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**Market Mechanisms and Cultural Values in
Negotiating Multilateral Environmental Agreements:
The Case of the Kyoto Protocol**

A Thesis
Presented to the Faculty
Of
The Fletcher School of Law and Diplomacy
By
Ari Nathan
In partial fulfillment of the requirements for the
Degree of Doctor of Philosophy
February, 2000

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Highlights of Qualifications

- Oversaw legal transition of last U.N. Trust Territory to independent status
- Wide range of legal experience
- Excellent managerial and analytical skills

Professional Experience

Environmental Protection Agency, Washington DC

Policy Analyst

Jan. 1999-Feb. 2000

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Achievements

- Helped develop strategy for negotiations with China and the Philippines
- Instrumental in Republic of Palau's ratification of climate change treaty

World Resources Institute, Washington DC

Research Fellow

June-August, 1998

Researched issues associated with market mechanisms to reduce pollution.

Organization for Security and Cooperation in Europe

Registration Supervisor, Bosnia-Herzegovina

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Trained and oversaw local staff in daily operations of a voter registration center.

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Office of the President, Republic of Palau

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Advised the President on all legal matters. Drafted laws in wide range of areas and oversaw them through the legislative process. Represented government in negotiations with foreign governments, international organizations and financial institutions. Primary legal negotiator for issues associated with Palau's status as a Trust Territory. Prepared bilateral and multilateral international agreements. Wrote speeches and other documents for President including addresses to the United Nations, foreign Heads of State and the national legislature.

Achievements

- Played instrumental role in Palau's transition from U.N. Trust Territory to independent nation
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Office of the Attorney General, Republic of Palau

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1995-1996

Provided legal counsel to the Republic of Palau. Chief prosecutor for all violations including of environmental laws. Oversaw an office of seven attorneys and staff as well as entire immigration department.

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Advised Vice-President/Minister of Justice on all legal matters related to oversight of the Office of the Attorney General, National Police force, Emergency Management Office, Juvenile Justice Division and Anti-Substance Abuse Program. Drafted legislation, agreements, speeches, letters and other documents.

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Managed large, multi-party actions in federal and state court litigation. Drafted and argued numerous motions on a wide range of substantive legal areas. Took or defended over fifty depositions with complex factual and legal issues.

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University of Southern California Law Center

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Publications

- "Best Practices for EPA's International Capacity-Building Programs," (Washington, DC: Environmental Protection Agency, 1999).
- "Defining the 'Common Heritage of Mankind,'" *Global Environment: Negotiating Its Future*, ed. W. Moomaw and L. Susskind (Cambridge, MA: PON Books, 1998).
- "Legal Instruments for Greenhouse Gas Emission Reduction Measures," (Geneva: International Academy of the Environment, 1997).

ABSTRACT

Climate change is one of the most complex problems facing the international community due to the multidimensional nature of the issue. Environmental impact, the politics of international relations, and the economics of energy production and use, are all critical factors in this multifaceted issue.

Two analytic perspectives have been used to explain the dynamics of climate change negotiations in the United Nations Framework Convention on Climate Change ("UNFCCC"). While structuralists have examined the role of relationships in the negotiations, "rationalists" have focused on countries' economic interests. This dissertation argues that culture, specifically cultural orientation towards open markets, is an important analytic perspective and relevant factor in understanding the dynamics of international environmental treaties generally and the climate change debate specifically. This dissertation explores the role of culture in the actions and positions of countries engaged in the climate change debate by focusing on the cultural value of "open market orientation."

At the time of this dissertation, the UNFCCC only market mechanism was "Joint Actions," within the "Activities Implemented Jointly" (AIJ) pilot program. Joint Actions allow an "investor" to reduce the green house gas emissions ("GHG") of a "host" and, at least ultimately, receive credit for such reductions. This dissertation demonstrates that open market orientation effects how countries have structured AIJ programs and projects.

In order to compare the impact of "rational" economic interests and cultural values on climate change policies, this dissertation evaluates the relative contributions of open market orientation and of economic interest in forming national positions on international emissions trading. Emissions trading, the quintessential market mechanism that has been proposed to reduce GHG, allows parties to trade their right to emit GHG. This dissertation demonstrates that cultural values play an important role in determining national positions this important GHG reducing policy mechanism.

This dissertation concludes by suggesting that cultural, rational, and structural analytic perspectives must all be used to understand the dynamics of climate change negotiations fully as they all focus on different aspects of the process. Without such a three-dimensional perspective, the hope of reaching meaningful agreement on climate change will be dramatically diminished.

DEDICATION

This work is dedicated to Hope: the hope that our understanding of each other and of our environment will continue to grow and deepen; and Hope-my mother who first nourished, and then challenged, my understanding of human behavior and of the natural world.

GLOSSARY

Ad-hoc Group on Berlin Mandate (AGBM)	The primary body designated by the Berlin Mandate to negotiate a “protocol or other legal instrument” for the third CoP in Kyoto
Activities Implemented Jointly (AIJ)	A pilot phase established under the first CoP voluntary GHG reducing projects between Parties which do not receive any “credit.”
Additionality	A term used to mean that either the GHG reductions from, or the funding for, a project should be in addition to those that would otherwise occur.
Annex B Parties	The Annex which contains the list of national commitments under the Kyoto Protocol.
Annex I Parties	Those countries who agreed to undertake specific commitments under the UNFCCC and the Kyoto Protocol (similar, but not identical to Annex B Parties). Also known as “Developed Countries,” “Industrialized Countries,” and “the North.”
Assigned Amounts (AA)	The official term in the Kyoto Protocol to describe the total emissions allowed to a Party over the commitment period of 2008-2012. Emissions trading, the CDM, or JI could add or subtract from this amount.
Assigned Emission Units (AEUs)	AAs which are gained or lost through emissions trading.
AOSIS	Alliance of Small Island States which, given the high degree of threat they face from rising sea levels have pushed for strong GHG reductions.
Base Year	Assigned Amounts are defined in relation to emissions calculated for a previous year. For the Kyoto Protocol 1990 is the base year for most Annex I Countries for most GHG.

Baseline	Emissions that would have occurred but for a project or policy.
Berlin Mandate	The agreement reached at the first CoP in 1995 that specific commitments for reducing GHG would have to be made by the third CoP in 1997.
Buenos Aires Action Plan	An agreement reached at the fourth CoP in 1998 that specific rules for the flexibility mechanisms developed in Kyoto would have to be made by the sixth CoP in 2000.
Business-as-usual (BAU)	Projections of GHG emissions in the absence of specific policies or projects to reduce them—often considering entire economies.
Carbon Dioxide (CO₂)	One of the primary GHG and the by product of using hydrocarbons for energy.
Certified Emissions Reductions (CER)	Credits received for CDM projects.
Clean Development Mechanism (CDM)	A mechanism in the Kyoto Protocol (Article 12) allowing Annex I Parties, or private sector entities, to develop GHG reducing projects in developing countries and obtain certified emission reduction credits (CER) for such projects. A portion of the value of such CER will go to run the administration of the CDM and for helping particularly vulnerable Parties mitigate against the adverse impacts of climate change.
Commitment Period	The period between 2008-2012 over which Parties must make GHG reductions which <i>average</i> their commitments under the Kyoto Protocol. Negotiations on commitments for a second period are to start by 2005.
Conference of the Parties (COP)	The supreme decision making body under the UNFCCC which meets on an approximately annual basis.
Committee of the Whole (CoW)	The full negotiating group in Kyoto which

	prepared the Protocol for the CoP.
Economies in Transition (EIT)	Those nations, primarily in Central Eastern Europe and the former Soviet Union, which are in transition from controlled to market economies.
Emissions Trading	The transfer (through sale or other means) of AEU's which allow Parties (or legal entities) to emit GHG. Permitted under Article 17 of the Kyoto Protocol.
Emission Reduction Units (ERU)	Credit allowing for GHG which can be earned through JI projects between Annex I countries pursuant to Article 6 of the Kyoto Protocol.
European Union (EU) Bubble	A means by which Parties (particularly the EU- but in theory others as well) can agree to meet their emission commitments collectively under Article 4 of the Kyoto Protocol.
Framework Convention on Climate Change (FCCC)	See UNFCCC.
G77 (and China)	The <i>Group of 77</i> (and China) is the primary body through which approximately 120 developing nations act as a bloc in most international negotiations. Also known as "the South," and "non Industrialized Nations." Within the UNFCCC the G77 (and China) is roughly synonymous with non-Annex I nations and includes countries with extremely different interests and positions such as AOSIS and OPEC.
General Agreement on Tariffs and Trade (GATT)	An international agreement under the World Trade Organization (WTO) to promote free and unrestricted trade between member nations.
Global Environmental Facility (GEF)	The entity responsible for the financial mechanism of the UNFCCC (initially on an interim basis now subject to four year review).
Global Warming Potential (GWP)	A measure of the warming potential of different

	GHG relative to that of CO ₂ which takes into consideration the lifespan of the molecule.
Greenhouse Gas Emissions (GHG)	Any of a number of gases in the atmosphere which absorb energy reflected back from the earth thereby leading to global warming and climate change through the operation of the "Greenhouse Effect."
Gross Domestic Product (GDP)	A measure of the total annual monetary output of a nation.
Hot Air	Assigned Amounts (AA) which Parties have which are in excess of their Business-as-usual (BAU) emissions over the commitment period and may be traded.
Intergovernmental Panel on Climate Change (IPCC)	An institution organized in 1988 by a number of governments through UNEP and the WMO. Its' purpose is to provide up-to-date assessments of the state of knowledge about climate change which are prepared by an internationally diverse and respected group of scientists and other analysts.
International Energy Agency (IEA)	An international agency that is involved in the analysis and projection of energy use.
Joint Actions	A term used to refer to collective project activities between Parties or legal entities to lower GHG.
Joint Implementation (JI)	Although it may be generally used to refer to various types of Joint Actions, under Article 6 of the Kyoto Protocol it specifically means GHG projects between Annex I countries which generate ERUs.
JUSSCANNZ	A group of countries aligned on many climate change issues similar to the "Umbrella Group" (but not including Russia or the Ukraine). It includes Japan, the United States, Switzerland, Canada, Australia, Norway, and New Zealand.

Kyoto Protocol	The agreement reached at the third CoP in late 1997. It includes quantified emission limitations and reductions as well as flexible market mechanisms.
Legal Entities	A term of art within the UNFCCC referring to private sector entities.
Non-Annex I Parties	Countries which are a party to the UNFCCC but are not within Annex I. Generally similar to the “G77 (and China),” the “South,” “Developing Countries,” and “Industrializing Nations.”
Non-governmental Organization (NGO)	Organizations which are focused on specific public policy issues but which are not part of national governments or international agencies. Usually industry groups are not included in this category although they can be.
The North	Developed, industrialized nations.
OPEC	Organization of Petroleum Exporting Countries which are generally considered to be opposed to vigorous international efforts to reduce GHG given their economic interests.
Party	A term of art within the UNFCCC referring to national entities.
Quantified emission limitation reduction commitment (QELRC)	The commitments accepted by Annex B nations to reduce GHG. Prior to Kyoto the term QELROs was used (“objective” instead of “commitment”).
Subsidiary Body for Implementation (SBI)	A body set up within the UNFCCC to examine the impacts of climate change policies.
Subsidiary Body for Scientific and Technological Advice (SBSTA)	A body set up within the UNFCCC to examine the scientific and technological aspect of climate change.
Sequestration/Sinks	Methods for absorbing CO ₂ out of the atmosphere such as by growing new trees, etc.

The South	Developing, industrializing nations.
Umbrella Group	A group which emerged at Kyoto and is focused on promoting emissions trading. It includes the JUSSCANNZ nations other than Switzerland and adds Russia and the Ukraine.
United Nations Environment Programme (UNEP)	The UN organization focused on environment.
United Nations Framework Convention on Climate Change (UNFCCC)	The international treaty on climate change adopted in 1992 which entered into force in March of 1994. It has an administrative "Secretariat" in addition to "Bureau" of individuals involved in the negotiations.
United States Initiative on Joint Implementation (USIJI)	The U.S. entity responsible for AIJ projects.
World Meteorological Organization (WMO)	The international organization focused on meteorology and climate.
World Trade Organization (WTO)	The international organization focused on free trade.

Chapter 1-Introduction: The Three Dimensions of Climate Change

Climate change encompasses “three dimensions of enormous scope and pervasive impact. First, its natural dimension is of truly cosmic proportions. Second, its central [international relations] dimension is the widening global fault line between the rich and the poor that threatens to split humanity irreparably. Third, the energy dimension is so central to society as to constitute its nervous system....As the central element of our global infrastructure, it shapes basic ways in which we live.”

Climate change is undoubtedly one of the most complex problems facing the international community. In large part, this complexity is a function of the multidimensional nature of the issue. The environmental impact of climate change, the politics of international relations, and the economic impact of energy production and use, are all critical factors in this multifaceted issue. Two analytic perspectives have generally been used to explain the dynamics of climate change negotiations. Structuralists have examined the role of relationships and power while rationalists have focused on the economic interests of countries. This dissertation argues that culture, specifically the cultural orientation towards open markets, is both an important third analytic perspective and a relevant fourth “factor’ in understanding the international climate change debate.

“FACTORING” CLIMATE CHANGE

Climate change is a complex and multifaceted issue. The international agreement to reduce greenhouse gas emissions (GHG) has “become an extraordinary multi-dimensional struggle....that has no parallel in the history of international politics.”² To understand the different aspects of the climate change debate one must differentiate both the diverse perspectives that have been applied to it as well as the different factors involved.

One author has claimed that there are three important “factors” to understand

¹ Ross Gelbspan, The Heat is On-the High Stakes Battle Over Earth's Threatened Climate, (Reading, MA: Addison-Wesley, 1997), 190.

² Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 193.

national compliance with international environmental law.³ In considering the legal status of the African elephant under international environmental law, Harland suggested that the relevant factors were scientific (biological-in the case of the elephants), economic (both quantifiable and non-quantifiable), and political (domestic or international). All three of these “factors of compliance” contribute to the decision-making process. I argue that a fourth factor, national cultural values, can also be considered in understanding the dynamics of the development of international environmental treaties.

To analyze this proposition, this dissertation will focus on the issue of climate change. Clearly, science, economics and politics all play important roles in the international discussion of climate change. Yet the possibility that culture might also be a factor in national climate change policies and positions has, largely, been ignored. To determine the role of culture, it is necessary to examine it in the context of the other factors.

The science of climate change helps us understand the impact that GHG have on the environment. This scientific understanding is the underlying driving factor in the consideration of climate change as an international issue. As such, there has been an enormous attempt to ensure that the scientific analysis is largely neutral and unbiased.

The economics of energy use is clearly a vital foundation of modern society. Given the direct connection between climate change and energy use, it would be surprising if national positions in climate change negotiations were not, at least to some extent, based on the economic impact of climate change and

³David Harland, Killing Game: International Law and the African Elephant (Westport, CT: Praeger, 1994).

GHG reducing policies.

The international politics of climate change is an integral part of the structure of international negotiations. The United Nations Framework Convention on Climate Change (“UNFCCC”) distinguishes between developed and developing nations. Different responsibilities are assigned to developed “Annex I” nations and developing “non-Annex I” nations. This, by definition, reflects the deep structural division between between the nations of the industrialized North and those of the less economically developed South.

Cultural values, an important component of decision making generally acknowledged within comparative politics, have generally not been critically considered in the context of climate change negotiations. This dissertation will explore the role that culture plays in the positions, and actions, of countries in the those negotiations.

There are a number of cultural differences which could potentially play a role in climate change positions. It has, for example, been suggested that there are some fundamental differences in the underlying cultural values of the three primary groups of nations in the climate change negotiations-the non-Annex I nations (aka, the “G-77 and China”), the group of nations in the European Union (aka, the EU Bubble”), and the “Umbrella Group” (a potpourri of countries largely led by the U.S.).⁴ Not only may all three groups be basing their climate change positions on very different cultural values-perhaps more problematically

⁴ William R. Moomaw, personal communication with the author during the first week of May, 1999. There are, of course, a number of cultural variables that could relate to positions on climate change which could include, for example, “cultural attitudes towards and experiences with nature, environment and technology.” Grubb, The Kyoto Protocol: A Guide and Assessment, 29.

they may not be aware of their own, and the others', biases.⁵

The Umbrella Group emphasizes the cultural value of "economic efficiency," and hence forcefully asserts that the "least-cost" measures must be taken to reduce climate change.⁶ The positions of the EU Bubble often appear to reflect a greater degree of environmental concern with arguments often based on ensuring long-term global environmental "sustainability." And while the Umbrella Group and EU Bubble argue about whether cost-efficiency or environmental effectiveness is more important, developing nations emphasize the value of "equity," arguing for a more equal balance in the relative power between themselves and developed nations.⁷

Each one of these cultural values is held, to some degree, by the different groups of countries (and by individual countries). A country does not value only "economic efficiency" or "sustainability," but instead values them both to

⁵ For example, "the American stress on individualism...is so deeply ingrained that Americans rarely question it." Raymond Cohen, Negotiating Across Cultures: International Communication in an Interdependent World, (Washington, DC: United States Institute for Peace, 1991), 29.

⁶ "In contrast to Europe, the United States has tended to be more hesitant about responses to the climate change issue overall and far more concerned about the economic consequences of CO₂ abatement." Grubb, The Kyoto Protocol: A Guide and Assessment, 31. U.S. President George Bush highlighted this perspective when he announced that his administration would "not permit the extreme in the environmental movement to shut down the United States. We cannot shut down the lives of many Americans by going extreme on the environment." The Guardian, (London, June 1, 1992) cited in Matthew Paterson, Global Warming and Global Politics (London, UK: Routledge, 1996), 72. This should not be taken to mean that the members of the Umbrella Group or the G77 and China are not concerned with environmental sustainability or that the EU and the G77 and China do not look for cost efficient solutions to policy problems. What it does mean is that there is a *relative* difference in the degree to which nations rank the importance of these different overall values.

⁷ The issue of "hot air" clearly brings out these different values. "Hot air" is the excess GHG emissions rights that some countries (notably Russia and the Ukraine) have under the Kyoto Protocol. The Umbrella Group views this as a benefit to the overall system as it will make the market for emissions rights more robust. The EU is concerned that hot air will allow there to be emissions that would not otherwise occur. Developing nations concern over hot air is more focused on the belief that it will allow developed nations to avoid having to make large domestic cuts in emissions (which cuts would perhaps give developing nations a better chance to reach a similar level of economic development).

different relative degrees. For example; for the US and the Umbrella Group the order of importance of the three different variable might be economic efficiency , sustainability, and equity; for the EU Bubble the ranking might be sustainability, equity, economic efficiency, and; for the G77 (and China) it might be equity, sustainability, economic efficiency.⁸

This dissertation will largely focus on the role of the cultural value of economic efficiency, as it is embodied in the concept of “open market orientation,” in the climate change negotiations. There are a number of reasons for looking at this particular cultural value. First, it is at the core of the policies agreed to in Kyoto to reduce climate change which are still being heatedly debated over.⁹ Second, the current international movement toward “globalization” (and the parallel domestic trends towards market liberalization and governmental deregulation), makes the issue of a society’s attitude toward open markets particularly relevant. Perhaps most importantly, open market orientation is a cultural trait which some, particularly in the U.S., tend to take for granted. Reasonable people might agree to disagree on the level of environmental protection that is appropriate. But, amongst many, there is a tendency to assume that the value of the open market is obvious-that it is less of a cultural orientation and more of a natural law. This attitude can make it very difficult for those who have such a cultural orientation to realize that others might not share it.

Open market orientation is the degree to which different societies are

⁸ For example, it has been noted that in the climate change negotiations the G77 (and China) “emphasis has been upon equity and development concerns”. Grubb, The Kyoto Protocol: A Guide and Assessment, 36. This leads to a “classic clash of perspectives, and potentially a clash of equity vs. efficiency”. Ibid, 108.

⁹ These policies have often been referred to as the “Kyoto market mechanisms.”

oriented towards laissez-faire, open market systems as opposed to command-and-control governmental systems. In other words, do cultures incorporate the idea that public welfare is maximized by having policies implemented through the clamorous operation of the market place, or through government regulations pronounced down from the "Commanding Heights."¹⁰

To date, only one market mechanism has actually been implemented under the UNFCCC. Joint implementation (which I shall refer to broadly as "Joint Actions") has been taking place through the "Activities Implemented Jointly" (AIJ) pilot program. Joint Actions are policy mechanisms in which an "investor" uses resources in a project to reduce the GHG of a "host." Investors and hosts may be either governments or private sector entities, but the key is that the investor receives credit for some share of the project's GHG reduction. The credit thus created will, at least so the investor hopes, be cheaper than if the investor had to make GHG reductions at home, or buy the credit elsewhere.

Joint Actions should, at least in theory, be guided by the "invisible hand" of the market to the most economically efficient projects for reducing GHG. Therefore, this research will examine if cultural attitudes towards open markets appear to have played any role in the actual development of AIJ projects.¹¹

The ongoing AIJ program is a pilot phase in which no real "credit" for

¹⁰ In the suggestive phrase of Vladimir Lenin used as the title of a book by Daniel Yergin and Joseph Stanislaw, The Commanding Heights. (New York, NY: Simon and Schuster, 1998).

¹¹ In the third Conference of the Parties, held in 1997 in Kyoto, Joint Actions were effectively split into two different market mechanisms. Post-Kyoto, there is a new Joint Implementation ("JI") which is only for Joint Actions projects which take place between Annex I nations. Projects between Annex I and non-Annex I nations, which are probably more similar to AIJ projects than to the new JI, will now be through the Clean Development Mechanism ("CDM"). I will use the phrase "Joint Actions" to generally refer to the type of project described above and will use "AIJ," "JI," or "CDM" to refer to the specific type of mechanisms.

reductions is given. As such, AIJ is clearly merely a surrogate for an actual market program and may not be a completely accurate predictor of how GHG reducing market mechanisms will work in reality. AIJ is, however, the best surrogate available for analysis and is designed to be a learning tool with precedential value. Additionally, AIJ is a relatively well developed market mechanism, with approximately one hundred projects having been approved by the UNFCCC Secretariat. Perhaps most importantly, because a number of different nations have been involved in AIJ projects, an examination of the way in which they have designed their programs and implemented their projects offers the possibility of comparative analysis to determine if culture played a role. Specifically, this research will see if the degree of open market orientation in five countries has affected the nature of its investors in projects and the cost per avoided tonne of CO₂.

Although the examination of AIJ programs and projects will demonstrate that cultural orientation does in fact play a role in the way in which countries have structured such programs and projects, this examination does not allow one to compare the relative impact of realist economic interests and culturalist orientations on climate change policies. Therefore, this dissertation will also evaluate the relative contribution of open market orientation and of economic interests in generating the positions of seven developed nations with regard to the quintessential market mechanism that can be used to reduce GHG-international emissions rights trading.

An international GHG trading system has not yet been implemented for climate change, but such a system has been proposed with the UNFCCC. There is a well developed body of analysis on the benefits and costs of such a

system-even though the exact means by which emissions trading will take place is now being heatedly debated (and the result of the debate will dramatically influence the benefits and costs of the system). Attitudes toward emissions trading will be analyzed based on government position papers, publicly made arguments, and other sources.

There are a number of reasons why the culturalist perspective may be important to our understanding of climate change negotiations. First, if culture, or more specifically, certain values held by different cultures, does play a meaningful role in climate change negotiations, then, as scholars of international relations it is incumbent on us to understand this role.

Second, if culture is important in climate change negotiations-but is not recognized-then the negotiations may be taking place without a full understanding of what underlies the Parties' positions and drives the negotiation dynamics. In essence, negotiators could be talking to each other without realizing that they may be speaking different languages (figuratively as well as literally). For those who have witnessed the negotiations on climate change, it sometimes seems as though everyone is talking but no one is truly listening.¹² A cultural analysis may help to explain this failure to communicate, because cultural dissonance can lead to a failure to understand the degree of importance which others attribute to issues

Finally, if there are cultural issues over which parties are in disagreement, it may add to the difficulty in ultimately reaching meaningful agreement on climate change issues. When underlying principles are in conflict, and especially when

¹² The author represented the Republic of Palau-a small, developing nation-at the Third and Fourth Conferences of the Parties of the UNFCCC.

such conflict is unrecognized, agreement on specific measures and mechanisms can be particularly problematic. On the other hand, the recognition of cultural differences could lead to negotiation design that takes such differences into account.

ANALYTICAL PERSPECTIVES

There are two different analytic perspectives through which the dynamics of climate change negotiations have generally been viewed.¹³ Many have looked at climate change negotiations through the “rationalist”¹⁴ lens which sees economic impacts as the critical focal point. Others have viewed climate change negotiations through the perspective of the structuralists, seeing the negotiations largely as a product of power differences and relationships between nations.

In the context of climate change, the rationalist perspective focuses on the economic interests of countries as determining the positions they have. The long-term negative economic impacts of climate change are balanced against the immediate negative impacts on national economies from making GHG emission reductions. There can be little doubt that the climate change

¹³ The science of climate change does not, *per se*, lead to an analytic framework for climate change negotiations. However, it creates the foundation upon which the negotiations are largely based.

¹⁴ As will be discussed in more detail, rationalism is related to realism. The underlying similarity between these two views is that they broadly encompass the general perspective that nations will do what it is in their national interest to do. “National interest” has been defined as either a military interest or, as in this analysis, an economic interest. One theoretical difference between these two positions, which is less relevant than their similarity for the purpose of this analysis, is that realists suggest there is no such thing as “international law,” whereas rationalists see some type of agreed upon rules for the international community.

negotiations have been deeply affected by economic considerations.¹⁵

It is also easy to see climate change negotiations as a function of structural, or institutional, dynamics. Structuralists and institutionalists (collectively “structuralists”) focus on linkages and relationships between parties.¹⁶ Their vision encompasses the broad canvas of international institutions and the relative power of parties within such institutions. The structuralist emphasis on categories of participants within a system, and on the connections between groups (political, economic and social), tends to see negotiations as driven by the differences between parties.

The structural perspective views the UNFCCC negotiations as a conflict between the industrialized North and a developing South. While the North wants to ensure that climate change does not threaten its economic and environmental security, the South feels it must increase its use of energy, and hence emissions of GHG, if it is to be able to achieve acceptable standards of living for its peoples.¹⁷ Such a perspective assumes that in the negotiations “a principal dividing line was and remains the basic ‘North-South’ division, reinforced by the corresponding structure of all UN institutions.”¹⁸

¹⁵ For example, an analysis of the emissions reductions agreed to in Kyoto suggests a strong correlation between per capita incomes (of the Annex I countries) and the emissions reductions below “business as usual” emissions. Statistically, “the existing Kyoto targets show this pattern of progressivity: each 1% increase in per capita income implies a 0.1% greater sacrifice, expressed as greater emissions reductions from BAU.” Jeffrey Frankel, “Greenhouse Gas Emissions,” Policy Brief #52 (Washington DC: The Brookings Institute, June, 1999), 7.
<http://WWW.BROOKINGS.ORG/comm/PolicyBriefs/pb052>

¹⁶ A basic difference between these structuralists and institutionalists is that while both see power and relationships as the key to the dynamics of decision making institutionalists believe that those relationships are always embodied within institutions. Despite this difference the two views broadly agree that relationships and relative power are the primary factors which determine the outcome of international decision-making.

¹⁷ As the Chinese delegate to the UNFCCC expressed it in a speech at the fourth Conference of the Parties in Buenos Aires, it is the difference between “luxury emissions” and “survival emissions.” Personal observation of the author.

¹⁸ Grubb, The Kyoto Protocol: A Guide and Assessment, 29.

The realist and the structuralist perspectives are actually focused on different aspects of climate change negotiations. The realist perspective may be seen as an attempt to explain how nations evaluate which positions most effectively meet their own interests. The structuralist perspective looks more at the dynamics of interactions between parties once the interests and positions have been determined. Culturalism, the third basic analytic framework in contemporary comparative politics, looks at the underlying values of different societies in trying to understand how, and why, decisions are made. The culturalist ontology "assumes that culturally embedded individuals follow social rules that are constitutive of their individual and group identities."¹⁹ Because the culturalist perspective focuses on the basic values upon which the calculations of a parties' interests are based, it adds an important third perspective to a holistic understanding of the dynamics of the climate change negotiations.

Although it represents an important international relations tradition, this study does not specifically consider the perspective of "liberalism." This may, at first, seem odd because international relations literature sometimes suggests that the primary analytic dichotomy is between liberalism and realism.²⁰ Liberalism is not considered in this study for two reasons. First, some components of liberalism, (having a single open global market, working toward the equitable distribution of resources between nations, respecting national differences through democratic governance) cross-cut economic rationalism, institutional

¹⁹ Mark Lichbach, "Social Theory and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure, Mark Lichbach and Alan Zuckerman, ed. (Cambridge, UK: Cambridge University Press, 1997), 247.

²⁰The international liberalism of the twentieth century (aka, "Wilsonian utopianism") is the intellectual descendent of the eighteenth century enlightenment which viewed both human beings and human institutions as ultimately perfectible. Realism, with its anarchical view of international relations and its pessimistic belief about human nature, is sometimes considered to have developed in reaction to the perceived naivete of liberalism.

structuralism and comparative culturalism. Second, perhaps even more importantly, liberalism is primarily prescriptive rather than descriptive-it is about what the international system should be-not how it does actually is. Even more to the point, to the extent that liberalism could be considered descriptive, it focuses on how the system as a whole works, not why individual actors make specific decisions and choices.

In contrast, rationalism, structuralism and culturism are all directed towards descriptively explaining how the international system actually works, and particularly *how decisions get made by actors within the international system*. Since this dissertation is primarily an examination of the different explanations of why nations make decisions about climate change policies and positions, liberalism is not an appropriate analytic perspective.

Because of the complexity of the issue, understanding the different analytic perspectives on climate change negotiations requires knowledge of the scientific, economic and international relations issues involved in climate change. It is these "factors" which we next consider in some detail.

Chapter 2-The World of Climate Change and Climate Change in the World

*"Climate change isn't just any environmental issue. It's bigger. Scarcely a life, much less a country, can escape its effects....It's tied to almost every facet of contemporary economic life....the growing sense that something must be done defies the political system's built-in tendency to stall until crisis presents itself ugly and full-fledged."*¹

Although the science of climate change has, at least in theory, been understood for over a century, it was not until the 1980s that the international community began to recognize the full potential of the impact of climate change on the global ecosystem. And because GHG are so intimately associated with energy production, there has been a growing understanding of the enormous costs that may be associated with reducing emissions. The effort to negotiate between the Scylla of possible environmental damage and the Charybdis of potential economic losses has led to a complex and multifaceted international discussion of climate change.

BACKGROUND

Weather has been an important part of human life, and has therefore been intensively studied, throughout history. However, our understanding of global weather systems is a more recent endeavor. Despite increasingly sophisticated computer modeling and satellite imagery, there is, as anyone who relies on local weather reports in deciding whether or not to wash the car can tell you, little certainty in predicting the weather in the short run.²

But there is increasing scientific consensus that certain gases-known collectively as greenhouse gases ("GHG")-do play an important role in the patterns of the weather system. Although there are many different GHG, Carbon Dioxide (CO₂) is probably the most important for a number of reasons. First, CO₂ is responsible for the largest share of "human-induced radiative forcing"

¹ Francesca Lyman and others, The Greenhouse Trap: What We're Doing to the Atmosphere and How We Can Slow Global Warming (Boston, MA: Beacon Press, 1990), ix-x.

