads are not always absorbed. Adam Smith had little to say about such things having not experienced directly the kinds of pollution and waste that would emerge from the market. Smith was at heart a moral philosopher and held that there could be an ethical foundation that would guide rational self-interest.

Charles Kindleberger (1986) makes an important contribution to the discussion of public or collective goods and those provided for through self interest by putting them into the context of group membership. In other words, traditional thinking allows for zones of indifference (Kindleberger 1986) that enables the exclusion of outsiders from benefiting from the provision of public goods. This is easy when the concerns are limited to those things that are direct benefits felt by members of a group, a community, or even a region. Nations often see themselves as such

exclusive groups. Therefore, it may be in the self-interest of a nation to protect the environment and provide public goods to its citizens tied to a desire to keep such benefits within national borders. However, global environmental problems transcend such self-created groups and artificial boundaries. Thus, there can be no discrimination and therefore provision must be available for everyone. The problem is that the international community lacks a political institution that possesses both the authority and the resources for this enormous task.

Political ties vary widely. Presently there are leagues, alliances, commonwealths, confederations, federations, provinces, states, kingdoms, or territories. These areas of cooperation, most basically of economic cooperation; for example trade, have historically increased and decreased, appeared and disappeared. Globalization has meant that the size of the economic area has transcended many of these traditionally limited areas, and in manifold ways has led to divers instances of environmental degradation. Politically however, the same expansion has not occurred and even the international organizations like the United Nations (UN), the World Trade Organization (WTO) or the International Monetary Fund (IMF) still exist outside of the state and rely on state power to voluntarily comply.

Kindleberger (1986) identifies two main problems with extending the political area to cover the same area that economics has through trade and commerce: First, the nature of the ties varies so much it imposes many limitations; and secondly, the ambitions of the members remain relevant. Providing for public goods on a global scale is directly impacted by the relationships between political powers and by each individual's self-interested pursuits. Since there is no centralized power in international governance public goods can only be provided by individual states, with their own centralized or federalized systems, or by some agreement amongst states.

David Pearce (1997) questions these agreements and their ability to provide global public goods like environmental protection. He refers to the traditions of the Scottish political economists like Adam Smith and David Hume and the belief that all actors will be motivated by self-interest and by extension of this fact all treaties will remain subject to the will of the actors. "For global environmental goods, then, the context is a game theoretic one, not a set of selfless nations coming together for the good of the global future" (Pearce 1997, 467). The level of concern for protecting the environment would be impacted by many things like incentives, degree of punishment in command and control policies, and even distance in both geographical and biological terms (Pearce 1997). Game theory and its application to environmental problems will be addressed in more detail in the next chapter. Corporate responsibility is also a major factor here and the success of these agreements more and more often depends on their willingness to recognize the limited amount of resources the planet has and the resulting tragedies of exploiting the commons.

Economies in transition, like those of many nations in the global south and east, are often reluctant to want to participate in strict regulation of environmental resources because of the economic risks they face. Even though it may be in their self-interest to maintain the health of the whole planet, it is difficult for them to see how they can survive without an industry critical to their economy like timber, oil, gas or coal. Placing a value on clean air and water over the sales of timber or other such resources is difficult and cost benefit analysis of environmental public goods is fraught with controversy. Still, the need for some provision for global environmental protection remains and as public goods it is not likely that total protection will come from profit driven market entities but requires government provision. However, the influence of corporations on governments is growing and a tremendous amount of literature has

emerged that cites examples of and reasons for the phenomenon. It is therefore often unclear when a state may be acting out of self-interest, aimed at improving economic and social conditions within its borders, and when there is greed or corporate manipulation.

As Thomas Berry points out, "It is difficult to realize the dimensions of the consequent control over our lives...They [corporations] dominate governments by their financial support of selected candidates for political office and by the constant pressures they exert on legislation through lobbying. In this manner they oppose legislation to restrict corporations and support legislation that provides subsidies for corporations, funds now referred to as 'corporate welfare'" (Berry, 1999, 146). This is generally done behind the scenes and, thus there exists an attitude amongst people that corporations are there for their protection and the government is somehow their enemy. This makes defining public goods extremely difficult, as well as enforcing policies that require corporations to be more responsible for their negative environmental externalities.

While the theoretical justification for the tradition throughout modern history for the government, as representatives of the collective interests, to provide public goods has been generally accepted, it has not been able to overcome the problem with defining or valuing public goods. Nor, has it been able to address the free rider problem. The non-exclusion aspect of public goods makes it virtually impossible to avoid allowing those who do not contribute the benefits. The free rider problem is often a cause for the non-production or under production of a public good. As Mancur Olson (1971) and others have pointed out, individuals make rational choices to satisfy their own desires and if those desires can be satisfied by allowing others to do the work there is little incentive to join. Someone must be charged with enforcing participation or be willing to compensate for those who do not participate. Additionally, there have to be

powerful and legitimate institutions to act as a referee to manage the disparate groups of free riders.

Governments are typically charged with managing the negative effects of free riders in order to limit their impact. A commonly cited example for the free rider is the provision of defense. If a national government sponsors a military for the protection for the people from outside invasion or through law enforcement for protection from each other there is little to be done to exclude those who do not pay their taxes or contribute to the maintenance of the military or police. Most people, however, see the greater benefit of participation and willingly comply. Olson addressed the idea of voluntary associations based on the tendency for individuals to come together purely because they desire to receive the benefits only a group, such as government providing public goods, can provide. He believed that the traditional theories of such voluntary groups are incomplete. How powerful group cohesion is does not always depend on the degree of consensus within the group. Of course the higher the degree of consensus the more likely the collective good will be realized, but perfect consensus is rare. However, as Olson argues, when social incentives to join groups are combined with rational economic choices, as well as other psychological needs like desire for prestige, respect, friendship, and status, people are more likely to join groups. So sometimes defining the true good that an individual receives from the group is difficult. Nonetheless, the various incentives are critical for understanding why individuals voluntarily participate actively in groups and why some choose to have a free ride.

Often free riding behavior is the result of an actor believing their actions are insignificant compared to collective actions. The paying of dues in an organization and the tragedy of the commons are the classic cases that are often used to illustrate this. There exists many kinds of clubs and organizations that provide the types of benefits that are often considered to be

collective goods or sometimes public goods, for example, the Sierra Club, which is but one of hundreds of environmental organizations that promote environmental protection and preservation. It might be said that the results of their efforts are beneficial to everyone, for instance cleaning up rivers or streams that reduce risks for infection or improve drinking water sources, regardless of whether they are a dues paying member of the organization. Dealing with the free rider problem is often difficult in the smallest of groups; dealing with a transnational free rider problem is enormous.

The tragedy of the commons represents the consequences of when one or more participants in a group behave in such a way that they diminish the collective goods by taking advantage of those who follow the rules. For example, if a group of sheep herders share a common field for grazing and each only grazes for their allotted time the common area will be used sustainably and will remain usable for each member of the group. However, when one person sneaks off to graze their sheep a little more thinking that this little extra will not hurt, the common ground is diminished. Additionally, if more than one person in the group behaves in this manner, it is more likely that the common land will no longer be able to sustain any of the sheep. In addition to the loss of grazing lands for the sheep there is the problem of identifying and holding accountable the responsible actor.

The displacement of costs beyond personal responsibility makes possible both the loss of accountability for creating problems and the responsibility for supporting the solutions. In the case of global environmental problems this often occurs across borders as pollution travels up or down stream or becomes airborne and travels quite distant from the source. Indeed opponents of international treaties often argue that some states will remain in a position to free ride and reap the benefits of reduced environmental problems without paying their dues to the agencies or

institutions that bear the costs, as the costs for international monitoring would be quite high. Nonetheless, controlling the spread of negative externalities and the extension of global environmental problems is a legitimate objective for global environmental governance through regulatory means.

Regulation is often used to prevent or reduce the number of free riders. Such actions aim to address problems of environmental degradation or the over use of resources. Environmental regulation also aims to increase both accountability and responsibility. Michael Mason (2001, 2005) addresses what he calls the analytical challenge of applying accountability and responsibility notions to global environmental politics. His argument is that it is necessary to narrow the definition for accountability and responsibility to the specific issue of transboundary environmental harm that requires specific political conditions in order to establish international environmental governance. Mason and others (Clapp 2008, Ruggie 2004, Newell, 2008) suggest that accountability has generally been understood as the common obligation of states to control the activities within their jurisdiction and to prevent them from causing damage to other states that are not within their jurisdiction. This can be complex and costly and often states do not work towards such prevention. Those that make such efforts help to protect a global public good, but those who do not exacerbate the free rider problem.

Skeptics of the free rider problem and the argument that free riders can weaken an organization cite the fact that some environmental movements have flourished in rich countries despite organizational disadvantages. For example, as Olson's theory suggests firms and polluters should have a stronger organizational structure than consumers and inhalers of dirty air. Yet, these groups have been able to produce considerable policy regulating air pollution. Such groups make it possible for people to participate in the policy making process between elections by

providing information and expert advice to elected officials. They can hold government in check in many ways by demonstrating their popular support through membership. The free rider problems are therefore less significant. Also the broad nature of issues like environmentalism has many advantages over the more specialized groups. Additionally, when states are the lead actors in managing such problems, there is more tendency to dismiss free riders, like in the case of military or police protection. When states form international regimes for dealing with global issues there are other significant factors that will determine their role and willingness to allow for some free riders.

Pamela Chasek (2006) and others suggest that it is possible to develop profiles of various nations to evaluate the characteristics of leading, supporting or blocking global environmental standards when they are involved in international regimes. Regime theory maintains that each state will play the role that most suits its own interests, sometimes a state will support certain regulations despite a possible economic side effect simply to remain in good standing internationally. That would be their self interested motivation. "States have different combinations of internal economic and political forces that influence their policies toward environmental issues. Because the costs and risks of environmental degradation are never dispersed equally among all states; some are less motivated than others to participate in international efforts to reduce environmental threats" (Chasek 2006, 13). Such differences in economic, political, and environmental conditions make achieving sustained cooperation difficult.

Some states find it in their interest to play the role of leader. Lead states will often sponsor and assert leadership on behalf of the most advanced proposal for international regulation on an environmental issue (Chasek 2006). Lead states might fund or produce research

that calls attention to certain environmental problems such as when the Swedish government began investigating the effects of acid rain. They may try to educate the public about the cause and effects of environmental problems as Canada did with the United States concerning the ozone layer and sometimes it is necessary for a lead state to stand up to the states unwilling to be supporters or participants in efforts to combat the effects of environmental problems. Scientific-technological capabilities and economic power do not always signal that a state will take on a leading role, the United States has not done so in regards to Climate Change, but such conditions do provide valuable assets to a state and to any regime it joins. The problem with relying on sovereignty and the conditions of global anarchy mean that not all states will share the desire to protect the global environment based on their diverse circumstances.

Predicting how a state will likely behave has been very difficult. Some states simply will not cooperate for various reasons. As Pamela Chasek, David Downie, and Janet Walsh (2006) describe, the veto or blocking state is one that by virtue of its importance of a particular environmental issue is able to block or weaken international agreement. "Veto power is so important that even economically powerful states are not free to impose global environmental agreement on much less powerful states if the latter are strongly opposed to it and critical to the agreement's success" (Chasek 2006, 14). As global economic trends continue to change and face new challenges, cooperation on economic as well as a host of other issues like the environment may be more compelling for all nations.

Despite the power of sovereignty and the relationship between a state's domestic environmental problems, environmental issues have never been confined to the borders of domestic policy. Issues of population growth, per capita consumption, the scope of global warming, the depletion of the ozone layer, as well as air and water pollution that are not

contained by political borders are some of the problems that made it necessary for a shift to global environmental policies. Environmental trends are perhaps more an issue today than ever before. Since the 1970's changes in consciousness have contributed to a growing awareness about global environmental concerns. However, building international regimes to combat these problems remains a difficult and enormous task. Global environmental problems are often viewed by most governments as minor concerns compared with their national economic and security affairs.

Recognizing their universal nature, global environmental issues, are tremendously impacted by the domestic politics of states. Sometimes, even when a particular policy may be in the interest of all states, some individual nations feel as if they will gain more or will pay a higher price than other states making agreement difficult. Internal politics will always be a factor when analyzing the behavior of states involved in international regimes. The consequences of their actions globally often impact the level of support political figures experience at home. Sometimes, the standards that are established internationally are quite unpopular in the domestic political environment and this adds to the complications of implementation.

The differences between politics among nations and politics within nations are another factor that is often discussed in relation to building international coordination. Politics amongst nations is often rather fluid and sometimes tenuous and can limit the ability to create international standards for environmental governance. Problems between domestic policy and international environmental protection are often exacerbated when there appears to be a conflict of interest. For example, the response the Bush administration gave to the Kyoto Protocol was explained as a response to domestic concerns over international ones. According to Walter Rosenbaum (2008) one of the major reasons that George W. Bush rejected Kyoto in 2001 was

because such regulations would be an unnecessary burden on the U.S. economy. The U.S. was experiencing an energy crisis that President Bush believed would only be made worse by strict regulation of greenhouse gases and instead required new economic incentives for increased oil production. The administration relied on such benefit cost analysis that always held U.S. economic interests above all else. The United States was in the end one of the only states that refused to ratify the protocol. Since this time this issue has largely been divided amongst party lines within the United States, but remains a salient issue globally.

In fact many international environmental issues often remain trapped in national politics. For example, there might be strong opposition within a country that has a great deal of influence on domestic policy. In the United States a powerful pro-business lobby, the Chamber of Commerce, discredits much of science behind global environmental issues like global warming and argues against any policy attempt to deal with it on the grounds that they are not good for business. They redefine environmental problems in such a way that denies the interrelatedness of domestic environmental problems and global ones. They argue that trans-boundary policies which restrict trade or other business or industry needs disrupt the national economy (Levy and Newell, 2005). Yet, denial of the global nature of environmental problems does not change the reality that so many environmental problems are no longer confined by national borders. New technologies continue to emerge that present more challenges to those who argue against the scale of environmental problems. Satellite images and computer technologies like modeling, led to new environmental fields like ecology and ecological economics and stress that trans-boundary environmental problems elude the jurisdiction of any national government and require more than just international cooperation, but local and regional management in addition to international.

While a state exerts the power, the control or dominating influence over resources found within its borders, the negative externalities that result from pollution or exploitation are not limited to those same borders. The effects are often found far outside of the state along river or coastal waterways for instance. Unfortunately there are few governmental institutions, laws or processes to which national governments give their allegiance. As Rosenbaum (2008) points out, "It is no surprise that the political foundation on which modern nations are expected to ground their international environmental diplomacy is at best precarious, a structure currently designed to satisfy two dissonant principles-the concepts of national sovereignty over indigenous resources and national responsibility for environmental stewardship-and so inherently insecure" (Rosenbaum 2008, 336). The Stockholm Declaration of 1972 even enforces the principle of a state's right to use the resources within their borders as they choose so long as there is no damage to the environment outside their jurisdiction.

Most states rely on some type of national cost benefit analysis to determine how they will use their resources. When measuring the costs versus the benefits of preserving or using a resource a state might consider such regional, international or global metrics such as money, sovereignty, national prestige, historic experience, or identity. For example, a nation like Costa Rica might consider the value of rainforest preservation to be quite high and the international recognition it receives for such preservation would be a measure of such value. A major problem occurs when one nation bears greater costs than another which often comes as a result of what is called the upstream/downstream effect (Rosenbaum 2008). Defining the problem usually begins with the downstream recipients, but whose agenda it will end up is not always clear.

Nations view international ecological issues through the lens of their own political historical perspective. The environmental diplomacy displayed will be infused with the

ideologies, passions, and assumptions held within the state, so-called under-developed or developing states might have left over feelings of dependence or resentment from colonial experience or have impressions of the role that the western or developed states should play regarding international concerns. They are often suspect of the intentions of the former imperial states. Yet, all nations regardless of history, experience the natural rivalries and tensions among sovereign states and possess as Rosenbaum (2008) describes it, "the omnipresent impulse to national power and sovereignty," and "all nations appraise prospective environmental policy first by its apparent impact on their own sovereignty and power" (339). This stance is becoming increasingly in opposition to the global nature of environmental problems and undermines the need for global environmental governance.

Questions of inequality are inextricably linked to the creation of sustainable environments, the conservation and just distribution of natural resources and the spread of environmental risks. The emergence of 'environmental refugees' who face insecurity and displacement arising from environmental threats such as global warming, pollution and toxic exposure exemplifies the growing tensions between economic growth and the preservation of inhabitable, safe, and clean environments. There are some difficulties in describing environmental problems as problems of inequity because it is hard to prove who is to be held accountable for rectifying the problems. Sometimes the problem is a result of organizations outside of the state that are responsible for environmental injustice while other times the state itself is responsible. According to Robert Bullard (1990) the definition of environmental justice espoused by the US Environmental Protection Agency (EPA) provides some criteria for the measuring what constitute environmental injustices. In 1994, the EPA decided that environmental injustice should mean, "the fair treatment and meaningful involvement of all

people regardless of race, color, national origin, or income with respect to the development, implementation or enforcement of environmental laws, regulations, and policies" (Rosenabum 2008, 132). Bullard (1990) however, believes that this is not enough to address environmental inequity.

Rather, there are three areas of inequity that need to be considered including procedural inequity, geographical inequity, and social inequity. Bullard says that the extent to which the procedures including the governing rules, regulations and evaluation criteria are applied uniformly is critical. For example, holding hearings for environmental issues in remote areas to minimize public participation is not a fair treatment of those who are impacted. He also says that there are tremendous problems with geographical inequities. The Not in My Back Yard or NIMBY reaction that many people have to the locating of unpleasant, unattractive, noisy, environmentally damaging, or health threatening developments most often leads to protest from those who have the knowledge and the resources to do so. However, as Evan Ringquist (2006) points out, there is considerable evidence that these facilities are located in neighborhoods and in nations with disproportionately large concentrations of poverty.

Chasek (2006) adds that the North-South economic divide has left many underdeveloped geographical regions unequipped to manage their environmental concerns as they strive to become part of the international trade and enhance their economic status. Additionally, there is a history of developing countries perceiving global environmental issues as a distinctly North-South issue that sometimes is a deliberate attempt to sabotage their development efforts. Nonetheless, developed countries continue to consume a disproportionate share of the world's resources while much of the negative environmental externalities like waste and deforestation are suffered by developing states. According to the 1998 United Nations Development Program

report on human development the 20 percent of the world's richest people account for 86 percent of total private consumption (Chasek 2006).

Bullard (1990) also believes that social inequality is evident in environmental decision making which reveals the power arrangements of the larger society reflecting things like racism. Whether or not the links between environmental injustice and racism are intentional or merely the misfortune of circumstance there are plenty of instances where minorities have been exposed to health risks or environmental degradation that is disproportionate to wealthier, more educated whites. The social environmental justice movement is a growing movement and will represent an area of global environmental governance that its supporters argue no regime will be able to adequately address, but rather will come from the tireless work of organizations outside of the state.

The political model focuses on the primacy of the sovereign state and supports the notion of providing for public goods and managing free riders through state power. Some states prove to be leaders, while others use their power or position to prevent regulations or other obligations towards which they are not inclined. This is usually studied methodologically with the game strategic models which I will do in the next chapter. Also central to this body of literature is a growing sense of globalization and what it means to state sovereignty. The greater the divide between richer more developed nations and struggling under developed nations the more issues requiring coordination and cooperation seem to elude the reach of state power. Environmental issues, which recognize no artificial borders and are not bound by sovereign laws, are drawing ever more attention to their global scale.

Market based literature

Merchants have no country. The mere spot they stand on does not constitute so strong an attachment as that from which they draw their gains.

-Thomas Jefferson

When John Locke wrote the Second Treatise of Government in 1690 he obviously was not anticipating the radical changes in global communications and the transnational nature of many of the world's problems. Based on his theory of Natural Law, Locke conceived of society as a place where people willingly allied with one another for their own individual benefits. Government for the society is necessary but its role should be limited. It must be constitutionally bound and serve the primary function of protecting individual rights and freedoms. Adam Smith, whose laissez-faire economics has penetrated deep into American thinking, found the government to be essentially unproductive and not conducive to competition and innovation. For him the role of government was to be limited to protecting the state, establishing and maintaining a system of justice, and maintaining public works projects. This idea has spread with economic globalization.

Adam Smith, as James Laney (1981) and Charles Griswold (1991) have pointed out, was perhaps above all else a moral philosopher who held that justice would be a pillar of the marketplace. Consequently, when there is rational self-interest tempered by justice then market competition can lead to social betterment. In the absence of ignorance, which is more likely to occur in a wealthy nation, there will be greater demand for things like environmental protection and other elements for a healthy society. Thus, the argument goes that by developing the economic well being of a nation, by raising the well being of its citizens, there will be a greater awareness and more desire for a cleaner and safer environment. After all, the market is not just a

place for a business to make a profit, but also where individual actions of social responsibility aim to promote desirable social goods and better quality of life for everyone.

For Smith the market functions best as the chief allocator of investment thereby rewarding the diligent and the astute, and penalizing the inefficient (Laney 2001). Today market liberals espouse this idea and claim that the more the controls and constraints of excessive taxes and regulations are removed, the more investment will be put into the market in new and innovative ways so that the productive capacity will increase. But these ideas stray far from the moral center of Adam Smith's economics. For at the center of his theory were human characteristics, such as moral responsibility, that are not often associated with contemporary market formulas. The modern market theory arises out of a desire to imagine economics as a science that can hold variables in check and make continuous improvements and increased profits.

Adam Smith saw a way for one's self-interested pursuits to lead to a great advantage for all. "To pursue one's self-interest can lead to mutual advantage if the enterprising spirit can identify and meet a real need that exists beyond one's self" (Laney 1981, 27). If in the pursuit of profit the entrepreneur uses intelligence, compassion and sympathy to the service of things larger than oneself then it is possible for the market to behave in ways that would be advantageous to everyone. How does the modern corporation resemble the intelligent self-interest that Smith imagined? Laney says that the last half century has shown a profound emphasis on consumption and immediate gratification. This culture of consumption has in a way pitted self interest against society instead of for the good of society and without this ethos one tends to look more for what can be gained instead of what can be contributed. What all this means for the environment is that there has been a shift away from the notion of capitalism for the sake of investment and human

productivity as Smith envisioned, to one of consumptive practices that are quickly placing many of the earth's most precious resources, like clean water, clean air, and habitable land, at risk. However, market liberals argue that this does not imply that there needs to be government intervention through regulation, incentives, and prices, but perhaps a shift in consciousness about the function of the market. The modern corporation might appear to exist only for the sake of profit, but there is more to be understood.

Milton Friedman argued in a 1970 New York Times article that it is critical to remember that the corporation is an artificial construct, and it in fact does nothing. All actions are performed by people, the people who make up the business. These people are accountable only to themselves and their shareholders. Friedman insisted that any proclamation of social responsibility was in actuality an undermining of free enterprise. In an ideal market "there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits..."(Friedman 1970, 1). This is the mechanism of the market. It rests on individualism, private property, and voluntary cooperation. Society is a collection of individuals.

However, the market responds to the political mechanism of conformity because there is always a more general social interest that the individual must contribute to in order for the society to exist at all. For example, there can be no market without the state to impose such things as property rights and rules for transactions. Furthermore, as Einstein stated, "The individual is able to think, feel, strive, and work by himself; but he depends so much upon society—in his physical, intellectual, and emotional existence—that it is impossible to think of him, or to understand him, outside the framework of society. It is "society" which provides man with food, clothing, a home, the tools of work, language, the forms of thought, and most of the

content of thought; his life is made possible through the labor and the accomplishments of the many millions past and present who are all hidden behind the small word society" (Einstein 1949, 1). Therefore, there is no true disconnect between the individual and the society. All markets likewise exist within social structures.

Generally it has fallen to the state to uphold social stability. When the state provides the market a safe and stable environment, as Adam Smith and most economists suggest, it will function well. When safeguards are taken to uphold legal contracts and property rights then there is little need for the state to intervene in the affairs of the private and free market. Innovations emerge which, for example, can lead to better efficiency and cleaner and safer environmental practices. Innovations often arise from needs or demands placed on the market. The market functions essentially as an open system and when one resource or practice becomes scarce or impossible new ones emerge. Such discovery sometimes carries a great deal of risk and uncertainty that require a willingness to partake. Critics of regulations argue that redistributive and regulatory policies tend to reduce incentives for risk taking and creativity. This idea is supported by traditional assumptions of market liberals.

Powerful schools of market liberalism promote the need for free and unrestrained markets that are able to move goods and services across borders. Perhaps no state holds these truths to be more evident than the United States. The very foundation of American political culture is founded in the enlightenment thinking of Adam Smith and John Locke who both placed a great deal of emphasis on individualism and the ability to make rational economic decisions. Thomas Jefferson claimed that the government that governs least governs best, but how this has come to be measured in environmental terms suggests otherwise. Still, there is no shortage of market liberalism in the world and many maintain that the power of the free market

will solve many environmental problems even as it is creating new ones. As marketization spreads around the world, so too do ideas about limited government interference and little or no regulation.

After all, the argument claims that the market has mechanisms that can gather information and assemble facts relevant to decision making. Additionally, it has set in place ways to measure the stakeholders concerns and to evaluate alternatives. Even with limited information it is possible for the market to discover and implement preferred solutions when preferences at least can be clearly known. Thus, creating and promoting a consumer base that helps to build the market place of ideas and information will allow for human ingenuity and creative problem solving achieving maximum outcomes.

As Laura Hartman (2007) points out that while there may be significant debate concerning some environmental issues and values, there is considerable agreement that humans have a right to be protected from harm and that no enterprise that does harm to humans will be viable for long. The controversy that remains has to do with what is the best means for achieving this goal. One perspective suggests that the best approach to environmental concerns is to trust them to an efficient market because of the inherent nature of a market to solve problems. Defenders of this approach argue that, "Fundamentally, environmental problems involve the allocation and distribution of limited resources. Whether we are concerned with the allocation for non-renewable resources like gas and oil, or with the earth's capacity to absorb industrial by-products such as CO₂ or PCBs, efficient markets can address environmental challenges" (Hartman 2007, 376). The free market can also provide an answer for conservation as Julian Simon (1984) argued that resources are merely a means to an end and should not be regarded as material objects in their own right and they are in a sense infinite. They are infinite to the extent

that as supply decreases price increases, and thereby a strong incentive to find substitutes emerges. Thus the natural response to the market is to react and correct scarcities.

Another offer for a defense of the market is suggested by Paul Hawken (1999), Herman Daly (1996, 1999), Hunter Lovins (2006) is the notion of natural capitalism. Natural capitalism functions exactly like the free market except that it changes the fundamental assumptions about waste and resource scarcity. Natural capital is the extension of environmental goods and services provided for in the natural world or in other words, inclusion of the costs of using natural resources. Only through the reorganizing of market principles to include the conservation of resources through more effective manufacturing processes, the reuse of materials as found in natural systems, a change in values from quantity to quality, and investing in natural capital, or restoring and sustaining natural resources, can we establish a free market system that can balance ecological and economic needs (Lovins 2006).

Natural Capitalism as a path to sustainability has several qualities that lend credence to the idea that the market can be a viable force for environmental governance. As Lovins (2006) explains, natural capitalism emphasizes that industrial capitalism as it is now practiced is an aberration; it is something entirely illogical that does not value its most important forms of capital-namely natural resources. In 2000 the UN, the World Bank and the World Resource Institute published an analysis revealing that there are significant signs that the biological engines of the planet upon which the production of so many goods and services depend are in rapid decline (UN Development Program 2000). This illustrates that industrial capitalism, which relies heavily on natural resources, will likely face shortages. Living bio systems that perform essential tasks like filtering the air to breathe and the water to support life are becoming overextended and increasingly limited. These functions are performed by the earth's natural

process at no cost to humans. In fact none of the attempts to replicate these systems have proven viable. Additionally, when they are not taken into consideration as part of the cost of extraction of resources or production of goods and services, such things can appear to be cheaper than they are. For example, oil and coal continue to look like cheap sources of energy as new extraction technologies emerge but do not take environmental costs into consideration.

Natural capitalism offers a market solution to the problems of shortage and scarcity. It is not enough to try and account monetarily for the natural systems functions, but rather to try and emulate them. Because the nature of production has shifted from abundant resources and few skilled people to abundant people and scarce resources a completely different approach to production is needed. Lovins and others offer natural capitalism as one such new approach. There are three main principles of natural capitalism (Lovins 2006). First, eliminate the concept of waste by redesigning the economy on biological lines that close the loops of material flows. Nothing is wasted in the natural world and the market should try to emulate this. Second, shift the structure of the economy from focusing on the processing of materials and the making of things to the creation of service and flow, to reward productivity and loop closing. In the natural world all waste is used by another species. Thus the closed loop system is self regulating. Finally, an effort to reverse the planetary destruction is now underway with programs of restoration that invest in natural capital that will make it possible to balance profit and the global environment.

In a letter to the editor of Science magazine in February of 2008, Paul Hawken, Robert Costanza, Peter Barnes, Elinor Ostrom, David Orr, Oran Young, and Alvaro Umana proposed an economic mechanism for stabilizing concentrations of greenhouse gases in the earth's atmosphere. They suggest establishing a type of global trust that would allow for a cap and trade

system to essentially become profitable in a free market atmosphere. They argue that when the proper principles are incorporated into traditional market tools the outcome can be hugely beneficial. Firms, largely motivated by profit, will naturally seek out any viable options to pursue it. Although the plan is not without some problems, it is certainly an important part of the market-centered literature as well as a useful tool for public policy.

Much of the literature of natural capitalism has grown out of a developing school of ecological economics. Interest in the environment and economics dates back to at least the 1960's with the works of Kenneth Boulding and Herman Daly, and Nicholas Georgescu-Roegen, but can certainly be traced back to earlier writers like John Stuart Mill. The major contemporary discussions and meetings began in earnest in the 1980s. In 1989 when the journal *Ecological Economics* was introduced Robert Costanza, one of the principal founders, described ecological economics as, "it [ecological economics] is intended to be a new approach to both ecology and economics that recognizes the need to make economics more cognizant of ecological impacts and dependencies; the need to make ecology more sensitive to economic forces, incentives, and constraints; and the need to treat integrated economic-ecologic systems with a common (but diverse) set of conceptual and analytical tools" (Costanza 1989, 1). The core of the theory is built on an integration of social, environmental, and economic principles that encourage bearable, equitable, viable and sustainable practices.

Furthermore ecological economics seeks to move beyond the current economic paradigms, like capitalism, socialism, and the various mixtures of them in addition to the assumptions of unlimited economic growth and incorporate inter-generational, intra-generational, inter-species equity and sustainability values. Georgescu-Roegen had been writing about energy and economics since the 1970s and published a book in 1976 that addressed issues

related to the relationship between economic institutions and analysis and how they were not sufficient to deal with emerging energy concerns. The energy crisis of the period seemed unlikely to be easily reconciled without a new perspective for analyzing the dynamics of energy and the economy. Indeed thirty years later the debate over energy rages on. Herman Daly (1996) continued to build upon these ideas and recently criticized the World Bank's failure to transcend traditional measures of economic growth and lack of ecological accountability.

These authors argue that measures for economic growth such as Growth Domestic Product (GDP), Consumer Price Indexes (CPI), unemployment rates, budget deficits and surpluses, and housing starts are not accurate measures for gauging the true costs to maintaining the economic system on a planet that ultimately must operate with a closed loop system. In other words, these measures do not take all things into consideration. The impacts of resource depletion, loss of species diversity, and pollution of air and water have far greater costs than presently accounted. Furthermore, such measures also fail to include more of the human dynamic like levels of community and awareness to global concerns that people might consider to be very valuable. When these, sometimes less tangible variables are included the data changes significantly. According to these theorists, in order for the human species to survive itself, it will have to reconcile the natural and the non-material with the endless pursuit of material prosperity.

Finally, there is the approach that through increased corporate social responsibility the market will respond to both the public demand for environmental stewardship as well as their self-interested pursuits like profit from increased efficiency. Jennifer Clapp (2005) regards Corporate Social Responsibility (CSR) to be the recognition by industry of their role in sustainable development, as well as the voluntary and self-regulatory efforts they adopt. In the past decade many transnational corporations (TNCs) have been encouraged by international

lobby groups to commit to the principles of CSR. In the absence of an international regulatory agency that can provide legal mandates and execution for such behaviors a number of industry guidelines have been established and have been upheld through voluntary compliance.

Independent agencies have developed measuring techniques to calculate how much a corporation upholds their end of the agreement. These companies often offer certification that can be used to demonstrate compliance.

Wolfgang Kasper (2007) says markets are naturally more responsive to such mechanisms and are naturally resistant to central planning and regulatory efforts. A firm recognizes that in order to survive it must respond to social demands and social problems, therefore market solutions are often forced by the market. Corporate social responsibility provides an avenue for responses. "The central planning route may be plausible to natural scientists and engineers, but it meets with distrust by economists, historians, and the friends of liberty...Historians and economists have learnt the lesson that economic freedom and the resulting prosperity are essential for human enterprise to cope with new challenges, such as possible climate changes (Kasper 2007, 5). Economic freedom and the resulting prosperity, as Adam Smith suggested, will be critical for managing new challenges that the global environment faces. Competition has been a valuable social mechanism which has empowered society to prosper.

True environmental management can only be established based on economic feasibility and no amount of policy can ignore that or change that. As Einstein suggested in 1949, the level of economic anarchy and the oligarchy of private capital appears to be outside the regulatory capacity of even the most well organized and advanced democratic society (Einstein, 1949). (However, it is important to note that Einstein would not have this be an indication that

mechanisms to control the market are not necessary). This is most evident when evaluating current environmental policy and discovering that it rarely addresses the many economic questions that are tied to solving environmental problems. "Politicians and bureaucrats around the Western world are now imposing piecemeal regulations 'to save the planet', often without much analysis of their effectiveness and costs. Energy users are being burdened with costly regulations and compliance costs; taxes are being diverted into subsidies for some politically preferred solutions; and new 'climate regulations' block otherwise promising avenues for wealth creation" (Kasper 2007, 7).

Central to the debate is the question of how to reverse and prevent things like climate change, air pollution, water pollution, loss of species diversity, the breakdown of the planet's life systems and as Kasper points out, "As we have known since David Hume (1711-1776), such practical discovery procedures can only come about when entrepreneurs are assured of secure private property rights, free markets, and rule bound government, in short: economic freedom" (Kasper 2007, 7). Kasper bravely argues that when left alone, the market will overcome all threats of scarcity and avert disasters of all portions. He cites Malthus and Marx as examples of doomsayers whose dire warnings failed to happen. Therefore, Kasper suggests the total environmental catastrophe will also be avoided provided that entrepreneurship is allowed to be free to answer demand.

The educated consumer demands improved levels of production and market products, and the manufacturer, concerned with a loss of profit, responds with better, cleaner, and more efficient products. Sometimes this profit motivated response is hard to distinguish from true social responsibility, but when the end results are sustainable ecological and economic policies, regulatory critics argue, there is reason to attribute some success to market actions taken in

response to global environmental issues and problems that are not confined to national borders or subject to government policies. The links between economic forces and environmental problems are, however, becoming more and more pronounced.

J.E de Steiguer (1995) recalls three theories from economics to try and show the linkage that does in fact exist between the environment and economics and presents some theoretical attempts to develop those ideas. Steiguer's three theories from economics about the environment include important theories from English economic writings in the late eighteenth and early twentieth century including Robert Thomas Malthus, John Stuart Mill and the neo-classical economic theorists. He argues that these ideas were and are essential for developing a new or perhaps renewed approach to addressing environmental problems.

Steiguer saw as an appropriate place to start examining economic theories the industrial revolution. Major social and economic changes resulted during this time from transformations in the use of natural resources, especially coal for steam engines and gas for lighting. Both of these things increased the prospects for employment and wages which improved opportunities for social mobility and consumption while simultaneously creating both social and economic chaos and ultimately ignited a firestorm of poor health and environmental conditions. In order to get a grip on the rapidly changing environment political economists began to evaluate the circumstances and conditions of the types of economic behaviors that were being established by new industries.

Political economy was essentially established as the discipline aimed at obtaining a better understanding for the human condition (Steiguer 1995). The classical economists based their science on natural law and tried to reason the principles that order the human life and community. From this thinking emerged a very rational look at the potential consequences of

population increases and resource scarcity. While modern market liberals argue that Malthus's was a failed theory because the severe crisis of food scarcity did not occur as he had predicted, of course this remains to be seen as China faces new challenges, there exists the more important point that Malthus was trying to make, through his example of agriculture; namely, that economic scarcity has detrimental effects on human beings (Steiguer 1995). Steiguer further suggests that John Stuart Mill also "foresaw that increases in human population and wealth could not continue in perpetuity" (Steiguer 1995, 553). The only resolution would come when a steady or stationary state is reached where both population and consumption are stabilized. Mill believed it is critical to achieve stability. Mill advocated a society that was based in voluntary reduced consumption and recognition of resource scarcity.