² For an interesting and readable discussion of how computer modeling of global climate systems is done see, Wallace Stevens, "Computer Model World's Climate, But How Well?" The New York Times, November 4, 1997, C1.

(aka, the “greenhouse effect”).³ Second, CO₂ is the byproduct of hydrocarbon (ie, coal, oil and natural gas) use to produce energy. Actions to reduce GHG therefore will, inevitably, impact on energy production, use and technologies. Finally, perhaps related to the central role of CO₂ in energy, is the fact that our understanding of the costs and benefits of activities to reduce CO₂ emissions is more robust than that for other GHG.

GHG allow light into the atmosphere but trap the heat radiated back from the earth. This process increases the amount of energy contained within the atmosphere, the so-called “greenhouse effect.” Extra energy can lead to higher temperatures, and hence the original description of the phenomenon as “global warming.” This extra energy has the potential to change the climate beyond simply meaning that winters will be a little less harsh and summers will provide a little more beach time. As U.S. Vice President Al Gore has noted, climate change

threatens far more than a few degrees added to average temperatures; it threatens to destroy the climate equilibrium we have known for the entire history of human civilization. As the climate pattern begins to change, so too do the movements of the wind and rain, the floods and droughts, the grasslands and deserts, the insects and weeds, the feasts and famines, the seasons of peace and war.⁴

Vice President Gore's vivid description of the dramatic impact of climate may seem at odds with contemporary beliefs about the degree of control mankind has over its collective destiny. Yet, up until early in this century, there had been a fundamental assumption that climate did play a critically important role in the affairs of nations and men. In fact, climate was believed to be one of

³ W.U. Chandler, “The Critical Decade: Case Studies in International Cooperation,” Carbon Emission Controls Strategies, W.U. Chandler, ed. (Washington, DC: World Wildlife Fund and the Conservation Foundation, 1990), 157.

⁴ Al Gore, Earth in the Balance: Ecology and the Human Spirit (Boston, MA: Houghton Mifflin, 1992), 147.

the primary factors in the development of civilizations.

There were a number of theories about the relationship between climate and civilization scattered across the intellectual landscape of the late nineteenth and early twentieth century. Colder climates might, it was suggested, stimulate creativity and require greater technological sophistication to survive (or lead to long indoor winters which gave people the time to invent new technologies). Riverine based civilizations, such as ancient Egypt, others argued, would of necessity develop elaborate bureaucracies, and hence more successful governments, in order to be able to run complex irrigation systems. An influential social-Darwinist geographer, Ellsworth Huntington, could, with little debate, simply assert that climate was one of the “great factors in determining the conditions of civilization.”⁵

By the middle of the twentieth century, climate had “virtually disappeared from the economic-development literature-or, more accurately, it was eclipsed by other factors, such as investment, trade policies, education, and other ‘modern’ factors.”⁶ One scholar has suggested that the importance of climate was largely disregarded for a variety of reasons. First, climate was considered an exogenous variable, one which could not be changed. Second, the increasing ability to use technology to adapt to different climates may have made climate seem less important. Finally, economic development may have seemed unconnected to climate, given the wide variation in economic development between countries with essentially the same climate, such as Hong Kong and the rest of China.⁷

⁵ William Nordhaus, “Perspectives on Climate Change: Past and Present,” Critical Issues in the Economics of Climate Change, Brian Flannery, Klaus Kohlhase, Duane LeVine, ed. (Oxford, UK: International Petroleum Industry Environmental Conservation Association, 1995), 5.

⁶Ibid.

⁷Ibid, 8-9.

But considerations of the importance of climate have begun to return to the intellectual landscape. The Pulitzer Prize winning author of, *Guns, Germs, and Steel*,⁸ made a compelling argument that the east/west axis of Eurasia (with its similarity in weather and ease of movement) is the underlying reason why Europe was able to develop the technology and political organization which led to its global dominance in the last five hundred years. And, of course, in the “last few years....climate has re-emerged as a new concern-as the centerpiece of international environmental issues in the form of the threat of global warming.”⁹

Growing concern over the potential threat of climate change as a result of increasing amounts of atmospheric GHG focused international attention on the issue beginning in the 1980s.¹⁰ The discovery of the so-called “Ozone Hole” in 1987 and a severe heat wave in 1988 also contributed to public interest and

⁸ Jared Diamond, *Guns, Germs, and Steel: the Fate of Human Societies* (New York: W.W. Norton, 1997). A one page chart outlining his argument can be found on page 87 of the book.

⁹ Nordhaus, “Perspectives on Climate Change: Past and Present,” 5. Although the term “global warming” is sometimes used to describe this phenomena “climate change” is more accurate. This is primarily because changes other than simply increased temperature may be produced by GHG. Moreover, some parts of the planet may actually get cooler. See, for example, the 1997 paper on climate change prepared by the Office of Science and Technology Policy and issued by the White House in October of 1997 (and the weather models in the third Intergovernmental Panel on Climate Change Assessment). In areas which have large emissions of sulfur dioxide this is particularly true since it reflects more light than it traps heat (this could, for example, create cooler temperatures over Eastern China which could exacerbate weather problems since it might lead to increased pressure differentials and hence more extreme weather). William R. Moomaw, personal communication with the author, October 1997. However, the phrase “global warming” appears to generate more public concern than “climate change” in U.S. opinion surveys.

¹⁰ Some realization of the potential impact of climate change actually started somewhat earlier. A study in the late 1960s by the Massachusetts Institute of Technology “...documented concerns about possible climate change, and by 1970 the Secretary General of the United Nations was sufficiently concerned to mention the possibility of a ‘catastrophic warming effect’ in his report on the environment.” Michael Grubb with Christiaan Vrolijk and Duncan Brack, *The Kyoto Protocol: A Guide and Assessment*, (London: Royal Institute of International Affairs, 1999), 4.

concern over atmospheric issues.”

One response to the concern over climate change was the creation, by the United Nations Environment Programme (“UNEP”) and the World Meteorological Organization (“WMO”), of the Intergovernmental Panel on Climate Change (“IPCC”). The IPCC is, as will be discussed in more detail, responsible for evaluating the scientific evidence for climate change, assessing the potential consequences of climate changes and estimating the costs of preventing or responding to climate change. As such, it is probably the most outstanding example of a multinational scientific organization focused on one specific issue in history.

But the most important step in the international efforts to reduce GHG emissions began with the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) at the Rio Earth Summit in 1992. Despite some disappointment that it did not initially impose strong emissions limitations, the creation of the UNFCCC represented a major step forward towards dealing with climate change on an international level.

The next major step was within the UNFCCC itself. This was the 1995 Conference of the Parties (aka “CoP”) in Berlin at which the “Berlin Mandate” was produced. The Berlin Mandate outlined various market mechanisms that might be used to reduce emissions. It also contained a statement that a protocol would be prepared by 1997 with quantified emissions limitations and reductions (“QELROs”) for different nations.

¹¹ For an outstanding book on the international dynamics of a very successful multilateral environmental negotiation-and one which has in many ways served as a model for climate change negotiations-see Richard Benedick, Ozone Diplomacy-New Directions in Safeguarding the Planet, (Cambridge, MA: Harvard University Press, 1991).

The most dramatic step within the UNFCCC was made at the third CoP in Kyoto, Japan in 1997 with the development of the Kyoto Protocol. Annex I nations finally agreed to accept quantified emissions limitations and reductions. This agreement was essentially made in exchange for non-Annex I nations agreeing that certain market mechanisms would become part of the UNFCCC. Three market mechanisms were described in the Protocol developed in Kyoto.

One mechanism is emissions trading, which allows countries ("Parties"), and/or private companies ("legal entities"), exchange their rights to emit GHG among themselves. The exact rules and procedures by which emissions trading will take place have not yet been agreed upon by the Parties. A number of issues, such as the impact of a country emitting more GHG than it has been allocated upon the status of emissions rights it has transferred, have yet to be decided upon. Such rules should be decided by the sixth Conference of the Parties in late 2000 or early 2001.

Additionally, there are two market mechanisms which may, collectively, be considered Joint Actions. These were originally considered in Berlin, Germany where it was decided that a pilot program, known as "Activities Implemented Jointly" (AIJ), would be initiated to experiment with how such a program might work. The assumption underlying Joint Actions is that GHG reductions vary in price in different countries. For example, it might cost \$X to reduce a fixed amount of GHG emissions in an industrial country such as the United States, but it might cost substantially less to reduce the same amount of emissions in a less industrialized country such as Mexico. The difference is mainly due to different levels of technology, efficiency and regulatory authority. It is therefore

more cost-efficient for the industrial country to invest the \$X in emissions reductions in the less industrialized country (investments could also be made directly between the private sector within different countries or between the public and private sector).

The "credit" for the GHG reductions thus being achieved would be split between the investing and the host countries. Since reductions in GHG anywhere benefit the atmosphere and climate system, this is economically and environmentally beneficial. Additionally, there will probably be non-GHG benefits to the environment or economy in the host country such as less particulate pollution, lower cost energy, etc.

At Kyoto, Joint Actions effectively split into two components. On the one hand, there will be "Joint Implementation" projects. These are projects which are developed solely between Annex I parties. On the other hand, there will be a "Clean Development Mechanism" ("CDM"), responsible for developing and certifying emissions reducing projects between Annex I and non-Annex I Parties.

THE MULTIPLE COMPONENTS OF CLIMATE CHANGE

While Harland's taxonomy of factors of compliance-science, economy and political-is, by his own admission, somewhat arbitrary, it forms a useful matrix from which to consider the issue of climate change.¹² Any consideration of climate change must be based on our scientific understanding of the relationship between GHG and climate. Economic projections about the

¹²David Harland, Killing Game: International Law and the African Elephant (Westport, CN: Praeger, 1994). Similarly, Daniel Yergin claims that the role of oil in society raises four types of issues, "political, technical, economic, or environmental." Daniel Yergin, The Prize: The Epic Quest for Oil, Money, and Power, (New York, NY: Simon and Schuster, 1991), 780.

consequences of climate change are fundamentally built upon our scientific knowledge of the issue. In addition, the politics of climate change can be seen as a product of the projected economic consequences (the realist view), the relationships between and within the countries (the structuralist view), and, as I will argue, countries' cultural orientation (the culturalist view). Ultimately, this suggests that no one analytical perspective has a unilateral claim to represent reality but, rather, that they all reveal different facets of this highly complex and multifaceted subject.

SCIENCE

The science of climate change is nothing new. Scientists have “understood the general theory of greenhouse warming for more than a century.”¹³ In 1827, the famous French mathematician and physicist Baron Fourier, suggested that heat in the atmosphere might behave similarly to that in a greenhouse.¹⁴ Seventy years later, in 1896, the Swedish chemist Svante Arrhenius argued from basic scientific principles to specifically predict that rising concentrations of atmospheric CO₂ could lead to global warming. Arrhenius went as far as to estimate that the Earth's temperature could increase from four to six degrees Celsius (seven to ten degrees Fahrenheit) if the burning of fossil fuels doubled the level of atmospheric CO₂.

Even though Arrhenius won the Nobel prize in 1903 for his theory of ionization, little heed was paid to his warning about global warming. It was not until close to a century later, after changes in atmospheric CO₂ concentrations were

¹³ Daniel Bodansky, “The Climate Change Convention,” Yale Journal of International Law 18 (1993):451.

¹⁴ Much of the discussion on the scientific history of climate change is from Grubb, The Kyoto Protocol: A Guide and Assessment, Michael Oppenheimer and Robert Boyle, Dead Heat, (New York, NY: Basic Books, 1990), and Robert Watson, Marufu Zinyowera, and Richard Moss, ed., Climate Change 1995- Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses, (New York, NY: Cambridge University Press, 1996).

clearly detected, that Arrhenius' prediction began to receive serious attention.¹⁵

This is not to say that no one paid any attention to the possibility of climate change in the first half of the twentieth century. Some scientists did consider the issue of climate change prior to actual testing of atmospheric CO₂. For example, in 1924 an American physicist, Alfred Lotka, who had worked on population biology issues, noted that the industrial era's dependence on fossil fuels was "radically" changing the atmosphere by increasing CO₂ concentrations. A British meteorologist, G.D. Callendar, argued in 1938 that, as a result of rising CO₂ levels since the 1880s, global warming had already begun. And, in 1954, G. Evelyn Hutchinson of Yale University suggested that the destruction of forests could increase atmospheric CO₂.

¹⁵ In considering the issue of climate change, it is important to distinguish between overall atmospheric CO₂ concentrations (or concentrations of all GHG) and actual emissions. It is the total amount of GHG in the atmosphere which affects the climate. However, it is GHG emissions that are generally considered in international discussions and negotiations of climate change. GHG include water vapor (which is actually the largest contributor to the greenhouse effect at this time but, because it precipitates out into rain at high concentrations is less problematic than other longer lived gases). Other GHG are methane (CH₄ is primarily the product of bio-organic processes and natural gas leaks), nitrous oxides (N₂O is produced from agricultural fertilizer), sulfur hexafluoride (an industrial gas) and chlorofluorocarbons (the ozone depletors which were responsible for creating the infamous "Ozone Hole" but are waning as a result of the international treaty to ban them). The greenhouse effect of all of these (with the exception of water vapor) are sometimes converted into Greenhouse Warming Potential ("GWP") which takes into account their ability to create the greenhouse effect and their longevity and compares these to the effect of CO₂. The GWP of the different GHG is generally converted to the GWP of one metric ton of CO₂. To add to the potential confusion, discussions sometimes refer to the amount of carbon rather than the amount of CO₂. Every ton of CO₂ contains 44/12 tons of Carbon (given the fact that Carbon has a molecular weight of 12 and Oxygen has a molecular weight of 16, 22 billion tonnes of CO₂ contains 6 billion tonnes of carbon). Unless otherwise specified figures given in this dissertation will refer to tons of Carbon.

Emissions are usually analyzed in terms of annual emissions by each nation. The UNFCCC takes this approach to measuring emissions. But there are several other ways in which emissions can be analyzed including through sectoral emissions, emissions by national groupings (such as North versus South emissions), cumulative historical emissions, emissions per Gross Domestic Product, etc. Not all CO₂ emissions become part of the atmosphere on a long-term basis because a large percentage of CO₂ is processed by natural ecosystems. For example, of the approximately 6,000 million tons of Carbon emitted in 1992 over 25 percent are estimated to have been absorbed by trees, plants and other organisms. Watson, Climate Change 1995- Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses

Oppenheimer and Boyle have suggested that one reason for the lack of attention paid to climate change was the prevailing scientific assumption that the oceans, which have an immense absorptive capacity for CO₂ (and other gases), would be able to absorb all of the CO₂ emitted by human activities.¹⁶ However, this assumption was rebutted in 1957 when two scientists at the Scripps Institute of Oceanography, Roger Revelle and Hans Suess, showed that the ocean did not absorb as much CO₂ as previously thought. Revelle and Suess warned that

human beings are now carrying out a large scale geophysical experiment....Within a few centuries we are returning to the atmosphere and oceans the concentrated organic carbon stored in the sedimentary rocks over hundreds of millions of years.¹⁷

Soon after Revelle and Suess's work was published one of their colleagues at the Scripps Institute, C. David Keeling, began to directly measure atmospheric CO₂ at the Mauna Loa Observatory. He found atmospheric concentrations of CO₂ at 315 million parts per million (ppm), a significant increase over the preindustrial level of 280 ppm.¹⁸

In 1983 an analysis by the National Aeronautics and Space Agency (NASA) reported that a doubling of preindustrial atmospheric CO₂ levels would eventually warm the earth by 3 to 8 degrees Fahrenheit. At about this same time, the U.S. Environmental Protection Agency (EPA) undertook a study which suggested that global warming could lead to a number of negative impacts, including altered agricultural conditions, disrupted economic systems and

¹⁶Oppenheimer, Dead Heat.

¹⁷Cited in Oppenheimer, Dead Heat, 36.

¹⁸ This preindustrial level has only been recently measured from ice-core records. By 1988 atmospheric CO₂ was measured at having reached 350 ppm-a 25 percent increase over the preindustrial level and by 1999 it has risen to over 360 ppm. Tom Wigley, The Science of Climate Change: Global and U.S. Perspectives, (Washington, DC: Pew Center on Global Climate Change, 1999), 5.

stressed political institutions.¹⁹

One of the most convincing pictorial arguments in favor of taking action to reduce GHG is the pictorial representation of strong correlation between the increase in GHG since the beginning of the industrial revolution in 1860 and the steady increase in global temperature in the last 140 years.²⁰ While this does not, of course, prove that GHG are warming the globe, it lends physical weight to the theoretical relationship between GHG and temperature. The fact that 1998 was the warmest year ever recorded (the previous warmest year was 1997) has emphasized this relationship.²¹

ECONOMICS

Energy use has been the "cornerstone of economic and social development."²² The development and growth of

civilization has depended on energy....The pattern of human development has been one of the almost uninterrupted rise in energy consumption....For clear economic reasons, fossil fuels dominate energy supplies, and their use globally is still growing rapidly.²³

One of the most important components of economic development has been to guarantee cheap access to energy. "Providing adequate energy supplies at reasonable prices has been an integral part of modernization and nation-

¹⁹ U.S. Climate Action Network. "Time line of Events Leading to Global Action to Stem Climate Change," (U.S. Climate Action Network, March 14, 1995).

²⁰ Different versions of this graphic have been used by Greenpeace, the U.S. government, the Intergovernmental Panel on Climate Change and others. For example, see Grubb, The Kyoto Protocol: A Guide and Assessment, 10.

²¹ *Ibid*, 21.

²² Michael Grubb, Energy Policies and the Greenhouse Effect, (London, UK: The Royal Institute of International Affairs, Dartmouth Publishing Company, 1990), 229.

²³ *Ibid*, 3.

building throughout the western world."²⁴ The latter part of the twentieth century—a period of intense nation building and modernization—has seen an acceleration of energy use, particularly from oil. From 1949 to 1972, for example, while world energy consumption tripled, the growth in oil use had a five-and-a-half fold increase.²⁵

This growth in energy use has been largely a function of the “rapid and intense economic growth and the rising incomes that went with it.”²⁶ In an analysis of which of the three primary “driver factors” (i.e., population, GDP/capita and energy/GDP) will drive future GHG emissions in developing and transition countries, the unequivocal conclusion was that “economic growth shows up as the major contributor in projections of emissions in the majority of studies.”²⁷

Reaching an international agreement on climate change “is complex because serious responses could reach deep into countries’ economic and political interests.”²⁸ As economics and climate change interact in three primary ways, climate change will affect “all sectors of the economy.”²⁹ First, rising affluence, as measured by GDP per capita, is generally the most important driving factor in increasing GHG emissions.³⁰ Second, climate change is

²⁴ Torleif Haugland, Helge Ole Bergesen and Kjell Roland, Energy Structures and Environmental Futures in Europe, (New York, NY: Oxford University Press, 1998), 471.

²⁵ Yergin, 540.

²⁶ Ibid, 542.

²⁷ Jayant Sathaye and Katja Schumacher, “Carbon Emissions Trends for Developing Countries,” (Berkeley, CA: Lawrence Berkeley National Laboratory, March 1999), 30. Unpublished draft on file with the author.

²⁸ Grubb, The Kyoto Protocol: A Guide and Assessment, 26.

²⁹ U.S. Agency for International Development. Climate Change Initiative 1998-2000. (Washington DC: USAID Global Environmental Center, 1999), 1

³⁰ Levels of technology and population are the two are major factors. The relative influence of these three factors varies between nations but GDP is the most important one in the majority of countries and is predicted to be increasingly important in the future. Sathaye and Schumacher, “Carbon Emission Trends for Developing Countries.”

expected to have negative economic effects for virtually all countries. Globally, the economic cost of an increase of 2.5 degrees centigrade (anticipated with a doubling of CO2 concentrations) is estimated to reduce the GDP of developed nations' by between 1 and 1.5 percent, and the GDP of developing countries and countries with economies in transition (primarily countries of the former USSR) by anywhere from 2 to 9 percent.³¹ Finally, it is generally anticipated that reducing GHG emissions will be expensive. Some economic models have suggested that stabilizing CO2 emissions at 1990 levels could impose costs of up to 2.5 percent of GDP on developed countries-although others have suggested that could have a favorable impact on the overall GDP depending on the policy instruments used to achieve it.³²

In large part, the decision to reduce GHG may be seen as an economic

³¹U.S. Agency for International Development, Climate Change Initiative 1998-2000, 15. One noted economist, William Cline, "has estimated that a doubling of pre-industrial concentrations of greenhouse gases would cost the U.S. economy about 1.1% of GDP annually-some \$89 billion a year in today's terms. Moreover, these estimates do not reflect the potential costs of so-called 'nonlinearities'-the risk that global warming will lead not to gradual and predictable problems, but to relatively abrupt, unforeseen, and potentially catastrophic consequences." U.S. Executive Branch. "The Kyoto Protocol and the President's Policies to Address Climate Change: Administration Economic Analysis," (Washington, DC: U.S. Executive Branch, July 1998), iv. Unpublished. On file with the author.

³² Robert Repetto and Duncan Austin, The Costs of Climate Change: A Guide for the Perplexed, (Washington, DC: World Resources Institute, 1997), 2. The authors are referring to a study by Charles River Associates, but go on to add that "other economic models predict that similar emissions reductions could be achieved with ...even favorable overall impacts on the economy." One large difference is that top-down models "typically assume that all cost-effective improvements in energy efficiency have already been realized[while] bottom-up studies have found inefficiencies[and] suggest that from 20-25 percent of existing carbon emissions could be eliminated at an overall cost savings." Repetto and Austin, The Costs of Climate Change: A Guide for the Perplexed, 17. One analysis, using Battelle's Second Generation Model (SGM) suggests that if the Kyoto mechanisms are fully functional, and key developing countries participate in emissions trading, then the cost to the U.S. of meeting its Kyoto commitments would be \$7-12 billion per year in 2008-2012, approximately 0.1% of GDP. This model further predicts that this would translate into a cost of carbon permits of \$14-23 per ton, an increase of about 4-6 cents per gallon of gasoline and additional annual costs of \$70-110 per household for energy. U.S. Executive Branch. "The Kyoto Protocol and the President's Policies to Address Climate Change: Administration Economic Analysis," iv.

balancing act.³³ On the one side, there is the threat of economic losses to which climate change may lead and, on the other side, there is the economic impact of measures to reduce GHG emissions. The U.S. Executive branch summarized this by saying that “we need to take out an insurance policy with reasonably priced premiums.”³⁴

Although European nations tend to see climate change as an environmental and scientific issue, in the U.S., the economic aspects of climate change are at the forefront of contention. From the beginning

the United States emphasized the potential economic costs of response measures and argued for further research, while other Western states tended to ignore the economic dimensions of the issue and supported immediate action to curb greenhouse gas emissions.³⁵

The perceptual difference between the United States and Europe has continued to be a major factor in climate change negotiations. The U.S. economic emphasis became especially pronounced after 1987, when economic agencies, such as the Commerce Department, the Office of Management and Budget, and the Council of Economic Advisors, became more involved in the issue.³⁶

INTERNATIONAL NEGOTIATIONS

Not only are GHG emissions closely related to the energy and economy, they also vary enormously between countries. Not surprisingly, richer industrialized

³³ However, precision in analyzing “the costs and benefits of mitigating climate change is a difficult undertaking for three reasons. First, uncertainties remain about significant details of certain provisions of the Protocol. Second, available models have inherent limitations in their abilities to analyze even short-term costs and benefits. Third, it is extremely difficult to quantify the long-term economic benefits of climate change mitigation.” U.S. Executive Branch. “The Kyoto Protocol and the President’s Policies to Address Climate Change: Administration Economic Analysis,” iii. .

³⁴Ibid, i.

³⁵Bodansky, “The Climate Change Convention,” 463-4.

³⁶ Ibid.

nations tend to have far higher emissions than poorer industrializing nations. A critical issue in reaching international agreement to reduce GHG emissions is that many developing nations believe that to achieve levels of economic development comparable to those of developed nations they will inevitably have to increase their energy use and hence their GHG emissions.

Additionally, the impact of climate change

will vary from country to country and region to region....It is expected that the impacts of global climate change will, however, be felt most by many of the countries that have contributed least to the problem [such as] developing nations and transition countries³⁷

Given these multiple dimensions, climate change raises the so-called "free rider" problem. Climate change is the type

of collective action problem that is often thought to require an international agreement for a solution....given the global nature of the problem, unilateral action will not provide significant benefits if others continue to pollute. Thus, states are likely to take potentially costly action to curb greenhouse gas emissions only if they have some assurance that other states will take similar actions.³⁸

Since climate change will require a cooperative international effort, the issues of economic disparity between the North and the South are an integral part of climate change negotiations which cannot be ignored.³⁹ This is one of the reasons why there is general agreement that the negotiations over the responsibilities each nation has to reduce climate change have, in the last decade, evolved into some the most complex and multifaceted which the global community has ever faced.

³⁷ U.S. Agency for International Development. Climate Change Initiative 1998-2000, 1.

³⁸ Bodansky, "The Climate Change Convention," 471.

³⁹ As opposed to, for example, the Vienna Convention for the Protection of the Ozone Layer and subsequent protocols (most notably the Montreal Protocol) in which the treaty restrictions impacted a relatively limited number of nations who were involved as either producers or as large scale users and where (perhaps most critically) the economic impact of reduced use was far smaller.

As the general scientific understanding of climate change grew in the early 1980s, the pressure to reach an international agreement to reduce GHG emissions built. In late 1985, a scientific conference on climate change was held in Villach, Austria. The conference concluded that

it is highly probable that increasing concentration of greenhouse gases will produce significant climate change....the understanding of the greenhouse question is sufficiently developed, scientists and policy-makers should begin an active collaboration to explore the effectiveness of alternative policies and adjustments.⁴⁰

In 1987 another meeting on climate change was held in Belagio, Italy. Both the Villach and Belagio meetings primarily involved independent scientists. The conclusions of the meetings, and perhaps a desire to ensure greater government control of scientific work on climate change, led President George Bush to call for the establishment of the IPCC.

1988 was, to some extent, a watershed in the political development of climate change. In June of 1988 a NASA scientist, James Hansen, made front-page news with testimony to the Senate Energy and Natural Resources Committee regarding the greenhouse effect. Hansen claimed that the earth in 1988 was warmer than at any time in the history of instrumental measurements. He warned that there was a high degree of confidence that global warming from GHG was a significant factor in the earth's warming. A severe heat wave and drought in the summer of 1988 added emphasis and credibility to Hansen's argument.⁴¹

⁴⁰ *Report of the International Conference on the Assessment of the Role of Carbon Dioxide and of Other Greenhouse Gases in Climate Variations and Associated Impacts*, Villach, Austria, Oct. 9-15, 1985, World Climate Programme, World Meteorological Organization, Doc. No. 661 (1986) at 3, 57. Cited in Bodansky, "The Climate Change Convention," 451. Much of the information on the international development of the UNFCCC is from the Bodansky article.

⁴¹ This was a world wide phenomena but was particularly pronounced in North America.

In 1988 Canada and UNEP also sponsored an international conference on the "Changing Atmosphere." Representatives from forty-six countries, including the heads of state of Canada and Norway, as well as scientists, environmentalists and industry representatives, discussed climate change. The outcome of the conference, the Toronto Statement, asserted that the consequences of climate change could be "second only to a global nuclear war."

The Toronto Statement recommended an international framework convention to protect the atmosphere and an overall 20 per cent cut below 1985 levels in global CO₂ emissions by 2005 (which, since there was a recognition that the developing world might need to increase emissions, meant a reduction of more than 20 per cent for industrialized nations). The Statement suggested that the primary responsibility to address climate change lay with developed countries.⁴²

⁴² Although the Toronto Statement was an ambitious effort it was not a binding one. The conference had not been an official government meeting because participants attended in their personal capacities. While this may have been necessary in order to generate such a strong statement, it also diminished the impact of the Statement. Moreover, as with many new environmental issues, environmental activists-who discovered and pushed the issue-had a head start, while opponents in industry and government took longer to mobilize. There was criticism that the Toronto Statement was not a negotiated document but "was drafted by a committee composed mostly of environmentalist and discussed in less than a day. Flush with the success of the Montreal Protocol, many participants did not fully appreciate the political difficulties of addressing the climate change issue." Bodansky, "The Climate Change Convention," 462. While this may have resulted in a stronger wording, it did not make for one that had the support necessary to be adopted by governments. Canada, concerned with acid rain, air toxins and smog, suggested a comprehensive "Law of the Atmosphere" but others argued that climate change was a complicated enough subject and that additional issues would slow down the process. Perhaps the most important problem with the conference was the fact that it was primarily a meeting of the industrialized North. This was a reflection of the fact that the North, with its relatively more active environmental movement and its lower level of pressing developmental problems, was more engaged in the climate change issue than the South, particularly in the initial stages. This also meant that although reference was made to the different potential issues which were of concern to the South and the North, the South's positions were not clearly articulated or strongly presented. The concerns of the South were primarily discussed in the context of their need for technology transfers.

Other leaders also began to recognize the importance of climate change in 1988. For example, England's Prime Minister Margaret Thatcher warned that the whole of humanity may have "unwittingly begun a massive experiment with the system of this planet itself."⁴³ And U.S. presidential candidate George Bush expressed concern with a campaign statement that those "who think we're powerless to do anything about the 'greenhouse effect' are forgetting about the 'White House effect'. As President I intend to do something about it." ⁴⁴

In 1988 climate change was first raised in the United Nations General Assembly. Malta, which twenty years earlier had introduced the idea of the "Common Heritage of Mankind" in the General Assembly in reference to oceanic resources, suggested that an agenda item be considered which would proclaim climate as "part of the common heritage of mankind." Although there was some support for the idea, it was ultimately agreed that the phrase "concern," rather than "heritage," would be used.⁴⁵ Malta's suggestion was

indicative of the underlying cultural value which has been consistently applied

⁴³ Nicholas Wood, "Thatcher Gives Support to War on Pollution," *The Times* (London), Sept. 28, 1988, p.1. Thatcher was much influenced by Sir Crispin Tickel, the United Kingdom representative to the United Nations who wrote a book on environmental related issues in the late 1970s.

⁴⁴ Jonathan Weiner, *The Next One Hundred Years: Shaping the Fate of Our Living Earth* (New York, NY: Bantam, 1990), 80-89. Cited in Bodansky, "The Climate Change Convention," 461. This statement is also suggestive of the domestic focus through which the U.S. saw climate change. As Bodansky noted the "United States may have been the only Western country to view the climate change issue through a domestic policy prism from the outset." Bodansky, "The Climate Change Convention," 463-464. And, after the election, the U.S. position during this period was essentially summed up by Secretary of State James Baker. In his first speech as Secretary of State, he outlined the U.S. "no regrets" position, calling to take only those "prudent" steps which were "already justified on grounds other than climate change." Bodansky, "The Climate Change Convention," 466.

⁴⁵Although "heritage" may not have been a legally binding term it would have been more strongly suggestive of a shared ownership right to the atmosphere than the more ambiguous "concern" which was agreed upon. The strength of the phrase "Common Heritage of Mankind" is based on interpreting it as a moral argument for the proposition that the planet's natural resources belong to all mankind rather than to any one country. Such a claim was further than the members of the United Nations were willing to go. Ultimately, even the idea of a common concern was watered down into the notion of "common but differentiated responsibilities."

by developing nations to climate change, namely that of equity.