As he saw it, there is not much sense to pursue wealth for its own sake:

Nor is there much satisfaction in contemplating the world with nothing left to the spontaneous activity of nature; with every rood of land brought into cultivation, which is capable of growing food for human beings; every flowery waste or natural pasture ploughed up, all quadrupeds or birds which are not domesticated for man's use exterminated as his rivals for food, every hedgerow or superfluous tree rooted out, and scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture. If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compel them to it (Mill 1848).

Mill was an inspiration to Herman Daly and the environmental economics movement of the twentieth century. Daly published his *Steady-State Economics* in 1991 to explain the limits of ecosystems and the need to stabilize the economy.

These problems represent the inherent problems of an economic system based on too much consumption and extreme self-interested pursuits. Mill's stationary society was not one without human advancements, but rather one of cultural, social and moral progress. In many ways Mill anticipated writers like Aldo Leopold and E.O. Wilson's whose whole systems

theories call for an ethic where humanity maintains the environment through less resource exploitation. As Aldo Leopold (1937) described it, "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." Such romantic descriptions of nature have remained at the heart of the modern environmental movement and dismissed as idealistic nonsense by those who do not recognize the limits or inherent values of the natural world.

The dominance of the neo-classical economic theories of the late nineteenth century has remained. "Neoclassical economics with its supply and demand curves, prices and quantities and market equilibrium would eventually become the economics of the modern university classroom" (Steiguer 1995, 553). Furthermore, the argument was that the open market sets production and consumption levels and solves all scarcity problems through innovation. Any departure from this system, according to this theory, results in the inefficient allocation of resources. Societal welfare is to be measured in producer and consumer surpluses or the difference between the cost of production and market prices for producers and for consumers the difference between the value one placed on an item and the price that is paid. There is no account for pollution and other side effects that are harmful to human welfare.

The modern notion of economic externalities has been slowly developed. "Though simple as a concept, externalities provide a powerful way of incorporating environmental damage into economic assessments" (Steiguer 1995, 554). Traditionally, few neoclassical economic theories include negative externalities. Theories like natural capitalism and ecological economics have tried to incorporate such costs into the costs of transactions so that there is recognition of the negative impact ignoring such things has. However, as Hartman and Des Jardins (2007) suggest internalizing external costs and assigning property rights to unowned goods such as wild species

are inadequate and inefficient environmental policies. They can only be useful when information about the problem becomes available, which in some cases like depleted fish populations, is too late.

In 1962 Rachel Carson published her book, *Silent Spring*, and in it she exposed one such negative externality. It was becoming increasingly clear that things such as pesticides and other chemicals that were being used in more and more ways were having silent and deadly effects on the environment and on the health of living creatures. This reignited the environmental movement and as Steiguer suggests revived these economic theories. As Carson so passionately stated, "We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one "less traveled by"—offers our last, our only chance to reach a destination that assures the preservation of the earth" (Carson 1962, 62). In 1968 Paul Ehrlich published a neo-Malthusian book, *The Population Bomb*. It echoed the apocalyptic concerns of Malthus. Several more doomsday books furthered the scenarios of resource depletion from over population. The entropy theories, emerged and with them the buds of ecological economics. All of these theories recognized the problems of relying on the laws of supply and demand and in some ways the problems with neo-classical economics and addressed the failure of the states to make significant improvements in protecting valuable environmental resources.

Neo-classical economics has been an important theoretical movement for what has been discussed at length as promoting the innovative nature of the free and open market. But where no markets exist to create a price for important social goods like endangered species, scenic vistas, or rare plants it is difficult to find individuals willing to supply or protect them. In these

cases there is often no clear mechanism for assigning liability. It was unclear how to treat exploitation when there was no sense of ownership or of responsibility. "Common property was then seen as a type of market failure, i.e. no defined property rights that could reduce social well being" (Steigeur 1995, 555). 1968 also saw Garret Hardin's *Tragedy of the Commons*, which truly captured this idea. When shared resources are abused by too many members of the community they will no longer be able to sustain the community. The earth community is no different from small groups of herders sharing grazing lands. As long as one group abuses the commons everyone will be affected. Resources will become scarce.

Rising population is the most obvious source to the opened flood gates of consumption. More people want more stuff which requires more resources and produces more waste. Whether people buy out of need, habit, belief, desire or fear the more free choice consumers have among products the more individuals will consume. Increased levels of consumption are the result of many changing forces and global dynamics. The growing global economy has made it possible for more and more people to gain purchasing power. As Peter Dauvergne notes, "The globalization of trade, corporations, and financing is at the core of this global political economy. But new technologies, advertising, and culture shape it, while government policies, activist networks, and global institutions guide it" (Dauvergne 2008, 216). This illustrates that markets are moving their goods and services with the help of governments into as many places as possible. Thus for more than four decades natural resource consumption of raw materials like wood, fish, and water has increased at alarming rates. In many instances scarcities have already become so severe that finding enough bare essentials has become a challenge for many people in the world.

The truth and extent of the scarcity problem is yet to be truly known. The twentieth century witnessed not a decline but an increase in the use of natural resources with improved extraction methods. Coupled with the increasing populations of India and China it is unclear what the twenty-first century will show without serious efforts towards sustainability.

Fortunately, sustainable development has emerged as a serious economic theory, thanks in large part to the many efforts at establishing international institutions to foster it, as well as other theories that support a voluntary decrease or stabilization in population and consumption. More theories are emerging that encourage incorporating biology and other natural sciences with economic theory.

At the core of market liberalism is the market place. In this globalized world of advanced technology that market place has become literally a worldwide market. It seems perfectly acceptable that there would be a general desire to raise the standard of living for so many people living in extreme poverty in the world. However, if this process does not occur in a sustainable way, then the end result will simply be exacerbated environmental damage. Negative environmental externalities continue to spread alongside the spread of the market. However, citizens in wealthier countries are beginning to demand cleaner and safer and more environmentally friendly products. In an effort to meet these demands corporations are responding, but unfortunately for now they are able to find other markets for their products and services that are harmful because there is no call for change in those places. Stricter codes of conduct from regulations and the work of international non-governmental organizations (INGOs) are forcing producers to develop more efficient products using less energy and creating less waste. Balancing economic growth and environmental protection will require a new type of market and a new type of consumer.

The Planetary Partnership Model

The problems of collaboration and co-ordination in managing global environmental issues require a distinction be made between interdependence and interconnectedness and where environmental problems might fit in this spectrum. Vinod Aggarwal and Cedric DuPont refer to Keohane and Nye to distinguish between interconnectedness and interdependence, "Where interactions do not have significant costly effects there is simply interconnectedness. With costly effects, (or high benefits), however we can consider countries as being mutually dependent on each other, or interdependent" (Aggarwal and DuPont 2005, 68). Environmental problems, like global climate change, come at considerable costs across both time and space. Most of the major environmental problems facing the globe today are not easily contained within borders or generations. For example, deforestation in one remote forest of the world has a direct impact on planetary carbon dioxide levels and leaves the next generation to deal with the results of deforestation and soil erosion.

Elinor Ostrom (1998) remarked that the human ability to undertake collective action to solve social problems is at the heart of both the successes and failures of history. Social dilemmas are found in all aspects of life ranging from the mundane to the monumental. These dilemmas have been described as part of the public-good or collective goods problems (Olson 1971, Samuelson 1954) and many theories have tried to best explain the most likely behaviors of individuals in regards to them. Game theory and other models of rational choice have attempted to predict how a collective group of people sharing the same problems might behave. The global environmental problems represent a new chapter in such modeling and require more than just an understanding of how rational choice or collective choice behavior might work.

If humans are self-interested, short term maximizers (Ostrom 1998), then how can a collective effort to live sustainably on this planet be maintained? Ostrom goes on to say that as global relations become even more intricately intertwined and complex, our survival becomes more dependent on our ability to continue to make collective choices that will improve our situation. It will be in everyone's self interest to pursue the collective good, because without a habitable planet all life will cease. However, there is little agreement on the priority of such an endeavor, especially from economically and politically underdeveloped states where mere survival might be a more pressing matter than global environmental governance. Sectarian or tribal warfare, as one example, fought across the fields of innocents is a rather distracting problem for establishing meaningful and inclusive global environmental governance. Many proponents of creating a collective voice to move towards sustainability or even towards the protection of one single species or ecosystem are often met with great resistance.

Rachel Carson may have been met with extreme skepticism but she was ultimately proven right and government actions were taken. The Environmental Protection Agency was established in the United States in 1970 largely in response to the concerns and awareness that Carson had raised. The movement certainly gained a degree of international momentum as similar efforts were being made for preservation and environmental protection in many parts of the world. However, despite the enormous amount of regulation and proposed regulation that came out of the late 1960s and 1970s there has been a great deal of objection and often plain noncompliance from the industries that are the targets of such regulations. Such hardliner industry proponents have successfully delayed the implementation and protective measures called for by environmentalists for decades. This is why regulation alone is insufficient. The battle over regulatory economics has not ceased since the first Earth Day.

As Walter Rosenbaum points out, "Critics assert that both the process and the objectives of environmental regulation are flawed by economic inefficiency, irrationality, and contradiction. Spokespersons for the business sector, state and local governments, and other regulated interests often join many economists in advocating fundamental changes in the criteria used in formulating environmental regulations and in the methods used to secure compliance with them" (Rosenbaum 2008, 143). Arguments against both the type of benefit cost analysis and the command and control types of regulations used in federal environmental regulation, that lack true market incentives, are at the center of the criticisms.

Benefit-cost analysis is in its simplest form an analysis of the costs of an action versus its benefits. An environmental regulatory agency like the US Environmental Protection Agency uses such analysis to determine if the benefits of a certain regulatory policy will outweigh its costs. Opponents most often argue that the costs are too high and compliance will be difficult and essentially bad for business. For example, requiring all new coal fired power plants to have next generation carbon sequestration capabilities. It has often been argued by market liberals and other market stalwarts that when government interferes with the economy and makes it difficult for a firm to maximize profit, then there is a problem. They argue that there is less incentive for innovation. While supporters will often counter that sometimes when a firm is forced to change their practices innovation naturally results.

Additionally, with cost-benefit analysis, there is the enormous problem of environmental valuation. How can environmental amenities be valued? Environmental accounting is an attempt to broaden the scope of traditional accounting practices to devise a metric that can discover what value societies place on an environmental amenity. So when Rachel Carson was trying to tell the world that DDT and other pesticides were harmful to bird's eggs and very likely to humans, the

level of increased awareness resulted in a value shift. Predicting outcomes is no easy task for scientists or economists, but this is what is often required. "Environmental accounting is especially difficult because it requires both economists and ecologists to work at the intellectual margins of their disciplines where theory and evidence are often tenuous" (Rosenbaum 2008, 156). Discovering the real market value for things that are neither sought nor sold in the market requires a great deal of speculation which means contentious debates.

The greatest problem with such regulations, however, is implementation. Such policies are often met with stark resistance in a state where there is enforcement capabilities, but there is no such entity which can implement regulations internationally especially when they are met with so much resistance by countries who do not possess the resources to implement them. Who will set the goals for international environmental management? What will the criteria to meet the goals look like and how shall the quality standards for protecting things like international air or water resources be established? When these things are established by individuals who lack perhaps the scientific knowledge or understanding of the detailed specifications that make good economic sense to many firms then the results are often too complex and lack the necessary support. As economists Allen Kneese and Charles Schultze (1975) pointed out:

Problems such as environmental control involve extremely complicated economic and social relationships. Policies that may appear straight-forward-for example, requiring everyone to reduce pollution by the technologically feasible limit-will often have ramifications and side effects that are quite different from those intended. Second, given the complexity of these relationships, relying on a central regulatory bureaucracy to carry out social policy simply will not work: there are too many actors, too much technical knowledge, too many different circumstances to be grasped by a regulatory agency (116).

Not only this, but in the global setting there is still the issue of sovereignty.

If partnerships were cultivated between states which possess the enforcement capabilities necessary to carry out environmental regulation and the market actors who possess the

technological expertise and skill to develop feasible alternatives and effective management mechanisms then more efficient policies will emerge. These types of partnerships will be more efficient because they will be more attractive to more actors and increase their willingness to surrender some of their own self-interested pursuits in order to be part of the global society and experience the collective good. This model is best because it accomplishes several things the first two cannot: first of all it brings all actors to the table, therefore all preferences can be considered. Also it is able to reduce the risks of cooperation through repeated interactions by the combined actors.

Chapter III Methodology

Three Models for Managing Global Environmental Problems

This chapter aims to make clear the methodological description and underlying definitions of key terms for this study. The research design of this dissertation is based on an examination of three probable models for managing global environmental problems. The first is primarily a political science model. It deals with attempts to solve environmental problems through policy developed by sovereign states. Arising from the assumption that environmental problems are largely public goods problems, policy makers have taken on the role of creating and establishing policies like regulations to try and stem environmental degradation.

Additionally, the entire model rests on the sovereignty and supremacy of the state, meaning that for states operating in the typical Westphalian system prior to the onset of political globalization, the preservation of their sovereign independence is likely to be preferred over any surrendering of sovereignty necessary to achieve meaningful compromise on environmental protection. States are likely to seek to maximize their sovereign absoluteness even while negotiating with other states on most global collective goods especially the supply of a sound and healthy environment. Where, therefore, this thinking is the dominant strategy in interstate deliberations on the environment, I expect states to prefer relevant self interested outcomes to absolute collective outcomes.

The second is largely the neo-liberal economic or market only model which maintains that the open and free marketplace is capable of providing solutions to environmental problems through private power structures. This model relies on the notion of the superior efficiency of the free and unrestricted market. A market that is free to allow companies to emerge in the pursuit of profit not restricted by regulations is expected to be more efficient at producing innovative

results. I expect that there will be little effort to maximize cooperative measures to manage the global environment as this often has the potential to interfere with company profits. The third model is based on negotiating global environmental protocols through active cooperation between the states and non-state actors. This model is more likely to achieve cooperative results because it brings all relevant actors to the table and reveals more preferences for negotiation.

The continuing problems of achieving ongoing cooperative measures promoting global environmental governance demonstrate the need to reexamine the basic assumptions about why and how actors cooperate. To further investigate the challenges of cooperation I will study the likely outcomes if countries only pursue the political model, or if only the pure market model is used to solve certain global environmental problems. Then I will look to see if the third model is capable of predicting more cooperative outcomes. The question concerns the best ways to achieve collectively optimal outcomes for environmental protection, especially in situations where there are asymmetric goals for actors, for example, resource use versus resource preservation such as the forest of Indonesia, the fish in the ocean or the oil under the Alaskan National Wildlife Refuge.

Operationalizing the Research Models

In order to link my models as hypothetical propositions for examining the development of global environmental governance, I will use the game strategic model, the Prisoners' Dilemma, to establish predictable outcomes. The Prisoners' Dilemma has been frequently and effectively used to illustrate various instances of global cooperation or lack thereof. By using this method I can assign preferred outcomes to specific countries and various non-state actors to predict their most likely behavior in regards to global collaboration. In international situations when individual states or firms are faced with making choices on unknown assumptions about

others' commitments or actions there is a tendency to choose what looks best based on self-interest. Sometimes the outcome results in collective benefits, but most often actors will not cooperate and securing collaboration faces many complications. The temptation to free ride is evident in the production and consumption of public goods such as attempts to combat global environmental problems. Providing for global public goods, as it is with efforts to establish international markets, is difficult primarily due to the lack of a global enforcement capability, especially if the number of attempts to achieve collective outcomes is limited to one or a few tries.

The Prisoners' Dilemma has been widely used in international political economy (IPE) to demonstrate the problems with trade liberalization and the difficulties in monitoring trade policies and is equally useful in examining outcomes for environmental protocols. As the story goes two men are under arrest and put in jail suspected of a crime but for which the authorities lack the first-hand testimony to convict either of them. Therefore they need one of the prisoners to "defect" D, or tell on the other prisoner while he "cooperates" C in order to convict and put him in prison for a long time, a DC outcome. The two prisoners sit in separate rooms knowing neither what evidence is against them nor what plea the other will make.

Assuming that you are the only clever person and can defect while your partner cooperates with you in not revealing any damaging information to the authorities is a risky assumption. But the cooperating is risky because it is based on the rather unproven and irrational proposition that the other prisoner would also cooperate, an unlikely outcome in a world of untruthful men. Rationality dictates that individuals prefer the assurance of small relative gains over the uncertainties of bigger collective outcomes which depend on others' choices the individual cannot predict nor control. Each prisoner faces therefore a $DC > CC > DD > CD$ strategic

outcome where “D” stands for defect or cheat (tell on the other partner) while “C” is cooperate or give no information to the authorities. A deal has been presented that would give the one who confesses a lighter sentence (DC), however it is on the condition that the other does not also confess or cheat in which case they both face a more severe punishment (DD). Another option is if neither one confesses then they will both receive a medium sentence (CC) which represents the collective outcome. Ideally neither would confess and they would receive the moderate punishment (CC), but the best alternative for each prisoner is to confess in the hope that the other one makes the opposite C choice that makes him the sucker. In the case of managing global public goods or negative externalities each party must ideally make an effort for the collective benefit. However, when there are many contributors to secure the provisions then it becomes tempting for one or more to try and cheat or free ride. In the game matrix below, the row entries will be the payoff for rational individuals and the columns will be the payoffs for collective action.

	Cooperate	Defect
Cooperate	Win-win (CC)	Lose much-win much (CD)
Defect	Win much-lose much (DC)	Lose-lose (DD)

It is my thesis that both the political and the market models of environmental policy making will result in selfish interests clearly exceeding mutually collective outcomes. Thus, I am defining increased cooperation or collaboration (C) as the willingness of individual actors to relinquish some of their own self interest necessary to secure the greater common good of protecting the global environment. Because both the political as well as the market models exclude important relevant environmental actors, the level of uncertainty regarding the choices

neglected players might make is too high to allow cooperative outcomes to supersede selfish choices. In order for global environmental governance to be successful a new approach that encourages actors to give up some of their own self interests for the collective good is needed. I further predict that the planetary partnership model which brings all relevant environmental actors together is the more efficient method that could secure collective environmental protective policies. Relevant environmental players are defined to include both polluters and those with authority to make environmental policy. These will include private companies in the oil, mineral, timber, chemical, nuclear or radiological industries as well as governments whose lax and permissive regulations create the atmosphere for cheating. By including all relevant environmental actors in the environmental decision-making process, actor preferences are more completely revealed and the fear of the unknown – being made a sucker of – diminishes.

As various game-strategic calculations show, preference of selfish over collective outcomes is usually due to the uncertainty that other public goods group members might prefer the certainty of small relative gains over bigger but more uncertain collective gains. So by bringing all environmentally relevant global actors, states and non-state players, together in making environmental protective regulations, “hidden” or unknown preferences are reduced, increasing the possibility for mutually beneficial outcomes to supersede the pursuit of selfish individual gains $CC > DC > DD > CD$. The planetary model might also yield a second and even greater collective outcome: reducing the likelihood of free riders will encourage the number of attempts environmental actors are willing to make to achieve the ideal collective goal. Therefore, I further predict that global environmental protocols are likely to become more comprehensive and effective the greater the number of environmental issues and concerns they incorporate. By including issues important to sovereign nations –especially their fears of losing sovereignty in

our increasingly integrated world, as well as issues relevant to non-state actors the number of choices for collective gains increases. Additionally, the non-state actors may not have to face the humiliation of being relegated to second tier players lacking sovereign confirmatory powers. The political model fails often to achieve ideal CC outcomes because it tends to treat non-state environmental actors as secondary dependent players with no “real” confirmatory power to act independently of their home and host governments. But they do. And as experiments have shown, group cooperation increases as the number of plays of iterations increase beyond a few to the infinite or random.

In the Iterated Prisoner’s Dilemma (IPD), the game is played repeatedly giving each player an opportunity to learn from the other player’s behavior. In a set number of games there is little chance of any actor changing their preference as they will remember how the other actor behaved and each will continue to act on that memory. However, the greater number of games played the greater the chance that the incentive to cooperate can overcome the tendency to defect. The defection strategy becomes counterintuitive as human behaviors are difficult to predict when it is not certain how many times the actors will encounter each other. Economic theory, for example, claims that players are likely to defect over and over again if they know the number of plays in advance. Unless the game is played an indefinite or random number of times cooperation is unlikely to occur. Thereby, if model 2 is relied on to foster global cooperation in managing the environment there is little chance that cooperation will trump self-interest if market actors are able to predict repeated non-cooperative behaviors by other actors and uncertainties about the behavior of the various states with which they do business.

Additionally, regardless of an infinite repetition of plays using Model 1, it cannot yield the typical effects of learning behavior because the preference choices of non-state actors, half of

the relevant environmental actors are not revealed because they are excluded from this model. The full and equal participation of non-state actors in Model 3 means all relevant environmental actors and their preferences are involved meaning the iteration of this model can lead to learning behavior -- better understanding of other negotiators past behavior, the punishment if one refuses to cooperate, etc, that leads to CC>DC>DD>CD outcomes -- sound global environmental governance capacity and a global collective good. Significantly, the key to IPD is that the number of games cannot be known, but the likelihood of their occurring must be large. Globalization and interdependence has ensured the reoccurrence of plays for seeking collective good outcomes, but how often and how many cannot be known. When all relevant players are included in the repeating games there is an increased probability that they will seek to cooperate because defection will become the greater risk.

The Political Model

Hypothesis 1 Nation states are likely to seek selfish national objectives in crafting international environmental protocols when they are the exclusive actors. Model 1 is in evidence when the relevance of non-state actors is not included in the conventions to draft treaties to address global environmental issues, but only includes nation states as the exclusive actors. Furthermore, when this model is the primary method for dealing with global environmental problems self-interested pursuits produce less effective and efficient results.

Hypothesis 1b While all nation states would tend to prefer relative individual gains over absolute collective benefits, rich and poor nations will base their selfish pursuits on a fundamentally different set of reasons using equally different strategies.

As described by Pamela Chasek (2006) and others, states often act according to various combinations of internal economic and political concerns which is why it is necessary to distinguish between rich and poor countries when trying to predict their behavior. As Walter Rosenbaum (2008) pointed out countries that seek to protect their economic interests will resist cooperative measures that may jeopardize those interests. But all states are not equal regarding their individual ability to affect global affairs such as the provisioning of global environmental

governance. Pamela Chasek (2006) and Robert Bullard (1990) have made important contributions to the relevance of the great divide between rich and poor countries. Both have suggested that the level of environmental injustice that has resulted from rapid economic expansion and exploitation of resources in lesser developed countries has made it significantly more difficult for these poor countries to catch up. They lack the resources like the knowhow and the technologies necessary to comply with stricter international protocols. It is therefore important that the distinction between rich and poor states be made in analyzing this model. In order to test the likely outcomes if the political model is the dominant strategy in attempts to build sound environmental governance capacity it is necessary to study the actual actions taken by these states when involved with international policy development.

I rely on the United Nations' classification of states to identify the two categories of states. For my purposes I am using the categories rich, the developed states, and poor, the "developing states", as described by the UN Development Program (UNDP) data. Clarifications offered by other data pools are not as thorough and efficient. For example, the World Trade Organization (WTO) classifies countries according to only two measures, their Gross National Income (GNI) and Purchasing Power Parity (PPP) to generate four classifications of states: low-income economies, lower-middle-income economies, upper-middle-income economies, and high-income economies. These numbers, however, are not able to show a biased income distribution or a concentration of wealth by a small percentage of the population and therefore can often be misleading about the true economic power of a country. The UN uses a different but much more thorough and simpler classification system that is the core of its development programs. The UNDP, through its Millennium Development Goals Indicator Program, uses over sixty indicators, including things like GNI, PPP, GDP, and the Human Development Index

(HDI) to measure the status of a country and makes continuous updates to its online sites. These sites provide lists for where nation-states rank in a variety of categories. Although these are very broad terms for describing the status of a state, for the purposes of predicting their likely preferred outcomes to global collective endeavor, it is sufficient and effective. Therefore, for my purpose the two groups are the First World, made up of the rich Western industrial countries, and the so-called “Third World” consisting of all developing countries. The term “developing” as applied to this group of countries may be considered euphemistic or perhaps optimistic, as many of the poorest countries are hardly developing at all.

Furthermore, there are good reasons to suppose that while the two groups of nation states would be equally selfish, they would come to the same conclusion using two very different approaches and calculations, again, based on their clearly different ranking according to the UNDP data. The largely self-sufficient states will pursue selfish but independent courses of action while poor states are likely to pursue group actions. Rich and largely self-sufficient nations have greater resources and better capabilities to independently impact global matters. They are more likely, therefore, to pursue preferred outcomes where they will defect rather than cooperate knowing that they could rely upon themselves to secure national interests. So the more highly developed nations are the greater the probability of individual defection over cooperative collective efforts on behalf of the environment. Rich nation states make their environmental domestic and foreign policies strategically based on the relative gains they know or perceive other major countries have pursued in other issue-areas such as the regulation of trade, exchange rates, and domestic financial markets. Rich and powerful states such as the US and those of the EU tend to see as their sovereign duty the extension of “big-brother” protection to their domestic

polluting private enterprises – oil and gas, chemicals, animal husbandry, to name the obvious few.

I will cite the responses of the nations like the US, the EU, and Britain in regards to international conventions on the environment aimed at protecting global commons like the atmosphere, especially with regards to acid rain, ozone depletion and climate changes as well as forests, to represent the rich countries. A rich country like the United States, considered a highly developed state by UN standards and currently ranked in first place overall, is more likely to resist cooperation if there are uncertainties about the potential strain and negative environmental externalities that cooperating is likely to place on its economy and the global competitiveness of its environment related industries and companies. Because the United States was in a hegemonic position for much of the twentieth century both economically and politically there is a great deal of resistance to become involved in foreign affairs where there is not a clear advantage to US interests. Despite rapid globalization, the dramatic changes in US foreign policy after the September 11th terrorist attacks on New York City and Washington, DC have spillover effects that seem to push the US back into a sense of protectionism which dates back to the very restrictive Omnibus Bill of 1988. Economic self interest continues to drive a great deal of US domestic and international policy. Similarly the nations of the European Union, ranked second in the UNDP data base, have secured relatively stable economies, prior to the economic recession of 2008. They have more to gain by protecting their own self interests than they do from cooperating with lesser developed nations that continue to demand increased investment and technology transfers. Although these countries have attempted to establish serious goals for important environmental measures like reduction in carbon emissions, they never live up to pledged obligations preferring instead to offer economic protection to their domestic private

companies who repeatedly pollute the environment. The level of global cooperation they are willing to adhere to when operating within the sovereign state model will likely continue to be insufficient. Therefore, the preferred outcome for the rich countries is likely to be DC>CC>DD>CD.

By contrast, developing countries are more likely to act as a group. They all share the one often cited excuse that the cost of strict compliance to international environmental regulation jeopardizes their national development goals. And further argue that strict compliance to environmental standards set mostly to please the rich countries would restrict their development progress in ways that the developed nations were not including the use of traditional but much cheaper technologies the developed countries relied on during their development phase. As Dauvergne (2008) and others have shown, developing states cite European slavery, colonialism, and resource exploitation as impositions that continue to have serious negative effects including why they are still dependent on imported manufactures, foreign technology and investment, and therefore seek exemption to meet increased demand for sustainable economic development. But, unless the country is in the position to be a significant veto state as described by Chasek, it will likely prefer collective rejection of collaboration as opposed to individual rejection. Individual rejection may put them into a position of being further alienated from the global economy. Simultaneously however, these countries would prefer to have rich countries work together to protect the environment and to help provide the resources for their struggling economic development. Therefore, like their rich-country counterparts, their likely preferred outcome would be DC>CC>DD>CD.

I will cite the responses of countries of the Group of 77, such as China, India, Algeria, Brazil or Russia to represent developing countries responses to the environmental challenge.

China and India, both considered to be developing and low-income states by the UN, have continued to argue alongside many Latin and Asian countries which are part of the developing world, that it is unreasonable to expect their nations to reduce levels of industrial pollution and resource extraction tied to environmental degradation when the developed nations were not made to do so during their development phase. So they defect from international treaties so they can continue to pollute because they are “poor” developing countries but expect the rich states to do the work for them. China and India are excellent cases for examining this phenomenon also because they requested to be exempted from major treaties like Kyoto. They clearly prefer to defect (DC) over cooperate (CC) arguing that they simply cannot afford to comply and it is not fair that they should be compelled to act in similar ways as richer countries.

The level of cooperation one can expect between rich and poor countries trying to develop environmental governance policy on a pure sovereignty bases is likely to be minimal. Each individual rich state asks the typical public goods question: Why should I contribute by subsidizing the developing countries in disproportionately funding sound environmental governance which equally benefits all, particularly when that cost continues to increase because developing countries prefer to free ride. This first model can be tested by examining actual state practices and positions taken with regard to recent international protocols on the environment. The effectiveness of the treaties can be measured by what they have actually accomplished in relation to what they established as goals and their efficiency can be measured in the level of willingness to forego self-interests in favor of the collective good. Because these protocols reinforced the supremacy of the state there is evidence that they are more likely to pursue selfish interests rather than cooperate.

But what are the chances that cooperation will gradually increase through repeated plays of this model? Since this model excludes non-state actors it essentially denies an important reality for dealing with environmental problems. Much of what is wrong with the way that aspects of the environment are managed is the direct result of actions performed by private corporations who extract resources for human consumption. Without addressing their concerns and incorporating their knowledge, state policies will be limited in what they can accomplish. Regardless of the infinite or random number of times this model is played out, learning behavior would be grossly limited because the preferences of half of the environmentally important actors on the global stage would still be hidden.

The Economic Model

Hypothesis 2 Hypothetically, market actors are more likely to seek selfish objectives when addressing global environmental problems when they are the exclusive actors, and the results of self-interested pursuits will be less effective and inadequate. Model 2 is in evidence when market forces and non-state actors attempt to ignore states and state regulatory policies in their approach to the environment.

Hypothesis 2b Because they are either excluded from or treated as secondary at exclusive interstate environmental conventions and in drafting environmental protocols, non-state actors are likely to seek (a) individual over collective solutions, and (b) to seek such solutions outside the framework of purely interstate gatherings. This hypothesis is supported if, for example, the different private companies charged with equal environmental pollution however adopt different levels of compliance to international environmental protocols

Hypothesis 2c Non-compliance behavior on environmental governance by non-state actors is likely to increase the greater the power (wealth, networking capacity, global reach etc.) non-state actors especially multinational companies enjoy over their host poor country governments.

The second model represents the pure market approach in which non-state actors especially environmentally sensitive private enterprises believe the market, when least interrupted by the government, is capable of successfully regulating and saving the environment. Taking their cue from the theory of market liberalism and the minimalist government doctrine, actors in this model are likely to seek minimal market regulation and hence, they would seek to ignore both home and host governments in the crafting of what they believe are purely market

solutions to our environmental challenges. Their reasoning derives from the untested proposition that would regard market and private choices as more efficient than government action. Major private companies, especially multinational corporations believe their corporate policies and productive methods are more efficient in taking care of the environment than anything states can do.

The primary actors in this model include various non-state players who have become involved with global environmental governance because of their relationship to many of the world's environmental problems. Non-state actors include any actor involved in international relations that is not a nation-state such as multinational corporations or non-governmental organizations. Multinational Corporations (MNCs) continue to expand their presence around the globe and interaction across borders. These players are above all else governed by the bottom line. Just as Milton Friedman suggested, this is the only responsibility of the firm: to make profits for its shareholders even though profit maximization is not always in the best interest of the common good. In this regard private enterprises' only course of action is to be as competitive as possible in an ever more globalized world. Without the ability to exercise arbitrary power to enforce their individual selfish pursuits upon various sovereign states, such non-state actors are more likely to prefer outcomes where there is an increased tendency to defect thus avoiding restrictive and binding regulations. Because many developing states rely on the presence of MNCs within their borders to provide an economic base they are often willing to ignore negative impacts that such corporations might have. Additionally, there are numerous cases where MNCs simply bribe their way out of regulations in nations where corrupt political officials seek to maximize their own bottom line. The preferred outcomes then will tend to result

in DD as these firms attempt to persuade states from becoming part of binding regulations. Again the risks of cooperation appear to outweigh the payoffs.

Representatives of this group include various national and multi-national firms who have a great deal to lose by strict environmental regulations. They resist any attempt to impose standards for firms to provide for public goods problems like negative environmental externalities. Since there is not a global entity with true enforcement capabilities, these individual actors will seek to protect their interests and align themselves with states where they might engage in less sustainable business practices. These market actors sometimes act in response to growing consumer demand for better more sustainable products and business practices or in anticipation of stepped up regulations, but prefer to be able to do it without intervention from the state. As Hunter Lovins and others suggested, a shift to increased notions of sustainable development or natural capitalism will allow for market actors to remain free and innovative in order to deal with increased global environmental problems. Furthermore, these players argue that if they are given clear direction with clearly defined property rights there will be sufficient incentives to avoid free rider behavior and to produce the desired outcomes of environmental protections.

Significantly, not all market actors have been unresponsive to the myriad of environmental problems that the world faces and wholly reject regulations. Many innovative companies have begun to discover that there are actually some cost benefits for them to implement a variety of environmental controls. Also the demand for more efficient products and even for products derived from renewable resources increases as new information is spread. For example, early in the environmental movement recycled paper gained popularity and the paper companies began to build recycling plants. Things like solar and wind power began to take off.

Research in many different types of alternative energy received a significant amount of private and public funding. Of course, there was much worry over whether or not these were fads, which some turned out to be, or if they were going to be viable and worthy of capital investment.

This is really a case of insufficient cooperation more than anything else. These actors believe that they are in fact contributing or making cooperative contributions (C outcomes) to protecting the environment, but their actions are often insufficient because they remain driven by profit maximization and therefore naturally resistant to home or host state laws that would curb their independence. Multinational Corporations' non-compliance behavior is likely to increase especially when they are operating in lesser developed countries where they know their host governments are too weak to penalize their free riding or could easily be bribed from doing so. So the result is most often a DD outcome where private companies defect in anticipation that state officials will also defect.

The second model can be tested in terms of the attitude of a number of corporations in attempting to develop a sense of social and environmental responsibility as well as by those who try to evade responsibility for managing global environmental problems. Because private power agencies were not truly represented at the conferences in a way that is suggested by model three it is somewhat difficult to analyze their actual actions in regards to the conferences. But there are numerous cases where such companies demonstrate their preferences for individualism over collective approach in dealing with particular environmental concerns in their own way.

An example comes from the automotive industry. Car manufacturers are increasingly aware of the relevance that they have in managing global climate change. Efforts to improve car emission standards and extend miles per gallon for their vehicles vary considerably among car producing companies in the same country, the United States. These car manufacturers are

attempting to make such improvements while simultaneously lobbying the US Congress not to impose strict standards upon them. This suggests there are countless instances of market actors trying to manage environmental problems on their own while trying to limit the amount of policy introduced through regulation, but I have chosen only a few specific examples to follow in order to illustrate that their efforts have been largely ineffective in producing collectively optimal outcomes by making significant improvements in environmental conditions. These examples will be looked at in the next chapter.

It is my argument that the second model is insufficient to address global environmental problems if market actors expect to be able to get around state policies when they can. Despite attempts by many innovative and responsive corporations to embrace cleaner, safer and more efficient productive technologies, like the companies embracing natural capitalism, there are far more companies who continue to take advantage of states who desperately want to see their economies improve or where there are officials who do not care about the state at all, but care very much about lining their own pockets.

The Planetary Partnership Model

Hypothesis 3 Hypothetically, actors are more likely to surrender some of their self-interest in order to achieve the collective good when both state and non-state actors are involved in the crafting of international policies for environmental protections. Model 3 is in evidence when government regulation aims to primarily maximize the efficiency and knowhow of private enterprises by inviting them to participate actively in international conventions to craft environmental policy. Furthermore, when this model is the primary method for dealing with global environmental problems cooperative pursuits will produce more effective and efficient results.

Hypothesis 3b The greater the equality extended to non-state environmental private authorities, the greater the level of preference revelation and the greater the opportunities that for cooperative behavior would supersede selfish interests in the crafting of global environmental regulations.

Hypothesis 3c The greater the number of state and non-state environmental actor interactions, the greater the chances that collective pursuits would exceed individual selfish pursuits. This assumption is supported if the number of global environmental meetings, conventions increases beyond a few scattered attempts. The greater the interaction among both

state and non-state environmental actors the greater the revelation of actor preferences, and the more infinite and random the iteration of this model the greater learning behavior would increase cooperation over selfish pursuits.

The third model represents the cooperative measures necessary to navigate the more globalized world. The actors that are directly involved in this approach include both nation states, non-state actors, and the various international institutions like the United Nations or the World Trade Organization. This theory claims that effectiveness in the regulation and supply of global environmental public goods comes, not just from states, but from other sources: for example, environmental groups linking across national borders in putting effective pressure on their governments policy positions in negotiating the first model, or increasingly and better still, linking with other non-governmental groups in other countries to provide environmental resources and act as vigilante groups in preventing environmental abuse.