Perhaps most importantly in the long-run, 1988 was the year in which the international community requested that the World Meteorological Organization and the United Nations Environment Program establish an international scientific effort to investigate climate change. As a result of this, in late 1988, the Intergovernmental Panel on Climate Change ("IPCC") was established in order to "provide internationally coordinated assessments of the magnitude, timing and potential environmental and socio-economic impact of climate change and realistic response strategies."⁴⁶

One of the most important facts about the IPCC is that the "Intergovernmental" nature of the IPCC means that the Report involves international cooperation and is essentially a governmental product. The process of writing the IPCC is designed to ensure that governments have

⁴⁶ *Protection of Global Climate for Present and Future Generations of Mankind*, G.A. Res. 53, U.N. GAOR, 43rd Sess., Supp. No. 49, at 133, 134, U.N. Doc A/43/49 (1988) cited in Bodansky, "The Climate Change Convention," 464. There is little doubt as to the technical adequacy of the Report which was prepared by approximately 2,500 of what are "billed as 'the best scientists in the world.'" Shardul Agrawala, "Explaining the Evolution of the IPCC Structure and Process," ENRP Discussion Paper E-97-05, (Cambridge, MA: Kennedy School of Government, Harvard University, 1997), 13. Vol. 1 had 78 lead authors from 20 countries. Over 400 contributing authors from 26 countries submitted draft text and information to the lead authors and over 500 reviewers from 40 countries submitted valuable suggestions for improvement during the review process. IPCC, Second Assessment Report, Vol. 1, (New York, NY: Cambridge University Press, 1995), xi-xii.

It is probably the extensive peer review that lends the most credibility to the Report. The Report's peer review process, "more comprehensive, *by many orders of magnitude*, than that in an average journal" is truly extraordinary. Draft chapters of the Report went through two full scale reviews "the first involving anywhere from twenty to sixty expert reviewers per chapter (a total of 700 experts from 58 countries were involved), and the second involving all IPCC member governments and the experts who had sent their reviews in the first round." Agrawala, "Explaining the Evolution of the IPCC Structure and Process," 12.

effective input.⁴⁷

In 1993 it was decided that all IPCC reports would have policy maker summaries-and that the summaries would be subject to line-by-line government approval.⁴⁸ The line-by-line review was not part of the first IPCC assessment in 1990. It was a product of the "realization that, in the course of sequential assessments, the IPCC will become ...increasingly policy relevant."⁴⁹ The effect of this was to create two different types of IPCC outputs. On the one hand, there are "policy maker summaries which are extensively reviewed and then approved line by line by governments."⁵⁰ On the other hand, there are the underlying reports which have extensive expert and government review, but are not subject to official line-by-line approval. Accordingly, these underlying reports have "been much less political."⁵¹

There was initially some belief that the IPCC would be designed to produce solely "scientific," rather than political, products and hence "developing country

⁴⁷Making the IPCC intergovernmental, as opposed to nongovernmental (as had been proposed by the International Council of Scientific Unions which had been involved with earlier climate change assessment activities), required that participants would be nominated by, and representatives of, their government. Nominations for writing team members are solicited from governments, international and non-governmental organizations. Teams are chosen by the chairs of individual writing groups. Writing teams, in coordination with their chair, spend close to two years drafting their sections. This includes reviews and meetings to resolve internal inconsistencies in different sections. The final output from each group is "then presented for government approval [at] their respective plenary session. The entire IPCC assessment is then approved at full IPCC plenary session." Agrawala, "Explaining the Evolution of the IPCC Structure and Process," 11.

Government approval of policy makers summaries has, not surprisingly, been the subject of some criticism. Policy maker summary approval is an "intensely political process....particularly susceptible to political pressure." Ibid, 15.

Despite the criticism, governmental involvement in the Report has been "in large part responsible for educating many government bureaucrats about the problem which made them more willing to come to the negotiating table [and was] key to the signing of FCCC in 1992." Ibid, 15.

⁴⁸Agrawala, "Explaining the Evolution of the IPCC Structure and Process," 13.

⁴⁹ Global Environment Assessment Project, A Critical Evaluation of Global Environmental Assessments: The Climate Experience. (Calverton, MD: CARE, 1997), 73.

⁵⁰Agrawala, "Explaining the Evolution of the IPCC Structure and Process," 12.

⁵¹ Ibid.

participation was....[not] necessary.”⁵² But the IPCC was ultimately given the mandate for its reports to encompass the science, the impacts, and the potential policy responses to climate change. This was a “major design choice....which had considerable ramifications ...on the subsequent size and structure of the IPCC.”⁵³ The decision seek comprehensiveness was a function of the fact that this was to be the first official assessment of climate change “at the international level.”⁵⁴ Perhaps even more importantly, it was felt that a meaningful assessment of climate change required “knowledge about climate science as well as about the economic and social aspects of impacts, mitigation, and adaptation.”⁵⁵

The second reason for the intergovernmental nature of the IPCC was to help ensure that all nations, particularly developing nations, were involved in the process evaluating the basis for political action to address climate change. It was felt that this would help give the IPCC credibility to the Report-particularly for those developing nations who played a major part in drafting it. According to Bert Bolin (shortly after he was asked to chair the IPCC), IPCC members *had* to be drawn from developing countries because “many countries, especially developing countries, simply do not trust assessments in which their scientists

⁵²Global Environment Assessment Project, A Critical Evaluation of Global Environmental Assessments: The Climate Experience, 93.

⁵³Agrawala, “Explaining the Evolution of the IPCC Structure and Process,” 9. Although “rational actor” models indicate that a comprehensive approach might lead to “better” decisions such an approach consumes more time, money and resources. There is also a risk that authoritative judgments from more quantitative disciplines (i.e., the natural sciences) can be “contaminated” by the “softer” socio/economic policy arguments. This line of thought suggests that natural science assessments could have a greater authority with policy makers.

⁵⁴Ibid.

⁵⁵IPCC, Second Assessment Report, Vol. 1, (New York, NY: Cambridge University Press, 1995), 30. The Report consists of three separate volumes (each of which is the product of a different Working Group). The first volume is “Climate Change 1995: The Science of Climate Change,” the second volume is “Climate Change 1995: Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses,” and the third volume is “Climate Change 1995: Economic and Social Dimensions of Climate Change.” The first volume deals with the science of climate change, the second volume with adaptation and mitigation, and the third volume with the economic and social dimensions of climate change.

and policy makers have not participated.”⁵⁶

Although the IPCC clearly describes different policy choices and outlines their implications it makes a conscious choice “to avoid policy judgments.”⁵⁷ The “IPCC can clarify scientifically the implications of different approaches and proposals, but the choice of particular proposals is a policy judgment.”⁵⁸ Therefore, the Report presents a “full suite of [policy] instruments without recommending the use of any particular set of instruments.”⁵⁹

In mid 1990 the IPCC finalized their First Assessment Report. The Report concluded that “business as usual” GHG emissions would create an unprecedented rise in temperature. According to Jean Ripert, the former chairman of the UN’s Intergovernmental Negotiating Committee which prepared the UNFCCC (the “INC”),

the FCCC would ‘certainly not’ have been possible without the IPCC.... The IPCC has not *demande*d hegemonic status, it may have *commande*d it....The fact that serious discussions are still on for a climate treaty is at least partly due to the IPCC Second Assessment

⁵⁶ Agrawala, “Explaining the Evolution of the IPCC Structure and Process,” 16.

⁵⁷ Intergovernmental Panel on Climate Change, Second Assessment Report, Vol. 3, Preface.

⁵⁸ *Ibid*, 8.

⁵⁹ Karen Fisher-Vanden, “International Policy Instrument Prominence in the Climate Change Debate: A Case Study of the United States,” ENRP Discussion Paper, E-97-06, (Cambridge, MA: Kennedy School of Government, Harvard University, 1997), 18.

activity [the Report] and its findings.⁶⁰

Political momentum continued to build on the issue of climate change as the 1980s wound to a close. In mid 1989, a summit was held at the Hague on global environmental issues in which seventeen heads of state issued a Declaration proposing that “new institutional authority” to reduce climate change be developed.⁶¹

Even more directly on the issue of climate change was the “Noordwijk Ministerial Conference on Atmospheric Pollution and Climate Change” held at the end of 1989. This conference directly addressed climate change and had representatives from close to seventy nations, including many developing ones. The conference Declaration took a strong position on reducing GHG emissions, and recognized that the gulf between developed and developing nations was an important component of the discussion. Divisions within the developed world also came sharply into focus with the U.S., Japan and the USSR opposing the EU and others who were pushing for a specific timetable for

⁶⁰Agrawala, “Explaining the Evolution of the IPCC Structure and Process,” 26-27. “An indirect measure of the relevance of the IPCC to policy making comes from the fact that many industry lobbying groups invest a lot of resources in reading the fine print of IPCC reports, attend its plenary sessions and even conduct expensive media campaigns which cast aspersions on IPCC findings and authors. They would clearly not have invested so much time and money had the IPCC not been critical to decision making. On the other hand, environmental advocacy groups which were so active in the assessment arena in the 1980s have stopped doing their own assessments....Now many draw legitimacy from the IPCC. They attend IPCC sessions in large numbers, cite its conclusions and their contributions to IPCC activity in public statements and even annual reports.” Agrawala, “Explaining the Evolution of the IPCC Structure and Process,” 26-27. One sign of the high degree of relevancy of the IPCC, is that industrial opponents of a strong climate change treaty, whose attempt to cast doubt on the finding of the IPCC has been analogized to “discredited apologists for the tobacco companies [in a view] that has become widely accepted among reporters and the public” are considering spending millions of dollars to counter the IPCC’s assessments. John Cushman, “Industrial Group Plans to Battle Climate Change Treaty,” New York Times, April 26, 1998, Sec. 1, p.1.

⁶¹ Declaration Adopted at the Hague, March 1989, reprinted in U.N. Doc. A/44/340-E/1989/120, Annex .

emissions reductions.⁶²

In the following year, the difference between the U.S. and European positions continued to deepen. Despite U.S. opposition, many other “industrialized countries adopted national targets and timetables unilaterally.”⁶³ And the Bergen Ministerial Conference on Sustainable Development saw a replay of the debate in Noordwijk-including a similar deadlock on the issue of specific emissions limitations.

In 1990 an appeal was also signed by 49 Nobel prize winners stating that

There is broad agreement within the scientific community that amplification of the Earth's natural greenhouse effect by the buildup of various gases introduced by human activity has the potential to produce dramatic changes in climate....Only by taking action now can we insure that future generations will not be put at risk.⁶⁴

At the Second World Climate Conference in late 1990, a ministerial component was included because of the “heightened political interest in climate issues.”⁶⁵ The differences in position between developed nations and developing nations began to be more clearly articulated and it “became obvious that the climate change negotiation would not be simply about the environment, but about development as well.”⁶⁶

The differences within developing nations came into focus at this conference as well. For example, OPEC nations, which feared the loss of oil revenues,

⁶² Abramson, “U.S. and Japan Block Firm Stand on Global Pollution,” Los Angeles Times, Nov. 8., 1989, at A1.

⁶³ Bodansky, “The Climate Change Convention,” 468.

⁶⁴ U.S. Climate Action Network. (U.S. Climate Action Network: March 14, 1995). “Time line of Events Leading to Global Action to Stem Climate Change.” The letter was initiated by Nobel laureate Henry Kendall of the Union of Concerned Scientists.

⁶⁵ Bodansky, “The Climate Change Convention,” 469.

⁶⁶ *Ibid*, 470-471

began arguing against stringent action. Small island nations recognized the common threat that they might face from rising sea levels and banded together into the Association of Small Island States ("AOSIS"), pushing for strong emission reductions.

Prior to the Second World Climate Conference, there had been a great deal of debate about the structure of an international treaty on climate change. Two models were considered. A single, comprehensive "Law of the Atmosphere," modeled on the basic structure of the "Law of the Sea" was one possibility. Alternatively, it was argued that a framework convention/protocol structure, modeled on the Framework Convention on Ozone Depleting Substances, with its subsequent Protocols, might be more appropriate.⁶⁷

A general treaty offers the advantage of being a more extensive agreement which could, at least in theory, be reached more quickly. However, as the negotiators were considering the structure of the UNFCCC, they could not ignore the fact that the Law of the Sea negotiations had been dragging on for decades. This did not suggest that it would be a quick and efficient model—particularly given that the issues could be far more complex. On the other hand, a framework/convention model lets a problem be addressed generally before there is specific binding agreement on the details of implementation. Additionally, the framework model can set up, or work closely with, information gathering institutions (such as the IPCC) and create positive feedback between them and the convention.

In the end, it was probably a recognition that the climate change negotiations
⁶⁷The Ozone Treaty had been considered a remarkable success. Its protocols, most notably the Montreal Protocol, had been extremely effective (in many ways beyond what anyone had expected) in reducing ozone depleting substances.

would be extremely complex, and it would be extraordinarily difficult to reach any agreement if a climate treaty had to be linked to all other atmospheric issues. Perhaps the final nails in the coffin of a general treaty of the atmosphere were the criticism of the idea of a general treaty on the atmosphere by Mostafa Tolba, then Executive Director of the United Nations Environmental Programme, who had been largely credited with the success of the Ozone treaty, and the 1989 recommendation by the IPCC's Response Strategies Working Group (chaired by the U.S.) that there should be a framework convention modeled on the Ozone Convention.⁶⁸

In late 1990, the U.N. General Assembly adopted Resolution 45/212 and established an Intergovernmental Negotiating Committee ("INC") to negotiate an international treaty on climate change. There had been some debate about whether the U.N. General Assembly was the appropriate body to establish, and oversee, the INC or whether this role should be undertaken by a more specialized body such as UNEP or WMO. This resolution suited some developed nations as it effectively took the issue away from UNEP and particularly from Mostapha Tolba, the head of UNEP. However, developing countries also argued that, given the developmental issues associated with climate change and the inherently political nature of such issues, it was appropriate for the U.N. General Assembly to have this role.

The INC met five times during 1991 and 1992 leading up to the Rio Earth Summit.⁶⁹ The early meetings were largely consumed by procedural issues and

⁶⁸ However, it has been suggested that the UNFCCC may actually lie "somewhere between a framework and a substantive convention. It establishes more extensive commitments than those contained in LRTAP or the Vienna Ozone Convention, but falls short of the type of specific emissions control measures contained in the Sulfur Dioxide or Montreal Protocols." Bodansky, "The Climate Change Convention," 498.

⁶⁹ This discussion of the INC negotiations relies heavily on Bodansky, "The Climate Change Convention," 481-492.

political statements. Although the actual progress of developing a text was slow, the pace of the process allowed participants to begin to gain a more comprehensive understanding of each others' positions.

The fourth meeting saw more positions introduced than discussed. The text was created by including different positions in brackets. The first four meetings also led to the solidification of the G-77 and China as a bloc and the introduction by AOSIS of an extremely ambitious proposal to reduce GHG emissions.

At the last meeting negotiations had to begin in earnest if any text were to be produced in time for Rio. Ultimately, and after an interim meeting by the Bureau (a group consisting of key members of the negotiating groups), it was decided that the Chair should introduce its own compromise text rather than working through the highly bracketed text including the text of all the Parties.

The right of the chair to develop a compromise text has become a key component of the UNFCCC. After delegations had expressed their positions on the compromise text, the Bureau prepared the final text that would be presented at Rio. Although the INC's procedural rules allowed for voting, there was a strong desire to work by consensus.⁷⁰ On the evening of May 9, 1992-the very last night of the negotiations-the United Nations Framework Convention on Climate Change was adopted by acclamation.

There are essentially four parts to the UNFCCC. First, are the introductory provisions which contain definitions, the Preamble, principles and objectives

⁷⁰ Despite a threat by Iran to reintroduce a right to development as a component of the text, which could have forced a vote, the delegates wanted to avoid voting.

(Articles 1-3).⁷¹ Second, are the actual commitments on GHG emissions and sinks, as well as on scientific cooperation and financial/technological transfers (Articles 4-6). The third part contains the institutional implementing mechanisms (Articles 7-12). Finally, there are clauses dealing with procedural processes such as amendments and ratification (Articles 13-26).

The Convention's objective is deceptively simple. It is to stabilize GHG emissions at a level that prevents dangerous human interference with the climate system. This is to be achieved in a "time frame sufficient to allow ecosystems to adapt," and in a manner which will "enable economic development to proceed in a sustainable manner." (Article 2).

The preamble covers a number of applicable "soft laws." This includes the concepts of climate as a "common concern of mankind," that states should not cause damage to other states (or the global commons), and of inter-generational equity. The distinction between developing and developed nations is highlighted and note is made of the fact that the largest share of emissions have been made by the developed world. It is noted that developing nations, with relatively low per capita emissions, will need to increase emissions to meet their "social and development needs."⁷² It goes on to suggest that responses to climate change should be related to the "differentiated responsibilities and respective capabilities of the parties" and that developing countries need access to additional resources.

⁷¹ The "principles" and "objective" are listed separately from the Preamble-where they would normally be included- which was done because some states "sought both to highlight these provisions and to elevate their legal status. Whether this strategy proves effective is a question for the future." Bodansky, "The Climate Change Convention," 497.

⁷² The reference to per capita emissions is "all that remains of an Indian proposal that the Convention should promote the convergence of greenhouse gas emissions at a common per capita level." Bodansky, "The Climate Change Convention," 498.

The principles of the UNFCCC acknowledge that developed countries have a greater responsibility for combating climate change and highlight the special needs and circumstances of developing countries and those that are particularly vulnerable to the effects of climate change, or of the UNFCCC itself (i.e., that might bear a disproportionate burden under the UNFCCC). The principles also introduce the “precautionary principle,” stating that if there is a serious threat of environmental damage, then uncertainty about the extent of the damage should not stop one from taking preventative measures. This effectively switches the burden of proof from those who claim that there may be environmental harm to those who claim that there may not be environmental harm.⁷³

The principles also recognize the value of sustainable development (which developed countries succeeded in making sure was distinguished from a “right to development”), recognize that environmental policies should be appropriate for the conditions of each country, and acknowledge that economic development is essential to address climate change. The final part of the principles seems oddly more addressed to international trade and its relationship to environmental measures than to climate change. It essentially reiterates the General Agreement on Tariffs and Trade (“GATT”) prohibition on unjustifiable trade discrimination.

The principles of the UNFCCC can be interpreted in a number of ways. Developing countries assert that the reason for the principles is so that they can serve as “the lodestar or compass to guide the parties in implementing and developing the Convention.”⁷⁴ Developed countries have a more limited

⁷³ This principle was championed by AOSIS which worked to develop its position on it with an environmental NGO.

⁷⁴ Bodansky, “The Climate Change Convention,” 501.

interpretation of the role of the principles arguing that they are simply to help reach decisions where the rules are unclear.⁷⁵

The second part of the UNFCCC contains emissions commitments. The heart of the commitments, and in many ways of the UNFCCC as a whole, is the idea of differentiated obligations between the developed and developing parties. There had been a great deal of debate about what the different classes of parties should be. Although most felt that there should be only two classes of parties-developed and developing-others, such as AOSIS, wanted recognition for those parties which were especially vulnerable. And some argued that there should be a category for the states of Eastern Europe and the former USSR. Ultimately, it was decided that, in addition to developed and developing nations, categories for “especially vulnerable countries,” “countries with economies in transition,” and “least developed states” should be included.

The organization of the commitments starts with general commitments, which apply to all Parties and relate to qualitative items such as keeping GHG inventories, creating national strategies, and cooperating in scientific research. It then addresses commitments on sources of GHG and ways to sequester GHG (“sinks”) which applies to developed countries and countries with economies in transition. Finally, it concludes with the commitments on financial and technology transfers from developed countries.

However, despite a great deal of debate, the commitments did not include quantitative emissions reductions. Europeans wanted strong commitments for

⁷⁵ In trying to dilute the effect of the principles the U.S. had a *chapeau* added which says the principles are merely to guide, changed the word “states” to “Parties” (ie, instead of applying to all nations it would only apply to those who had agreed to the UNFCCC) and had the term *inter alia* inserted which means that additional principles can also be considered.

developed countries to stabilize CO2 emissions at 1990 levels by the year 2000. Some members, such as Germany and Denmark, had even taken steps to unilaterally adopt national targets and timetables.

The primary opposition to specific targets came from the U.S. The U.S. argued that specific targets were premature and criticized the European proposal as rigid and inequitable. The United Kingdom and Japan

attempted to mediate between the European Community and the United States-Japan by proposing the 'pledge and review' formulaand the United Kingdom by proposing the 'phased, comprehensive approach'.....and finally by brokering the ultimate deal of a 'quasi-target and quasi-timetable' .⁷⁸

The compromise that was reached was to give developed states the "quasi-target" of the acknowledging the benefit of "returning" to 1990 emissions levels. However, this phrase piled ambiguity on ambiguity. First, to "return" emissions levels does not say when they will be returned. Moreover, a state could even argue that after it had returned the emissions levels to 1990 levels, it could then raise them back up again. Perhaps most ambiguous of all was that developed countries simply recognize that a return by the year 2000 to the earlier emission levels would be "desirable" and attempt to accomplish this.

Joint Actions are also a part of the UNFCCC commitments. Originally raised in the INC discussions, the UNFCCC endorses the general concept by stating that "efforts to address climate change may be carried out cooperatively by interested Parties," (Art.3(3)), and by allowing states to "implement such policies and measures jointly with other Parties." (Art 4(2)(a)). Despite some discussions in the INC about restricting the eligibility of participants (within regional areas or between developed [i.e., Annex I] nations), the

⁷⁸ Bodansky, "The Climate Change Convention," 515.

implementation of Joint Actions was left relatively unrestricted in the UNFCCC. The United States position was that participation should be open to all countries.⁷⁷ Because of concern that Joint Actions might be abused, the UNFCCC put off the decision about how it would work. Such “decisions regarding criteria for joint implementation” were left to be made by the Conference of the Parties at its first session (Art. 4(2)(d)).

Some countries also suggested that there should be a central clearing house to match proposed projects in developing countries with sponsors in developed countries or a system of tradable emission permits. Although neither of these were initially agreed to, they are basically the mechanisms which evolved at the third Conference of the Parties in Kyoto.

The third part of the UNFCCC deals with the institutions and mechanisms for implementation of the convention itself. Five institutions were established within the UNFCCC. First, there is a Conference of the Parties (“CoP”), the “supreme decision-making body” with regular (approximately annual) meetings. To create transparency and add substantive input non-governmental organizations, such as environmental and industrial groups (“NGOs”), and non-state parties are allowed to observe, and to a limited degree, contribute to CoP meetings (Article 7). A Secretariat is established to help with administrative functions of the CoP (Article 8).

Next, are the Subsidiary Bodies for Scientific and Technological Advice (“SBSTA”) (Article 9) and for Implementation (“SBSTI”) (Article 10). These two operational institutions are to assess the “overall aggregated effect of the steps

⁷⁷ Hilton Graham, “Joint Implementation as a Policy Issue” in Catrinus Jepmus, ed. The Feasibility of Joint Implementation, (Dordrecht, Netherlands: Kluwer, 1995), 181.

taken by the Parties," but have no authority to examine the actions of any specific country. There was substantial debate about whether the SBSTA would eliminate the need for the IPCC.

Next, there is the financial mechanism (Article 11). The Global Environmental Facility ("GEF") was considered for financing the UNFCCC. The GEF is a joint financial project of the World Bank, the UNEP and the UNDP which was established in 1990 to help developing countries deal with environmental problems, including climate change. However, both developed countries and developing countries objected to this. Developed countries were worried about entrusting their money to a new financial institution, and developing countries objected to the GEF because it might appear to be too much under the influence of developed countries. In the end, the GEF was entrusted with responsibility for the financial mechanism (which was essentially defined by its functions) until the first CoP. After this, the CoP was allowed to designate other entities for financial mechanisms. In practice, the GEF has continued to be involved in many UNFCCC financing areas.

The last part of the UNFCCC includes procedures for amendments, annexes and protocols (Articles 13-26). The UNFCCC enters into force upon ratification by fifty states. Some had suggested that rather than basing entry into force on the number of ratifications, it should be based upon the ratification by states with a minimum amount of GHG emissions. It was argued that this would help to ensure that those responsible for the problem (i.e., the large GHG emitters) had ratified the treaty before it took effect. This would also minimize the risk of some large emitters not ratifying, and hence obtaining a competitive advantage over those that ratified. However, there was concern that this could create a dead-

lock if many large emitters wouldn't ratify unless the others did. Given the lack of real emissions limitations, it was finally deemed unnecessary to have ratification based on emissions and decided that fifty ratifications would be the number necessary for the UNFCCC to enter into force.

An unprecedented 157 nations signed the UNFCCC in Rio and entry into force was remarkably rapid. The U.S. Senate, for example, ratified in unanimously in only four months and it entered into force on March 16, 1993, just nine months after it was introduced. This stands, of course, in marked contrast to the international response to the Kyoto Protocol.

At the first Conference of the Parties (CoP-1) in Berlin in the spring of 1995 delegates addressed the primary issue—the need for binding commitments to reduce emissions beyond the year 2000. The result of this was the “Berlin Mandate” pursuant to which it was agreed that binding commitments did have to be established and that an ad hoc group would begin the process of working out the nature of the commitments. The link between the subsidiary bodies and the scientific assessment process was also established. At CoP-2 in Geneva in mid-1996 the elements of a possible protocol for emissions commitments were analyzed and a negotiating text for such a protocol began to emerge.

The third CoP, held in Kyoto in late 1997, saw the development of the Kyoto Protocol. Under the Protocol Annex-I nations agreed to specific emissions limitations. However, in exchange for accepting quantified emissions limits, developing countries successfully argued that they needed flexibility in how they would meet such commitments. This led to the creation of three flexible

market mechanisms.⁷⁸ These mechanisms are the Clean Development Mechanism (which allows credit for project based GHG reductions by Annex I countries in non-Annex I countries), Joint Implementation (which allows credit for project based GHG reductions by Annex I countries in other non-Annex I countries), and emissions trading (which allows Annex I nations to trade their emissions rights).

The fourth CoP was held in Buenos Aires in late 1998. At the last minute delegates to CoP-4 adopted the "Buenos Aires Action Plan." Under the Plan the deadlines for reaching agreement on the Kyoto mechanisms are, generally, by CoP-6. The primary outcome of CoP 5 (in Bonn in October of 1999) was reaching a number of decisions on ongoing work in key areas to ensure the momentum for reaching final agreement on the Kyoto mechanisms by CoP 6.

Climate change negotiations raise a host of complex and diverse issues. Not surprisingly, there are a number of different analytic perspectives which have been used to explain the dynamics of such negotiations. This study will now focus on three perspectives that help to understand climate change negotiations.

⁷⁸ Some, particularly the U.S., have tried to argue that the sharing of emissions reductions by the European Union under the EU Bubble should be considered a flexible market mechanism.

Chapter 3-The Rationalist, Structuralist and Culturalist Perspectives on Climate Change Negotiations

"Today, rational choice theories, culturist approaches, and structuralist analyses stand as the principal competing theoretical schools in comparative politics."¹ These perspectives are all "founded on certain presuppositions about the way the world is constructed. Each perspective, that is, assumes something about the nature of existence: the entities and their properties that populate our lives."²

Although climate change negotiations lend themselves to the rational, structuralist, and culturalist perspectives, cultural differences have not been focused on within the context of climate change. However, a cultural perspective may help explain some of the underlying issues involved in the negotiations.

THE RATIONALIST/REALIST SCHOOL

The realist perspective focuses on power. Realism sees power as the fundamental concept in the social sciences."³ Hans Morgenthau, "the academic grand master" of realism, and the author of its canonical book "Politics Among Nations," summarized realism by explaining that the

¹Mark Lichbach and Alan Zuckerman, "Research Traditions and Theory in Comparative Politics: An Introduction," Comparative Politics: Rationality, Culture, and Structure, Mark Lichbach and Alan Zuckerman, ed. (Cambridge, UK: Cambridge University Press, 1997), 5.

²Lichbach, "Social Theory and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure, 245.

³James Dougherty and Robert Pfaltzgraf, Jr., Contending Theories of International Relations-A Comprehensive Survey, 2nd ed., (New York, NY: Harper and Row, 1981), 5. The development of realism as an intellectual perspective is sometimes seen as a "deliberate reaction to the idealism of the pre-World War I and inter war periods." Yosef Lapid and Freidrich Kratochwil, "Revisiting the 'National': Toward an Identity Agenda in Neorealism?," The Return of Culture and Identity in IR Theory, Yosef Lapid and Friedrich Kratochwil, ed. (Boulder, CO: Lynne Rienner Publishers, 1996), 106. From this perspective some of Morgenthau's arguments are considered to have been primarily "...ammunition against proponents of utopian' world-state, world-government proposals." Freidrich Kratochwil, "Is the Ship of Culture at Sea or Returning?," The Return of Culture and Identity in IR Theory, 204. This perspective sees the "utopians, for the most part, as intellectual descendants of eighteenth-century Enlightenment optimism, nineteenth-century liberalism, and twentieth-century Wilsonian idealism...the utopians...stressed international legal rights and obligations, the natural harmony of national interests-reminiscent of Adam Smith's 'invisible hand'-as a regulator for the preservation of international peace." Dougherty and Pfaltzgraf, Contending Theories of International Relations-A Comprehensive Survey, 5. Liberalism is the idea of a "government of free individuals defending law and property....producing material incentives that promote peace." Michael Doyle and G. John Ikenberry, "Introduction: The End of the Cold War, the Classical Tradition, and International Change," New Thinking in International Relations Theory, Michael Doyle and G. John Ikenberry, ed. (Boulder, CO: HarperCollins Publishers, 1997), 11. As such, liberalism is the primary intellectual underpinning of the arguments in favor of international open markets.

main signpost that helps political realism to find its way through the landscape of international politics is the concept of interest defined in terms of power....statesman think and act in terms of interest defined as power.⁴

Power is generally considered to be the ability to control the actions of others. The ultimate power is military might. Classical realism, which claims an intellectual tradition ranging from Thucydides to Machiavelli to Thomas Hobbes, sees power as inextricably linked to military strength.⁵ Hobbes claimed that "covenants, without the sword, are but words and of no strength to supply a man at all."⁶

Realism has three basic assumptions. First, it assumes that states are the primary players in international relations. Second, it assumes that the international system is essentially anarchical, a game played without rules in which might made right (and hence military power is often the way power is measured and used).⁷ Third, states are assumed to be rational, autonomous and unitary actors.⁸

⁴ Hans Morgenthau, Politics Among Nations: The Struggle for Power and Peace, 5th ed., (New York, NY: Alfred Knopf, 1973), 5.

⁵ Terrence Hopmann, "Two Paradigms of Negotiation: Bargaining and Problem Solving," Annals AAPSS, (November 1995): 542.

⁶ Thomas Hobbes, Leviathan, Introduction by Michael Oakeshott (Oxford, UK: Basil Blackwell, 1946), 64 cited in Dougherty, Contending Theories of International Relations-A Comprehensive Survey, 93. The classic realist position was recently summed up by Robert Gates, a career intelligence officer who was director of the CIA under President Bush. Describing the "lessons" to be learned from "reality," he wrote, "in a tough world-the only world there has ever been, really-we must recognize the critical and enduring importance of American strength and enhance that strength in all its dimensions: military, intelligence and diplomatic....This is not realpolitik; it is just plain common sense." Robert Gates, "The ABC's of Spying," The New York Times, March 14, 1999, Week in Review, p.15.

⁷In the twentieth century realism developed a more multifaceted picture of power. For example, Morgenthau, even though he was a classical realist, admitted that power can be economic, it is "anything that establishes and maintains the control of man over man." Morgenthau, Politics Among Nations: The Struggle for Power and Peace, 9. Contemporary realists agree that in achieving their ends, states may use "economic means." Dougherty, Contending Theories of International Relations-A Comprehensive Survey, 101.

⁸ Joseph Grieco, "Realist International Theory and the Study of World Politics," New Thinking in International Relations Theory, (Boulder, CO: HarperCollins Publishers, 1997), 164-165.

Realism is based on a vision of states as having consistent goals and as being able to

devise strategies to achieve their goals. These strategies take into account rank-ordering by states of their goals. As an extension, realists assume that states are 'sensitive to costs' and thus can change their strategies in the face of changes in external constraints and opportunities.⁹

From the classical realist perspective, state decisions are seen as being based on perceptions of relative military strength-and the international system is considered to be lacking in any organized rules. The "neo-realist" view shares a vision of states all struggling to survive but believes that the system created by this struggle is more similar to a market place than a battlefield. Neo-realism sees collaboration as necessary to advance states' interests, and therefore cooperative mechanisms develop within the international system.¹⁰

Rationalism is generally considered to be a separate analytical perspective

⁹Ibid, 165-166.

¹⁰The "neo-realist" perspective was largely established by Kenneth Waltz in his foundational text "Theory of International Politics." Waltz agreed that the international system is essentially anarchical with states as the primary unit struggling to survive. But, he argued that the international system created by this struggle is more similar to a market place than a battlefield because collaboration is necessary to advance states' interests, cooperative mechanisms develop within the international system. Kenneth Waltz, Theory of International Politics (Reading, MA: Addison-Wesley, 1979), 90.

This means that contemporary realists are able to see the international system as something other than "nature red in tooth and claw." Realists can "live quite comfortably with the idea of international regimes in which states, as the basic holders of political authority in the system, get together sometimes with other actors, sometimes just with other states, to discuss issues of joint concern, and sometimes they can hammer out a set of policies, a set of rules of the game, which enable them to coordinate their behavior." Barry Buzan, "Realism vs Cosmopolitanism: A Debate Between Barry Buzan and David Held-conducted by Anthony McGrew," Review of International Studies, 24 (1998), 388-392.

Waltz's model of international relations suggests problems, by his own admission, for the management of global problems including global pollution. Waltz, Theory of International Politics, 139. Because he sees all nations acting in their own interests, with no supranational authority to ensure the greater good, the solution to global problems, particularly "commons" type problems, will be primarily based on national policies and interests as they are defined by a states' economic interest. And the rationalist school helps to explain how such economic interests defined by states.

from realism. But it shares with neo-realism an assumption that states abide by some rules and that economic power plays an important role in decision making. Most significantly, rationalism-like classical realism and neo-realism-envisions that states' decision making process is based on some type of calculation of the relative harms and benefits of a specific action. The primary difference is that rationalism applies a magnifying glass to focus on the elements of the calculus by which such decisions are made.¹¹

Rationalists "begin with assumptions about actors who act deliberately to maximize their advantage."¹² Rationalists are "ultimately materialists in that they assume that material conditions drive subjective consciousness and ultimately rational choice."¹³ The "underlying model [of rationalism] derives from the neoclassical economic model."¹⁴ A rational choice perspective, therefore, uses "a behavioral model based on utility maximization: when confronted with various options, an agent picks the one that best serves its objectives and interests."¹⁵

Rationalists argue that actors, which can include entities other than nations, determine what to do by making "rational" choices between options. Robert Jonathan Cohn, "Irrational Exuberance," The New Republic, Vol. 221, no. 17 (October 25, 1999), 31. "The future of political science in general," may, it has been suggested, be in "intellectual movement called 'rational choice' that spans several disciplines but has recently been making its greatest inroads in the study of politics. Rational choice scholars seek to identify universal explanations for political behavior ...by treating it the way physicists treat atoms and subatomic particles." Cohn, "Irrational Exuberance," 25.

¹²Mark Lichbach and Alan Zuckerman, "Research Traditions and Theory in Comparative Politics: An Introduction," Comparative Politics: Rationality, Culture, and Structure 6.

¹³Mark Lichbach, "Social Theory and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure, 250.

¹⁴Lichbach, "Research Traditions and Theory in Comparative Politics: An Introduction," 22. William Riker, one of the intellectual fathers of rationalism, explained that he visualized "the growth in political science of a body of theory somewhat similar to ...the neoclassical theory of value in economics." Cohn, "Irrational Exuberance," 27.

¹⁵Jeffrey Checkel, "The Constructivist Turn in International Relations Theory," World Politics, 50 (January, 1998), 327.

Bates, for example, "offers a materialistic theory of political preferences" to explain why parties act as they do.¹⁶ Bates sees the world as populated by rational actors whose decisions are solely based on calculations of costs and benefits. He uses the Coase theorem to help explain how decisions are made.¹⁷

This study will use the term "rationalist" to collectively refer to the general analytic perspective which the realists and rationalists share. Both assume that choices are always made to maximize utility based on calculations to determine

¹⁶Lichbach, Comparative Politics: Rationality, Culture, and Structure 242.

¹⁷The Coase theorem is one of the most important theoretical underpinnings of rationalism. It also explains how to optimally use market instruments, such as emissions rights, to allocate public goods. See Ronald Coase, "The Problem of Social Cost," The Journal of Law and Economics 3 (October 1960).

To understand the theorem Coase gives the example of the exhaust from a factory which damages laundry nearby apartment dwellers have hanging to dry on their balconies. One could have a system in which the factory has the right to emit exhaust, and hence the apartment dwellers would have to make alternative arrangements (such as buying a dryer). Alternatively, the apartment dwellers could be entitled to dry their laundry on their balconies (in which case the factory would have to put some filter on their exhaust outlets).

Coase suggested that whether the apartment dweller has the "right" to expect clean air, or the factory the right to pollute the air, is irrelevant in determining the most efficient allocation of rights. Assume, Coase suggested, that the parties were the same. If the the apartment dwellers owned the factory, then whether they bought dryers, or put filters on the factory exhaust, will depend on which is cheaper to do. Coase went on to suggest that the reason it didn't matter where the rights were allocated was that if it was cheaper for apartment dwellers to buy dryers, then even if they have the right to expect clean air, the factory should pay them to get dryers so that it can continue to pollute. If the factory has the right to pollute the apartment dwellers will have to buy dryers anyway-or wear wet clothes.

The transaction costs must be zero for the Coase theorem to apply in full force. Transaction costs include *all* of the costs in the factory and the apartment dwellers striking a deal. Obviously, the payment from the factory to the apartment dwellers is part of the transaction costs, but so are the costs involved in enforcing the law (or other way in which the apartment dwellers rights are vested). The cost of reaching an agreement between the factory and the apartment dwellers is also included.

Of course, whether the apartment dwellers, or the factory pays for the dryers (and if dryers are cheaper than factory filters than economically it is more efficient for dryers to be used) depends on who has the right in question. In this case, the right is essentially one to use the atmosphere- either as a place to discharge exhaust or as a way to dry clothes. Although Coase suggests that the original allocation of the right should not affect whether the economically efficient outcome is reached, it clearly affects who must pay the costs of reaching that outcome.

The Coase theorem also suggests a change in the role that government has traditionally played. Rather than deciding that factories must use exhaust filters, or that apartment dwellers must use dryers, governments would ideally be involved in ensuring that transaction costs were minimized so that the factory owners and apartment dwellers could negotiate their own agreement.

Government would still, presumably, be involved in the initial decision as to who has the right to use the atmosphere for their purposes (and hence who must pay for the dryers).

the highest expected utility. Additionally, they both assume that markets have perfect competition and reach market equilibrium. Most importantly, they both agree that the behavior of nations is governed primarily by a desire to maximize self-interest and that some type of cost-benefit calculus is used to determine what decisions will maximize self-interest.¹⁸ The realist outlines the ends which states generally seek, and the rationalist explains the process by which such calculations are made by states to determine the means to meet those ends.

The rationalist perspective, therefore, implies two primary motivations behind the overall positions of parties in climate change negotiations. First, countries must consider the “degree of damage” that they will suffer if climate change proceeds unabated. A higher potential “degree of damage” would lead countries to want a stronger agreement to reduce GHG. Second, countries must evaluate their own “costs of compliance” with an agreement to abate GHG. Higher “costs of compliance” would lead a country to be less likely to want a strong agreement to reduce GHG.

A country with few potential harms from climate change, and with high potential costs of compliance, would be least inclined to want a strong climate agreement under the rationalist perspective.¹⁹ Alternatively, a country with large potential harms and low potential compliance costs would be most interested in a robust agreement. Those countries which have high damages and costs (or

¹⁸ In making such calculations there is a built in, and perhaps almost inevitable, tendency to see national interests as uni-dimensional. In other words, while one can compare the relative merits of apples it is difficult to compare apples and oranges unless one comes up with a common denominator (such as cost or calories or vitamin content, etc) and that denominator then becomes the only dimension upon which decisions are based. Even if the different attributes are weighed to develop an overall value the weighting (and hence the type of valuation) then becomes the uni-dimensional scale upon which they are judged.

¹⁹ Of course, “high” and “low” are relative terms which apply in comparison to other countries.

low damages and costs) would be expected to have a more mixed position.²⁰

Positions on the more specific issue of the role of emissions trading would, under the rationalist perspective, be based on similar concerns. A higher potential “degree of damage” from climate change should lead to a lower desire for emissions trading under the rationalist perspective. This is because emissions trading might allow more emissions than there would be in its absence, primarily due to the emissions rights that would not be used domestically by a country but can now be traded (the so-called “hot air”).²¹ On the costs side, one would consider the amount of “costs saved” by emissions trading. The more emissions trading might reduce the cost of GHG emissions reductions for a country, the higher the country’s level of interest in trading.

Therefore, in determining each country’s need (from a rationalist perspective) for emissions trading, this study will examine the degree of damages for that country from climate change and how much emissions trading would save each country. The costs saved will be based on an analysis of the emissions reductions each country has agreed to, together with the country’s potential ability to make domestic reductions. Additionally, to the extent that there are estimates of the actual monetary savings that different nations will achieve

²⁰ There is no suggestion as to whether the potential harms or compliance costs are more important. From a strictly realist perspective the total monetary damages would be the issue, but one would have to take into account the fact that harms are more in the future than compliance costs and hence the “discount” factor which is applied would be critical. Given that the discount factor is inherently related to the degree to which a society values the future versus the present it can be more than simply a straightforward economic calculation.

²¹ One can, of course, argue that since emissions trading will allow reduction to be made more cheaply, then it will lead to more overall reductions being economically possible (and hence be favored by those nations which would be damaged by climate change the most). This is, to some extent, the argument made by the U.S. in explaining that its agreement to reduce emissions in Kyoto was contingent on the lower costs that a robust trading system would result in. However, once specific reductions have been agreed on, then this argument (other than as retrospective explanation) is largely irrelevant.

through the use of market mechanisms, those estimates will be incorporated into the analysis.

THE STRUCTURALIST SCHOOL

Structuralists focus on relationships between the players. They look at the relationships-both static and dynamic-within

collectivities, institutions, or organizations.....Hence, entities are defined in terms of relationships with other entities and not in terms of their own intrinsic properties....Structuralists thus focus on the political, social, and economic connections among people. Historically rooted and materially based processes of distribution, conflict, power, and domination, thought to drive social order and social change are their particular concern.²²

For example, Theda Skocpol has explained social phenomena by taking a structural perspective....that emphasizes patterns of relationships among groups and societies ...[especially] the institutionally determined situations and relations of groups within society and upon the interrelations of societies.²³

Stephen Krasner has taken a structural approach to understanding the dynamics between developed and developing countries. According to Krasner, the North and South as having very different goals. While the North pushes for open markets, "developing states have challenged the existing regime and called for an allocation of resources that would not be based on market principles."²⁴ It is this difference which fuels the conflict between them.

Krasner argues that the South consistently endorses

principles and norms that would legitimate more authoritative as opposed

²²Lichbach, Comparative Politics: Rationality, Culture, and Structure 247-8.

²³Ibid, 243. The authors are referring to Theda Skocpol, States and Social Revolution: A Comparative Analysis of France, Russia and China (Cambridge, UK: Cambridge University Press, 1979).

²⁴ Stephen Krasner, Structural Conflict: The Third World Against Global Liberalism (Berkeley, CA: University of California Press, 1985), 227-229.

to market-oriented modes of allocation. Authoritative allocation involves either the direct allocation of resources by political authorities, or indirect allocation by limiting the property rights of non state actors, including private corporations. A market-oriented regime is one in which the allocation of resources is determined by the endowments and preferences of individual actors who have the right to alienate their property according to their own individual estimations of their own best interests.²⁵

Developing countries have used two specific strategies to stifle market systems and promote authoritative regimes .

First, the Third World has sought to alter existing international institutions, or create new ones that would be more congruent with its principles and norms. Second, developing countries have pressed for regimes that would legitimate the unilateral assertion of sovereign authority by individual states.²⁶

The structuralist perspective assumes that nations can be categorized or classified by a set of common conditions or interests. The UNFCCC negotiations are, from this perspective, a product of differences in economic

²⁵ibid, 5.

²⁶ibid, 6.

The debates over the creation of the UNFCCC reflect both of these strategies. For example, the struggle over what would be in the "Principles" section can be easily seen from a structuralist perspective. While both the North and the South thought that putting clauses in the Principles section, as opposed to the Preamble, could "create precedents and potentially create new general principles of international law," the South, which wanted to create a new and powerful institution, favored and the North opposed it. Matthew Paterson, Global Warming and Global Politics, (London, UK: Routledge, 1996), 74. And the struggle over the inclusion of the "Sovereignty Principle" (similar to that in the Stockholm Declaration on the Human Environment which asserted sovereignty in the right to use natural resources) in the Principles section can be seen from the structuralist perspective as well. Although the South felt that this was necessary to protect itself from "...eco colonist' attempts to control their development strategies by the North," ultimately the North prevailed and the Sovereignty Principle was moved to the Preamble. Paterson, Global Warming and Global Politics, 75.

The ongoing debate on "per capita convergence," i.e., the idea that the goal of the UNFCCC should be to ensure that there is an eventual convergence of per capita GHG emissions on a global basis, is also a good example of the North-south structural conflict in the UNFCCC. Essentially, this would create global property rights in the atmosphere. Such an argument is based on a fundamental value of equity. The South, led by India, has long pushed for such a convergence which has been rejected by the North.

development, political unity, and interests in various market mechanisms.²⁷ A structuralist perspective sees the positions of nations in the UNFCCC as, at least in part, molded by the relations and power of the parties.

The UNFCCC's split between the developed Northern "Annex I" nations and the developing Southern "non-Annex I nations" is a classic structuralist division strongly linked to historical patterns of wealth and resource distribution, conflict, power and domination.²⁸ In fact, the very idea of "Annex I" nations makes no sense as a category without "non-Annex" nations. The original G-77 (and China), aka the "South," was largely created by developing nations as a foil to the threat they perceived from the developed nations of the North.

Structuralists may also see the split of the North into the EU Bubble and the U.S. led Umbrella Group in terms of the relationships between groups of the

²⁷ And even within a single nation, the structural perspective could parse the decision making dynamics by examining the power and relationships between government, industry and environmental ngos. A further step in structural analysis could be taken for many nations by examining the power and relationships of different branches of the government. For example, within the U.S. the executive branch has been far more active in pushing for reducing GHG emission whereas the legislative branch (especially the Senate) has argued against this. And one could look at the different divisions within the executive branch, such as the White House, the State Department, the U.S. Agency for International Development and the Environmental Protection Agency all having somewhat different perspectives on climate change based on their relative positions and power.

²⁸For example, Grace Akumu, executive director of Climate Change Network Africa (and other African authors) reminded delegates to the first CoP in 1995 that it was "almost 110 years and 4 months to the day when the parceling of the African continent into disparate entities that now constitute [Africa] took place [and] the North discussed and concluded the strategy to spirit away our natural resources that formed the basis of their industrialization. This industrialization has now resulted in a new problem-global warming." Akumu went on suggest that the responsibility for emissions reductions rests "only on industrialized countries [because] developing countries will still have to emit in order to develop....Africans are entitled to equal economic and environmental space just as every other human beings. Those who have monopolized the utilization of common resources for humankind at the expense of others must compensate those they have marginalised." Grace Akumu and Michael Nrwalla, "Berlin: Africa's Chance!" *Eco*, LXXXIX, No. 1 (March 28, 1995): 3.

Parties.²⁹ The “North” has split in relatively distinct lines with the EU Bubble increasingly at odds with the United States (and some of its allies known as the “Umbrella Group”).

The EU Bubble is a product of their political unification which then generates common economic interests. The fifteen member countries of the EU comprise the largest single political entity in the industrial world in terms of both population and economic output.³⁰ The Umbrella Group brings together a diverse assortment of countries but they all share two traits. First, they believe that emissions trading is in their interest. Second, they all realized that with the creation of the EU Bubble their own ability to influence the negotiations would be enhanced by working together with like minded Parties.

A structural perspective helps to explain why the G-77 and China has, within the UNFCCC context, worked so hard to maintain its group cohesion (which is partially based on opposition to the positions of Annex I nations). Perhaps the most obvious example of the difficulty of maintaining G-77 and China unity comes from the fact that it includes the island nations of AOSIS (who are particularly vulnerable to rising seas and other severe weather patterns) who consistently push for major emissions reductions, and the oil producing nations of OPEC (who want to encourage continued oil use) whose oleaginous arguments often seem designed to thwart agreement on any meaningful aspect of the UNFCCC.

²⁹ The Umbrella Group is composed of most non-EU Annex I countries including the US, Australia, New Zealand, Canada, Iceland, Norway, Ukraine, Russia and Japan. It was created, according to the U.S. State Department, to pursue “the implementation of a trading regime.” U.S. State Department, “The Kyoto Protocol on Climate Change-State Department Fact Sheet,” (Washington, DC: U.S. State Department, June, 1998), 2. On file with the author.

³⁰Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 29.

The fact that countries with such different economic interests in climate change as OPEC and AOSIS are joined together in common positions within the G-77 and China suggests that the rationalist emphasis on economic considerations does not tell the whole story. "However disparate their real interests and perspectives, these countries feel that their only source of strength lies in numbers and unity when faced by the might of the OECD."³¹

An example of the efforts of the G-77 and China to maintain unity were seen when the EU made a bid for a leadership role in supporting strong emissions reductions targets. The EU's attempt was frustrated by the absence of support from the G-77 and China. The lack of support occurred despite the fact that most, but not all, members of the G-77 and China were in favor of such reductions. But not all of the G-77 and China was in favor of the reductions, and this meant that the Group as a whole was unable to take a strong stance given the

political dynamic in the group. The Tanzanian Chair ...stuck hard and fast to the group principle that no position should be adopted where one member dissents. This principle stems from what has been described as a 'false sense of brotherhood' defined by unwavering opposition to the OECD. Whoever manipulates that opposition successfully tends to win out within the group. This helps to explain the influence of a handful of countries in the G-77/China decision-making process.³²

The conflict between the North and the South, within international regimes such as the UNFCCC, is virtually inevitable from a structuralist perspective. This is because "most Southern countries cannot hope to cope with their international vulnerability except by challenging principles, norms, and rules

³¹Grubb, The Kyoto Protocol: A Guide and Assessment, 35.

³² Earth Negotiations Bulletin 12, no. 55, (August 11, 1997), 13-14.

preferred by industrialized countries."³³

A good example of North/South conflict may be seen in the South's reaction to Joint Actions. The South has expressed serious reservations based on doubt about

the genuineness of the change of heart among industrialized nations particularly in view of the massive transfer of state of the art technology to the South that is possible under [Joint Actions]....Within the framework of the North-South dialogue seeking to establish a New International Economic Order (NIEO), developed countries significantly failed to accede to the developing country demands for an equitable access to global technological development and and equitable sharing of the world markets....This unequal exchange which prevailed since direct colonialism became termed neo-colonialism ...a new cooperation paradigm is being ushered in under JI.³⁴

This suggests that joint implementation may be seen as one more battlefield on which the struggle for economic equality is played out. Moreover, joint implementation was seen by some as a means to divide the structural integrity of the G-77 and China. Joint Actions, some have suggested, were intended to be "used by industrialized countries to break the ranks of G77 and China."³⁵

Because the countries considered in this study are all Annex I countries (which have invested in Joint Actions under the AIJ pilot phase and are also eligible for emissions trading), the strong North-South structural component of the UNFCCC is not quantified within this analysis as the realist and culturist perspectives are. However, the structural perspective will be considered in

³³Krasner, Structural Conflict: The Third World Against Global Liberalism 3. Krasner defines principles as coherent sets theoretical statements about how the world works, norms as specifying general standards of behavior, and rules and decision-making procedures as specific prescriptions for behavior in clearly defined areas. Regimes are used to define basic property rights.

³⁴ R. S. Maya, "Joint Implementation: Cautions and Options for the South," The Feasibility of Joint Implementation, Catrinus Jepma, ed. (Dordrecht, Netherlands: Kluwer, 1995), 210-211.

³⁵ Grace Akumu, "G77 In-Flight Reflections," Eco, Vol LXXXIX, no. 10, (April 7, 1995), 4.

explaining some aspects of the behavior of parties.

Although rationalist and structuralist perspectives have often been used in considering the dynamics underlying climate change negotiations, the role of culture has not generally been considered. One cultural orientation which may play an important role in the UNFCCC is the level of open market orientation different countries have. However, before considering the role of open market orientation in climate change negotiations, it is necessary to examine what we mean by "culture."

THE CULTURAL PERSPECTIVE

Defining "culture" is both easy and hard. Culture may seem to be both everything and, at the same time nothing-or at least nothing tangible. "A neat, one-sentence definition of culture can," it has been suggested, "only mislead."³⁶ However, the same author who issues this warning goes on to suggest that culture is

a quality not of individuals but of the society which individuals are a part; that it is acquired-through acculturation or socialization-by individuals from their respective societies; and that each culture is a unique complex of attributes subsuming every area of social life.³⁷

Culture has also been described as "a grammar for organizing reality, for imparting meaning to the world....It is the programming of the human system, the 'software,' that translates potential into actuality."³⁸ This mental software provides

a framework for organizing the world, for locating the self and others in it, for making sense of the actions and interpreting motives of others, for grounding an analysis of interests, for linking collective identities to

³⁶ Raymond Cohen, Negotiating Across Cultures, (Washington, DC: United States Institute for Peace, 1991), 8.

³⁷Ibid, 9.

³⁸Ibid, 10.

political action, and for motivating people and groups toward some actions and away from others.³⁹

Broadly speaking, culture may be considered to include the

socially transmitted beliefs, behaviors patterns, values, and norms of a given community. It consists of rules, concepts, categories, and assumptions that the people of that community use to interpret their surroundings and guide their interactions with other persons with the society.⁴⁰

Those who see culture as a determinant, at least in part, of human behavior, are “culturalists.” A culturalist sees the actions of groups as based not on “objective conditions *per se*” but instead on “values embedded in concrete practices.”⁴¹

One might expect that, almost as a matter of definition, cultural analysis would play an important role in our understanding of international relations. However, with a few exceptions, this has not usually been the case.⁴²

Political science in general, the base upon which theoretical models of

³⁹ Marc Ross, “Culture and Identity in Comparative Political Analysis,” Comparative Politics: Rationality, Culture, and Structure, 42.

⁴⁰ Jeswald Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad, (New York, NY: Times Books, 1991), 45.

⁴¹ Lichbach and Zuckerman, Comparative Politics: Rationality, Culture, and Structure, 242.

⁴² One author has noted that “culture, in the sense of the inner values and attitudes that guide a population, frightens scholars.” David Landes, The Wealth and Poverty of Nations, (New York, NY: W.W. Norton and Company, 1999), 516. One notable exception to this is Samuel Huntington’s argument that “culture and cultural identities, which at the broadest level are civilizational identities, are shaping the patterns of cohesion, disintegration, and conflict in the post-Cold War world.” Samuel Huntington, The Clash of Civilizations and the Remaking of World Order, (New York, NY: Simon and Schuster, 1996), 20. Additionally, the impact of culture on politics has been looked at by “political culturists.” Political culture is defined as “the set of attitudes, beliefs, and sentiments which give order and meaning to a political process and which provide the underlying assumptions and rules that govern behavior in the political system. It encompasses both the political ideals and the operating norms of a polity.” Lucian Pye, “Culture and Political Science: Problems in the Evaluation of the Concept of Political Culture”, The Idea of Culture in the Social Sciences, Louis Schneider and Charles Bonjean, ed. (Cambridge, UK: Cambridge University Press, 1973), 68.

international relations rest, has "been strangely slow to incorporate the concept of culture."⁴³ In general, "culture and identity have failed to figure prominently in international relations'....[as] political realists...have harshly marginalised culture."⁴⁴ One author explains that

it is not hard to identify the reasons why studies that give culture a central role are rare in comparative politics. Most basically, culture is not a concept with which most political scientists are comfortable. For many, culture complicates issues of evidence, transforming hopes of rigorous analysis into 'just so' accounts.⁴⁵

"EPISTEMIC COMMUNITIES" AND CULTURAL DISSONANCE

Despite underlying cultural differences, some observers have suggested that diplomats, and others involved in the negotiation of international agreements, may have more in common than meets the eye. A striking feature of diplomatic interactions is, they argue

not the clash of cultures but the apparent existence of a universal diplomatic culture. Although the odd interpreter and the occasional item of exotic costume may hint at foreign origin, diplomats seem to belong to an exclusive fraternity....the inevitable conclusion presents itself: these people share a common (elitist) language, way of life, and outlook on the world.⁴⁶

If the general diplomatic community is seen as having a common outlook on life, then those involved in the development of specific international regimes might be seen as even more closely related "communities of experts sharing common values and approaches to policy problems."⁴⁷ A cogent argument has

⁴³ Lucian Pye, "Culture and Political Science: Problems in the Evaluation of the Concept of Political Culture", The Idea of Culture in the Social Sciences, 65

⁴⁴ Yosef Lapid, "Culture's Ship: Returns and Departures in International Relations Theory," The Return of Culture and Identity in IR Theory, Yosef Lapid and Friedrich Kratochwill, ed. (Boulder, CO: Lynne Rienner, 1996), 3. As may be deduced by the title, the authors argue that cultural theory is beginning to be reapplied to international relations analysis.

⁴⁵ Marc Ross, "Culture and Identity in Comparative Political Analysis," Comparative Politics: Rationality, Culture, and Structure, 43.

⁴⁶ Raymond Cohen, Negotiating Across Cultures, 3.

⁴⁷ Gareth Porter and Janet Brown, Global Environmental Politics, (Boulder, CO: HarperCollins, 1991), 21.

been made that such experts may form transnational "epistemic communities" who are able to move beyond cultural differences.⁴⁸ From this agreeable picture of international diplomacy "an important conclusion inevitably follows: disagreement is invariably based on an *objective* conflict of interests."⁴⁹ (italics supplied).

There are, however, a number of reasons why the real world of diplomacy might not be as culturally neutral as one might wish. First,

no officials can completely escape the mind set of the parent society: it is too deeply woven by socialization into the warp and weft of their nature....Second, diplomats are not free agents: they cannot stray beyond 'the public's tolerable limits of morality or self-image.'...it should be emphasized that negotiation is a group activity and therefore subject to cultural norms....in the modern world professional diplomats are no longer the only, or even the main, actors in international negotiation.⁵⁰

There are other reasons to explain the role of cultural differences in international regime formation. For example, negotiators may take positions at odds with their personal beliefs not only to conform with their instructions, but also perhaps out of a desire to avoid the risk of being labeled as "epistemic collaborators" by their domestic constituencies.

CULTURE IN ENVIRONMENTAL POLICY MAKING

The classic equation for rating environmental impacts is the "I=PAT" equation (i.e., "environmental impact" is a product of "population, affluence and technology.")⁵¹ However, this equation ignores the role of culture in determining

⁴⁸ Peter Haas, "Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control," International Organization, 43(Summer 1989): 378-403.

⁴⁹ Raymond Cohen, Negotiating Across Cultures, 4.

⁵⁰ *Ibid.*, 17-18.

⁵¹ P.R. Ehrlich and J.P. Holdren, "Impact on Population Growth," Science, 171 (1974): 1212-1217.

environmental impact.

Different authors have examined a number of cultural orientations that might play a role in environmental policy.⁵² In examining whether cultural differences can create problems in designing environmental policies (in an analysis of environmental policy implementation in Caribbean island nations) one author concluded that

cultural differences can create obstacles that undermine environmental initiatives undertaken in developing countries. One reason for this is that programs to promote environmental protection in developing countries are often initiated in the United States, Europe, Canada and Japan, which have very different cultural conditions and traditions. In turn, the cultural conditions and traditions in these countries are different from those that exist in the developing countries they are attempting to influence....Misunderstandings of local and national cultural norms ...can defeat the most well-intentioned efforts.⁵³

Another author has noted that the U.S.'s "position of strong individualism in comparison to most other countries makes the relevance of some of its theories in other cultural environments doubtful."⁵⁴

The role of culture on environmental decision making was the subject of an analysis of the acid rain experience in Europe, "Acid Politics: Environmental

⁵² See, for example, Sheila Jasanoff, Ronald Brickman and Thomas Ilgen, Chemical Regulation and Cancer: A Cross-National Study of Policy and Politics (Washington, DC: National Science Foundation, 1982) which compares the policies of the U.S., French, British and German governments for controlling carcinogens relating such policies to broader legal and institutional frameworks for decision-making. See also, Sheila Jasanoff, Risk Management and Political Culture: A Comparative Study of Science in the Policy Context, (New York, NY: Russell Sage Foundation, 1986) and Mary Douglas and Aaron Wildavsky, Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers, (Berkeley, CA: University of California Press, 1982).

⁵³ John Gamman, Overcoming Obstacles in Environmental Policymaking: Creating Partnerships through Mediation, (Albany, NY: State University of New York Press, 1994), 70.

⁵⁴ Hofstede, Geert, Culture's Consequences: International Differences in Work-Related Values, (Beverly Hills, CA: Sage Publications, 1980), 219.

and Energy Policies in Britain and Germany.”⁵⁶ In *Acid Politics*, Boehmer-Christiansen and Skea attempted to examine all of the factors that went into European policy making on acid rain, specifically including the culture of the different countries involved. Interestingly enough, they also suggested that one value of their research was that it could provide “lessons for future efforts made in response to climate change.”⁵⁸

The authors pointed out that finding the relationship between culture and national policy can “only be studied with great difficulty.”⁵⁷ Nonetheless, they assert that

Cultural differences have undoubtedly influenced the perception of acid rain, the style of response and the measures adopted in the UK and the FR Germany....Environmental policy-making does not take place in a vacuum. It is deeply affected not only by objective experience, but also by prevailing concepts of nature, attitudes and values which are shared by governments and wider public....Culture constrains political action and directs it into specific channels.⁵⁸

Boehmer-Christiansen and Skea point to a number of different German and English cultural orientations which played a role in the acid rain negotiations. These included sensitivity to pollution, the concept of environment, the attitudes towards dirt and pollution, and anxiety over external threats. The authors also argued that the political culture of the two countries, most notably how strongly they differentiated the organs of the state from society at large (to some extent

⁵⁶ Sonja Boehmer-Christiansen and Jim Skea, *Acid Politics: Environmental and Energy Policies in Britain and Germany*, (New York, NY: Bellhaven Press, 1991).