What are the chances this model will ever exist beyond ideas? What this model suggests is for nation-states to go beyond their known habit of treating non-state environmental actors as no more important than suppliers of information to states as final decision makers. States must embrace environmentally relevant private actors as full impact players and final decision makers. Meaning, for example, that corporations' maximum profit needs and strategies should be treated with the same sensitivity and regard states sometimes extend to each other's sovereign needs. In return, private environmental authorities are more likely to become more responsive to the environmental needs of the communities in which they operate.

Hypothetically, therefore, the planetary model draws its strength by embracing several important realities of our world today. Our contemporary globalized world is no longer dominated by a few powerful states or a few giant multinational companies. Direct access to the global market makes even the weakest states potential global players. Ours is therefore a truly interdependent world, one in which states and non-state authorities are mutually interdependent

and equally vulnerable to what each other does. The globalization literature shows an increasing transfer of economic power from sovereign states to private producers and consumers. This is not to say that states are no longer important. States and their power to enforce laws will be necessary, after all, operating essentially in a lawless climate, what prevents well-intentioned environmental groups from becoming a law unto themselves (the burning of homes located in sensitive environmental areas especially as major US cities sprawl to areas once thought of as sacred abodes protecting wild life and other endangered species) or for certain firms to take advantage of loopholes in polices or of unaware and unsuspecting consumers? In these instances states remain the only domain of the rule of law and therefore, the only entities that could regulate environmental behavior. Most often states are motivated by economic concerns. But while states' confirmatory approaches are still relevant and useful, a truly global civic community is already emerging which relies on nontraditional methods to enforce its rules and concerns. The global civic community is so huge relative to even the most powerful states as well as multinational corporations it commands the attention of all and is capable of holding polluters to account. The larger global civic society is made up of sub-groups such as the global scientific community, the environmental watchdog groups, consumer advocate groups, the digitized media as well as global production networks, all of which act to police and more importantly to support the good efforts of each other.

Because the planetary model bridges the gap between rich and poor countries, it is being advanced in the IR literature as humanity's best hope yet to rise up to its responsibility as good stewards of the environment. By incorporating the strength of the first two models while eliminating many of their weaknesses, the planetary model becomes the only model which could benefit from the iteration of the PD game. Because it brings to the negotiating table all relevant

environmental actors revealing all their often competing preferences it offers opportunities for learning behavior through the infinite and random reiteration of the PD environmental negotiating strategic game. And as the preferences of state and private environmental authorities repeatedly interact, collective choices will increasingly replace selfish pursuits (CC>DD) It is my thesis therefore that this model will be an efficient and effective instrument in reaching the goals for environmental protection set at international environmental conventions. The more nation states acknowledge and incorporate non-state actors in any attempt to provide planetary solutions to the environment, the greater the likelihood that non-state actors will respond to their global responsibilities in positive constructive ways. The preferred outcome for such partnerships is a CC scenario where the respective power of the various players is considered and included in developing methods for governing global environmental problems. State power to regulate private enterprises is acknowledged and is effective and private companies' expertise is maximized. The collective good is preferred over self-interest

Empirical Data

Which of the three models is best suited to produce these outcomes can be tested by examining actual outcomes of historical attempts at global environmental governance and through relevant case studies of efforts made by market actors to deal with environmental problems on their own. The outcomes can be measured in part by their actual quantifiable results, their effectiveness, as well as the level of self-interest that was overcome in order to secure cooperation, their efficiency. The conferences that are useful for this study include: Stockholm, Montreal, Rio, Kyoto and Johannesburg and most recently the conference of the parties in Copenhagen.

I chose these conferences as representatives of the first model because they are well known and widely analyzed conventions that brought together and relied exclusively on the role of the nation state in crafting the policy and ultimately implementing it. All non-state actors that were involved were employed in a consulting manner and ultimately were excluded in voting on the actual treaties. This supports several assumptions underlying the political model that nation states believe that they alone have the necessary confirmatory power to craft and implement effective environmental policy.

Despite the effects of globalization and expectations that states would be more willing to cooperate the greater they are hedged in by advancing global market forces and realities, the fundamental assumption that states must freely consent to be bound by any international agreement, crafted by their representatives, remains. The crafting and finalizing of modern international treaties still begins with an affirmation of the sovereignty of the state. Thus, states are able to protect their self-interests and place them above the collective good, despite the fact that voluntarily entering into the treaty is an acknowledgment of the potential restriction on sovereign rights.

On the other hand, specific instances of multinational corporations resisting regulatory policies designed to protect the environment can be used to show the relentless pursuit of self-interest by market actors that undermines the market or economic model. These actors, however, have attempted to establish themselves as capable of protecting environmental resources without state intervention. In order to study the effectiveness and efficiency of this model I will look at both the areas where the market has tried to make real progress towards sustainability as well as where they have tried to avoid restrictive regulations. To measure the first I will examine corporate sustainability reporting as conducted by both the Global Reporting Initiative (GRI) and

the Corporate Register's Corporate Social Responsibility (CSR) database. As suggested by Jennifer Clapp (2005) and Wolfgang Kasper (2007) these reports are a valuable measure of the market players' role in sustainable development.

This chapter presented the structure for the research design of this dissertation. The next chapter will take a closer look at how these models have been tried and what the outcomes were. The Political model attempts to protect the sovereign self-interest of individual states while the Economic model focuses on the free and unrestricted market to provide viable environmental solutions. Finally, the third model, the Planetary Partnership model, suggests that neither of the first two models have been successful in producing true collective gains for global environmental governance because they exclude the importance and relevance of each other.

Chapter IV Results

Introduction

This research tested three competing models on best practices regarding sound and effective global environmental governance capacity (GEGC). The ideal collective approach to GEGC is one that:

- involves all environmentally relevant players, states and non-state actors alike;
- does so on the basis of mutual equality and respect;
- is comprehensive in linking all aspects of the global environmental problem; and
- provides clear measurement criteria to test improvement in environmental governance over time.

TESTING THE HYPOTHESES

The above mentioned ideal consensus on environmental protection, GEGC, is the independent variable for this research. In terms of the Prisoners' Dilemma strategic game theoretic thinking, such a consensus will produce a $CC > DD$ outcome, as all selfish pursuits give way to the pursuit of ideal collectivism. The various dependent variables that would test the probability of the independent variable were presented in the previous chapter as so many competing hypotheses, each defined according to the three equally competing models. As elaborated on in the Design Chapter, attempts at environmental governance have so far not produced a single set of observable data that covers all the various dependent variables to test the independent variable. The predominant approach to arriving at sound environmental solutions so far has been the state-centered approach which is here captured in Model I, the political model. Several environmental conferences present sufficient data in terms of the various country positions to adequately test Model 1.

The Political Model

The first model, the political model, is predicated on the kind of GEGC that is likely to emerge when only sovereign nation states are involved in negotiating environmental policy. Using the Prisoners' Dilemma strategic game theoretic thinking, I hypothesized that this model will be dominated by selfish strategies such that $DC > DD$ with no possibility of CC outcome, this, the greater likelihood because of the total exclusion or insufficient inclusion of environmentally relevant non-state actors. The exclusion of all environmentally relevant private authorities also means that no amount of repeated playing of this scenario would result in the revelation of all preferences and hence, no possibility of learning behavior that would lead to an ideal CC outcome for GEGC.

For Hypothesis H1 to gain support from historical observations, its null hypothesis must not be true, which assumes that nation states would set aside selfish pursuits to embrace sound GEGC outcomes. The twentieth century, especially post WWII, has a rich history of international negotiations covering a variety of issues which have set the stage for states to set aside such selfish pursuits for a collective good. The process essentially involves issue definition, research, negotiation for regime formulation, establishing a regime, and strengthening the regime. This process generally occurs in a two-stage approach. The first stage takes the form of a framework convention consisting of multiple meetings before and subsequent to the second stage, the actual signatory conference. During this initial stage, participating states negotiate a protocol of understanding as to the mission, objectives and procedures of the signatory conference to follow. But already at these meetings, states reveal much of their negotiating strategies and the level of compliance with, or resistance to, the intended protocol, giving them opportunity to share new information that might lead to compromises.

In June 1972 the first global United Nations conference for state officials on the environment took place in Stockholm, Sweden. The conference was set up in response to growing environmental concerns like air pollution, toxic chemical use, species loss, and acid rain. Ultimately, the action plan it developed was to monitor and research specific environmental variables and to evaluate the data in order to determine and predict certain environmental conditions and trends. Important to this research was the fact that the conference was designed along the parameters of the political model of dealing with the human problems of the environment and identifying the aspects of the problems that could be solved through international coordination. State representatives from 113 countries attended the conference and the concerns going into the negotiations were all of the typical inter-state variety.

Many of the more powerful nations that attended the conference were hesitant to sign any binding treaty to provide for specific environmental policies. For example, as was reported by the United Nations Environment Programme's official documents, Great Britain made the following statement:

The representative of the United Kingdom of Great Britain and Northern Ireland welcomed the Declaration, but considered that certain references to highly political matters contained in it were out of place. The United Kingdom had come to Stockholm not to discuss strategic issues but to look for a consensus on priorities for action. The real task would begin after the Conference when the hopes would have to be turned into actions not only of a defensive type but of an offensive type in order to provide a good environment for all. There was a general will to move in that direction and the Conference must be regarded as a success. Together the Countries had accepted the notion that nature was man's most precious possession, that no nation was an environment island, and that the common estates (air, water) must be tackled on an international level. Although grave issues still divided the countries, the message must be conveyed, especially to the young, that a new beginning had been made together (www.unep.org/documents).

Similarly, the United States made several points to clarify its generally negative reaction to the Conference Declarations:

The United States of America does not regard the text of this principle, or any other language contained in the Declaration, as requiring it to change its aid policies or increase the amounts thereof. The United States of America accepts the idea that added costs in specific national projects or activities for environmental protection reasons should be taken into account (www.unep.org/documents).

Critically then, Article 21 of the Stockholm Convention, which was reiterated later at the 1992 Earth Summit in Rio, emphasized the principle of sovereignty in the stewardship over the environmental. The article states:

States have in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to insure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of its national jurisdiction.

Article 21 summarizes the general approach not only evident at this Convention but throughout much of the preceding period as well as its aftermath, to see environmental problems and our stewardship obligations as issues that neatly terminate at national borders. That position fails consistently to recognize the global public goods nature of environmental problems as challenges that are fully resolved only when addressed collectively. As discussed extensively in the Literature Review, most environmental pollution problems such as sulfur dioxide emissions and the resulting acid rain that spread uncontrollably from the polluting state to other countries are typical public goods problems that require equally collective solutions. The compromise acknowledged in Article 21 that no nation be permitted to pollute another thus falls far short of the collective understanding of our environmental challenge necessary to secure an ideal GEGC. Failure to acknowledge the public goods dimension of the environmental challenges facing the participating states at this convention is therefore the Achilles of the Conference. Indeed, the Stockholm Convention Protocol itself became the benchmark defense several participating countries would use to justify their failure to address a variety of environmental problems that

followed the Convention. Among other things, these states stressed that no country should have to risk its economy to protect its own or the global commons.

Although Sweden had brought the issue of trans-boundary sulfur dioxide pollution to international attention in the late 1960s, the final protocol with effective targets and timetables was not established until 2005. In the late 1970s the US, the UK, the Federal Republic of Germany, Belgium, and Denmark formed a coalition rejecting agreements that included specific commitments to reduce sulfur dioxide emissions known to cause acid rain across borders (Levy 2005). These nations were major exporters of sulfur dioxide emissions from a heavy reliance on burning coal to meet their energy needs and saw that it would not be in their best interest to agree to any levels of reduction without compromising a major economic sector. The US and the UK continued to oppose such formal pledges of emissions reductions throughout the 1980s and early 1990s. In the UK throughout the mid 1980s the National Coal Board and the Central Electric Generating Board did everything they could to avoid UK commitments to sulfur dioxide reductions (Chasek 2007).

What is particularly troubling is that the failure at Stockholm was by no means an exception, however measured, to states' general approach to the environment. For example, already by the early 1970s, there was sufficient scientific consensus that many of the industrial chemicals in use were actually harmful atmospheric pollutants that cause ozone depletion and other negative environmental and health related problems. And the signing of The Vienna Convention for Protecting the Ozone Layer in 1985 was supposed to signal that the consensus among the scientific community had reached the general public. However, as typical of the nation-state approach, nothing was done to enforce the agreement until the 1987 Convention in Montreal, Canada, which came up with the first concrete framework to phase-out the pollutants

that were known to be causing the hole in the ozone layer (Levy 2005). Yes, most countries eventually signed the Montreal Protocol because there was compelling scientific evidence demonstrating that it was in their self-interest to do so. But even that did not persuade several others who not only failed to sign the Agreement, but continued to argue that chlorofluorocarbons (CFCs) and other chemicals were not the actual culprits for ozone layer depletion, or at least, there were no technically feasible alternatives for producers and users of CFCs. The European Community (EC) and Japan, for example, were both concerned about the costs and difficulties for their domestic companies that produced or used CFCs for finding substitutes for the ozone depleting substances and resisted any ban on them. At the time, the European Community (EC) already had an excessive production capacity and refused to commit to reductions to avoid serious economic consequences for important national firms (Levy 2005). China did not ratify the Montreal Protocol until 1991 and finally did so only to gain greater legitimacy and access to more markets. At this time they were already requesting to be exempted from the impending Kyoto Protocol. China, along with India, had rejected Montreal because they were gearing up to increase their production of CFCs and did not want what they considered as critical to their economic development to be hindered by international regulations. India had already developed plans to export half of their production to Asia and the Middle East. Similarly both countries argued that Kyoto would severely undermine their economic goals (Levy 2005).

Development of global climate change policy followed a similar pattern of states knowing about the eminent dangers to the environment and yet persistently failing to summon the necessary collective will to procure their solutions. Scientists who had been studying climate patterns for decades began to publish alarming reports of the possible negative consequences if current emissions levels of carbon dioxide (CO₂), the leading greenhouse gas blamed for climate

change, continued. In 1990 the Intergovernmental Panel on Climate Change (IPCC), which had been established by the UN and was comprised of 2000 leading experts from around the world to study climate change, released its First Assessment Report indicating that global temperatures had risen since 1980 and it was most likely anthropogenic causes that were responsible for it.

By leaving it up to states, both to define and to resolve what each perceived as the environmental problems of the time, the Stockholm Conference played right into the sovereignty trap. Nation-states have always been jealously guarded about their sovereignty; and minus enforceable international agreements would, as at this conference, resist compliance with whatever they perceive as external encroachment on their sovereignty. Thus this Conference and its aftermath produced no evidence whatsoever that would negate the null hypothesis.

The United Nations' Conference on the Environment and Development held in Rio de Janeiro in 1992 is another of the reporting conferences that will test for a GEGC. So will it record a change in major powers' reactions to the environment over Stockholm? The evidence suggests, no. Both in the draft Framework Convention on Climate Change (UNFCCC) as well as the Treaty itself, there was no mandatory limits on greenhouse gases (GHGs) for individual countries, nor any enforcement mechanisms. The major achievement seems to be established categories to distinguish between industrialized countries and economies in transition (Annex I), and a subgroup of developed countries (without the economies in transition) which pay for the costs of developing countries (Annex II) and the developing countries. Before the Rio Conference, US President George H.W. Bush threatened to boycott if it intended to make binding timetables or specific goals dealing with the growing concerns of climate change. Even though the US ultimately attended Rio, it stood alone in rejecting the Convention on Biological

Diversity and the UNFCCC. The latter was later signed as a show of support but no targets or timetables for CO2 reductions were introduced in the US.

In the 1990s the EU was willing to lead the way towards commitments to GHG emissions targets and timetables largely because they had already learned to reduce their fossil fuel use because they were so dependent on imports. However, the US, Russia, China, India, Brazil, and Mexico, states with large supplies of cheap energy resources and a culture of high energy use, exercised virtual vetoes by tying their own compliance to poor developing countries capacity not to pollute, knowing very well that most developing countries lacked such capacity (Chasek 2006). Even as most of these objectors would reluctantly implement some of the recommended measures later, the US and Russia remained the only two major industrialized countries still resisting these timetables. The reason was as clearly selfish: These high-energy use states did not want to have to transform their fossil fuel use which they claimed would cause major economic and political problems.

Approaching the conference in Kyoto, Japan in 1997, where the Protocol to the UNFCCC was established, some US Senators expressed their fear for the loss of sovereignty. Senator Chuck Hagel of Nebraska claimed that Kyoto would in effect take sovereignty away from every nation that signed, and further charged “Would a binding treaty mean that a United Nations multilateral bureaucracy could come in and close down industry in the United States?” (*Washington Post* 1997). On June 12, 1997 the US Senate unanimously passed (95-0) a non-binding resolution stating that it would not give its consent to any agreement that allowed for differentiated responsibility for reducing green house gas emissions. In this regard, the US staunchly defended its industrial energy structure denying the science of climate change and refusing to put demands on its energy companies. Similarly, China, India and Brazil, which

already accounted for 21% of all global CO₂ emissions, also rejected international efforts to establish reduction targets (Rosenbaum 2008). In 2004 the US formed a new coalition with Australia, China, India and the OPEC countries to reaffirm staunch opposition to renewed proposals for stringent CO₂ reduction levels. Russia finally entered into Kyoto in 2004 as a condition to joining the WTO (Dauvergne 2008). Despite US opposition the Kyoto Protocol with its mandatory reduction targets and timetables was finally entered into force in 2005. About this time, along with China and India, the US was planning to build 850 new coal fired power plants.

Although treaties have been established concerning a variety of environmental issues including air pollution and climate change the issue of sustainable forest management has been more difficult. From 1990 to 2000 the world's forests decreased annually. As early as the 1970s NGOs were trying to establish an international treaty for sustainable forests practices. Managing the world's forests has been one of the most daunting tasks faced by international agencies trying to establish regimes and protocols to reduce deforestation. In fact, no consensus was reached regarding the proper management of forests and no regime or treaty has been signed. The biggest argument is that the world's forests are not public goods (although with increased climate research their value as carbon sinks lends credence to this argument). The developed nations, mostly European nations, argue that forests are indeed a global common good because all of humanity, especially future generations, has a stake in the world's forests. However, many developing nations, led by Malaysia and India, vehemently argue that forests are a sovereign resource that should be managed by national policies only. Malaysia, as the world's largest exporter of tropical timber believes that only such export earnings as the timber and the crops grown on the converted forestland can move them towards becoming a developed state. Brazil has also resisted a binding treaty on forest management making similar claims that it is within

their sovereign rights to decide how to best use their natural resources. The Brazilian leadership has also charged Europe with hypocrisy as much of Europe's forests are gone.

In 1983 an agreement was finally achieved that attempted to bridge the gap between protecting the world's forests and economic development. The International Tropical Timber Agreement (ITTA) was established to provide an effective framework for cooperation between tropical timber producers and consumers and to encourage the development of national policies aimed at sustainable utilization and conservation of tropical forests and their resources but was signed by only fifty-four countries (Levy 2005 172-176). This unique agreement within the UN was part trade, industry, and environmental in its mission. It was replaced in 1994 and 2006 as debates over best practices continued to plague it. Too many individual states are not willing to participate in limiting their use of forest resources or to participate in labeling schemes designed to alert consumers to the level of sustainable wood product they are purchasing to sustain the agreement (Levy 2005).

Testing H1b: The Two Worlds

All of these global environmental issues require significant levels of cooperation amongst the international community; however, as the salience of the issues grows so too does the divide between rich and poor states. In order for H1b to gain significance its null hypothesis must be rejected which holds there will be no difference in nation states' attitude toward environmental stewardship based on their level of development, a criteria that breaks the ranks of nation states into two: the developed industrial countries and the non-industrial developing countries. Will nation states willingness to comply with international protocols on the environment be markedly different for the developed and the developing countries? Nation-states would display their compliance with international conventions and protocols by implementing the provisions within

their borders in an equitable and voluntary way. Our evidence suggests that the development gap was again and again an impediment to international consensus; thus, the null hypothesis should be rejected.

Within the United Nations framework, there exists a loose coalition of developing nations designed to promote its members collective interests and to promote their negotiating capacity. The group is known as the Group of 77 (G77) as there were 77 original founding nations, but has now grown to include over 130 nations. The G77, including China, has continued to oppose binding commitments that are developed at international conferences aimed at providing environmental protection which in any way might restrict their economic development or sovereign use of resources. Additionally the G77 has made clear that in order for developing nations to comply with such protocols international aid is necessary.

It essentially began at the Stockholm Conference in 1972 where developed nations made an assertive stand that developed countries had a greater responsibility for environmental protection. At Stockholm the representative from China made the following point, “He emphasized that the draft Declaration had failed to point out the main reason for pollution of the environment: the policy of plunder, aggression and war carried out by imperialist, colonialist and neo-colonialist countries, especially by the super-Powers. Accordingly China could not agree with a number of views embodied in the declaration” (www.unep.org/documents). Thus, China criticized the documents’ lack of accountability on the part of the highly developed states. Similarly, “The representative of Algeria spoke of ‘the Environmental despoliation of colonialism’ and of oppression that were still going on in the world. Algeria appreciated however the considerable evaluation of the concept of environment that had occurred during the Conference, especially among the developed countries” (www.unep.org/documents). Thus the

representatives from lesser developed nations were beginning to espouse a belief that would become a lasting part of future conferences: The world's richest countries have an obligation to those countries who suffer economically. It became the official position of the G77 that the environmental issue was largely a north-south issue. Overall, there was a general consensus or unitary voice from the developing states that they were in no way able to make any further extensions of their limited resources without aid from rich countries. In Rio the same sentiments were echoed from Stockholm as developing nations worried about their ability to take on additional environmental commitments without more economic assistance from richer countries. These countries believed that the more industrialized countries were responsible for the extra costs of so-called green growth than they were.

To ease developing countries' concerns about limited resources, a Multilateral Fund was created in 1990 to address the demands that developing nations made before signing the Montreal Protocol. The Fund meets costs to developing countries to implement new technologies by using money from seven developed countries. China, India and many African states only signed onto Montreal when they were given a ten-year extension to their CFC reduction deadlines and monetary incentives from the multilateral fund (Chasek 2006). Because developing nations are recognized as needing greater assistance, many of the conventions and protocols included specific provisions addressing such needs. Without the Multilateral Fund conferences like Rio and Kyoto would never have acquired as many signatures as they did. Despite the fact that many signatories acted only symbolically, others were motivated by the potential economic support they would receive.

The UNFCCC had divided countries into Annex I, Annex II, and Developing supporting the role for differentiated responsibility in CO₂ emission controls specifically to increase its

supporters. The 134 countries with development status, including China, India and Mexico would be exempt from binding emissions reductions despite the fact that some of them were top producers of CO₂ emissions. China, the US, the EU 15, India and Russia were the top five emitters of CO₂ from fossil fuel use in 2007. Although China's share is slightly higher than that of the US, the US per capita emissions were considerably higher at 19.4 metric tons per capita compared to China's 5.1 which China argued made the US more liable (Dauvergne 2008).

The Kyoto Protocol further exempted developing countries from mandatory GHG reductions based on the common but differentiated responsibility principle. It also continued the promotion of providing financial and technological support to developing nations in order for them to meet their goals. Both China and India received a great deal of support from the Multilateral Fund in the 1990s trying to meet the goals of the Montreal Protocol and Kyoto Protocol (Levy 2005). Yet neither of these countries has been able to reduce their emissions levels.

In 2007, coal provided 70 percent of China's energy needs which is now more than the US, Japan, and the UK combined (Dauvergne 2008). Additionally, China has severe health problems from its high levels of emissions of harmful particulates. Acid rain falls on one-quarter of China's territory seriously diminishing its agricultural capacity and eroding its infrastructure. This acid rain also affects Japan and South Korea and the dust and sulfur clouds that travel across the Gobi Desert and the Pacific Ocean can be seen from space (Dauvergne 2008). Yet, despite these serious environmental problems and their ever increasing reach China has resisted imposing strict international standards on its private as well as public sector operations emphasizing their sovereignty and economic priorities stressing their position as a developing state.

Conclusively, it could be said that both the developed and the developing blocs of nations tended to set their environmental stewardship criteria jealously relative to one another. The G77 has largely rejected many of the items on the international agenda like climate change, ozone depletion, and loss of biodiversity claiming that these were primarily northern concerns and have called for more attention be placed on problems of a primary concern to developing nations like drinking water sanitation, urban pollution, desertification and economic development. The US has also opposed several key policy- making efforts including the Biodiversity Treaty, Kyoto on climate change, the Basel Convention on toxic and hazardous waste, and both Stockholm Conventions. However, US opposition is largely concerned with protecting its economic concerns as well as rejecting differentiated responsibility despite its position as the world's largest per capita resource consumer.

The history of political global environmental governance demonstrates how state actors have struggled in moving from abstract debate to strategic implementation. Many environmental and developing battles continue to be fought at the conferences of the parties where interstate interests are the center of discussion more than the environmental problems themselves. The coalitions that form opposing strong actions for protecting the environment are made up of states whose primary motives for protecting their self-interest are aligned.

The effectiveness or ability to produce measurable improvements of the global environmental regimes has been impeded by the complexities of environmental issues and by a lack of compliance and implementation. The structure of the global political system comprised of individual sovereign states has not proven to be suited to address the complex, interdependent, international environmental problems whose causes, impacts and solutions do not adhere to national borders. The global ecological system is inherently different. Additionally, this approach

ignores the relevance of the global economic structure and the importance of economic actors which is critical to sound GEGC.

Resource extraction, globalization, free trade, high levels of consumption, and the failure to include environmental costs have produced serious environmental problems that require more than state solutions. Because environmental problems compete with so many economic, security, and social issues it is sometimes impossible for states to negotiate and make commitments. Finally, because states possess different capacities concerning the scientific, political and administrative aspects for participating in GEGC they tend to first focus on what seems manageable. Because the political model relies on sovereign entities to make voluntary agreements, some states will join while others will not. Some will merely free ride and others will continue engaging in practices harmful to the environment. This model does not involve all environmentally relevant actors in an equal and mutually respectful way. It fails to link all the aspects of global environmental problems and provide clear mechanisms for improvements in global environmental governance. Instead, it continues to place sovereign self-interest ahead of genuine positive collective outcomes. Perhaps, the most problematic aspect of this model is its zero-sum view of the world with clear winners and losers based on sovereignty and strength. However, global environmental problems are not easily contained in such parameters and many of them will result in losses for all states despite power or wealth.

The Economic Model

The economic and second model is based on the kind of GEGC that is likely to emerge when non-state actors try to establish measures for environmental protection without intervention from the state. For this model to gain support, the null hypothesis must be debunked which holds that private environmental entrepreneurs will eschew profit maximization in preference for

maximum collective environmental gains. Because private actors of the environment are likely to prefer the maximization of profits over the cost of sound GEGC, this model will, like the previous one, most likely produce the same $DC > DD$ outcomes. In order for H2 to gain significance, market actors will have to demonstrate their willingness to forego their own self-interested bottom line pursuits in order to protect the environment in ways that benefit the common good. This can be evaluated by looking at corporate strategic responses to various international environmental problems as well as interstate policies on the environment. Key firms in a number of environment related industry sectors must have a track record of pursuing corporate policies that protect the environment, particularly if in doing so they may have to sacrifice bottom line considerations. I also equally expect that repeated plays of this scenario will not result in useful learning behavior because, once again, states' preferences are not sufficiently revealed nor factored into environmental policy implementation by private companies. The null hypothesis of this proposal is denied if there is a trend in state and environmentally-relevant firm consultations in preparing for international environmental conferences, in the frequency of the full and equal participation in international environmental conferences of states and non-state actors, and in their joint and equal implementation of environmental agreements.

Corporations are able to exert considerable influence in order to protect their interests over sound environmental stewardship. Their fierce independence and determination to defend their autonomy particularly against government sovereignty and impositions undermines corporate stewardship for the environment. Because states derive some of their legitimacy from the mutual diplomatic recognition they extend to one another, states must cooperate to a degree. Private companies have no such obligations, indeed, they must compete to survive; and

corporations resent any suggestion of government imposition even if, as with environmental protective laws, such impositions serve the common good. An essential component of corporate competitive strategy is the degree to which each is free to define their corporate individual responsibility for the environment differently as might disadvantage their competition and oppose government high-handedness. Corporate efficiency is therefore in part a measurement of firms' ability to manipulate state laws (including restrictive environmental regulations) as well as to strategize to gain advantage over their competition. Within that hostile corporate atmosphere, therefore, environmental laws, whether domestic or international, are likely to be implemented by environmentally relevant corporations only if such corporations feel they have had an equal hand in the crafting of environmental laws in the first place. Corporations which are forced to implement imposed environmental laws are likely to work against them.

Corporations have had to address myriad concerns about the environmental risks associated with their business practices. But are such concerns meant to aid state action on behalf of the environment? The historical evidence would suggest not. As early as 1954 oil and oil shipping companies were faced with growing global concerns over the safety of transporting oil across the oceans. The International Chamber of Shipping along with the Oil Companies Marine Forum were able to successfully dictate the terms of the International Convention for the Prevention of Pollution of the Sea of 1954, one of the earliest attempts at international environmental protection, by controlling the technical papers that were submitted for consideration (Chasek 2006 20,88). The companies ensured that their interests were preserved and the result was an ineffective effort to prevent oil pollution of the seas. The evidence came in the form of several dramatic oil spills in the following years. These will include the 1978 oil spill off the coast of France, the 1988 oil platform explosion in the North Sea, the 1989 Exxon-Valdez

spill in Prince William Sound, and the 1991 spill off the coast of Kuwait (Chasek 2006). The other related problem is getting the guilty private transportation companies to assume full responsibility for the damage to the ecosystem they caused. With the exception, perhaps, of the Prince William Sound oil spill, it had been very difficult to enforce full responsibility on companies caught in this most devastating act.

Similar private sector disregard for the environment is evident in the food industry. The agrochemical industry has maintained a strong influence over the Food and Agriculture Organization's (FAO) Plant Protection Service Industry by promoting pesticide use especially in developing countries (Chasek 2006). Throughout the 1970s when environmental protection was gaining momentum and the number of issues increasing, many companies began to publish independent reports that countered the science. For example, when Rachel Carson's book *Silent Spring*, created a negative backlash against the use of the pesticide DDT many producers of the chemical were able to promote its values in deterring malaria and tried to further debunk the science that claimed such chemicals were not only harmful to the environment and certain species, but to humans as well. This trend has continued with each new issue such as ozone depletion and climate change.

Coal, oil, transportation and electric utility companies are particularly vulnerable to climate change policies and so are most likely to work against the regulation of harmful greenhouse gas (GHG) emissions. Consequently, environmentally relevant firms spend millions of dollars trying to protect their self-interests by working against environmental laws. For example, the Global Climate Coalition (GCC) formed in the US in 1990 was a major anti-environmental lobbying organization (Chasek 2006, 87-89). With more than forty major fossil fuel producer and consumer representatives drawn not only from the US but all the other

industrial countries, this organization was able to mount an effective campaign aimed at discrediting scientific findings critical of their practices. They staged a large protest at the Rio conference trying to get the attention of international leaders. When this group's use of illegitimate tactics and false information in their campaigns were exposed, they suddenly disbanded. However, similar groups were always available. The Information Council on the Environment, a group of coal and utility companies during the 1990s worked tirelessly to deflate the science of climate change. These efforts include the Business Council for Sustainable Development and the International Chamber of Commerce who were particularly active at the Rio conference trying to persuade state actors to abandon strict environmental regulations in favor of economic considerations (Chasek 2006, 93).

Similar to the oil and food companies, the auto manufacturers have been organizing against stringent regulations since at least the 1970s when the US government implemented the Corporate Average Fuel Economy (CAFE) standards for automobile fleets. Successful lobbying campaigns managed to keep the standards low for light trucks and ultimately led to the upsurge in Sport Utility Vehicles (SUVs) which resulted in increased fuel consumption and US CO₂ emissions (Dauvergne 2008). The SUV allowed auto companies to pursue profits over environmental protection by meeting consumer demand for bigger vehicles without having to address fuel efficiency. Similarly, European car exporters to the US have fought US standards, claiming that they violated WTO agreements by creating unfair trade barriers. In 1992, Europe's industrialists succeeded in their campaign against the proposed EU carbon tax (Chasek 2006). Because of concessions made to industrial actors in Europe and in the UK many countries will not likely meet their reduction commitments. The failure of the EU's carbon tax to deliver on reduction promises has undermined the market model. And most recently, despite presenting

itself as a leader in fuel efficient technology, Toyota has joined up with the International Chamber of Commerce in fighting new climate change polices at the ongoing international meeting on climate change in Copenhagen.

On the question of whether environmentally relevant companies are encouraged to participate as full and equal partners with states in the making of environmental regulations, the historical evidence is even more starkly negative. Private companies, the chief architects of environmental degradation, have never been invited to participate in inter-state conferences on the environment as full and equal partners. Even as we move increasingly into a single globalized community, our world remains locked in the old Westphalian system governed by territorially distinct nation states which have never shown the willingness of sharing the limelight with private corporations, regardless of how big they grow. It is not insignificant, therefore, that environmentally relevant companies have not participated as equal partners with states in any of the inter-state conferences on the environment examined for this dissertation. If consulted at all, their narrow corporate interests have been used to justify a state's unwillingness to enforce effective environmental laws. For example, one hears repeatedly U.S. government officials claiming that this or the other international convention on the environment "would be damaging to the economy" a reference to corporation's race to the bottom line.

The oil industry is perhaps more global in nature than any other industry because oil is a commodity with a uniform international price which forces oil companies to react with global rather than multi-domestic strategies. Rather than participate as good-intentioned equal partners, the major oil companies Exxon and Chevron continuously strategize their opposition to climate policies in a largely global context such as at the international negotiations and conferences attempting to establish reduction levels for CO₂ emissions. They spend considerable money

lobbying against mandatory international emission controls and aggressively challenge the science of climate change and the high costs of GHG controls. In the global oil industry, Exxon has taken the firmest stand against greenhouse gas controls. Exxon spends substantial money citing the scientific uncertainties of climate science to support the exclusion of developing countries, where they hope to maintain and build upon growing markets, from emission reduction commitments. Exxon has made clear that it sees less economic value in displaying environmental responsibility than in keeping its focus on core business and lean cost models to maintain its company's profitability (Dauvergne 2008). Exxon's financial performance, despite once being responsible for one of the worst oil spills in recent history, indeed has allowed it to continue to pursue its current strategy of maximizing fossil fuel extraction and production of oil.

Corporations tackle environmental challenges in a variety of ways. For example, DuPont addressed the ozone problem in a very unique and individualistic manner that seemed somewhat surprising at the time, but ultimately was designed to give them a real competitive advantage as being the first-mover in working to phase out harmful CFCs and other chemicals responsible for causing the hole in the ozone layer. They intended to be the leader in the fierce competition for the substitutes market. DuPont possessed the necessary financial and organizational resources to invest a great deal in new technologies. Ultimately, the substitute compounds that DuPont, and the chemical companies joining the battle, were able to produce began to dictate the level of phase-out that individual states pursued (Chasek 2006 90, 92). Despite that Montreal Protocol's design for complete phase-out many states relied on the chemical companies to lead the way without actually including them in the negotiations. As the new substitutes emerged individual states were able to adjust their phase-out. However, many chemical firms remained opposed to

strict phase-out timetables and even DuPont resisted some targets which exceeded their developing substitutes' capabilities.

Additionally, despite the ban of many ozone depleting chemicals by the Montreal Protocol several corporations producing CFCs have found ways to smuggle between ten and twenty thousand tons into the US since 1989 (Chasek 2006). Similarly international corporations continue to find ways around other various attempts at environmental protection. For example, South East Asian logging companies have engaged in smuggling and bribes to customs officials, enforcement officials and politicians to avoid having to meet standards for sustainable timber harvesting and continue to sell wood products that were harvested in unsustainable ways. Japan's Mitsubishi provides financing for logging in places like Indonesia, Malaysia, Papua New Guinea, Brazil, Burma, Thailand, and Vietnam where the raw logs are sometimes illegally harvested and sent to Japan for processing (Chasek 2006). Other examples include oil companies which continue find new ways to exploit host countries as well as pharmaceutical and agricultural firms taking advantage of poor nations with lax environmental regulations.