⁵⁶Ibid, 3.

⁵⁷Boehmer-Christiansen, *Acid Politics: Environmental and Energy Policies in Britain and Germany*, 57. In addition, “standing inside our own culture, we can only look at our predicament through our culturally fabricated lens....The conceptual tools of economic analysis are entirely our [U.S.] invention.” Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers*, (Berkeley, CA: University of California Press, 1982), 194.

⁵⁸Boehmer-Christiansen, *Acid Politics: Environmental and Energy Policies in Britain and Germany*, 57.

similar to open market orientation), played a critical role in the debate. Their conclusion was that “environmental policies preferred by different countries are unlikely to coincide unless there are strong similarities in terms of living standards, cultural attitudes, economic characteristics and institutional structures.”⁵⁹

In another look at how culture impacts on environmental decision making, Anne Johnson and her colleagues at Battelle, Pacific Northwest Laboratory analyzed the role that culture has in determining the type of energy sources that countries use.⁶⁰ Using the four cultural types proposed by Mary Douglas in her “cultural theory” of decision-making, they distinguished countries as being egalitarian, market, hierarchy and fatalist and correlated cultural type with nuclear power development in the U.S., the EU and Japan.⁶¹ The predictions were then compared with the actual nuclear plants planned for construction.⁶²

⁵⁹Ibid, 287.

⁶⁰ Anne Johnson, Steve Rayner and Chris MacCracken, “Human Factors and Risk in Macroeconomic Models,” *Proceeding of the National Association of Environmental Professionals Annual Meeting*, (1995). Paper on file with the author.

⁶¹ In a later work, Johnson explained the differences in the three types of culture. She suggested “that egalitarian cultures, with their future-oriented, intergenerational focus, will strive to prevent further environmental degradation for the benefit of succeeding generations....take an aggressive approach to dealing with environmental problems and will be eager to act on a global level. Market cultures, on the other hand, will maintain that resources should be allocated on a first come, first served basis....they will only act on a commons problem if it is in their best economic interest to do so....Market society also tends to be oriented toward the short-term. This is because market thinking yields interest and discount rates, concepts which favor the near-term over the future....hierarchies tend to routinise risk and are reluctant to upset the status quo....However, once the decision to act has been made, the hierarchy will allocate resources to combat the problem based on the bureaucracy’s measured appraisal of needs. The response will be centralized, technocratic, and conservative.” Anne Johnson, “The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States,” *Environmental Values*, 7 (1998): 223-44. White Horse Press, Cambridge, UK. p.226-227.

⁶² Primarily using data from a cultural index compiled by Geert Hofstede, *Cultures and Organizations: Softwares of the Mind*, (London, UK: McGraw-Hill, 1991) and Hofstede, *Culture’s Consequences: International Differences in Work-Related Values*. Hofstede based his analysis on data from surveys of IBM employees in different countries-perhaps leading to an in built “sampling bias” towards market orientation.

The U.S. was rated as the most market/individualist oriented, Japan the most hierarchical, and the EU the most egalitarian/collectivist.⁶³ The U.S. was

an example of a market/individualist decision-making culture. In contrast to the situation in many other nations, the individual in American society takes large responsibility for his own well being and resents government attempts to restrict his freedom or his ability to make choices.⁶⁴

What this meant was that the U.S. would encourage "competition and entrepreneurial activity....Because of this strong emphasis on the bottom line, individualist societies are oriented toward short-term objectives."⁶⁵

On the other hand, the EU's egalitarian/collectivist orientation, in contrast, would be expected to make the EU "highly averse to all forms of risk and consider nature to be fragile and endangered; they argue that resources must be preserved so that future generations may also enjoy them."⁶⁶

Japan, unlike the E.U. or the U.S., is primarily a hierarchical society. Accordingly, Japan society is "distinguished by their preference for bureaucratic procedures and controls."⁶⁷ Japanese policy making is largely "dominated by an elitist triumvirate consisting of the professional bureaucracy, the leading political party...and leaders of big business."⁶⁸ Effective policy making in Japan tends to call for a convergence of the interests of all three of these decision-making bodies.

The study found that incorporating cultural orientations into the projections

⁶³Johnson, Rayner and MacCracken, "Human Factors and Risk in Macroeconomic Models," 8.

⁶⁴Johnson, "The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States."

⁶⁵Johnson, Rayner and MacCracken, "Human Factors and Risk in Macroeconomic Models," 3.

⁶⁶Ibid, 2.

⁶⁷Ibid.

⁶⁸Johnson, "The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States," 233.

(as opposed to just using a simple macroeconomic model) led to results which which were closer to the number of nuclear plants actually planned (EIA estimates were assumed to be accurate because they were based on actual nuclear plant orders). It found that

- incorporating culture into a macroeconomic model [made] a distinct difference in the results....in all cases the revised ERB projections [of the study] move in the appropriate direction, toward EIA estimates, compared to the earlier runs.⁶⁹

In other words, cultural factors, including open market orientation, appeared to play a significant role in decisions about energy use and the environment.

The structure of how environmental decisions are politically generates a positive feedback system with a country's cultural orientations. For example, U.S. political structure is seen as more chaotic than that of the EU and Japan. "The separation of powers means that, within limits, each entity is free to act without securing the consent of the others in the system."⁷⁰ Additionally, with each change of administration, "a new group of about 3,000 officials is brought to Washington."⁷¹ The role of Congress (particularly the Senate) in ratifying treaties, and of aggressive advocates of a particular interest, adds to the multiplicity of potential view points on international environmental issues that the U.S. government could have.⁷²

Because the U.S. system of decision making makes it "infeasible" to achieve

⁶⁹Johnson, Rayner and MacCracken, "Human Factors and Risk in Macroeconomic Models," 10.

⁷⁰ Raymond Vernon, "Behind the Scenes: How Policymaking in the European Community, Japan, and the United States Affects Global Negotiations," Environment, 35, no.5 (June, 1993), 14.

⁷¹Vernon, "Behind the Scenes: How Policymaking in the European Community, Japan, and the United States Affects Global Negotiations," 15.

⁷²The political structure of the U.S., which "allows interested parties to make their views known on important policy questions" meant that "industry lobbies and other pressure groups played an important role in the national debate." Johnson, "The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States," 231.

“consensus”, it lends itself to latching on to a proposal “that embraces some general principle”.⁷³ This may add an additional impetus in the U.S. position on emissions trading as it allows groups with diverse interests to rally around a culturally resonant position such as open market orientation.

The environmental decision-making process of the EU may be contrasted to that of the U.S. The EU environmental policy had its predecessor in the European Community’s 1987 amendment to the Treaty of Rome, which expressly authorized common European environmental legislation and action. It also embodied normative standards such as the “Polluter Pays Principle.” The EC successfully agreed on how to deal with acid rain and jointly negotiated the Convention on Ozone Depleting Substances and the Montreal Protocol. Based on this legal framework and past experiences, “when the issue of climate change reached the political agenda, the EC was in a position where it had acquired sufficient experience of environmental policy making to feel able to take on a leading role.”⁷⁴

The EC decision-making process was basically in the hands of the different “Councils of Ministers.” Each area, from agriculture to trade to environment has a separate council of the respective ministers from each country. These bodies have primary legislative authority while a separately elected European Parliament is largely an advisory body.⁷⁵ The European Union has largely followed this same structure. The effect of this has been the “inhibition of the give and take across functional areas that ordinarily occurs in the policy-making

⁷³Vernon, “Behind the Scenes: How Policymaking in the European Community, Japan, and the United States Affects Global Negotiations,” 18.

⁷⁴ Nigel Haigh, “Climate Change Policies and Politics in the European Community,” Politics of Climate Change: a European Perspective, Tim O’Riordan and Jill Jager, ed. (London, UK: Routledge, 1996), 160-161.

⁷⁵Vernon, “Behind the Scenes: How Policymaking in the European Community, Japan, and the United States Affects Global Negotiations,” 38-39.

bodies of democratic societies, such as national legislatures and national cabinets."⁷⁶

One of the most important components of EC environmental policy making was the idea of "burden sharing." The belief that the different member countries should share the costs of making environmental policies was, in part, based on the experience gained in responding to acid rain.⁷⁷ Another important element is the principle of "subsidiarity," pursuant to which actions shall only be taken by the group as a whole if the objectives cannot be sufficiently achieved by member states.⁷⁸

The impact of the EC on the climate change negotiations was somewhat muted in the formation of the UNFCCC. Although the EC had wanted a firmer commitment to stabilize CO2 emissions at 1990 levels by the year 2000, firm opposition to this led to the UK Environmental Secretary, "allegedly with the encouragement of some other Environmental Ministers from EC Member States,"⁷⁹ traveling to the U.S. to negotiate the finessed language of Article 4(2) which merely makes this a "goal." Additionally, although the EC had originally had some momentum for a European carbon tax, the failure of this idea to be implemented may have undermined the EC's posture in negotiating for stronger measures and policies to be taken internationally. Obviously, the successor of the EC, the EU, has had a much larger role to play in subsequent negotiations.

Japan's approach to environmental issues is markedly different from that of the U.S. and the EU. Although overall Japanese environmental conditions

⁷⁶Ibid, 38.

⁷⁷ Haigh, "Climate Change Policies and Politics in the European Community," 163.

⁷⁸Ibid, 178.

⁷⁹Ibid, 181.

were probably comparable to those in the U.S. and Western Europe in the 1960s, a number of localized problems “were so shocking” that citizens “organized themselves into local cooperatives that hammered away at local polluters and local government official to develop an appropriate response.”⁸⁰ By the 1970s the mass media, and some key ministries such as the Ministry of Health, had allied themselves against industrial pollution. This led to a shift in public perception, and “a new internal balance was achieved in Japan and politicians and industry leaders, taking note of the shift, joined in framing a new set of environmental policies.”⁸¹

The shift in the perception of the environment did not, however, lead to the creation of strong environmental advocacy groups in Japan. Instead, the bureaucratic machinery effectively swallowed, and then took the lead on, environmental policy-making. And rather than viewing industry as a distinct constituency with its own perspective, “the affected industry groups were not regarded as adversaries in the process that shaped the relevant program; on the contrary, their consultations with the bureaucracy were frequent and extensive.”⁸²

Japan, has traditionally emphasized the role of technology in responding to challenges, whether they be social, economic or environmental. Technology allows the bureaucracy to work with industry to develop appropriate solutions to environmental problems. Japan tends to see technology as the most “important aspect of the Japanese response to the threat of climate change.”⁸³

⁸⁰Vernon, “Behind the Scenes: How Policymaking in the European Community, Japan, and the United States Affects Global Negotiations,” 19.

⁸¹Ibid, 20.

⁸²Ibid.

⁸³Johnson, “The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States,” 236.

Johnson has also applied the cultural theory matrix in considering climate change policies in the U.S., Japan and Sweden.⁸⁴ Johnson's hypothesis was that "each country approached the greenhouse gas (GHG) issue very differently....attributable partly to variations in political cultures."⁸⁵

Johnson's conclusion was that the U.S. approach to climate change is a reflection of its cultural orientation. The "market-based orientation of the US is," suggests Johnson, "apparent in the way in which the climate change debate was framed....[the] discussion in the United States was viewed in heavily economic terms, using economic models in a cost-benefit ('top-down') approach".⁸⁶

The role of culture in energy policy was noted by Daniel Yergin in his epic book about the oil industry, *The Prize*. Although developed nations in the mid-1970s shared the common goal of reducing their dependence on imported oil,

each of the major consuming countries proceeded in its own characteristic way, *reflecting its political culture* and idiosyncrasies-the Japanese with a public-private consensus; the French with their tradition of *dirigisme*, state direction; and the United States with its usual fractious political debate.⁸⁷

Interestingly enough, Yergin predicted that in the 1990s the "energy and environmental debate" will lead to clashes over "markets versus regulation."⁸⁸

Culture may also play a particularly important role in international regime

⁸⁴ Ibid, 223-44.

⁸⁵ Ibid, 223.

⁸⁶ Ibid, 232-3.

⁸⁷ Yergin, *The Prize: The Epic Quest for Oil, Money, and Power*, 654.

⁸⁸ Ibid, 780.

formation when parties have different perceptions about what fundamental value issues are raised by the regime. For example, there appears to be different underlying concepts about the fundamental principle underlying the UNFCCC negotiations. In general terms the EU Bubble is concerned with environmental effectiveness, the G77 and China with overall equity and the Umbrella Group with economic efficiency.

Cultural variations are even more distinct between individual countries than between groups. Such variations may play an important, albeit subtle, role in climate change. In order to examine the role of culture in climate change negotiations it is appropriate to focus on a particular cultural variable which can be quantitatively measured and which relates to such negotiations. The degree of open market orientation a culture has is such a cultural variable.

Chapter 4-Open Market Orientation

“Perhaps the most crucial area of modern life in which culture exercises a direct influence on domestic well-being and international order is the economy. Although economic activity is inextricably linked with social and political life, there is a mistaken tendency, encouraged by contemporary discourse, to regard the economy as a facet of life with its own laws, separate from the rest of society.”¹

Because cultural orientation “imparts meaning and even gives substantial structure to the political system,” there is a need to “design better ways of judging whether hypotheses about particular political cultures have provided the kind of highly qualified predictive powers necessary to suggest their validity.”²

Cultures vary widely in their degree of open market orientation. Because of this, the degree of open market orientation a specific culture has can be quantified in a variety of ways. Quantifying open market orientation allows one to make predictions about how different countries will react to the market mechanisms of the UNFCCC and the Kyoto Protocol based on their level of open market orientation. This allows one to test the hypothesis that culture plays a role in national policies.

CULTURE AND OPEN MARKET ORIENTATION

The idea that culture might be linked to economic values was the heart of one of the most influential works of this century.³ In his 1905 opus, “The Protestant Ethic and the Spirit of Capitalism,” Max Weber argued that the rise of capitalism, and the subsequent economic development of the West, was a

¹ Francis Fukuyama, Trust: The Social Virtues and the Creation of Prosperity. (New York, NY: Free Press Paperbacks, 1995), 6.

² Lucian Pye, “Culture and Political Science: Problems in the Evaluation of the Concept of Political Culture,” The Idea of Culture in the Social Sciences, Louis Schneider and Charles Bonjean, ed. (Cambridge, UK: Cambridge University Press, 1973), 73-75.

³ And, one might suggest, at the heart of one of the most influential books written since the invention of the printing press, *Das Kapital* by Karl Marx. Marx, it should be remembered, spoke eloquently about the destructive impact that capitalism had on traditional community and cultural values. Benjamin Barber, Jihad vs McWorld. (New York, NY: Ballantine Books, 1995), 162. Marx wrote, in *The Communist Manifesto*, that raw capitalism “resolved personal worth into exchange value,” and therefore “left remaining no other nexus between man and man than naked self-interest, than callous ‘cash payment’.” Paul Starobin, “Rethinking Capitalism,” National Journal 3 (Jan. 18, 1997):106.

product of unique cultural attributes associated with Calvinist Protestantism.⁴

One of the central issues for any culture is “the relation of ‘government’ to the freedoms of the economic realm....the need to explicate rulership in a society where two structures of authority occupy the same space, engage the activities and command the obedience of the same persons.”⁵ In fact, virtually the

greatest distinction between one government and another is in the degree to which market replaces government or government replaces market....questions about the governmental-market relation are at the core of both political science and economics.⁶

The way in which different societies resolve this issue, between the appropriate responsibilities of the private financial sector and the public governmental sector, is largely a function of their respective open market orientation. Such orientation “is less an economic strategy than a moral doctrine. Although it pretends to be value-free, it is fundamentally value-driven.”⁷

The governmental-market relationship is not a natural phenomenon but is a cultural creation. In other words, markets are social artifacts. Classical economics theorists would disagree with this seeing “the economy as a system separable in principle from politics....A main point of classical theory was that

⁴ Although the specific link Weber made has been challenged, his fundamental assertion, that “culture is not simply an epiphenomenon determined by economics, but an autonomous set of factors that sometimes shape economic events,” has remained a basic tenant of our understanding of the relationship between culture and economics. Ronald Inglehart, Culture Shift in Advanced Industrial Society, (Princeton, NJ: Princeton University Press, 1990), 49.

⁵ Robert Heilbroner, The Nature and Logic of Capitalism, (New York, NY: W.W. Norton and Company, 1985), 122-123.

⁶ Charles Lindblom, Politics and Markets: The World's Political-Economic Systems (New York, NY: Basic Books, 1977), ix.

⁷ David Morris, “Free Trade: The Great Destroyer,” The Case Against the Global Economy and For a Turn Toward the Local, Jerry Mander and Edward Goldsmith, ed. (San Francisco, CA: Sierra Club Books, 1996), 218.

economy is not, or at least need not be, political.”⁸ Although economists may argue in favor of the “capacity of markets to regulate themselves,”⁹ the fact is that the “state creates and maintains the parameters with which the market operates.”¹⁰ And cultural orientation toward open markets determines where the parameters of the market are drawn.

The degree of open market orientation may be considered to be a cultural continuum. At one end is a completely libertarian *laissez-faire* system in which the only function of government is to regulate the market (i.e, provide procedures to minimize transaction costs). At this end of the spectrum of market orientation all social services-from police to education to health care-must be paid for at market rates. At the other end of the continuum there might be the theoretical Marxist communist system-in which everyone contributes based on their abilities and receives based on their needs.

The essence of the measurement of open market orientation is whether the government (i.e., the collectivity of all citizens spread temporally into the past and future) is responsible for providing for all citizens’ needs, or whether every individual is only entitled to what they can purchase. Certainly no societies have ever been purely at one end or the other of such a continuum, and all fall somewhere in between the extremes. The closer one is to the *laissez-faire* end of the spectrum, the more a culture is “open market oriented,” and the more

⁸ James Caporaso and David Levine, Theories of Political Economy, (New York, NY: Cambridge University Press, 1992), 3.

⁹Ibid.

¹⁰ Daniel Yergin and Joseph Stanislaw, The Commanding Heights, (New York, NY: Simon and Schuster, 1998), 373.

likely it is that “cost-efficiency” will be one of its core ideological values.”¹¹

I consider the terms “open market,” “free trade,” and “globalization” to be closely related. An “open market” is one in which government’s primary role is to reduce transaction costs—there are no regulations to interfere with an efficient allocation of resources.¹² “Free trade” is a related concept, which refers to markets being open between countries.¹³ “Globalization” is the worldwide trend toward free trade (and hence toward international open markets) which would create an economically integrated world market, in which goods, services, and capital could move with a minimal of governmental involvement.¹⁴

¹¹Closely related to deep cultural orientations are national ideologies. Ideologies, “more or less systematic body of beliefs that explains how society works and what program of political action should follow,” are “deadly serious business. Whether it is socialism or capitalism, nationalism or Islamic fundamentalism, ideology gives authoritative answers to some basic questions. What should be the relationship between the individual and the community....What should be the role of the state in the lives of its citizens?” Jeswald Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad, (New York, NY: Times Books, 1991), 73. Salacuse also notes that ideologies have an adversarial nature, can complicate communication between deal makers, and may lead negotiators to take hard-and-fast positions. Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad, 74-5. Ideologies are, as another scholar has explained, “the deeply and unselfconsciously held views of the dominant class in any social order...systems of thought and belief by which dominant classes explain to *themselves* how their social system operates and what principles it exemplifies. Ideological systems therefore exist not as fictions but as ‘truths’—and not only evidential truths but moral truths.” Heilbroner, The Nature and Logic of Capitalism, 107.

¹² The phrase “economic liberalism” is often used as a concept which encompasses open markets, economic globalization and democratic governance. In this analysis “open market” orientation is a product of both a society’s orientation towards domestic open markets and towards international free trade. A country could be very open market-oriented domestically yet still favor trade isolation internationally. However, since the theoretical arguments in favor of domestic open markets are basically the same as those in favor of international free trade such a position would be likely to cause cognitive dissonance.

¹³ Some have suggested that a more “accurate name than the persuasive label ‘free trade’—because who can be opposed to freedom?—is ‘deregulated international commerce’.” Herman Daly, “Free Trade: The Perils of Deregulation,” The Case Against the Global Economy and For a Turn Toward the Local, 230.

¹⁴ Recently, Daniel Yergin has been attributed with coining “globality,” a new twist to the concept of globalization. While “globalization” describes “the process by which businesses expand into markets around the world, globality is what happens afterward. It is a condition, a situation, and a convergence of several forces. The first is the attitudinal change toward greater confidence in markets. The second is the continuing and rapid pace of economic integration...Countries that used to have central planners now have stock markets.” Daniel Yergin, “Is Globality Sustainable? Going to Market,” The New Republic, Issue 4,397 and 4,398—double issue (April 26 and May 3, 1999): 52.

For some the phrase “open market” has a mantra for success. For others it is a dirge of sorrow. Paeans extolling the virtues of the “open market” serenade into one ear, while excoriations of the pain that the open market has caused hiss into the other.

To those who would worship it, the open market has become “the religion of our age. With its heaven as the global economy, free trade comes complete with comprehensive analytical and philosophical underpinning. Higher mathematics are used in stating its theorems.”¹⁵ On a global level, the open market has “become a sacred principle of modern economic theory, a sort of moral dogma.”¹⁶

On the other hand, very diverse sources have expressed concern about open markets. Pope John Paul II has pontificated that

the laws of the market applied to suit the powerful, the consequences cannot but be negative....this system considers a profit and the laws of the market as its only parameters, to the detriment of the dignity of and the respect due to individuals and peoples.¹⁷

George Soros, famous for making a billion dollars breaking the Bank of England, lends his opinion that markets “are amoral, whereas society does need some kind of morality—a distinction between right and wrong....And by allowing market values to become all-important, we actually narrow the space for moral judgment and undermine public morality.”¹⁸ Ralph Nader advocates

¹⁵David Morris, “Free Trade: The Great Destroyer,” The Case Against the Global Economy and For a Turn Toward the Local 218.

¹⁶ James Goldsmith, “The Winners and the Losers,” The Case Against the Global Economy, 172.

¹⁷ New York Times, “Pope Urges Bishops to Minister to the Rich” January 24, 1999. p10.

¹⁸ New York Times, “The Consequences of Speculation,” December 6, 1998. p11. And William Bennett, a well known conservative pundit, has cautioned that “unbridled capitalism is a problem....It may not be a problem for production, but it’s a problem for human beings. It’s a problem for that whole dimension of things we call the realm of values and human relationships.” Paul Starobin, “Rethinking Capitalism,” 106.

that open markets “the very basis of democracy and accountable decision making that is the necessary undergirding of any citizen struggle for sustainable, adequate living standards and health, safety, and environmental protections.”¹⁹

Benjamin Barber, a noted scholar on democracy, elects to focus on the fact that the

market's invisible hand is attached to a manipulative arm that, unguided by a sovereign head, is left to the contingencies of greed.... The apparent widening of individual consumer choices actually shrinks the field of social choices and forces infrastructural changes no public community ever consciously either selects or rejects.²⁰

If the degree of orientation towards the open market is a cultural attribute which has played an important, albeit largely inexplicit, role in climate change negotiations, particularly in the debate over the market mechanisms then it is important to determine ways in which it can be measured.

OPEN MARKETS ARE NOTHING NEW

Despite the praise and criticism of the open market, there is nothing new about the idea of an open market-or of some governments strongly advocating it. Given the role of the open market in defining societies, and the rules which

¹⁹ Ralph Nader and Lori Wallach, “GATT, NAFTA, and the Subversion of the Democratic Process,” The Case Against the Global Economy and For a Turn Toward the Local 94.

²⁰ Barber, Jihad vs McWorld, 220-221. Barber cites, as an example of his concern, the fact that “the American’s freedom to choose among scores of automobile brands was secured by sacrificing the liberty to choose between private and public transportation, and mandated a world in which strip malls, suburbs, high gas consumption, and traffic jams (to name just a few) became inevitable and omnipresent without ever having been the willed choice of some democratic decision-making body-or for that matter of individuals who liked driving automobiles and choose to buy one. This politics of commodity offers a superficial expansion of options within a determined frame in return for surrendering the right to determine the frame. It offers the feel of freedom while diminishing the range of options and the power to affect the larger world.” Barber, Jihad vs McWorld, 220-221. The basic problem with turning over control to markets is that government, as the representative of citizens, has “a perfect right, indeed it has a duty, to intervene in the economy in the name of justice, ecology, strategic interests, full employment, or other public goods in which the market has and can have no interest.” Barber, Jihad vs McWorld, 29.

regulate the way in which they interact with each other, it is perhaps no surprise that open markets have long been a part of the foreign policy of some nations.

To a large extent, the hundred year *Pax Britannica* was based on its energetic imposition of open markets on much of the rest of the world.²¹ During the 17th, 18th and 19th centuries the idea of the open market, and of actively opening markets, was closely linked to oceanic travel since this was the major way in which trade between long distances was conducted.²²

Britain's advocacy of open markets was not entirely disinterested. While Britain was

preaching free trade to the rest of the world ...she effectively dominated the world economy. Not only was one-fourth of the world's terrestrial surface under her direct imperial control, not only did her navy control the seas, but the city of London was the world's financial center and was alone capable of financing the industrial expansion that free trade would make possible....In such conditions, Britain was far more 'competitive' than her rivals, and free trade was clearly the right vehicle for achieving her commercial goals.²³

Britain's lust for free trade led to one of the more amazing examples of the excesses of the open market as Britain fought a series of wars to preserve the right to sell the Chinese opium even though the Chinese government tried to have the trade stopped. Despite the fact that the British themselves felt that the

²¹ Open markets are closely tied to the development of the modern capitalist system which is based on three primary building blocks which developed over the course of centuries. First, was the "freedom to contract" derived from Western merchants who operated outside of the church and created their own norms and mercantile law (based on Roman civil law) in which merchants acted as judges and juries. The next piece, the inviolability of property, was solidified in the aftermath of the French Revolution in the late eighteenth century. In the 19th century the final component for the development of modern capitalism was developed with the creation of corporate personality which separated ownership and operational control and allowed professional managers to raise large sums of money.

²² And the only way in which trade in many important items, such as spices from what is now Indonesia, could be conducted.

²³ Edward Goldsmith, "Development as Colonialism," The Case Against the Global Economy and For a Turn Toward the Local 256.

opium trade was an “infamous and atrocious traffic,”²⁴ the Opium Wars were justified on the grounds no country should be allowed to stop the flow of free trade and close the door on open markets.²⁵ Today’s proponents of open markets can sound every bit as vociferous as the British Prime Minister who argued that the closure of Canton to the opium trade had challenged national “honor.”²⁶

In the beginning of the twentieth century, the U.S. assumed the “white man’s burden” from the United Kingdom and began to wear the imperial mantle of the global champion of the open market.²⁷ But the U.S. connection with open markets goes back to the nation’s inception.²⁸ Benjamin Franklin wrote that “commerce should be ‘as free between all the nations of the world, as it is between the several countries of England,’ and John Adams declared, ‘I am against all shackles upon trade.’”²⁹ Others have noted that it may be more than

coincidence that Adam Smith’s *An Inquiry into the Wealth of Nations* (one of the

²⁴ Maurice Collis, Foreign Mud: The Opium Imbrolio at Canton in the 1830’s and the Anglo-China War. (New York, NY: W.W. Norton and Company, 1968).

²⁵ Although such an extreme position on trade as the British took in the Opium Wars is not seriously argued today, WTO rules which encourage child labor and environmentally destructive practices may be seen in a similar light. The large scale rioting in Seattle during the WTO talks in late 1999 were largely based on labor and environmental concerns.

²⁶ The Opium Wars also were one of the first venues for the imposition of a Most Favored Nation (“MFN”) agreement pursuant to which any trade arrangement received by one country would be extended to all countries. The MFN concept is one of the foundations upon which history’s most successful open market agreement, the General Agreement on Trade and Tariffs (and its successor the World Trade Organization) rest. Interestingly enough, it was suggested a few years ago, that when the British government “threatened to cut off aid to the government of India if it did not go ahead with its plan to buy twenty-one large helicopters, costing 60 million pounds, from a British corporation....[that it was] but a more sophisticated method of achieving what Britain had achieved in the previous century when it went to war with China to force that country to buy opium from British merchants.” Edward Goldsmith, “Development as Colonialism,” The Case Against the Global Economy and For a Turn Toward the Local 263.

²⁷ Rudyard Kipling’s ode to imperialism with this title was, in fact, written to encourage the U.S. to “take over from England” the mantle as the world’s dominant power. Gore Vidal, Empire. (London, UK: Grafton Books, 1987), 138.

²⁸ Although the U.S. was largely protectionist throughout the nineteenth century. Goldsmith, “Development as Colonialism,” The Case Against the Global Economy and For a Turn Toward the Local, 256.

²⁹ Quoted in Gary Burtless, Globophobia: Confronting Fears about Open Trade. (Washington, DC: Brookings Institution, 1998), 42.

most influential economic texts ever written, and one which has been interpreted as a manifesto for the open market), was published in 1776, the same year as U.S. independence.³⁰

Smith's work has, not unjustifiably, been called a "charter for American economic liberties."³¹ His economic ideas served as a foundation for ideas U.S. economic system. Almost two centuries after U.S. independence, open markets "became an important component of the American policy of promoting capitalism and democracy as a shield against communism."³² In the post World - War II environment, a fervent belief in the virtue of open markets combined with

³⁰At the philosophical core of the open market is the work of Adam Smith. Smith's profound insight was that when an individual seeks their own gain in the market, they are lead by an "invisible hand" to promote the interests of society because they provide the services which society desires. It is "a major irony of economic history" that Smith (a tutor to nobility) was mainly intending to make an attack on his employers' self-declared "charity" to their tenants (in contrast to the openly declared avarice and self-interest of the merchant class) and that this attack on the ruling class has become the "motivational core of economics." Charles Hampden-Turner and Alfons Trompenaars, The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain, Sweden and the Netherlands (New York, NY: Currency Doubleday, 1993), 54.

Smith's work was elaborated by another famous British economist, David Ricardo, who developed the principle of "comparative advantage." Ricardo argued that even if a nation were better than all others at producing everything, it "would still be better off if it concentrated on producing the things that it was comparatively best at producing and traded for the rest." Burtless, Globaphobia: Confronting Fears about Open Trade, 19.

There are essentially four reasons why open markets are considered beneficial. First, they lead to more efficient production (due to the comparative advantage of different producers). The second reason flows from the first-efficient production leads to efficient consumption ie, prices to consumers become cheaper. The third reason related reason is that open markets creates competition which spurs producers to produce goods at the lowest costs. Finally, open markets can promote economic innovation through competition, exposure to new ideas and by enabling the importation of technology, capital and know-how that enhances production. Burtless, Globaphobia: Confronting Fears about Open Trade, 19-24.