An alternative to private polluters collaborating with states to undermine international protocols on the environment will, at minimum, require the powerful non-state environmental actors to demonstrate their willingness to abide by their host country's environmental regulations. This kind of voluntary compliance remains the best hope for market management of the environment. This will be indicated by MNC's commitment to improving their host developing country government's ability, particularly financial capability, to abide by domestic and international environmental laws. And MNCs do have that potential. The mobility of world markets and of worldwide production markets has made it possible for MNCs to locate their headquarters and various centers of operation strategically in a variety of locations around the

globe that gives them this capability. What we see instead is giant MNC's consistency in manipulating host domestic elites: government, academic, business, and military elites into crafting foreign investment policies to favor foreign polluters. It is by far much cheaper for MNCs to provide a few hundred thousand dollars to bribe local elites than to pay the huge cost of sound environmental practice, including installation of modern non-polluting plants and avoidance of toxic plant runoff to pollute local rivers. A case in point is the much-protested behavior of Exxon Mobile drilling for oil in the Niger Delta of Nigeria. In Nigeria and Ecuador there are ongoing investigations into bribery allegations and tax evasions (Levy 2005). In addition, the company has been accused of causing major pollution for which it is refusing responsibility. Similarly, Chevron, a large and powerful MNC with production and distribution operations throughout North America, Europe, Africa and the Middle East, has been embroiled in scandals in Africa where it was discovered to be providing lavish gifts to US Minerals Management Service employees who are supposed to supervise their overseas operations.

Overall, the economic model does not provide a clear path to GEGC because MNCs operate with complex trade chains of suppliers, financiers, producers, wholesalers, and retailers that are difficult to hold to accountability and transparency. In their relentless quest for profits, MNCs have always put bottom line considerations above good stewardship for the environment. And there are no significant changes to their bottom-line strategies even as their once exclusive domination of the global market of the 1960s to the 1980s suddenly opened up to all kinds of new global companies. Powerful MNCs continue to seek to bribe individual governments in the developing world as a diversion strategy to avoid adopting, or rejecting, a particular position on international protocols or regime formations. Corporations also continue to be a major presence at international conventions, not as equal participants in trying to advance environmental

government but to lobby against any strict regulations that they believe will hinder their ability to maximize profits. Because they are excluded from the negotiations their concerns are often neglected. Given their considerable influence, MNCs tend to have considerable power of their usually poor developing host governments. This model also does not involve all environmentally relevant actors in an equal and mutually respectful way. It fails to link all the aspects of global environmental problems and provide clear mechanisms for improving global environmental governance.

The Planetary Partnership Model

The third model, which I named “the planetary partnership model” to underscore its global actor and policy comprehensiveness, is predicated on the kind of GEGC that would emerge when all environmentally relevant actors, rich and poor states as well as private companies, are engaged in the crafting and implementation of environmental policy. It is the thesis of this research effort that *this and only this model* will produce a sound, effective and long lasting GEGC. Its comprehensiveness with regard to actors and actor-preference revelation as well as policy inclusiveness further underscores its openness to learning behavior through an infinite or random repeated PD plays.

The null hypothesis to H3a essentially sees the state centric and the market-centered approaches to environmental governance as so viable they rule out the need for the planetary approach to environmental governance as a necessary alternative. However, as the above analysis shows, there is no support whatsoever for either model. Similarly, there is also no evidence to sustain H3b’s null hypothesis that greater equality between states and environmentally relevant non-state actors will lead to planetary cooperative behavior to protect

the environment. Equally, we find no historical evidence that would support the null to H3c that repeated attempts to structure genuine planetary environmental governance would fail. *The lack of evidence to support any of the three null hypotheses regarding the planetary model stems from the simple reality that the planetary approach to environmental governance has never been tried. Nor is there any on the drawing board for the foreseeable future.* The fact that only sovereign states were invited as direct participants in the just completed December 2009 Copenhagen International Environmental Conference suggests the pursuit of absolute sovereignty still dominates states understanding of how the environment should best be governed. It repeated the usual failed outcomes of such state-only meetings on the environment being characterized by the usual open disagreement among the major industrial countries and between them and the developing world as to who bears what responsibility for the damage to the environment and how it may be corrected.

However, that a truly planetary approach for making and implementing sound environmental policy has never been tried does not take away from our ability to test its soundness. Such an approach would require that all human activities-political, social and economic-be included, where not only government, but business and civil society are integrated into a whole system for environmental management to conserve and protect natural resources. Planetary environmental governance is still verifiable vicariously in the other areas of global collective engagement where it has been successfully applied. This will include the 2000 World Bank Prototype Carbon Fund (PCF) established as a public-private partnership between a few national governments, the Netherlands, Sweden, Japan, and Canada with 26 companies including BP-Amoco, Shell-Canada, and Daimler-Chrysler to raise money for investment in renewable efficiency in developing countries. In an attempt to meet Kyoto targets, the Fund has since

invested \$180 million dollars in Clean Development Mechanisms and Joint Implementation projects in developing countries all over the world. But when internationalists talk about the advantages of planetary governance over its purely sovereign or purely market alternatives they usually cite the European Union's environmental governance mechanism. The EU has structured a multi-level governance institution that is comprehensive in tackling every aspect of the environmental crisis, in its rule orientation, and its ability to be inclusive in catering to both sovereign and non-sovereign actors alike.

The European Environment Agency (EEA) was established in the early 1990s as an agency of the European Union to provide independent information on the environment. This agency represents the advanced institutionalization of joint environmental governance in conjunction with state level governments. The job of the EEA is to provide timely, relevant, and accessible information to the public and the European Council and Parliament. The Treaty of Lisbon (2007) clearly stated that one of the EU's main objectives is to work towards sustainable development and a high level of protection and improvement of the environment. It also makes combating climate change, a global concern, a specific concern of the EU. This is significant because it recognizes the role that the EU can play to support international action for protecting the environment.

The EU develops policies that aim to improve political, economic, and network, or information, solidarity between member states as well as influence the relationships with non-member states to which the EU has strong ties. Essentially independent national governments adopt policies and programs developed by the EU as part of their supranational obligations. Such policies directly impact domestic institutional arrangements and policy choices. The effects of EU policy have been most pronounced with increased market integration, but are

becoming more significant in areas like human rights and the environment. This signals the possibility for coordination and cooperation at the supranational level.

The EU has produced a wide range of environmental legislation concerning water protection, air pollution, waste management, nature conservation, chemical controls, biotechnology, and emissions limits. One particular policy is the Environmental Impact Assessment (EIA), similar to the Environmental Impact Statement (EIS) of the US, which requires that the environmental impacts of a project are fully considered before decisions are made. Countries throughout Europe have greatly benefited from the EIA because it ultimately improves project design and also protects against future violations of existing laws. This could be especially useful for global environmental governance by eliminating the ability for high polluting firms to operate where there are few or no environmental laws. When final decisions are made with all relevant actors even greater collective benefits would be obtained.

Another EU environmental policy is emissions limits. The EU continues to expand its goals for emissions limits on such things as sulfur dioxide, nitrogen oxide, and carbon dioxide. Significantly this aims to lower the risks of air pollution and human health perils not only throughout the territory of the EU member states, but across national and regional borders as well. Such policies, like those proposed at Kyoto and most recently in Copenhagen, could achieve this at the global level if similar levels of coordination and cooperation are possible.

Finally, a third policy example of the EU is eco-labeling. The label is designed to help consumers make more informed choices about what they are consuming by requiring firms to meet certain process and production standards to earn the EU label for sustainability. Eco-labels are particularly interesting because they address important product standards that are usually subject to and often protected by international trade laws. However, it also provides an occasion

for the market to seize an opportunity to compete for a growing group of eco-minded consumers. As environmental awareness increases globally such marketing tools would be very appealing to various firms and industries that have an impact on the environment and would therefore be quite a useful tool for good global environmental governance.

Overall, the EU policies have been able to reach out beyond member countries to other nations wishing to establish economic relations or information sharing with the EU. As this process evolves and actors are involved in the decision making the more likely sound global environmental governance will be achieved. The EU is attempting to balance short term social and economic needs with long-term environmental needs and any attempt to achieve this at the global level must be able to do the same. A coherent observation and implementation strategy that involves all relevant actors with a multilateral approach that best supports the needs of each actor will establish the necessary dialogue between the states, the firms, the experts and the people to make global governance possible.

Chapter V Discussion and Conclusions

When considering the development of social solidarity and how it has transpired from what has been, however naively, described by various political theorists as the *state of nature* into the complex global arena of transnational relationships, a significant understanding emerges that is useful for developing models for global environmental cooperation. It is interesting to reflect on the development of sovereign states and the different variables that brought people into so many alliances. Although sovereignty, as a concept, has probably existed as long as any social system, even rather primitive ones, it has since the modern era been the most dominant way the world is known. In the modern age the classical liberals, Hobbes, Locke and Rousseau, the great contract theorists, as well as the economist Adam Smith, led the world in its steady evolution towards new ideas concerning of the role of government. They offered rational explanations of why people might prefer to live together in cooperation as well as the role for the sovereign. When the variables of alliance are better understood then establishing global regimes to combat international problems becomes more viable. Additionally new variables must be considered. The most powerful of the new variables is the public goods, or in the case of environmental problems “public bads,” and how the various sovereign nations will be able to work together to combat them. The political economic structure must be changed to better foster voluntary compliance of international environmental regulations.

Sovereignty is difficult to define. The social construction of sovereignty continues to be a factor in all analysis of international politics. Essentially, the sovereign of a state has final say in all matters of state with no interference from outsiders. According to Hobbes the sovereign is never able to leave the state of nature, which is a perpetual war of all against all. Without the possibility of a global sovereign to enforce treaties and agreements the interests of the individual

states will always be the primary focus for every sovereign ruler. In order to avoid the threat of other sovereigns each state must remain alone and free to make whatever choices it sees as best.

For Hobbes people willingly leave behind their personal sovereignty to join the society in order to have comfort and security. Likewise it is possible for the sovereign nations to freely join in international regimes in order to benefit from provisions of public goods realized through a healthy environment. Are not the positive incentives strong enough for a nation to surrender some of its natural liberty, as Hobbes would have it, in order to reap the rewards of coalition?

John Locke followed Hobbes in his ideas about the social contract and relied on notions about property as a basis for his thought. The fundamental element of social contract theory is that the people leave behind their natural state and their natural right of total liberty in order to benefit from social living. They do this in order to enjoy the public goods. The type of system is negotiable, for Hobbes absolute authority was best while Locke supported something closer to majority rule.

Locke's ideas about property radically changed the way societies were constructed. His notion of individual ownership has been translated into sovereign ownership. This further complicates treaty processes. When a nation feels as if their right to own and use their property any way they like is threatened they tend to resist having policy imposed. Locke also agreed that sovereigns remain in the state of nature where they could defend their rights and property as they see fit; therefore cooperation is often difficult to ensure. Again without a global sovereign to enforce the laws there is no guarantee anyone will comply.

Jean Jacques Rousseau too thought sovereigns remained in the state of nature and could not be bound by any authority. However, he saw the progression from which people left the state of nature to form societies as a process rather than as a moment or particular event in time.

People are always changing and it was only natural that they moved from primitive peoples to social beings. Societies formed as people became more aware of themselves and others. One such new awareness was the need for self-esteem or gratification that can only be achieved in society. He said, "Let us, in a word, instead of turning our forces against ourselves, collect them in a supreme power which may govern us by wise laws, protect and defend all members of the associations, repulse common enemies, and maintain eternal harmony among us." (Rousseau 1762, Bair 1983, 185). If his idea is followed out to its logical conclusion then the various independent and sovereign states may move toward a union in order to benefit from the bonds of association. Because the common enemy may be environmental devastation, excluding no nation, it is ever more possible for a planetary partnership to emerge to manage the environment and the global public goods problems.

However, for the time being, the principles of sovereignty and non-interference by other states into domestic affairs remains very powerful and weakens many efforts to protect transnational public goods and limit the number of non participating states. Attempts to manage these problems through state-centered voluntary agreements for international protection of global environmental public goods is inefficient because there is little agreement as to what constitutes a global public good, there is not an authority that has both the power and the resources to make decisions and implement policy, there is often little economic incentive, and there is no sufficient way to prevent states from not participating even when it is in their interest to do so.

As Ruth Grant and Robert Keohane (2005) point out there is the additional problem of defining the parameters for participation in the global environment. In a democratic state the public might be defined as those citizens with the capacity to participate, to be held accountable, and to hold their representatives accountable. This structure is absent at the global level.

Despite the fragmentary global politics that are emerging in issue areas like human rights or environmental protection they are insufficient to constitute the magnitude of political subjects as one finds with national publics. This last point is particularly important for both defining public goods in the context of what constitutes the public as well as whom then would be part of the free rider problem.

A potential solution is to understand publics in non-territorial terms as collective spaces of deliberation sharing rights and responsibilities (Mason 2001, 2005) and in regards to environmental governance the public would include everyone on the earth. Therefore, rather than the territorial terms of reference the global scope of environmental problems is set in, it should be open and inclusive of all geographical locations and all people. This idea changes the dynamics of the way earth's resources will have to be managed. It also spreads accountability and responsibility requiring more people to participate at personal, local, regional, and global levels. The free rider problem will not likely be solved, but this new framework might expand participation in collective actions.

State-centered theories for managing global environmental problems still provide the dominant framework from which most efforts are made. In addition to the public goods and free rider problem is the problem of major inequalities in environmental standards within and across states. These inequalities arise from both differences in the types of state actor as well as with the way that some states behave in regards to others. Many argue that there is a stark north-south divide or a rift between the more industrialized nations as compared to those who are still developing. This debate further illustrates the inefficiencies of regime-centered theories.

Adam Smith had argued that the market would continue to be driven by demand for better and more efficient products and that this demand would ensure that the market always

provided the best products for consumers. However, the history of the market has proven otherwise. Producers no longer have to respond to demands as they essentially create them. Consumers no longer demand the best but more often the cheapest and when self-interested corporations are left unchecked their desire for gain seems unstoppable.

Overall, neoclassical economics has failed to move far enough away from its measures of profits and values to embrace a practical program of balanced economic growth and environmental health. Consumption remains both critical to economic development and detrimental to the environment. Mainstream economic theory has not been able to establish itself as a viable theory for environmental studies, especially as it deals primarily with empirical validation like prices, costs and other market phenomena. Instead it has been viewed as crassly materialistic and destructively competitive, a sharp contrast from the enlightenment thinking. Free market principles and the power of consumer demands have been subverted by the powerful corporation and its tendency to produce too much because of cheap labor and resources.

As Steiguer suggested, the neoclassical economic theories have failed to seriously consider the philosophical and psychological factors that govern resource consumption. Consumption represents perhaps the biggest threat to the global environment and yet is seemingly critical to growth and prosperity. This is especially true when looked at from an aggregate perspective. There is a real distinction between individual decisions and group consequences. For example, if a single consumer decides to buy an SUV there is little consequence from the minuscule amount of extra carbon dioxide emitted, however if every consumer makes the same decision the consequences will be significantly different. As Peter Dauvergne (2008) suggests the ecological shadows of consumption reach far and wide and without addressing this issue directly other efforts to protect the environment will be inefficient.

Hobbes may have been right in assuming the instinct for self-preservation was stronger than the one for social solidarity and that sovereign entities, be they corporate or national, strive to preserve their power above all else. So in this regard the social institution itself must intervene to protect the majority. The only way to manage sovereign states would be through a global contract. If people come together to live in social solidarity in order to gain the benefits society has to offer, and they do it freely in order to create positive laws to live in accordance, then the people of the world could possibly agree on global environmental standards. Perhaps it is first necessary for every country in the world to have its own free form of government before a global compact is possible. But on the other hand, perhaps it is more relevant to deal with issues of growth and how self-imposed limits to growth will become acceptable. Property rights can still be protected for their lawful owners and be managed in such a way as not to produce negative externalities.

Collective goods are no longer those things that each nation must define and provide for its people alone. Globalization and the expansion of markets have created a new world order. This powerful buzz word is no longer one for radicals, but it is reality. It can no longer be denied that some kind of protection for public goods, whether they are environmental, human rights, or fair trade laws, must be provided for at the international level. Transforming values and beliefs is necessary to change actions. After all, the world is not flat nor is it the center of our solar system, it never has been, and yet it took a long time for people to accept these ideas. In this same way it might take time for people to realize that the world is not an infinite open system. Resources that seem ceaselessly abundant are being rapidly depleted.

This study has been limited by both economy and feasibility. There a great deal more to discuss concerning the issues of economic development and environmental problems. The scope

of the subject is enormous. But these studies can be generalized essentially as a path towards greater coordination and collaboration for global actors by both changing the players and the nature of the game. When sustainable development is presented and supported by governments as well as market actors and seems attainable for developing nations then the trail to global environmental governance will be blazed. Indeed in its broadest sense this model applies to more than just environmental issues, but of poverty and despair.

What this implies for policy development is that policies must be created in conjunction with market forces and technological developments. In practice political leaders and heads of state would do better to include as many players in the game as possible in order to really achieve the desired results and optimal outcomes. In colleges and universities interdisciplinary studies should be encouraged and a new emphasis should be placed on political economics and its relationship to environmental problems.

I would recommend for future research a study of successful public-private partnerships in addressing environmental problems. As more and more local and regional types of agreements are taking place it would be useful to study them in order to discover what makes them work, where they are weak, and how they may be applied globally. An entirely new round of research questions could be developed concerning the processes of globalization and environmental problems. Consumption levels could be closely studied as well as the trend for cleaner and more efficient products. Also the role of corporate social responsibility could be looked at in greater depth. The annual reports put out by corporations involved in sustainable projects could be used to study how involved the market truly is. Also I think a study is necessary to determine what the fastest rate possible for sustainable change is.

Just as Charles Darwin and Rachel Carson were met with great resistance so too are today's environmentalists. Major value shifts are going to have to take place in order for there to be real progress in sustainability. Individually and collectively we must reinvent the political economic structures in order to develop a more symbiotic relationship with the planet. Currently the structure places the human outside of the natural world in many ways which has led to the current ecological crisis. It also anthropomorphizes the state through the myth of power. Concordance is the next step as the people of the world struggle to balance the myriad of changes and increasing interdependence. A planetary confederation may no longer be the work of science fiction, but rather necessary for survival. The true goal would be to extend the social contract to establish a world based on less material intensive economies achieved through public private partnerships that enhance the quality of life and economic well being for everyone.

Finally, it is critical that the relationship between humans, economics and the environment is not examined from a deconstructed perspective or as separate theoretical assumptions. Economics has changed and evolved as the human condition has changed, and as the human condition changed so too did the natural world. These changes reinforced each other and were simultaneously causing and being caused by one another. From this point of view it is easier to see why any theory that will be able to foresee and understand the next step for humanity on earth must be holistic while at the same time able to be microcosmic and practical to each individual on the planet. It is not a matter of predicting the outcome of the prisoner's dilemma, but rather how to bring the prisoner's out of the Platonic cave and into the light. Once it is seen that the earth cannot sustain the level of resource use required to maintain current economies then new solutions to better understood problems will emerge. Combing these forces

will make it possible to better cope with the continuous changes. Perhaps above all else, this new approach must be malleable and never static in order to mimic the ever changing world.

References

- Aggarwal, Vinod K. and Cédric Dupont (2004). Collaboration and Coordination in the Global Political Economy. In John Ravenhill, ed. *Global Political Economy* (pp. 28-49). Oxford: University Press.
- Alic, John, Mowry, David, and Rubin. Edward. (2003). US Technology and Innovation Policies: Lessons for Climate Change. Prepared for the Pew Center on Global Climate Change. Retrieved March 4, 2008, from, The Pew Reports Web Site: http://www.cleanenergystates.org/library/Reports/Pew_US-Technology_and_Innovation_Policies.pdf
- Axelrod, Robert and Keohane, Robert. (1985). Achieving Cooperation Under Anarchy: Strategies. *World Politics*. 38(1), 226-254. Retrieved from Academic Search Premier database.
- Berry, Thomas. (1999). *The Great Work: Our Way into the Future*. New York: Random House.
- Bullard, Robert. (1990). *Dumping in Dixie: Race, Class, and Environmental Quality*. Boulder, Colorado: Westview Press.
- Carson, Rachel. (1962). *Silent Spring*. New York: Houghton Mifflin Company.
- Chasek, Pamela. (2007). U.S policy in the UN environmental arena: powerful laggard or constructive leader? *International Environmental Agreements: Politics, Law and Economics*, 7(4), 363-387. DOI10.1007/s10784-007-9054-2.
- Chasek, Pamela, Downie, David, Janet Welsh Brown. (2006). *Global Environmental Politics*. Boulder, Colorado: Westview Press.
- Clapp, Jennifer. (2005). Global Environmental Governance for Corporate Responsibility and Accountability. *Global Environmental Politic*, 5(3), 23-34. Retrieved from Academic Search Premier database.
- Cooper, Richard. (1989). International Cooperation in Public Health as a Prologue to Macroeconomic Cooperation. In Richard N. Cooper et al.,(Eds.), *Can Nations Agree?* (pp. 178-254). Washington, DC : Brookings Institution.
- Costanza, Robert. (1989). *Ecological Economics*, 1,1-7. Retrieved from Academic Search Premier database.
- Daly, Herman. (1991). *Steady-State Economics*. Washington, DC :Island Press.
- Daly, Herman. (1996). *Beyond Growth*. Boston: Beacon Press.
- Dauvergne, Peter. (2008). *The Shadows of consumption: Consequences for the Global*

- Environment*. Cambridge: The MIT Press.
- Dauvergne, Peter and Clapp, Jennifer. (2005). *Paths to a Green World: The Political Economy of The Global Environment*. Cambridge: The MIT Press.
- De Steiguer, J.E.(1995). Three Theories from Economics about the Environment. *Bioscience*, 45(8), 552-558. Retrieved from Academic Search Premier database.
- Ehrlich, Paul. (1968). *The Population Bomb*. Cutchogue, New York: Buccaneer Books.
- Einstein, Albert. (1949). Why Socialism? *Monthly Review*, First Issue September 1949.
- Elmendorf, Byron, Walsh, Brennan, and Minnucci, Chris. (2007). Potential Impacts of Climate Change on the Energy Sector. Prepared for the Department of Energy Technology Laboratory. Retrieved March 12, 2008, from, The Department of Energy Web Site: <http://www.netl.doe.gov/energy-analyses/pubs/Potential%20Impacts%20Climate%20Change-1.pdf>
- Falkner, Robert. The Business of Ozone Layer Protection: Corporate Power in Regime Evolution. In David Levy and Peter Newell (ED), *The Business of Global Environmental Governance* (pp. 105-134). Cambridge: The MIT Press.
- Friedman, Milton. (1970). The Social Responsibility of Business is to Increase Its Profits. *The New York Times Magazine*, 13 September.
- Grant, Ruth W., and Keohane, Robert. (2005). Accountability and Abuses of Power in World Politics. *American Political Science Review*, 99 (1), 12-34.
- Griswold, Charles L. (1991). Conscience of Capitalism. *The Wilson Quarterly*, 53, 43-50.
- Hartman, Laura and DesJardins, Joe. (2007). *Business Ethics: Decision Making for Personal and Social Responsibility*. Boston: McGraw Hill.
- Hardin, Garrett. (1968). Tragedy of the Commons. *Science*, 162 (3859), pp. 1243-1248.
- Hawkin, Paul, Lovins, Amory, Lovins, Lovins, Hunter. (1999). *Natural Capitalism*. Boston: Little Brown
- Hopkins, Sam (2009). *Where to look for the world's best green energy investments*. Retrieved April 8, 2009, from Green Stocks Central Web Site: <http://greenstockscentral.com/where-to-look-for-worlds-best-green-energy-investments-1527.html> .
- Iledare, Omowumi and Olatubi, Williams. (2004). The Impact of changes of Crude Oil Prices And Offshore Oil Production on the Economic Performance of U.S. Coastal Gulf

- States. *The Energy Journal*, 25 (2), 97-113.
- Inge, Kaul. (2000). What is a Public Good? Retrieved January 8, 2009, from Le Monde Diplomatique Web Site: <http://mondediplo.com/2000/06/15publicgood>.
- Jaffe, Adam, Newell, Richard, and Stavins, Robert. (1999). Energy-Efficient Technologies And Climate change Policies: Issues and Evidence. Resources for the Future Issue Brief no 19.
- Jung, Wolfgang.(1997) Sustainable Development in Industrial Countries: Environmental Indicators and Targets as Core elements of National Action Plans-The German Case. *Sustainable Development*, 5(3), 139-147. DOI 10.99-1719(199712)5:3<139::A10-5075>3.0.CD,C-C
- Kasper, Wolfgang. (2007). The Political Economy of Global Warming, Rent Seeking and Freedom. Retrieved March 9, 2009, from CSCCC Web Site: <http://brunoleonimedia.servingfreedom.net/Papers/CSCCC-Report-Climate.pdf#page=82>.
- Kneese, Allen and Schultze, Charles. (1975). *Pollution, Prices, and Public Policy*. Washington DC : Brookings Institution.
- Kindleberger, Charles. (1986). International Public Goods without International Government *American Economic Review*, 76(1), 1-13. Retrieved from Academic Search Premier database.
- Koerner, Brendan. Power to the People: 7 Ways to Fix the Grid, Now. Retrieved May 20, 2009, from Wired Web Site: http://www.wired.com/print/science/discoveries/magazine/17-04/gp_intro.
- Kuehls, Thom. (1998). Between Sovereignty and Environment: An Exploration of The Discourses of Government. In Karen Litfin (Ed.), *The Greening of Sovereignty in World Politics* (pp.31-54). Cambridge: MIT Press.
- Laney, James T. (1981). The Other Adam Smith. *Economic Review*, October, 26-29
- Layzer, Judith. (2006). *The Environmental Case: Translating Values into Policy*. Washington DC: CQ Press.
- Leopold, Aldo. (1948). *A Sand County Almanac*. New York: Oxford University Press.
- Levy, David and Newell, Peter, ed. (2005) *The Business of Global Environmental Governance* Cambridge: MIT Press.
- Lovins, Hunter. (2006). Natural Capitalism: path to sustainability? Retrieved January 4, 2009, from, Natural Capitalism Solutions Web Site: <http://www.hunterlovins.com>.

- Mason, Michael. (2001). Transnational environmental obligations: locating new spaces of accountability in a post-Westphalian global order. *Transactions of the Institute of British Geographers*, 26(4), pp. 407-29. Retrieved from Academic Search Premier database.
- Mason, Michael. (2005). The Governance of Transnational Environmental Harm: Addressing New Modes of Accountability/Responsibility. *Global Environmental Politics*, 8(3), 8-24. Retrieved from Academic Search Premier database.
- Newell, Peter. (2008) The Political Economy of Global Environmental Governance. *Review of International Studies*, Issue 34, 507-529. Retrieved from Academic Search Premier database.
- Olson, Mancur. (1971). *The Logic of Collective Action*. Boston: Harvard University Press.
- Ostrom, Elinor. (1998). A Behavioral Approach to the Rational choice Theory of Collective Action. *American Political Science Review*,. 92(1), 1-22. Retrieved from Academic Search Premier database.
- Pearce, David. (1997). The Political Economy of the Global Environment. *Scottish Journal of Political Economy*, 44(4), 462-483. Retrieved from Academic Search Premier database.
- Ringquist, Evan. (2005). Assessing Evidence of Environmental Inequalities. *Journal of Policy Analysis and Management*, 24, 223-248. Retrieved from Academic Search Premier database.
- Rosenbaum, Walter. (2008). *Environmental Politics and Policy*. Washington, DC: CQ Press.
- Ruggie, John. (2004). Reconstitution the Global Public Domain: Issues, Actors, and Practices. *European Journal of International Relations*, 10(4), 499-531. Retrieved from Academic Search Premier database.
- Samuelson, Paul A. *The Pure theory of Public Expenditure*. Cambridge: The MIT Press.
- Simon, Julian and Kahn, Herman. (1984). *The Resourceful Earth*. New York: Blackwell.
- Smith, Adam.(1776). The Wealth of Nations: Introduction and the Plan of Work. In Murray Jardine, *Fundamental Readings in Political, Economic, and Social Theory* (pp.39-63), Copley Custom Textbooks.
- Wallerstein, Immanuel. (1998). *Utopistics: Or Historical Choices of the Twenty-First Century*. New York: The New Press

Wallerstein, Immanuel. (2003). *The Decline of American Power: The US in a Chaotic World*.
New York: The New Press

www.fossil.energy.gov

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1529>
visited 9/09/09

[http://www.qualityplanning.org.nz/monitoring/intro-pressure-state-response-
framework.php](http://www.qualityplanning.org.nz/monitoring/intro-pressure-state-response-framework.php)
visited 9/09/09

Appendices

Appendix 1

Kyoto-Related Fossil-Fuel CO ₂ Emission Totals				
Year	Annex B Countries		Non Annex B Countries	
	Fossil-Fuel CO ₂ Emissions (million metric tonnes C)	Bunkers (million metric tonnes C)	Fossil-Fuel CO ₂ Emissions (million metric tonnes C)	Bunkers (million metric tonnes C)
1990	3887	90	2121	47
1991	3802	94	2298	41
1992	3714	102	2257	44
1993	3653	103	2320	48
1994	3625	103	2461	52
1995	3645	114	2557	57
1996	3680	115	2645	70
1997	3707	118	2722	72
1998	3723	122	2665	78
1999	3640	125	2718	86
2000	3693	131	2826	84
2001	3751	120	2938	86
2002	3722	124	3016	88
2003	3797	121	3275	93
2004	3849	132	3592	98
2005	3885	139	3841	107
2006	3897	142	4077	113

This table shows the total of CO₂ emissions from fossil-fuel use and cement manufacture for those countries listed in Annex B of the Kyoto Protocol and for those countries not listed in Annex B. In keeping with the convention of the IPCC methodology for calculating national greenhouse gas emissions, emissions from international bunker fuels (fuels used in international commerce) are not included in the country totals but are shown separately under the country group in which final fuel loading occurred.

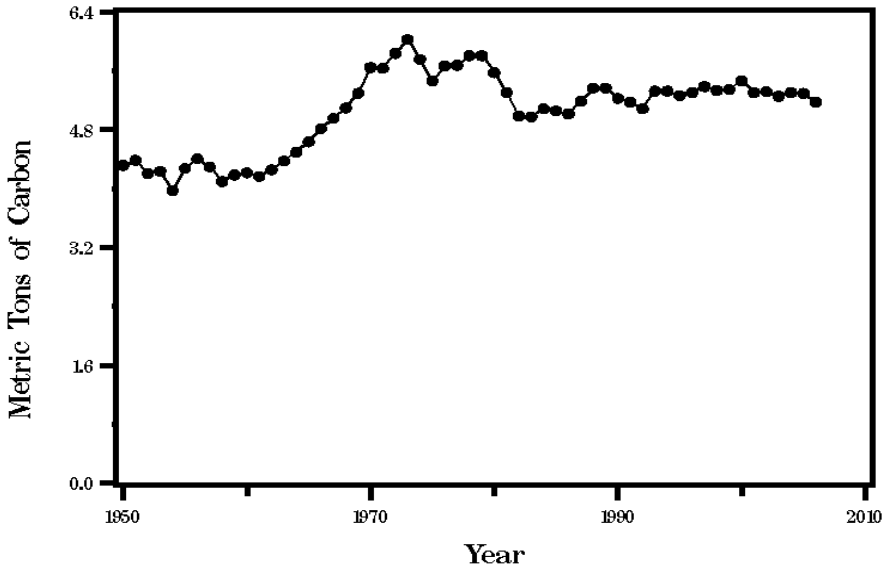
Note, that the list of countries in Annex B of the Kyoto Protocol differs from the list of countries in Annex I of the Framework Convention on Climate Change by the addition of Croatia, Liechtenstein, Monaco, and Slovenia and the removal of Belarus and Turkey.

We have estimated emissions for 1990 and 1991 from the republics that were formerly part of the USSR and of Yugoslavia by taking total emissions from the USSR (and Yugoslavia) for 1990 and 1991 and distributing them among the new republics in the same ratio as emissions from those republics in 1992.

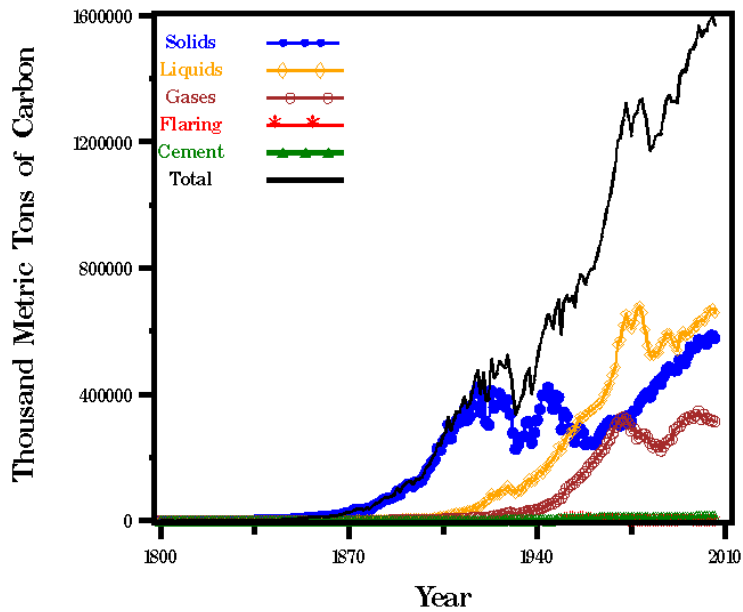
Source: Carbon Dioxide Information Analysis Center:
<http://cdiac.ornl.gov/trends/emis/annex.html>

Appendix 2

Per capita CO₂ Emission Estimates for the United States of America



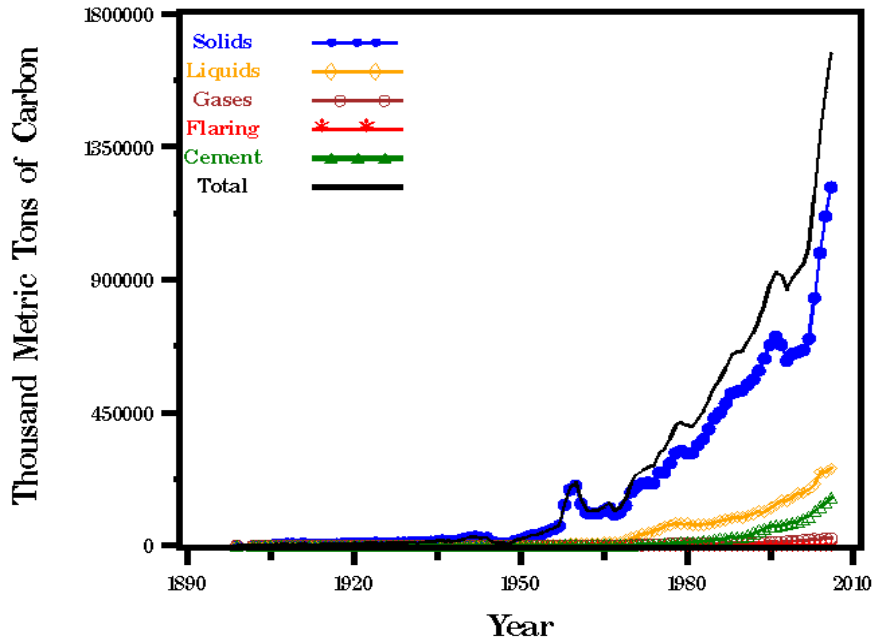
CO₂ Emissions from the United States of America



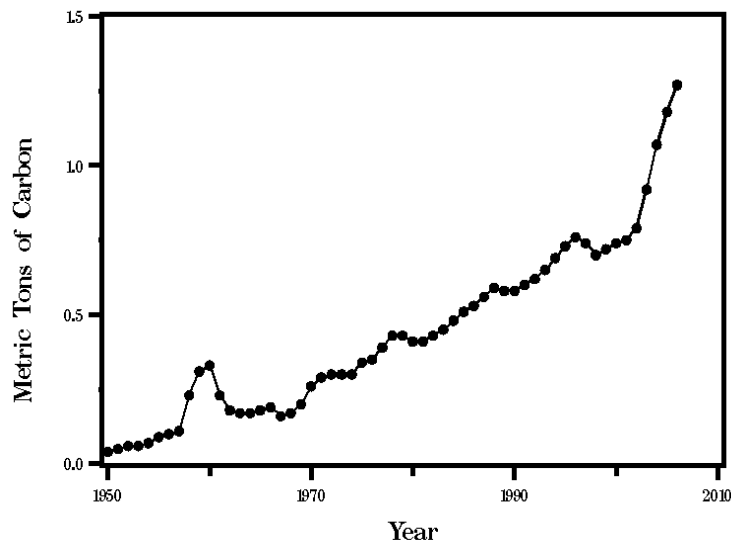
Source: Carbon Dioxide Information Analysis Center:
<http://cdiac.ornl.gov/trends/emis/annex.html>

Appendix 3

Total Fossil-Fuel CO₂ Emissions from the People's Republic of China



Per capita CO₂ Emission Estimates for People's Republic of China



Source: Carbon Dioxide Information Analysis Center:
<http://cdiac.ornl.gov/trends/emis/annex.html>