In pointing to the benefits of open markets proponents note that as a result of the Uruguay agreement (establishing the WTO) the World Bank expects consumers to gain between \$100 billion and \$200 billion every year (notably with two-thirds of the gains going to rich industrialized countries such as the U.S.) Burtless, Globaphobia: Confronting Fears about Open Trade, 30.

³¹ Hampden-Turner, The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain, Sweden and the Netherlands 53.

³²Burtless, Globaphobia: Confronting Fears about Open Trade, 24. Not surprisingly, one of the most vigorous of the new Russian hard liners, Vladimir Zhirinovskiy, has compared the German blitzkrieg of World War II with the U.S. open market thrust. "The Americans are clever" he asserts, "they know it is better to come with chewing gum, stockings and McDonald's." Barber, Jihad vs McWorld, 198.

democracy promoted with an almost evangelical zeal to help create the “law and development” movement.³³ This movement has been called the turning point at which the “highly developed countries, particularly the United States, [pushed] for worldwide market reform and privatization in developing countries.”³⁴

In our contemporary world, the U.S. probably is as far to the open market end of the spectrum as any other nation. The concepts of open markets and democracy became inextricably linked in U.S. foreign policy.³⁵

In America, the confidence in the omnipotence of markets has been transformed into a foreign policy that assumes internationalizing markets is tantamount to democratizing them and that human freedom is secured the minute nations or tribes sign on to the dogmas of free trade....as if choosing brands or trademarks and choosing life plans or cultural norms were kindred activities.³⁶

By 1990 U.S. trade policy had crystallized to the extent that it could be summarized by the Office for the United States Trade Representative in pure open market terms.

The one essential target of our strategy is to get government out of business: out of the business of making steel, selling grain, growing

³³In fact, economics has “its roots in what was called moral philosophy hardly a century ago.” M. Gillis, “Economics, Ecology and Ethics: Mending the Broken Circle for Tropical Rain Forests,” Ecology, Economics, Ethics: The Broken Circle, F.H. Bormann and S.Kellert, ed. (New Haven, CT: Yale University Press, 1991), 157.

³⁴Saskia Sassen, Losing Control? Sovereignty in an Age of Globalization, (New York, NY: Columbia University Press, 1995), 24. A somewhat sinister view takes the perspective that in the post WWII period, as “formal colonialism came to an end [colonial powers realized] the economic advantages it provided ...could in the new conditions ...be obtained by more politically acceptable and more effective methods....This was probably clear to the foreign policy professionals and heads of large corporations [whose] discussions eventually led to the notorious Bretton Woods conference of 1944. Economic development was the means for achieving this goal, and it was by promoting free trade that development could be maximized.” Goldsmith, “Development as Colonialism,” The Case Against the Global Economy and For a Turn Toward the Local, 255.

³⁵ In a recent letter to the author Edward Crane, President of the Cato Institute (a public policy think tank), referred to the “American heritage of individual liberty, free markets and strictly limited government.” Letter from Edward Crane to the author. November, 1999. On file with the author.

³⁶ Barber, Jihad vs McWorld, 239.

beef, building ships, and the hundreds of other ways that governments distort trade and interfere with market access.³⁷

But it is not easy to get other countries to change their practices which flow from their level of open market orientation. As one author has commented, "it is exceptionally difficult for trade liberalization to proceed when resistance to increased economic openness is located in the very nature of a society."³⁸

This required the U.S. to create stronger tools to pry markets open than those that were already available through the GATT. One tool was enacted in the Trade and Competitiveness Act of 1988 whose centerpiece was designed to curtail what were seen as "unfair" foreign trade practices. A new procedure, the "Super 301" was created to "strengthen the implementation of U.S. laws against unfair trade."³⁹

Section 301 allows the U.S. to implement "aggressive reciprocity" in trading practices. This means that the U.S. can enact policies that lets it "impose new trade barriers against countries whose *existing* barriers to trade are *judged by the United States* to be higher than corresponding American barriers."⁴⁰ This means that if the U.S. unilaterally feels a country is not open marketed enough

³⁷ Office of the United States Trade Representative, 1990 Trade Policy Agenda and 1989 Annual Report of the President of the United States on the Trade Agreements Program (Washington, D.C., 1990), 1, cited in Pierre Martin, "The Politics of International Structural Change: Aggressive Unilateralism in American Trade Policy," Political Economy and the Changing Global Order, Richard Stubbs and Geoffrey Underhill, ed. (New York, NY: St. Martin's Press, 1994), 439.

³⁸ Robert Gilpin, The Political Economy of International Relations (Princeton, NJ: Princeton University Press, 1987), 202 cited in Martin, "The Politics of International Structural Change: Aggressive Unilateralism in American Trade Policy," Political Economy and the Changing Global Order, 444.

³⁹ Martin, "The Politics of International Structural Change: Aggressive Unilateralism in American Trade Policy," Political Economy and the Changing Global Order, 440.

⁴⁰ Ronald Wonnacott, Aggressive Reciprocity Evaluated with a New Analytical Approach to Trade Conflicts, (Montreal, Canada: Institute for Research on Public Policy, 1984), 6; emphasis in original, cited in Martin, "The Politics of International Structural Change: Aggressive Unilateralism in American Trade Policy," Political Economy and the Changing Global Order, 440.

then the U.S. can impose trade barriers against them.⁴¹

President Clinton “employed the phrase ‘democratic markets’ as a mantra ...[and h]is foreign policy aides have consistently done the same.”⁴² A realist could argue that this is because, like the British before us, as “the country that benefits most from global economic integration ...We Americans are ...[now] the prophets of the free market....We want the world to follow our lead and become democratic and capitalistic.”⁴³ From a structural perspective, the dynamics of a bipolar world, in which the U.S. struggled for global domination with the USSR (and its extremely closed market orientation), might be seen as a large part of the reason the U.S. has urged open markets on the rest of the world.⁴⁴ And, from a culturist view, the open market orientation of the U.S. may be seen to be a cultural orientation which is rooted in a deeper cultural

⁴¹ The exercise of Section 301 powers is often considered against Japan, the other economic colossus at the end of the twentieth century. The “relative impenetrability of a large domestic market” in Japan has become “a symbol in the often acrimonious debate regarding the exact character of state and market relations in Japan....[which has] an ideological suspicion of free markets.” Michael Donnelly, “The Political Economy of Japanese Trade,” Political Economy and the Changing Global Order, 485-6. Japan’s economic success is largely based on having “government actively involved in creating an advantageous environment for business,” which in turn is rooted “in a view of political economy quite different from the market-based version celebrated in the United States.” Donnelly, “The Political Economy of Japanese Trade,” Political Economy and the Changing Global Order, 493.

⁴² Barber, Jihad vs McWorld, 14.

⁴³ Thomas Friedman, “A Manifesto for the Fast World,” The New York Times Magazine, March 28, 1999. p.43.

⁴⁴ And the collapse of the Soviet Union added more certainty to those who believed that free market systems were intrinsically superior.

foundation.⁴⁵

It has been suggested that the

American stress on ...the economic and political dimensions of individualism (the free market and representative democracy) ...which were so effective in unlocking the natural resources of the country, have become almost categorical imperatives. Their demonstrable success has convinced Americans of the universal applicability of their way of life and their duty to spread its benefits around the world. [In contrast,] the communal ethos ...reflects quite different assumptions about the relationship between individuals and society. Its origins are to be sought in the historical predominance of the rural village community (and the need for partnership in harvesting crops or irrigating fields).⁴⁶

MEASURES USED TO QUANTIFY OPEN MARKET ORIENTATION

In order to evaluate the degree to which the different countries under consideration are open market oriented, this study will use four separate measures. First, it will look at a cross-cultural analysis of the way in which

⁴⁵Similarly French orientation towards open markets can be seen as having cultural, structural and realist components as it was described in three different stories in three different successive issues of *The Economist*. In the first article, France was described as having "a culture that sanctifies the state and distrusts the market's abilities to bring either wise or fair results." "Pascal Lamy, free-market Frenchman?," *The Economist*, Vol. 352, No. 8135 (Sept. 4, 1999), 53. In the second article it was pointed out that France's "perennial *struggle against Americanization* and globalization is as lively as ever....[as evidenced when] President Jacques Chirac, in a politically correct moment at last weekend's summit of French-speakers in Canada, declared: 'I am in complete solidarity with France's farm-workers, and I detest McDonald's.'" "Rural France, up in arms," *The Economist*, Vol.352, No. 8136 (Sept.11, 1999), 54. Finally, the Economist noted Prime Minister Jospin's politically realist statement that, in response to Michelin's announcement of its intention to lay off 7,500 workers despite a 20% rise in profits, he did not "consider this has yet been settled. The state must say that there are other ways of doing things." "Jospin's Way," *The Economist*, Vol.352, No. 8137 (Sept. 18, 1999), 55. Prime Minister Jospin followed up on this remark on the Michelin announcement by telling a crowd of lawmakers that "the market economy does not spontaneously work in harmony....It needs ground rules to function effectively." Cited on October 2, 1999 at

<http://www.nytimes.com/library/world/europe/100399france-jospin.html>

⁴⁶ Cohen, *Negotiating Across Cultures: International Communication in an Interdependent World*, 29-30. Just as there is a long historical basis for the high degree of U.S. open market orientation, there is nothing new in France's low degree of open market orientation. "The essential French view, which goes back to well before the Revolution of 1789, is that the effective conduct of a nation's economic life must depend on the concentration of power in the hands of a small number of exceptionally able people, exercising foresight and judgment of a kind not possessed by the average successful man of business." Andrew Shonfield, *Modern Capitalism: The Changing Balance of Public and Private Power*, (Oxford, UK: Oxford University Press, 1969), 71-72.

different countries' value systems relate to their perspective on economic relations will be used focusing on issues of individualism (versus communitarianism) and universalism (versus particularism). Second, it will examine the results of a survey of the levels of "individualism" of business persons in different nations. Third, it will consider a large scale analysis of cross-cultural attitudes towards issues related to open market orientation-such as whether government ownership of business and industry should be increase, whether competition is harmful, and whether the state should be responsible for public welfare. Finally, an international survey which ranked countries based on their actual "openness" to foreign trade, investment and financial flows will be considered.

The four different approaches to measuring the open market orientation of the subject countries are quite different. The first measure looks at some of the deeper underlying values which may help determine open market orientation. The second measure is a more detailed examination of one of the deep values related to open market orientation-individualism. The third measure is largely a measure of how individuals in different countries feel about open markets. Finally, the fourth measure examines how open the markets of different countries actually are. However, despite the fact that four different ways, and levels, of open market orientation are examined, the results generated are relatively similar. This lends credence to the idea that they are based on a core commonality of values.

The first measure is from "The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain,

Sweden, and the Netherlands."⁴⁷ It is also based on cross-cultural surveys but it examined the attitudes of business persons more than of the general population. The *Seven Cultures* is written by authors who are involved in organization which helps analyze different business practices world wide and teaches business persons how to adapt to such differences. It is primarily a book for business persons and students of cross cultural differences.

The *Seven Cultures of Capitalism* is descriptive in that it examines the different ways in which cultures define value. But its fundamental message is prescriptive. It suggests that not only will understanding other culture's concepts of value enhance an individuals ability to work within such cultures, such an understanding may also be used by corporations and societies to create a more effective approach to the global market. Although it examines the seven fundamental differences in the way value is defined, there are essentially two of these which relate to open market orientation and they are the ones which are used for this study.

The *Seven Cultures of Capitalism* presented a series of questions or short stories. Respondents were asked to choose one of two options each of which represented a different end of the spectrum of values being examined. Responses for each country were given a percentage (from 1-100) based on how closely they fell on one extreme of the value spectrum. Communitarinistic (versus individualistic) and universal (versus particularistic) are the two aspects examined in this dissertation as they most closely relate to open market orientation.

⁴⁷ Hampden-Turner, The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain, Sweden, and the Netherlands

The second measure of open market orientation is based on each countries' "individualism" as measured in a cross cultural study of subsidiaries of a large multinational corporation. The survey asked a number of questions about "values" on two separate occasions (1968 and 1972) producing over 116,000 questionnaires. Four values were examined including power distance, uncertainty avoidance individualism and masculinity.⁴⁸ Each country was given a score for each value which was based on answer to a number of questions related to the specific value.

Individualism is very closely related to the definition of "open market orientation" in this analysis. It "describes the relationship between the individual and the collectivity which prevails in a given society."⁴⁹ The author notes that there is a close correspondence between "capitalism, competition, and individualism. The capitalist market economy fosters individualism and in turn depends on it."⁵⁰

The third measure is from the "Human Values and Beliefs: A Cross-Cultural Sourcebook-Political, Religious, Sexual, and Economic Norms in forty-three Societies."⁵¹ The *Human Values Sourcebook* is based on large scale surveys of general members of the population in a large number of countries. It is primarily an academic text which analyzes the answers to a set of questionnaires administered world wide. The data has been used as the basis of many scholarly articles. The questionnaires are formulated and administered by

⁴⁸Geert Hofstede, Culture's Consequences: International Differences in Work-Related Values. (Beverly Hills, CA: Sage Publications, 1980), 11.

⁴⁹Ibid, 213.

⁵⁰Ibid, 233.

⁵¹ Ronald Inglehart, Miguel Basanez and Alejandro Moreno, Human Values and Beliefs: A Cross Cultural Sourcebook-Political, Religious, Sexual, and Economic Norms in 43 Societies: Findings from the 1990-1993 World Values Survey. (Ann Arbor, MI: The University of Michigan Press, 1998).

social scientists and largely funded with grants from organizations such as the National Science Foundation.

Although the *Human Values Sourcebook* has, literally, hundreds of areas which it covers, this study will use three of its questions which focus on different views on the role of government and the private sector. The *Human Values Sourcebook* presents statements, such as "Government ownership of business and industry should be increased" to individuals. It then ranked countries based on the percentage of individuals from the country (further broken down based on sex, education, income, and political affinity) who agreed with the statement.

The fourth measure is based on the actual open market practice of societies rather than their attitudes. This analysis is from the "Global Competitiveness Report 1998."⁵² The *Global Competitiveness Report* is an annual publication of the World Economic Forum (largely prepared by Harvard economists under the direction of Jeffrey Sachs) which ranks the world's largest economies based on their overall competitiveness. Given a price of over \$500 for the 300 page book, it appears that it is primarily designed for corporations and governments.

Competitiveness is based on eight different categories of which one is "openness." Each country is rated on its relative "openness." "Openness" was based on a number of factors, such as corporate control by foreign investors, public sector contracts, foreign investment protection, import barriers, and export policies. "Openness" may be considered to be the reification of attitudes about open markets as they are played out in actual policies implementation

⁵² World Economic Forum, The Global Competitiveness Report 1998. (Geneva, Switzerland: World Economic Forum, 1998).

(although realist and structuralist concerns may also play a role in the formulation of openness).

The *Global Competitiveness Report* created a number rank for the “openness” of each of the fifty-two countries it examined. The number is based on the relative rank which each country has compared to the other countries and so ranges from 1-52.

Together, these four studies create a holistic picture of open market orientation which encompasses the general public, the private sector, and government itself. This comprehensive perspective is enhanced by the fact that the studies focus on different levels of open market orientation which are all causally related. The underlying value systems generate opinions about individualism and the roles of the state and private sector. This is the basis upon which open market orientation is formed and which, in turn, plays a role in the formation of government policies on openness of markets.

Of course, the different levels all interact with each other. For example, the collapse of an economy (such as the Asian economic crisis of the late 1990s) was blamed on government economic policies. This could generate a reexamination of the underlying values which could lead to a shift in public opinion about the respective roles of the public and private sectors.

Although different societies are characterized in “very different degrees by a specific syndrome of cultural attitudes [which] ...can have major political consequences,”⁵³ it is important to keep in mind that all members of a society

⁵³ Inglehart, Human Values and Beliefs: A Cross Cultural Sourcebook-Political, Religious, Sexual, and Economic Norms in 43 Societies: Findings from the 1990-1993 World Values Survey, 15.

may not all have the orientation to the same degree, or even at all. For example, in discussing China's political culture, a leading scholar in the area of political culture, Lucian Pye, notes that "we are not concerned with questions about the actual distribution of attitudes and feelings throughout the Chinese population."⁵⁴ Instead, Pye suggests that if one wishes to posit a political cultural orientation, the correct methodology is to test samples in different countries to determine the *relative prevalence* of that particular orientation.

But using different methodologies, which focus on such different aspects of open market orientation, can be problematic. Such differences might appear to make it difficult to correlate the studies' outcomes into a single coherent value for each country's open market orientation. Each of the studies assigned numerical values to its evaluations which are a function of different methodologies.

Fortunately the different studies share a ranking of the same countries (with one exception-the *Seven Cultures of Capitalism* does not include Norway) based on different aspects of open market orientation. And it should be kept in mind that it is the *relative* open market orientation of each country which is being looked at. It is the relationship and order of the countries in open market orientation which is of interest here. In fact, if the different methodologies and different foci suggest similar rankings of the countries (as they generally do), then they actually serve to help validate each other and suggest that there is a common core to what they are representing.

Accordingly, for each of the four different studies I will use the numbers
⁵⁴ Lucian Pye, "Culture and Political Science: Problems in the Evaluation of the Concept of Political Culture", *The Idea of Culture in the Social Sciences*, Louis Schneider and Charles Bonjean, ed. (Cambridge, UK: Cambridge University Press, 1973), 73.

generated to rank the different countries. However, in order to take into consideration the fact that there are differences in the significance of the scores in the different measures, some way of standardizing them is necessary. Accordingly, a standardized score is developed for each measure. This indicates how many standard deviations a particular score is above, or below, the average score. This allows meaningful comparison of the relative degree of open market orientation the different measures indicate. Each country can therefore receive an overall ranking of open market orientation based on the combination of the standardized scores from the different measures.

The standardized score is calculated by determining the standard deviation for the set and then dividing the difference between each score and the average score by the standard deviation. These numbers typically fall between 2.0 and -2.0 which is consistent with the fact that symmetric mound shaped data sets the overwhelming majority (approximately 95%) of all data fall within two standard deviations from the mean (approximately 70% falls within one standard deviation of the mean). The data generated from the four measures, and particularly from the sum total of all measures, falls within these parameters.

OPEN MARKET ORIENTATION OF SELECTED COUNTRIES

The *Seven Cultures of Capitalism* examined seven different spectra of values (or “values in tension” as the authors put it) which underlie the way in which societies define and create value. They are universalism vs. particularism, analyzing vs. integrating, individualism vs. communitarianism, inner-directed vs. outer directed orientation, time as sequence vs. time as synchronization, achieved status vs. ascribed status, and equality vs. hierarchy. It appears that there are two of the “values in tension” which relate most closely

to open market orientation.

First, is universalism vs. particularism. Universalism lays a common set of ground rules which is an essential condition for open markets. In fact, the most important component of an international open market is a common set of trade rules (which is what the WTO is all about). The more a society favors universal rules, therefore, the more open market oriented they might be.

The second value in tension which relates to open market orientation is how much a culture emphasizes individualism vs. communitarianism. Communitarianism's emphasis on enhancing the value of the larger group is less open market oriented than the individualistic viewpoint. Therefore, the more a society favors individualism the more open market oriented they may be.

Universalism is measured in *Seven Cultures of Capitalism* based on responses to two stories. The first story is as follows: "Suppose you, as a manager, are in the process of hiring a new employee to work in your department. Which of the two following considerations are more important to you: (a) The new employee must fit into the group or team in which he/she is to work [or] (b) The new employee must have the skills, the knowledge, and a record of (sic) in a previous job." The second scenario asks respondents whether they prefer "(a) Jobs in which no one is singled out for personal honors but in which everyone works together, [or] (b) Jobs in which personal initiatives are encouraged and individual initiatives are achieved." Choosing "(a)" in either of the stories indicates greater communitarinistic values and hence less open market orientation.

The second story is as follows: "While you are talking and sharing a bottle of beer with a friend who was officially on duty as a safety controller in the company you both work for, an accident occurs, injuring a shift worker. An investigation is launched by the national safety commission and you are asked for your evidence. There are no other witnesses. What right has your friend to expect you to protect him? (a) A definite right? (b) Some right? (c) No right?"

The second story is as follows: "You run a department of a division of a large company. One of your subordinates, whom you know has trouble at home, is frequently coming in significantly late. What right has this colleague to be protected by you from the others in the department? (a) A definite right? (b) Some right? (c) No right?"

Answering "(c)" in both cases indicates a greater tendency to favor universalism.

The results for universalism and individualism were as follows⁵⁵:

	Indiv cap	Personal initiative	Don't defend beer Drinker	Don't defend late worker	Ave score	Stan score
U.S.	92	97	94	95	94.5	1.16
Germany	87	84	90	94	88.75	0.77
Netherlands	88	92	92	82	88.5	0.75
Sweden	53	95	89	91	82	0.31
France	57	69	53	43	55.5	-1.48
Japan	49	49	66	56	55	-1.51

Although there is not complete consistency in the results, there are some general observations that can be made. First, the U.S. is the highest ranked in all the categories which relate to open market orientation while France and Japan are at the bottom in almost all the categories. Germany and the Netherlands are close in all the categories and, but for an apparent Dutch distaste for tardiness, the Dutch would be slightly above the Germans in open market orientation. Sweden falls between Germany/Netherlands and

⁵⁵Hampden-Turner, The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain, Sweden, and the Netherlands 22-23, 56-57.

France/Japan (Norway was not included in the study).

The second measure of open market orientation used “individualism” from a cross cultural study of a large multinational corporation. There was also a strong correlation between individualism and a country’s per capita GNP.⁵⁵ Given the fact that individualism is directly related to open market orientation this may not come as a surprise.

The results for individualism were as follows⁵⁷

	Individualism	Standardized Score
U.S.	91	1.60
Netherlands	80	0.73
Sweden	71	0.02
France	71	0.02
Norway	69	-0.13
Germany	67	-0.29
Japan	46	-1.95

There are three questions which were asked for the third measure related to open market orientation from the *Human Values Sourcebook* relate.⁵⁸ First, it asked whether “government ownership of business and industry should be increased.” Second, it asked if “the state should take more responsibility to ensure that everyone is provided for.” Finally, it asked if respondents agreed that “competition is harmful. It brings out the worst in people.”

The greater the percentage of people in each country who answered affirmatively to each question, the less each culture is open market oriented. In

⁵⁵ Hofstede, Culture's Consequences: International Differences in Work-Related Values, 214.

⁵⁷Ibid, 222.

⁵⁸ Inglehart, Human Values and Beliefs: A Cross Cultural Sourcebook-Political, Religious, Sexual, and Economic Norms in 43 Societies: Findings from the 1990-1993 World Values Survey, p.V251,V252, V254.

other words, the lower the percentage of people who answered affirmatively the greater the open market orientation. The scores for each of the countries was as follows:

	Increase govt ownership	Increase State responsibility	Competition is harmful	total score	Stand score
U.S.	7	14	10	31	-0.87
Sweden	14	11	7	32	-0.81
Germany	9	22	8	39.5	-0.41
Norway	14	21	7	42	-0.27
Netherlands	10	23	14	47	0.0
France	18	19	16	53	0.32
Japan	17	55	13	85	2.06

One can note that there is a rough similarity between the answers to the questions. The U.S. and Sweden are generally more open market oriented in all categories. Germany, Norway and the Netherlands are in the middle of open market orientation. Japan and France are markedly far less open market oriented in most categories. Therefore, the total seems to be a good overall representation of open market orientation for each of the countries at least as represented by attitudes of citizens.

The fourth measure of open market orientation is the actual degree of governmental market "openness." The *Global Competitiveness Report* ranks countries on their openness to foreign trade and investment, financial flows and exports and other measures which relate to open markets. Data from all these measures are collated to determine a country's "openness."⁵⁹

The countries are ranked as follows:

⁵⁹ World Economic Forum, *The Global Competitiveness Report 1998*, 112, 114, 134, 146, 150, 170, 184.

	Governmental openness	Stand score
Netherlands	2	-1.34
Norway	6	-0.91
Germany	11	-0.36
U.S.	12	-0.25
Sweden	20	0.62
France	21	0.73
Japan	28	1.50

SUMMARY OF NATIONAL OPEN MARKET ORIENTATION DATA

	Individ/universal (Seven Cultures)	Individ (Culture's Conseq)	Govt owner/comp (Human values)	Govt open (Global Report)	total/4 ⁶⁰
U.S.	1.16	1.6	0.87	0.25	0.97
Netherlands	0.75	0.73	0.0	1.34	0.71
Norway	---	-0.13	0.27	0.91	0.35
Germany	0.77	-0.29	0.41	0.36	0.31
Sweden	0.31	0.02	0.81	-0.62	0.13
France	-1.48	0.02	-0.32	-0.73	-0.63
Japan	-1.51	-1.95	-2.06	-1.50	-1.76

SUMMARY OF DATA AND PREDICTIONS BASED THEREON

The relative overall open market orientation for each country is based on a combination of the four measures (using the standardized score analysis for each one).⁶¹ The total results are indicative of the overall open market orientation of each country.

It will be noted that there is a relatively high degree of similarity in the different measures.⁶² This indicates that all the measures are strongly

⁶⁰ Dividing each of the total standardized scores will avoid making differences appear greater than they are. Additionally, it allows one to correlate Norway's score more appropriately since it need only be divided by three given that it is not included in the *Seven Cultures of Capitalism*.

⁶¹ The positive and negative are reversed for the Human Values Sourcebook and the Global Competitiveness Report scoring since a lower number in each means that the country is more open market oriented.

⁶² Interestingly, an analysis of EU Energy liberalization shows a similar ranking. Norway and Sweden are considered the most liberal (labeled as "Open"), with the Netherlands and Germany intermediate (labeled as "Progressing") and France the least liberal (labeled as "Closed"). Kenneth Lay-CEO of Enron Corp, "Megatrends of Energy," *World Energy*, Vol.1, No.1(1998). p.30.

correlated. For example, Japan is the least open market oriented by all measures by a large degree. France is the second least open market oriented by three measures. By three out of four measures the U.S. is the most open market oriented. The Netherlands, Norway, Germany and Sweden all vary somewhat in the degree of open market orientation the different measures suggest. Norway and Germany are slightly more consistent in the measures than Netherlands and Sweden.

If the open market orientation of countries has played a role in their response to market mechanisms to reduce GHG, then there should be a correlation between such orientation and national positions on emissions trading. Additionally, there should be a correlation between ones' market orientation and the design of AIJ programs and the implementation of AIJ projects. This should be particularly clear in the relative degree of private and public involvement since this relates specifically to open market orientation.

Countries with a high degree of open market orientation would be expected to largely treat AIJ as simply another type of private investment. Government involvement in projects would be relatively minimal-primarily approving projects and reporting on them. Projects would be expected to generate financial returns even if no GHG credits were received. And the GHG reductions would be expected to be higher (per dollar invested) for projects by open market oriented investors because they would seek to maximize profits in the event that the projects did ultimately receive some credits for reductions (they would also be more inclined to want to increase their experience/contacts in the type of projects that would ultimately generate the largest returns).

On the other hand, countries with a lower degree of open market orientation would be expected to have been more likely to treat AIJ projects as government operations. Governments, rather than private sector parties, would be more likely to be involved in both making the agreements for specific projects and in financing projects. Projects would not necessarily be designed to make a profit and the GHG reductions would not be expected to be as high (per dollar invested) as projects from high open market oriented countries. In order to test this hypothesis we now turn to a closer examination of the history of, and theoretical issues associated with, Joint Actions.

Chapter 5-Joint Actions

*Countries "may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention."*¹

Joint Actions, either between countries or between private parties, have been hailed by some as the most cost-effective way to make GHG reductions and condemned by others as one more ploy to maintain the economic subjugation of developing nations.

JOINT ACTIONS PRIOR TO THE UNFCCC

If one thinks of Joint Actions in the wider sense of voluntary cooperation between nations, then they can be seen as a part of "the evolution of international law from a system of 'delimitation' and coexistence' towards a system of 'common responsibilities' and 'cooperation'."² As such, they are entirely consistent with the underlying philosophical orientation of the UNFCCC. This is because the UNFCCC is part of "the general trend of international environmental treaty-making: systematic regulation at a global level to cope with common problems."³

Joint Actions, in the sense of countries working together on common environmental areas, probably began with transboundary river and lake systems because they are relatively easy to recognize as natural ecosystems that lend themselves to being jointly managed. For example, in the nineteenth century, the Rhine and Danube River Commissions developed intergovernmental organizations to jointly manage riverine navigation. These agreements ultimately evolved to cover pollution as well. Recent years have continued to see the continued growth of Joint Actions to deal with transnational

¹Third sentence of Article 4.2 (a) of the UNFCCC

²Karin Arts, "Legal and Institutional Aspects," Joint Implementation to Curb Climate Change, Onno Kuik and others, ed. (Dordrecht, Netherlands: Kluwer Academic Publishers, 1994), 12.

³Nico Schrijver, "Joint Implementation from an International Law Perspective," Catrinus Jepma, ed. The Feasibility of Joint Implementation, (Dordrecht, Netherlands: Kluwer Academic Publishers, 1995), 133. This movement is consistent with Chapter IX of the Charter of the United Nations which calls for international economic and social cooperation.

pollution of bodies of water such as the 1993 Protocol to the 1976 Convention on the Protection of the Rhine Against Pollution by Chlorides and the Great Lakes Water Quality Agreement.

Joint Actions could also be seen as part of an emerging “duty to cooperate” in international law. In 1986, the International Law Association (an organization of international lawyers from all parts of the world) adopted the Seoul Declaration. The Declaration states that “the duty to cooperate in international economic relations implies the progressive development of this duty in proportion to the growing economic interdependence between States and should lead therefore to a reinforced cooperation.”⁴

The economic relationships Joint Actions foster are an important side benefit. For example, in the U.S. Initiative on Joint Implementation (“USIJI”) it appears that a number of investors have used the program to help facilitate and foster relationships with the private and public sector in host countries.

In recent years, Joint Actions on environmental issues have begun moving up-literally and figuratively. Contemporary examples of Joint Actions have shifted their focus from transnational shared water management issues to global atmospheric problems. For example, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol-as amended in 1990 in London) incorporated Joint Actions as an important element in reducing ozone depleting substances.

⁴ International Law Association. “Declaration of the Progressive Development of Principles of Public International Law Relating to a New International Economic Order,” Seoul, 1986, paragraph 4.1. Cited in Arts, “Legal and Institutional Aspects,” Joint Implementation to Curb Climate Change, 16.

The Montreal Protocol limits consumption and production of certain ozone depleting substances. But it lets participants enter into agreements with other nations so that the collective total consumption of both is within the allowed limits [Art.2(5)].⁵ Additionally, the Montreal Protocol allows regional economic integration organizations, such as the EU, to “jointly fulfill their obligations.” [Art.2(8)(a)]

A major limitation was initially placed on the ability of parties to transfer emissions rights in the Montreal Protocol. There was a requirement (in Article 2) that at least fifty percent of national reductions must be made domestically. However, that limit could be exceeded (by ten percent in some cases and fifteen percent in other cases) for the purpose of what the Montreal Protocol calls “industrial rationalization.” The discussion over what exactly “industrial rationalization” meant foreshadowed the current debate in the UNFCCC on how the market mechanisms will be implemented.

Under the Montreal Protocol “industrial rationalization” is clearly designed to increase the economic efficiency of making reductions in emissions. It was defined as “the transfer of all or a portion of the calculated level of production of one Party to another, for the purpose of achieving economic efficiencies or responding to anticipated shortfalls in supply as a result of plant closures.”⁶ The U.S. “interpreted this to mean that trading would be allowed whenever firms wanted to trade.”⁷

⁵ There have been a number of such transfers of production—generally between two plants of the same multinational company. Axel Gosseries, “The Legal Architecture of Joint Implementation: What Do We Learn from the Pilot Phase?” New York University Environmental Law Journal 7, no. 1 (1999): 58.

⁶ Scott Barrett, Joint Implementation for Achieving National Abatement Commitments in the Framework Convention on Climate Change, (Paris, France: Organization for Economic Co-operation and Development, 1993), 4.

⁷ *Ibid.*

At first glance the U.S. interpretation may seem somewhat unusual. In essence, the U.S. did not feel that there would be any need to actually prove that such trades were economically efficient because trades would be made only if they were economically efficient. The reasoning behind the U.S. position is illustrative of how deeply the U.S. is steeped in the classical economic paradigm. The U.S. argument was that it was not

necessary to require firms engaging in industrial rationalization to prove that they are doing so for the specified purposes. Economic theory suggests that in a free market, agreements to buy and sell are based on what the participants consider to be in their economic self interest. A firm's decision to export its production is thus by definition 'economically efficient,' one of the two purposes industrial rationalization serves.⁸

Part of the reason the U.S. attempted to reduce any restrictions on trading may have been that the European Community (the "EC" was the precursor to the European Union) was given greater flexibility in reaching its total reductions. The EC's reductions could be made jointly within the EC without any restrictions as to the percentages of inter-EC trading between themselves. The EC, therefore, had less of an economic need to broadly interpret the meaning of industrial rationalization.⁹

Within three years of the Protocol's operation, the restrictions on trading in ozone depleting substances were removed. In June of 1990, revisions to the Montreal Protocol were made which stated that "any Party may, for any one or more control periods, transfer to another Party any portion of its calculated level

⁸ United States Environmental Protection Agency, "Protection of Stratospheric Ozone; Final Rule," Federal Register, 1988, vol.53, no. 156: 30566-30601, p.30588.

⁹ Although the EU has not availed itself of the opportunity to reach its commitments as a region. Gosseries, "The Legal Architecture of Joint Implementation: What Do We Learn from the Pilot Phase?" New York University Environmental Law Journal 59

of production.”

The 1994 Second Sulphur Protocol of the 1979 Convention on Long Range Transboundary Air Pollution also allowed for Joint Actions between countries. Article 2.7 of the Convention states that “parties may jointly implement the[ir] obligations ...[to] promote the achievement of the environmental objectives.”¹⁰

The Montreal Protocol was, however, the only treaty, prior to the UNFCCC, which included “the option of joint implementation in the strict meaning of this term.”¹¹ One important difference between the type of Joint Actions allowed under the Sulfur Protocol and the Montreal Protocol was that the Montreal Protocol only required that parties give notification of agreements to transfer, but the Sulphur Protocol required that such agreements actually be approved by a separate body.¹²

The unrestricted model of Joint Actions, which the U.S. had strongly favored under the Montreal Protocol, was similar to systems with which the U.S. was gaining increasing familiarity. For example, in 1991 a bill was submitted to the U.S. Congress which would “require that large new stationary sources of CO₂ ‘offset’ their emissions by carrying out abatement elsewhere-including foreign countries.”¹³ This bill was inspired by the AES corporation’s acts in “offsetting”

¹⁰ Cited in David Pearce, “Joint Implementation: a general overview,” Catrinus Jepma, ed. The Feasibility of Joint Implementation, 19. The 1994 Sulphur Protocol to the Transboundary Air Pollution Convention also allows states to meet their obligations jointly by reallocating the original 1979 national pollution limits between states as long as the aggregate total does not increase. Cullet, p394-395.

¹¹ Arts, “Legal and Institutional Aspects,” Joint Implementation to Curb Climate Change, 11.

¹² It has been suggested that the difference is a function of the fact that sulfur dioxides are not uniformly mixed pollutants and thus “changes in emissions distributions may affect third parties even when there is no change in the aggregate amount of emissions.” Gosseries, “The Legal Architecture of Joint Implementation: What Do We Learn from the Pilot Phase?” New York University Environmental Law Journal, 60.

¹³ Barrett, Joint Implementation for Achieving National Abatement Commitments in the Framework Convention on Climate Change, 7.

the CO2 emissions of a new coal-fired electricity plant by funding a reforestation project in Guatemala, and the first joint action to address climate change.¹⁴

In sum, the idea of Joint Actions existed prior to the UNFCCC and they are not an entirely new form of international relationship. Rather, they may be viewed as a “special form of foreign investment [for which] there is great deal of further meaningful precedent in both conventional and customary international law, relating to international investment.”¹⁵

JOINT ACTIONS UNDER THE UNFCCC

The use of Joint Actions to reduce GHG was introduced into the INC by Nordic nations “backed by the United States...in order to speed treaty implementation and to promote the most cost-effective mitigation possible.”¹⁶ The details of how Joint Actions would operate were left for future discussion because

No consensus was ever reached among developed and developing States about the desirability to jointly implement measures on the territory of developing States; this issue was deliberately left open in the Convention, and no agreement was since reached on the matter. Legally, the issue turns on the interpretation of the term ‘jointly’ with other Parties in Art.4(2)(a) of the convention.¹⁷

¹⁴ AES, an independent power producer, had planned a 180 MW coal-fired plant in Connecticut. Despite not being legally required to offset its CO2 emissions (estimated at 15 million tons of Carbon over a forty year projected lifespan) AES wished to offset those emissions. Having considered different options, AES decided to pursue a reforestation project which they did so with the advice of World Resource Institute. The project involved planting more than 50 million trees through CARE Guatemala on 385 square miles over a ten-year period sequestering an estimated 19 million tons of Carbon (considering protection of existing forests, new growth and reduction of projected fire loss). AES was since involved in other environmental and community oriented projects in Guatemala and Latin America. Barrett, Joint Implementation for Achieving National Abatement Commitments in the Framework Convention on Climate Change 7-8.

¹⁵ Arts, “Legal and Institutional Aspects,” Joint Implementation to Curb Climate Change 14.

¹⁶ Alex Hanafi, “Joint Implementation: Legal and Institutional Issues for an Effective International Program to Combat Climate Change,” Harvard Environmental Law Review 22 (1998), 463.

¹⁷ Rudolf Dolzer, “AIJ and JI: Concepts, Issues and Positions,” New Partnerships to Reduce the Buildup of Greenhouse Gases, (Costa Rica: United Nations Environmental Programme, 1996), 3.

The UNFCCC provides the theoretical basis for Joint Activities in Article 4.2. The main concepts in Article 4.2 were based on “a report prepared by McKinsey and Co. for the Ministerial Conference on Atmospheric Pollution and Climatic Change held in November 1989 in Noordwijk, the Netherlands.”¹⁸ The report was based on interviews with political leaders and senior officials of 17 countries, which included eight OECD members as well as developing countries such as China and states in transition such as Russia and Poland. The report suggested a two-pronged approach: “a first phase primarily on domestic action, followed by phase two: joint, international action covering all greenhouse gases worldwide.”¹⁹ In the first phase

the key word was to be ‘effectiveness’: each country takes whatever action is most effective in its own circumstances. It was foreseen that thereafter the costs of further corrective measures would rise and societal resistance mount. Therefore, during the second phase the emphasis should shift to joint international action and the key word would be ‘efficiency’.²⁰

The McKinsey report suggested that there could be a “35% improvement in cost-effectiveness, i.e. 35% more emission reduction at the same costs, if a regional approach were replaced by a global one.”²¹ The McKinsey report cited a study by the Environmental Defense Fund which “showed that a 20% CO₂ reduction in 2010 compared to 1990 levels could be achieved at 10%-30% of the costs if the most cost effective world wide regime were applied.”²²

As the UNFCCC was originally being negotiated, proposals from Germany, Norway and the U.S. were put forward to facilitate international cooperation in reducing GHG emissions. Although all the ideas could have been called “Joint

¹⁸ Arts, “Legal and Institutional Aspects,” Joint Implementation to Curb Climate Change, 5.

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ Burt Metz, “Joint Implementation: What the Parties to the Climate Convention Should Do About It,” Catrinus Jepma, ed. The Feasibility of Joint Implementation, 163-164.

²² *Ibid.*

Actions,” or “joint implementation,” there were differences between them.²³

Germany (the then Federal Republic) suggested that in order for developed nations to stabilize CO2 emissions at 1990 levels by 2000, a portion of reductions could be implemented jointly “in cooperation with another contracting party by taking measures to reduce emissions there.”²⁴ And if domestic emission policies didn’t lead to sufficient reductions, then any reductions made internationally would have to be in an amount larger than the shortfall. In other words, the penalty for not meeting domestic reductions would be that any cooperatively achieved reductions would be discounted.

Norway proposed that the transaction costs inherent in reaching bilateral agreements for Joint Actions could be reduced through the creation of “a kind of market place for greenhouse gas emission abatement projects” with a portfolio of possible projects.²⁵ Norway suggested that there could be a “multilateral Clearing-House mechanism” for effecting joint implementation. Any country with a surplus of potential emissions reductions projects could submit proposals to the Clearing House. The Clearing House staff would then evaluate the proposal and link it with “investment funding from those Parties which want to meet part of their commitment outside of their borders.”²⁶

²³ In describing what the entomological basis of “joint implementation” is it has been noted that “implementation” is a fairly recent addition to English which has “become almost a vogue word with politicians, officials, and the press....More recently it has also taken the UN by storm.” Arts, “Legal and Institutional Aspects,” Joint Implementation to Curb Climate Change 3. The authors note that “implement,” used over 90 times in Agenda 21, means taking actions to carry out a policy. Although “joint implementation” should therefore be relatively easy to define, the authors note that the ordinary meaning of words is not always what they mean in treaties which must be interpreted in their context and in light of the treaty’s purpose. This rule of interpretation plays an important role in understanding the scope of Article 4 of the UNFCCC. Although “joint implementation” could have been interpreted in a relatively broad sense, the treaty context has lead to it being taken in a more narrow sense.

²⁴Barrett, Joint Implementation for Achieving National Abatement Commitments in the Framework Convention on Climate Change, 6.

²⁵Ibid, 7.

²⁶Ibid.

The U.S., consistent with its position on Joint Activities under the Montreal Protocol, urged that any regime of Joint Actions should be comprehensive in terms of the participants, and unconstrained, in terms of the rules.

ADVANTAGES AND DISADVANTAGES OF JOINT ACTIONS

The costs and opportunities for making emissions reductions, or enhancing opportunities to sequester carbon ("carbon sinks"), varies widely between and within countries and regions.²⁷ Therefore, Joint Actions can allow one Party, or legal entity, to reduce emissions at a lower cost than it could if acting within its own borders or company. Support for such an activity flows naturally from the "cost-efficiency" value of the "rational" perspective.²⁸

Joint Actions not only lead to specific economic benefits, they also lead to more generalized promotion of the open market system itself. In order for projects to be attractive to investors, host countries need to have the legal, technical and ideational infrastructure which facilitates the open market. Any attempt to push for Joint Actions, correspondingly "seeks to introduce market

²⁷For several reasons emissions reductions are generally cheaper in developing countries. "First, these countries have yet to install much of their energy and industrial infrastructure, whereas developed country infrastructure is already largely in place. Building factories and power plants efficiently in the first place is cheaper than converting or replacing them later. Second, many developing countries have forests that are in need of protection and degraded lands that could be reforested. Both of these activities can provide climate and other environmental and socio-economic benefits at relatively low cost. JI may also be cheaper merely because labor costs are lower in many developing countries and countries with economies in transition." Donald Goldberg and Matthew Stilwell, "12 Principles to Guide Joint Implementation" (Washington, DC: Center for International Environmental Law, 1997), 1.

²⁸ Additionally, the cost-efficiency value supports Joint Actions because they may also lead to the building of new and innovative relationships and guide the flow of private capital. A "major promise [of joint implementation] is that it can serve to improve the cost-effectiveness of meeting internationally agreed emissions reduction targets and as a vehicle for international financial and technology transfers." Jepma, The Feasibility of Joint Implementation, 3. Investing countries can use joint implementation to improve bilateral relationships with host countries. Private companies, a.k.a. "legal entities" can use joint implementation to make money and develop relationships.

principles in the implementation of international agreements.²⁹ In other words, Joint Actions promote the open market, and all that comes with it. This may be seen as related to a culturalist value.

Joint Actions facilitate technology transfers and foreign investment flows into developing countries. Joint Actions are therefore seen by some developing countries as a mechanism to improve the opportunity for investment projects that are environmentally sustainable and reduce GHG emissions. From this perspective, Joint Actions offer developing countries an opportunity to improve their economic status relative to developed nations. Hence, Joint Actions can tie into the structuralist goals of developing nations.

Finally, Joint Actions can also promote non-GHG policies (in addition to reducing GHG) that are important at local, national and regional levels. Outdated and inefficient technologies could be replaced resulting in non-GHG environmental benefits. For example, given that emissions of local air pollutants often correlate with GHG emissions, reducing GHG emissions may reduce other pollutants. Additionally, enhancing carbon sequestration ('sinks') could also promote biodiversity, increase food production, reduce soil erosion and lessen health problems. This may be seen as an interest based on a sustainability value.

Despite its potential advantages, approximately six major concerns over Joint Actions have been raised, primarily by the G77 (and China) and/or the EU. These concerns can be seen as products of realist, structuralist and culturist perspectives. This lends credence to the suggestion that all three of the analytic

²⁹Philippe Cullet, Annie Kameri-Mbote and Annie Patricia, "Joint Implementation and Forestry Projects: Conceptual and Operational Fallacies," *International Affairs* 74, no. 2 (April, 1998): 394.

perspectives have validity in understanding the overall dynamics of climate change negotiations.³⁰

The six concerns about Joint Actions are; (1) that developed nations will “pick the low lying fruit” of easy emissions reductions; (2) that the U.S.'s experience in global markets will give it an advantage in Joint Actions; (3) that Joint Actions may encourage some developing countries to favor market mechanisms in general (and hence consider taking on emission reduction commitments thereby fragmenting the G77 [and China]); (4) that the fact that some nations (such as Latin America) are favored as host countries for Joint Actions may lead to fragmentation within the G-77 (and China); (5) that Joint Actions may lead to “eco-colonialism” as developing countries are forced to adopt western legal infrastructure to accommodate Joint Actions; (6) that both developing and

³⁰Another similar breakdown of developing country concerns about joint implementation has been suggested “from a game-theory perspective.” It describes the concerns as being about; (1) industrialized countries getting all the credits; (2) loss of low-lying fruit; (3) apprehension about getting shortchanged; (4) risk of collaboration leading to caps that will inhibit economic growth; (5) fear of losing Official Development Assistance (ODA); (6) unintended adverse impacts; (7) mismatch with host countries' priorities and technology needs; and (8) fear of loss of sovereignty. Russell Lee and others, Understanding Concerns About Joint Implementation, (Knoxville, TN: Joint Institute for Energy and the Environment, 1997), ix.

The authors argue that these concerns break down into different categories. The first five, under this categorization, are realist economic concerns. Concerns (1) to (5) center around the issue of whether the host country will be at economic disadvantage as a result of JI. The best chance of resolving the first three of these concerns is the parties developing an understanding of JI projects as being joint ventures in which the investor and host partner recognize that there are opportunities for both to benefit, and accept that each will try to negotiate the best possible terms for itself. The best chance of resolving Concerns (4) and (5) appears to be in the parties recognizing and accepting that JI and other policies (such as emission caps on non-Annex countries and ODA) are separate issues that should be decoupled from those dealing with JI. Lee, Understanding Concerns About Joint Implementation, ix-x.

The last two concerns are more focused on the cultural perspective—they deal with the worry that the value systems of investors and hosts will be different and that investors will be able to unduly influence host countries. “Concerns (7) and (8) ...deal more with host countries' sense of national priorities. The best way of addressing this type of concern is for investors and the host country to appreciate each other's outlook.” Lee, Understanding Concerns About Joint Implementation, ix-x. The sixth concern is harder to place. It “is largely about adverse environmental effects from economic growth. The best way of mitigating this impact is also the very thing that developing countries would want to avoid—taking on emission caps. But countries that aspire to economic growth must make tough decisions and realize that it is difficult to have one's cake and to eat it too.” Lee, Understanding Concerns About Joint Implementation, ix-x.

developed countries will be pushed into a greater market orientation than they are comfortable with as they use the market mechanisms.

The first concern has a realist basis for the G-77 (and China). They worry that developed nations will be able to use Joint Actions to take advantage of all of the cheapest emissions savings. By the time developing nations are ready to make emissions reductions commitments, they will not have any cost effective emissions reductions left to them.³¹

The second concern is shared by both the G-77 (and China) and the EU. It is based on a realist concern that the US, which is more experienced in market mechanisms and adept in the new “globalization,” will be able to be more effective in taking advantage of the opportunities that Joint Actions offer.

The third and fourth concerns represent two separate, albeit related, structural concerns that the G-77 (and China) might have over Joint Actions. The South is concerned that as developed nations participate they may be tempted to become active in other market mechanisms, such as emissions trading. Emissions trading, of course, requires that participants have emissions limitations. Therefore, Joint Actions may be viewed as the first step in a process which could ultimately “ratchet” into emissions limitations for developing nations.

³¹An anecdote illustrating this concern is pungently described by Grubb. “An economist from a US environmental NGO (one long associated with promoting market instruments) had expounded the virtues of JI and explained how much cheaper it could be to absorb CO₂ in Africa than to limit emissions in the United States. Shaking with anger, an African present rose and asked ‘Why should African governments let their land be used as a toilet for absorbing emissions from Americans’ second cars?’” Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 99.

An environmental NGO, the Center for International Environmental Law ("CIEL") has explained that because of the prevailing assumption that economic development is dependent on GHG emissions

many developing countries further fear that a JI regime would pressure them to establish emission targets, which would stunt their economic progress....that JI represents a form of neo-colonialism, a 'Trojan horse within which is packaged another industrialized country ploy to extend their exploitation of resources and cheap labor in the South'.³²

The other structural worry that developing nations might have (the fourth concern) is that Joint Actions may be far more attractive to some members of the G-77 (and China) than to others and hence create dissension within the G-77 (and China). Argentina's choice to accept emissions limits which was announced at the fourth CoP in Buenos Aires in late 1998, could be seen as part of this possible movement. It is, perhaps, not a surprise that structuralist concerns are-unlike the realist and culturist concerns-largely limited to the G-77 (and China). Since structuralist issues are based on relative power relations, the EU is far less likely to feel such concerns than the G-77 (and China).

The fifth concern is a culturist one related to ideological positions. The G-77 (and China) are worried that Joint Actions may inflict a new form of "eco-colonialism" on developing nations. Support for such a fear may be based on statements such as one by the World Bank in which it made it clear that a

major condition for large scale private JI involvement, is a host country investment climate whereby the relative level of risk is matched by reasonable profit opportunities. JI might well have been employed to gear Zaire's generous hydro potential towards reducing emissions in coal-dependent South Africa (the grids are in fact not far from being connected), but political risk is, under current circumstances, prohibitive. In more general terms, the following 'host country factors' suggest themselves as conducive of stimulating JI investments by the private sector: A favorable domestic investment climate, characterized by

³²Goldberg, "12 Principles to Guide Joint Implementation," 2.

political stability, strong domestic financing institutions, sound macroeconomic policies and positive attitudes to foreign investment as codified through robust legal frameworks....Any major policy reform aimed at making foreign investment in a given country more attractive, is bound to increase the likelihood of successful JI investments.³³

The sixth (and related) culturist concern is one that both the G-77 (and China) and the EU may share. This is the concern that Joint Actions may promote market values which could conflict with a culture's own degree of "market orientation." Grace Akumu, the Executive Director of Climate Action Network Africa, has argued that using cost-effectiveness to justify Joint Actions ignores social and ecological (non GHG related) costs. Akumu questions whether joint implementation is "any different from [the attitude] of Larry Summers, former World Bank Chief Economist [and ultimately Secretary of the U.S. Treasury Department] who argued that it is cheaper to pollute the South."³⁴ This cultural concern, particularly as it is held by the EU, is the major focus of this study.³⁵

Akumu, ties together realist, structuralist and culturalist concerns as she accuses the North of having a "hidden agenda" of promoting Joint Actions in order to evade making

necessary changes in production systems and lifestyles at home. It would like to continue its economic development at the expense of the South forever....Joint implementation violates the principle of equityIf joint implementation were to benefit all countries equally, they would all have to start from equal negotiating positions. By treating all countries in a blanket manner under the principle of cost-effectiveness,

³³ World Bank Group, "Joint Implementation: Policy Context and Aims of Report." (Washington, DC, World Bank, 1998). Worldbank website <http://www-esd.worldbank.org/aij/econji.html> p.9-10

³⁴ Grace Akumu, "Mitigation Strategy or Hidden Agenda?" Climate Action Network Africa (1998). <http://www.cru.ueq.ac> p.2.

³⁵ This is not to say that the G-77 (and China) does not share this concern with the EU (in fact, they may have it to an even greater degree) but that it is easier to compare the US (and Japan) with the EU because they would both be in the position of joint implementation investors.

joint implementation becomes another vehicle for perpetuating inequity.³⁶

There are two additional concerns over the market mechanisms generally (but which also apply to Joint Actions) which can be seen as being based on equity and sustainability values. Developing countries are unhappy about the idea that Joint Actions may allow developed countries to avoid making tough choices about domestic emissions reductions policies. Joint Actions, they argue,

will allow industrialized countries to 'buy themselves out of the problem' of reducing GHG emissions. JI would furthermore allow them to continue their current production and consumption patterns and to eat more than their fair share of the greenhouse cake.³⁷

This is an equity concern because it is fundamentally rooted in the idea that it is not fair that the developed world, which is largely responsible for GHG, should be able to continue to emit them. Equity, under this classification, is largely about the continuation of existing power dynamics and relations.

Both developing nations and the EU have expressed concerns that market mechanisms, particularly emissions trading, can allow the Parties to purchase "paper" emissions reductions (aka "hot air") which do not really exist (i.e., the reductions were ones that the country made for non-GHG related reasons such as economic restructuring).³⁸ This concern is rooted in fears that market mechanisms will undermine the environmental effectiveness of the UNFCCC.

With all the potential pluses and minuses that Joint Actions offered it was no

³⁶Akumu, "Mitigation Strategy or Hidden Agenda?" 2.

³⁷ Metz, "Joint Implementation: What the Parties to the Climate Convention Should do about it," Catrinus Jepma, ed. The Feasibility of Joint Implementation, 165.

³⁸ Although this fear applies more to emissions trading than to joint implementation, it could be an issue in a joint implementation project if participants in host and investor countries both have incentives to overinflate emissions reduction activities estimates. Additionally, many regard joint implementation as the first step in a process which leads to emissions trading.

surprise that it became “one of the key topics in the international policy debate on energy and climate change policies.”³⁹

Of course there are a number of different ways to categorize concerns over joint implementation. Bert Metz, a Dutch negotiator in Kyoto and co-chair of Working Group III of the IPCC, has summarized the objections to joint implementation as being “classified into three groups; equity issues; sovereignty issues; and the issue of leakage.”⁴⁰ This classification is analogous, although not identical, to structuralist, culturist and realist perspectives. The difference is largely that the leakage issue is more related to the overall integrity of the treaty system, and hence the realist concerns would be more tied to the more general issue of the potential damages each nation might suffer from climate change rather than the more specific impact of the market mechanisms.

The sovereignty issue encompasses a wide range of issues. For example, Joint Actions could lead to potential conflict over land-ownership, especially with tree planting projects. Although such projects currently do not aim at formal land-ownership by investors from industrialized countries, they do lead to long-term contracts over land use, with substantial ‘damage provisions’ in case the forest would not be maintained.⁴¹

The sovereignty issue could be even more pronounced for projects which take place in traditional land tenure societies in which land is communally owned and members of a clan or extended family group all have claims to use the land when they need to. If the land is contractually bound by a Joint Actions

³⁹Jepma, The Feasibility of Joint Implementation, 7.

⁴⁰Metz, “Joint Implementation: What the Parties to the Climate Convention Should do about it,” Catrinus Jepma, ed. The Feasibility of Joint Implementation, 165.

⁴¹Ibid.

project it could prevent it from being used in a traditional manner. Essentially, this is a concern that the cultural open market orientation which comes with Joint Actions could undermine the cultures of host countries.

“Leakage” (which is relatively unimportant at this point but could become important if deeper reductions in emissions are agreed to) refers to the possibility that Joint Actions could result in higher GHG emissions than would otherwise be the case. Metz suggests that there are various potential leakages. Joint Actions might reduce the incentive for non-Annex I nations to take on emissions limits if it is attractive to accept the benefits of hosting Joint Action projects. Another leakage could occur if there is a “double counting of reductions,” i.e., activities are given more emission credit than they actually created. There is also the possibility that developed nations might not develop low GHG emissions technology as fast as they might otherwise do if they can obtain cheap reduction credit through joint implementation.

“ACTIVITIES IMPLEMENTED JOINTLY” EMERGES

By the time of the first CoP in Berlin in early 1995, it was clear that the Parties had a large number of important issues to resolve. Developed countries weren’t ready to accept binding emission limitations unless developing nations made some type of commitments, and developing nations refused to make commitments until developed countries accepted emission limitations.

Ironically, disagreements on how Joint Actions, a mechanism designed to bring parties together cooperatively, was beginning to create, “the makings of a stalemate” for the UNFCCC as a whole.⁴² During “the first part of the CoP 1

⁴² Alex Hanafi, “Joint Implementation: Legal and Institutional Issues for an Effective International Program to Combat Climate Change,” Harvard Environmental Law Review 22 (1998), 468.

negotiations the divergent points of view on JI seemed almost unbridgeable.”⁴³ The G-77 and China argued that Joint Actions should only be between Annex I parties, while the U.S. and others insisted that the success of Joint Actions would be contingent on the ability to implement projects in non-Annex I countries. There was also debate about whether credit should be given for the GHG emissions reductions that resulted from such projects. The U.S. argued for such credit, stressing “the important role of incentives also during the pilot phase.”⁴⁴

Ultimately, “a political compromise was worked out to buy time so that all parties could further wrestle with the problems surrounding JI.”⁴⁵ The compromise solution, as agreed to in Decision 5/CP.1, was to create a “pilot phase” in which there could be experimental Joint Action projects, but investors would not receive credits for the projects. This pilot phase was designated “Activities Implemented Jointly” (AIJ). AIJ projects would have to support the environmental and developmental goals of participating nations, lead to measurable, cost-effective environmental gains that wouldn’t have otherwise taken place, and be in addition to Official Development Assistance (ODA).

After the adoption of the compromise, the subsidiary bodies of the CoP, “were tasked with producing a reporting framework for AIJ pilot project developers to use in submitting progress reports.”⁴⁶ This uniform reporting format “added more structure to the loosely defined AIJ”⁴⁷ and gave the

UNFCCC Secretariat a way to evaluate whether a project should be formally

⁴³ Catrinus Jepma, “Editorial Note,” *JIQ*1, no.1(Summer 1995):1. Groningen, Netherlands.

⁴⁴Ibid.

⁴⁵Hanafi, “Joint Implementation: Legal and Institutional Issues for an Effective International Program to Combat Climate Change,” 474.

⁴⁶ Emma Arguelles, “National Programs and Pilot Projects Initiated Under Activities Implemented Jointly” (Denver, CO: University of Colorado, 1998), 5.

⁴⁷Ibid.

accepted.

Although there was a uniform reporting format for AIJ, there was also a great deal of latitude that countries had in setting up their own AIJ programs. Some Annex I and non-Annex I countries, such as the U.S. and Costa Rica, were quite quick to establish national focal points for AIJ projects (as an investing nation on the part of the U.S. and as a host country on the part of Costa Rica), while others have been slower or have not established any national focal points at all.

Of the Annex I nations that have been active in the AIJ program there is a wide range of variety in how they have chosen to implement projects. One of the biggest differences between national AIJ programs is the relative degree of private and public involvement. While governments must be involved in the overall program, the degree of involvement in specific projects is up to each individual government.

Some countries, such as the U.S., appear to see AIJ as simply another type of private investment. Government involvement in projects has been minimal—limited mainly to what is required by the UNFCCC—such as approving projects and reporting on them. One author has referred to this type of national AIJ program as the “closest to the Free Market end of the institutional spectrum... ‘the Frontier Saloon’ model.”⁴⁸

On the other hand, other countries, such as Japan, have treated AIJ projects as government operations. Governments make the agreements for the projects and are the primary investors in them. There are also some programs which

⁴⁸ Irving Mintzer, “Institutional Options and Operational Challenges in the Management of a Joint Implementation Regime,” Criteria for Joint Implementation Under the Framework Convention on Climate Change. (Woods Hole, MA: Woods Hole Research Center, 1994), 45.

blend both approaches seeking to encourage both government and private sector projects. If there is a statistically significant correlation between open market orientation and the way in which countries implement Joint Actions and the positions they have on emissions trading, then it suggests that culture does play such a role.

Chapter 6-The Implementation of Joint Actions-AIJ Programs and Projects

One "model for the management of the Joint Implementation regime is closest to the Free Market end of the institutional spectrum ... 'the Frontier Saloon' model....a laissez faire view of market evolution. "

Examining the way in which countries have established AIJ programs, and implemented AIJ projects, suggests a correlation with national open market orientation. Countries with higher degrees of open market orientation have a AIJ programs and projects which include greater involvement of the private sector and a more cost efficient reduction of GHG.

EVALUATING AIJ PROGRAMS BASED ON OPEN MARKET ORIENTATION

According to the UNFCCC posting, 96 projects have officially been accepted by the UNFCCC as AIJ projects as of mid 1999.² Of the accepted projects, Sweden was the investing country in over half (50), while the U.S. was the investing country in over a quarter (25) of the projects. The Netherlands was the investing country in 8 of the projects, Norway in 6, Germany and Australia in 2, and France, and Belgium in 1 each.

There are additional AIJ projects which countries have been involved in which have not, for various reasons, been submitted to, or accepted by, the UNFCCC. Japan, for example, has a number of AIJ projects which have not been submitted to, or accepted by, the UNFCCC. To the extent that information on non-UNFCCC accepted AIJ projects is available, it will be incorporated into the analysis of the AIJ projects.

¹ Irving Mintzer, "Institutional Options and Operational Challenges in the Management of a Joint Implementation Regime," Criteria for Joint Implementation Under the Framework Convention on Climate Change, (Woods Hole, MA: Woods Hole Research Center, 1994), 45.

²As of April 30, 1999 this was the number of projects listed at the UNFCCC website, http://www.unfccc.de/fccc/ccinfo/aij_proj.html. Information on these projects forms a relatively convenient data base from which to analyze AIJ projects given the relatively standardized reporting requirements. A summary of all the projects is listed in UNFCCC Subsidiary Body for Scientific and Technological Advice/Subsidiary Body for Implementation. Tenth Session, Bonn, May 31-June 11, 1999. Activities Implemented Jointly Under the Pilot Phase (FCCC/SB/1999/INF.1). ("UNFCCC/AIJ Report")

Countries have chosen to develop AIJ programs and invest in AIJ projects in different ways. AIJ, it has been noted, is closely related to the use of “market principles in the implementation of international agreements.”³ In the most extreme open market type of AIJ all projects would be based on “bilateral arrangements [with] no regulatory structures in place, no central institution monitors the completion or performance of individual projects. Prices are set by negotiation between investing and receiving countries on an ad hoc basis.”⁴ The U.S. approach to AIJ, tends to be in this direction which is consistent with the high national degree of open market orientation of the U.S.

On the other hand, some AIJ programs have been run as if they were a part of a government foreign affairs program. In these cases, Ministries of Foreign Affairs are generally responsible for the programs, and the projects are the outcome of bilateral government-to-government agreements. The Swedish and Norwegian programs exemplify this approach. They are based on government investments, and hence primarily government-to-government agreements.

The Swedish, Norwegian and Japanese programs are not, however, identical. While the Swedish program seems to be based mainly on foreign relations concerns, the Norwegian program is more directly related to exploring joint implementation. The Norwegian program also works more closely with international institutional entities such as the World Bank.

Other programs, like those of the Netherlands and Japanese, seek to encourage both government and private sector agreements.

³ Philippe Cullet and Annie Kameri-Mbote, Annie Patricia, “Joint Implementation and Forestry Project: Conceptual and Operational Fallacies,” International Affairs 74, no. 2 (April, 1998): 394. ⁴Mintzer, “Institutional Options and Operational Challenges in the Management of a Joint Implementation Regime,” Criteria for Joint Implementation Under the Framework Convention on Climate Change 45.

The difference in the structure of national AIJ programs is reflected in the type of entity that invests in AIJ projects. There types of investors range from purely private sector to purely public sector (including governments, international institutions and NGOs). The motivation to participate in an AIJ program as an investor differs for the public sector and for the private sector.

Governments have a number of reasons participating. Governmental motivations include general foreign relations issues (such as wanting to strengthen ties with specific countries or regions), foreign relations issues specifically related to the UNFCCC (such as wanting to encourage certain countries or regions to be more interested in market mechanisms to reduce GHG), general issues related to the UNFCCC (such as a desire to appear to be actively involved in reducing GHG), or specific issues related to the AIJ pilot phase (such as wanting to gain more practical experience in dealing issues associated with market mechanisms such as “additionality”).⁵

For international institutions AIJ projects have primarily been approached as learning experiences. Environmental NGOs may be largely interested in the reductions of GHG that the projects lead to-especially when the projects have additional environmental benefits such as the preservation of biodiverse ecosystems.

The motivation of the private sector to invest in AIJ projects is more difficult to decipher, given that no credit for GHG is being given under the AIJ pilot phase. However, despite a general perception that private sector involvement in AIJ is low, private investment actually exceeds public investment in AIJ projects.

⁵ For a discussion of “additionality” see Appendices.

There has been “a surprisingly large amount of private investment of \$140 million, which compares to \$47 million of public investor AIJ funds.”⁶

But for many investors the motivation to participate in an AIJ project is simple-profit. There is no requirement that an AIJ project lose money and a number of projects have been developed to make money with the GHG benefits being in the nature of a bonus (for a discussion of whether the “bonus” should be a necessary, although not individually sufficient, motivation for the project see the discussion of “additionality in Appendices). The greater the open market orientation of investors in AIJ projects, the more likely it is that they will seek to make a profit from the projects.

It is possible that some investors feel that AIJ projects may ultimately be “grand fathered” into becoming CDM or JI projects. Or, perhaps more likely they may think that approved AIJ projects will be able to be easily turned into such CDM or JI projects, even if retroactive credit is not awarded, because they have already dealt with most of the methodological issues anticipated for CDM or JI projects. Private sector investors should therefore have a greater interest in the cost efficiency of GHG reductions in projects they are involved in than public sector entities have.⁷

This analysis will seek to evaluate whether there is a significant correlation between the level of open market orientation countries have, and the degree to which they follow the *laissez-faire* “Frontier Saloon” model in AIJ programs and

⁶ Reimund Schwarze, “Activities Implemented Jointly: Another look at the facts,” 12-13. Forthcoming in Ecological Economics. Unpublished draft on file with the author.

⁷ Investors may be also be seeking to gain experience in GHG reducing projects and in making the necessary contacts with host country participants so that if CDM and JI become a reality they will be more prepared to implement projects. It is also possible that AIJ may serve as an entry for investors to work with host countries both at a governmental and private sector level. The public relations value of participating in AIJ projects has also been suggested as a motivation.

projects.⁸ However, although the French and German programs and projects will be described, given the small number of projects (together they have only half of the number of projects of the Country with the next lowest number of projects considered in this analysis), they will not be considered in the comparison of AIJ projects and open market orientation.

In evaluating the degree to which AIJ projects have reflected open market orientation, this study shall consider two quantifiable factors about actual projects. The first factor in evaluating projects is the nature of the investors. If the project investors are from the private sector, this indicates a higher degree of open market orientation than a public sector investment (either from a government, an international institution, or an environmental NGO). Purely private investment will rank 1.0, while purely public investment will rank 0.0 with mixed investments ranked in between.⁹

The second factor in evaluating projects is the monetary amount it cost to reduce or sequester GHG emissions.¹⁰ A higher reduction per amount will,

⁸ One analyst has suggested another correlation in AIJ projects—"neighbourhood trading." Japanese projects are all within the Asia Pacific region, that almost 90% of EU projects are in European economies in transition, and that 2/3 of U.S. projects are in Latin America. The suggested explanation of this is "the established institutional links of development cooperation." Schwarze, "Activities Implemented Jointly: Another look at the facts," 7.

⁹ Schwarze has also generated data consistent with the general hypothesis about the relationship of open market orientation and the AIJ investor. Looking from a regional perspective, he classified funding composition as private, public or mixed. He found that 26 out of 33 U.S. projects were private, whereas only 6 European projects, and no Japanese projects, were private. Ibid, 13.

¹⁰ There is a wide range given for the duration of projects which is based on a number of different methodologies. The estimates of cost per avoided tonne of CO₂ will be for the length of the total project. Additionally, the average cost or avoided CO₂ will generally be based on the average of the costs for the different projects (as opposed to adding up the total amounts spent for all projects and dividing it by the total amount of CO₂ avoided by all projects). The reason for this is that certain types of projects, such as large scale carbon sequestration, may have much lower costs for avoiding CO₂ and may hence tend to skew the results of any analysis (given that one is trying to get a feel for the overall orientation of the investing countries). However, for Sweden the total amount spent will be divided by the total CO₂ avoided given the homogeneity of the projects and the large number of projects.

under a CDM or JI program, lead to more profits. Therefore, projects with higher reductions in emissions will ultimately be more desirable as market investments. Hence, larger reductions per dollar will rate a higher open market orientation. The cost of carbon reductions will be ranked from the highest to the lowest and ranked appropriately. Although there is a great deal of data on the costs of the different projects the data is not complete or consistent. One analyst has remarked on “the patchy and partly inconsistent cost data [for AIJ projects].”¹¹

Simply looking at investing countries’ AIJ programs alone will not allow one to fully understand the dynamics of AIJ programs and projects. Therefore, a number of non-quantified factors which help to set the real world context for AIJ will be considered. First, all the investor country AIJ programs of countries considered in this study will be examined. Brief project case studies for projects by the five investing countries which are ranked will also be undertaken. These case studies also cover a wider range of project types, including forestry sequestration, land fill methane capture, power production conversions, and industrial technology improvements.¹² These projects also involve different host countries including Costa Rica, Russia, Poland, Latvia and China.¹³

The AIJ programs of two of these host countries, Costa Rica and Poland-who have been amongst the most proactive of host countries in promoting AIJ-will also be described. Finally, some of the contractual relationships which have

¹¹Schwarze, “Activities Implemented Jointly: Another look at the facts,” 17.

¹² There is a distinct difference in the average GHG reduction of the different types of activities. For example, one analyst (who generally used somewhat different cost figures than this study) found that the average reduction cost per ton of avoided CO₂ for renewable energy projects was \$14, for energy efficiency projects \$3.2, for fuel substitution \$15.4, for fugitive gas recapture \$0.1 and for land use change and forestry was \$2.6. Ibid.

¹³ Additionally, three other case studies of projects in which Costa Rica is the host country are included in Appendices in order to more closely examine issues related to joint implementation-particularly additionality.

been used by the public and private sectors to develop AIJ projects will be examined. These contracts include one that is solely between two private parties, one that is between two governments, and one that is between two governments and an international financing institution (the World Bank).¹⁴

THE U.S. AIJ PROGRAM AND PROJECTS

In October of 1993 President Clinton announced the U.S. Climate Change Action Plan. The Plan set forth "a series of measures designed to return U.S. greenhouse gas emissions to 1990 levels by the year 2000 by domestic actions alone."¹⁵ However, the Plan also noted that there was enormous potential for "cost-effective greenhouse gas emission reductions in other countries."¹⁶

The U.S. moved rapidly to find such opportunities for cost-efficient emission reductions in other countries. It created a pilot program, the United States Joint Implementation Initiative (USIJI), to explore the possibilities for Joint Activities.

The enunciated purpose of the USIJI is to "help establish an empirical basis for considering approaches to joint implementation internationally and thus help realize the potential of joint implementation both to combat the threat of global warming and to promote sustainable development."¹⁷ In other words, USIJI is supposed to generate practical experience and knowledge which applies to theoretical issues about how Joint Activities, and market mechanisms in general, might work to reduce climate change.

¹⁴ Actually three different, but very similar, agreements between the Netherlands and other governments will be examined.

¹⁵ "Announcement for Groundrules for U.S. Initiative on Joint Implementation," (Wednesday, June 1, 1994), Federal Register, Vol 59, No 104/ . p.28442.

¹⁶Ibid.

¹⁷Ibid.

The USIJI does not fund projects, but sometimes does help put together private parties who are interested in AIJ projects. The USIJI program

has facilitated two-part and, in some cases, multiple-party arrangements among project developers and host country governments. To establish these arrangements (usually in the form of contracts), the participants directly negotiate and agree upon project design, cost sharing, allocation of potential GHG credits, the project implementation schedule, monitoring and verification procedures, and other project issues.¹⁸

The focus on the private sector for project development seems consistent with overall U.S. policy in this area. Commenting on the future of the Clean Development Mechanism, then Deputy Secretary of the Treasury (and subsequently Secretary) Larry Summers explained that his “personal bias was to have them [CDM projects] implemented business-to-business under a government framework.”¹⁹

In designing USIJI, a State Department chaired interagency working group developed draft Groundrules. The draft Groundrules were published in the Federal Register and public comments were solicited.²⁰ Based on a relatively small number of comments (twelve), and some additional thought about the issues involved, final Guidelines were developed.

The Groundrules established an interagency Evaluation Panel which is responsible for overseeing the USIJI program and approving projects as official USIJI projects. The Panel was also made responsible for developing

¹⁸ Draft Submission of the United States on the Review of the Activities Implemented Jointly (AIJ) Pilot Phase. On file with the author.

¹⁹Karl Hausker and Katie McGinty, “Proceedings of Indo-U.S. Business Dialogue on the Clean Development Mechanism,” (Washington DC, 1999-on file with the author). Summers has been influential in the formation of U.S. policy on climate change.

²⁰ “Department of State Public Notice 1918,” December 17, 1993. Federal Register, Vol 58, p.66057-66059.

“operational modalities” and specific guidelines for the implementation of the USIJI program.

The Guidelines set forth a number of operational criteria which are to ensure that accepted projects create real, measurable and lasting emissions reductions. The criteria require that each project; has host country acceptance; will reduce or sequester GHG emissions; was developed or realized because of USIJI; provides data and methodological information sufficient to measure emissions with and without the project; provides for tracking and verifying the emissions reduced or sequestered by the project; identifies associated environmental and developmental benefits; and provides assurance that benefits gained will not be lost over time.²¹

Operationally, USIJI has a small secretariat consisting of approximately ten individuals who are seconded from the Environmental Protection Agency and the Department of Energy (and occasionally from the Department of State or the US AID). The Secretariat staff is responsible for providing potential project developers with general information about how to undertake a project and USIJI rules for project submissions and analysis.

Developers submit proposed projects for consideration which USIJI staff

²¹ Robert Dixon, “Accomplishments and Descriptions of Projects Accepted Under USIJI.” (Washington, DC: United States Initiative on Joint Implementation, 1998), 1.

review.²² Based on such reviews, the USIJI Secretariat makes recommendations to the Evaluation Panel about whether or not to accept a project as an official USIJI project. The recommendations are almost always followed.

Of the 24 USIJI projects which have been accepted by the UNFCCC 12 are land-use change and forestry projects, 9 are renewable energy projects, 2 are energy efficiency projects and one is a fugitive gas capture project.²³ The U.S. submission on USIJI projects lists projects in a somewhat different format and lists all projects whether or not they have been approved by the UNFCCC. It lists all 32 projects and breaks them down as having 15 energy only projects, 14 land-use change and forestry projects, 2 energy and waste projects and 1

²²There are actually a series of reviews. First, the Secretariat staff must determine whether a project is ready to be sent for technical review or lacks sufficient information for technical review to be relevant (for example, it may not be in English, it may lack some basic information such as host country acceptance or host country partners, it may not explain its methodology or the impacts of the project in enough detail for a meaningful technical review to be undertaken, etc.)

The technical review process basically determines whether the methodological assumptions are reasonable. For example, technical review would look at whether the estimates of GHG reductions or sequestrations were feasible (which requires an analysis of the baseline estimates without the project and the projected emissions with the project), the extent to which a monitoring and tracking system has been designed, and if the non-GHG environmental impacts were thoroughly analyzed.

Problems that come up during the technical review process, such as incomplete, inaccurate or missing information, are communicated to the project developer by Secretariat staff. Often the developer is able to successfully respond to such questions rapidly. In these cases, projects will generally be submitted to the Evaluation Panel in the round for which they were originally submitted. If the developer is not able to quickly respond to technical questions, then the project may be submitted to the Evaluation Panel at a later date.

Upon completion of the technical review, the Secretariat makes recommendations to an Interagency Working Group (co-chaired by the Department of Energy and the Environmental Protection Agency, but including members from the Department of State, Treasury, and US AID). Recommendations include descriptions of the project, discussions of how the project meets USIJI criteria, a summary of the technical review, and any other relevant information.

²³UNFCCC Subsidiary Body for Scientific and Technological Advice/Subsidiary Body for Implementation. Activities Implemented Jointly Under the Pilot Phase (FCCC/SB/1999/INF.1.

agricultural project.²⁴

The 15 energy only projects involved 16 private investors, 3 institutional investors, and 5 governmental investors. The 14 land-use projects involved 15 private investors, 14 institutional investors, and 2 governmental investors. Both the 2 energy and waste projects and the 1 agricultural project each involved 3 private investors. The total investors for all projects were 37 private investors, 17 institutional investors and 7 governmental investors. If private investors are ranked as 1 and institutional and governmental investors are ranked as 0, then the total ranked score would be 0.61.

Calculating the cost per avoided tonne of CO₂ annually is somewhat problematic. Of the 30 projects listed in the Third Report, only 13 provide information on both the amount invested and the annual CO₂ avoided. Some do not provide information on the invested amount for “confidential business” reasons. Others have not yet finalized their calculations on the amount invested and/or the amount of CO₂ avoided.²⁵

For the limited numbers of projects which themselves supply information on both the amounts invested and the CO₂ avoided, there is a enormous range for the cost per avoided ton of CO₂ ranging from over \$2,000 per tonne (for

²⁴ United States Environmental Protection Agency, Activities Implemented Jointly: Third Report to the Secretariat of the United Nations Framework Convention on Climate Change: Accomplishments and Descriptions of Projects Accepted Under the U.S. Initiative on Joint Implementation, (Washington, DC: U.S. Environmental Protection Agency, 1998). The data on the USIJI projects is, unless otherwise specified, from both the SBSTA/SBI Report and the Third Report.

²⁵ An additional problem is that many calculations for Costa Rican projects assume, in accordance with the announced Costa Rican government plan, Costa Rica will derive all of its power from renewable energy by the year 2000. Therefore, this calculations often have emissions offsets only up to the year 2000 (at which point it is assumed that the baseline emissions would be zero) for renewable energy projects. Since it seems highly unlikely that Costa Rica will achieve its goal, I have simply used the highest annual reductions for this analysis.

renewable energy projects) to under \$3 per tonne (for sequestration projects). Some projects have not yet been fully implemented and the funding, and avoided CO₂, are only estimates of what might occur if the projects go forward. The overall investments for projects which supply information is \$190,952,363²⁶ and the total annual tonnes avoided are 6,524,777 for an average of \$29.3 per ton per year.

However, the UNFCCC/AIJ Report gives more details on lifetimes of the 24 UNFCCC approved projects and the total tons of CO₂ reduced. The total tons avoided for all 24 projects (over a total lifespan of 759 years, or an average of 31.6 years per project) is 134,725,542 tons of CO₂. Assuming that the cost for the 24 projects would be relatively compatible with the 13 detailed by the USJI, then the cost for 24 projects would be \$352,527,439 ($\$190,952,363 \times 24/13$).²⁷ This leads to an average total lifetime cost of \$2.6 per ton of CO₂ avoided. Relative to other nations costs per ton of CO₂ reduced this is the quite low and so is ranked as 0.83.

The average of open market orientation for U.S. AIJ projects, taking both indicators into account is 1.44.

The "Klinki Forestry Project" is a good example of the type of forestry project which may be popular if carbon sequestration projects are allowed under the Kyoto Protocol. The "Klinki Forestry Project" establishes relatively small commercial tree plantations on privately owned farms in Costa Rica. The

²⁶ Close to half of this, \$92,247,677, is the projected investment in the Costa Rican plan to consolidate all of its sequestration activities. The majority of the remainder of the investments, \$68,000,000, are from three separate energy projects.

²⁷ In fact, this is very close to another estimate of total U.S. investments in AIJ projects by Schwarze who estimated the value at \$374,566,686. Schwarze, "Activities Implemented Jointly: Another Look at the Facts."

plantations are set up in areas that have previously been deforested or converted to pasture lands.²⁸ Because it takes a fair amount of effort to maintain the plantations, a sustained commitment on the part of the landowner is required over the lifetime of the trees.²⁹

Dr. Herster Barres, the force behind the project, is bubbly with enthusiasm about the klinki pine tree (*araucaria hunsteinii*). A species native to Papua New Guinea, and one of the few pine trees that grows in the tropics, the klinki tree can produce high-quality lumber in forty years. Dr. Barres, who has worked with klinki trees for decades and who is the initiator of the project, says that the klinki's combination of rapid rate of growth and high-quality wood creates the potential for it to be one of the best lumber producing trees from the tropics.³⁰

Landowners are paid USD\$1,000 for every hectare of klinki trees planted. The funding is spread over the first five years of the project.³¹ The total costs of planting a hectare with klinki trees is just over double (costs are \$1,000 per acre) what the land owners are paid. Payments cover the costs of the trees and the developmental costs of the project. The owner agrees that they will pay the money back if they cut the trees down before forty years is up (or if they sell the property and the new owner does not agree to maintain the trees). However, Dr. Barres believes that after the first five years the real motivation for the land owner to maintain the plantation until the trees reach maturity will be the value

²⁸Environmental Law Institute, Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly Under the Climate Change Convention, (Washington, DC: Environmental Law Institute, 1997), 46.

²⁹ Personal interviews with Dr. Herster Barres in March and April of 1999 (on file with the author).

³⁰ Ibid.

³¹ Carlos Chacon, Rolando Castro and Steve Mack, "Pilot Phase Joint Implementation Forest Projects in Costa Rica: A Review," Carbon Conservation: Climate Change, Forests and the Clean Development Mechanism, (Washington, DC: Center for International Environmental Law, 1998), 41.

the trees will have as lumber at that point.³²

The klinki trees are relatively effective at sequestering carbon but they are an exotic species in Costa Rica. Accordingly, growing klinki trees does not have the same biodiversity benefits that, for example, the Ecoland project³³ (or other projects which are designed to preserve existing forests) has. However, the availability of klinki for lumber eventually should reduce the pressure on natural forests. Moreover, klinki trees are relatively widely spaced in the plantations and other biota can be mixed with them. As they grow older, they create a fair degree of shade which is advantageous for many rainforest species. Dr. Barres is actively experimenting with different matrices of vegetation which grow well with the klinki.

The klinki project has initially been undertaken on a relatively small scale. There are two U.S. partners in the projects (in addition to specific organizations which wish to make offset their emissions), Dr. Barres' "Reforest the Tropics" and the Yale School of Forestry and Environmental Studies. Two Costa Rican NGOs, the Cantonal Agricultural Center of Turrialba and the Tropical Agricultural Research and Higher Education Center, are also involved in projects. But the primary local partners are small local land owners.

Dr. Barres has worked with a number of land owners to find those who are reliable in maintaining the trees. For example, in the last two years he has worked with five farmers who each had small 6 hectare plantations. Of these, two have successfully maintained the trees and three have not. This process has allowed Dr. Barres to find land owners who will be responsible for

³² Personal interviews with Dr. Barres.

³³ Described in Appendices.

maintaining plantations which can be expanded.

In the U.S., Dr. Barres tries to find organizations, including businesses, schools and churches, which would like to have their CO2 emissions calculated and then offset through Klinki plantations. His largest project by the end of 1999 was a 30 acre project which offset the CO2 emissions of Harry Hintlian, a nut roaster in Cambridge, Massachusetts. He estimated that the nut roasting plant emitted approximately close to 500 tonnes of CO2 per year. The 30 acres of the project is based on an assumption that the plantation would sequester 16 tonnes per acre. The nut roaster has apparently had some financial success in marketing his nuts as more environmentally friendly than other nuts.³⁴

If the projects remain viable for forty years then the costs of sequestration would be USD $\$1,000/(16 \times 40) = \$1.56/\text{tonne}$ of CO2 sequestered. This assumes that the value of the trees as lumber is sufficient incentive for the landowners to maintain the plantations for the full forty years. If the trees are not maintained after the landowners have been paid (the fifth year) than the sequestration costs would be eight times as high ($\$12.48/\text{tonne}$ of CO2).³⁵

The contracts used for the Klinki project are relatively sophisticated in considering the special issues related to Joint Actions.³⁶ This is despite the fact that they were essentially prepared by a single individual (who is a non-lawyer)

³⁴ Personal interviews with Dr. Barres.

³⁵ Of course if a non-maintained plantation leads to the trees rotting or otherwise releasing their carbon into the atmosphere then the sequestration will be substantially reduced. Once the trees in a plantation are cut they would be used in a way to minimize their release of carbon into the atmosphere (for example, they might be coated in some substance to reduce rotting and then used in construction).

³⁶ The version of the contract for the project used here is the latest version, circa April 1999, used by the Klinki project. It is a product of the Klinki project having used different contractual arrangements and ultimately having settled on this one as the most appropriate. This information is based on personal interviews with Dr. Barres.

and negotiated with Costa Rican farmers (whereas the other agreements examined were prepared by governments and international financial institutions). The reason for this may be that the Klinki contract is the product of evolving experience with actual projects and takes into consideration the value of the CO₂ avoided.

The Klinki project contracts are essentially between individuals. They are between Dr. Hester Barres, on behalf of the project, and local Costa Rican landowners. The contracts clearly state that their purpose is the “improvement of the environment....by offering the service of sequestering carbon.” (Second Article, first paragraph). The Klinki project provides tree saplings and money to a land owner. In exchange, the land owner agrees to “carry out a carbon sequestration project, specifically the planting and management of trees for the long-term sequestration of carbon combined with the production of wood and other environmental services.” (Second Article, B)

The primary mechanism by which the project is accomplished is by having the payments to the land owner spread over a period of years (after certain project milestones have been achieved) (Third Article). Although the payments will probably be completed within the first five years of the twenty-five year projects, Dr. Barres believes that by that point the land owner will understand the economic benefit to them that will accrue if they maintain the plantation for the next twenty years so that they can sell the lumber grown.³⁷

Additionally, the land owner grants an “Ecological Encumbrance” to the Klinki project (Second Article, first paragraph) which gives the project the right to take legal action against the land owner if they don't maintain the plantation

³⁷ Personal interview with Dr. Barres.

for a least twenty-five years.

What the Klinki project gets out of this contract is the economic rights from the sequestration of carbon during the twenty-five years of the contract. A specified amount of carbon is anticipated to be sequestered during this period and, if any additional carbon is sequestered, the value of the additional sequestration is equally split between the land owner and the project (Fourth Article). This CO2 credit is additional to the economic benefits from selling the timber and gives the landowner an extra incentive to try to increase the amount of sequestration.

COSTA RICA AS A HOST COUNTRY

Costa Rica, the host country for the "Klinki Forestry Project," has clearly been the most proactive host country in the AIJ pilot phase both in theory and in practice. Serving as a "model" for other AIJ host countries,³⁸ it has been described as "perhaps the best example in the developing world of a national joint implementation program."³⁹ Costa Rica's program, which was created under the impetus of its President Jose Maria Figueres, has been based on its belief that AIJ creates efficient GHG emission reduction options while transferring environmentally-friendly, cutting-edge technology. For Costa Rica, AIJ represents a cost-effective, market based method to meet the objectives of the UNFCCC. Even more importantly, it provides new resources to help Costa Rica to meet its own national sustainable development goals.

Costa Rica was the first non-Annex I country to establish a national program and office for AIJ activities, the *Oficina Costarricense De Implementacion*

³⁸Costa Rica is a "model" AIJ host country largely because it has a strong market system in place and realizes that this is an important element in attracting market oriented investors.

³⁹Environmental Law Institute, Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly Under the Climate Change Convention, 26.

Conjunta ("OCIC"). The program was

developed through a process of public discussion among the government agencies, environmental NGOs, and the private business sector. These discussion resulted in a unique institutional structure so far among national JI programs with an office jointly managed by representatives from government, business and the non-profit sectors.⁴⁰

OCIC is a cooperative effort between the Ministry of Environment and Energy, the Costa Rican Trade and Development Board (a private organization designed to attract foreign investment), and two non-governmental organizations, one of which has expertise in forestry management and the other in power generation.⁴¹ In establishing a program to include such a range of institutions, Costa Rica became "the only national [joint implementation] program to include non-governmental entities in the management of its AIJ projects."⁴² For this reason, Costa Rica's AIJ program is considered the "best example of a program which included many participatory elements in its formation."⁴³

On September 30, 1994 Costa Rica signed a "Statement of Intent for Bilateral Sustainable Development, Cooperation and Joint Implementation of Measures to Reduce Emissions of Greenhouse Gases" with the United States of America (the "Agreement"). The Agreement, signed by Costa Rican President Jose Maria Figueres and by the Vice President Al Gore on behalf of the U.S., was the first bilateral Joint Activities agreement signed in the Western Hemisphere.

⁴⁰Ibid.

⁴¹By executive decree in April of 1996 OCIC was raised to the rank of "technical-administrative highest deconcentration organ" which makes it the national authority to address policies related to AIJ and gives it technical and administrative autonomy.

⁴²Emma Arguelles, National Programs and Pilot Projects Initiated Under Activities Implemented Jointly, (Denver, CO: University of Colorado, 1998), 10.

⁴³Environmental Law Institute, Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly Under the Climate Change Convention, 16.

The Agreement states that the U.S. and Costa Rica

recognize that enhancing environmental protection, and, in particular, controlling greenhouse gas emissions to limit potential adverse climate change impacts, would be mutually beneficial....[and] requires a global solution, to which both the United States and Costa Rica can make significant contributions....[and] the Participants will mutually benefit from the deployment and use of sustainable energy and greenhouse gas emission reduction technologies and methods....[and] Participants recognize the potential for additional investment in environmentally sound development through the participation of the private sector in joint implementation of measures and technology cooperation projects[and] cost-effective, world-wide greenhouse gas emission reductions may be achieved by encouraging such reductions in countries where responsive solutions are available at least cost with financial and technical assistance and investment from individuals and organizations in other industrialized countries.

Given the concerns of Costa Rica and the U.S. it was therefore agreed that they would work together to

facilitate the development of joint implementation projects which will encourage the following: market deployment of greenhouse gas-reducing technologies, including energy efficiency and renewable energy technologies; education and training programs; increased diversification of energy sources; conservation, restoration and enhancement of forest carbon sinks, especially in areas that promote biodiversity conservation and ecosystem protection; reduction of greenhouse gas emissions and other pollution; and the exchange of information regarding sustainable forestry and energy technologies.

The Agreement also lays out forms of cooperation between the two countries which include the creation of mutually compatible national AIJ programs, the identification of potential projects, the design of appropriate methodologies and mechanisms, and other activities to support Joint Activities.

OCIC has a set of Guidelines and criteria which are relatively compatible with both the USIJI and the UNFCCC criteria. The Guidelines are designed to reduce red tape while meeting Costa Rica's interests. Costa Rica's

requirements for approving AIJ projects may be considered to break into four basic areas, basic project considerations, environmental feasibility, financial feasibility, and technical and institutional feasibility.⁴

Costa Rica has basic project considerations which include whether the project is; consistent with Costa Rican laws and regulations; acceptable to the investing government; compatible with and supportive of Costa Rican national environmental and developmental priorities and strategies, and; enhancing of income opportunities and life quality for Costa Rican civil society.

In reviewing the environmental feasibility of projects, Costa Rica requires that the the project; bring environmental benefits that are additional to what would have occurred in the absence of the activities; have an appropriate monitoring plan in place; provide for independent verification of the project's impact; have a high likelihood of GHG offsets over the course of the projects life, and; explain the methodologies used to calculate GHG reductions, sequestration and also explain the degree of uncertainties involved in methodologies.

Costa Rica also reviews the financial feasibility of projects. Project financing must be; additional to ODA and to obligations imposed by the UNFCCC; include an accounting of all economic costs and benefits of the project; address the cost per ton of CO₂ (or equivalent) avoided; describe the financial return of the project clearly; include financial projections with and without the AIJ value, and; address the sharing of monetary benefits related to the GHG abatements between the project participants.

⁴Arguelles, National Programs and Pilot Projects Initiated Under Activities Implemented Jointly 10-11.

The technical and institutional requirements for Costa Rican AIJ projects includes whether; Costa Rica has the institutional framework to adequately implement and administer the project; the prior experience and track record of the project partners, and; whether the role of each partner is clearly defined in the proposal.

The consistency between USIJI and OCIC Guidelines has enhanced both the quantity and quality of AIJ projects between the two countries. Currently, nine out of the twenty-seven USIJI projects which have been approved by the UNFCCC are in Costa Rica. Moreover, USIJI projects represent nine out of a total of ten UNFCCC approved AIJ projects in Costa Rica (the tenth is a Norway/World Bank project).

Costa Rica has also taken a number of purely domestic actions to reduce and sequester GHG. For example, in the late 1990s it enacted a 15% tax on the consumption of gasoline. One third of the revenues from this tax are

designated specifically for forest activities to compensate for GHG emissions and to protect [Costa Rica's] biodiversity. These revenues are channeled...directly to small and medium- sized landholders as a compensation for reforestation and forest protection, while making a reasonable rate of return...With this initiative Costa Rica has taken the first step toward the internalizing the negative externalities of fossil fuel consumption and externalize the cost of GHG mitigation as an environmental mitigation as an environmental service.⁴⁵

Costa Rica has also declared that it will attempt to meet all of its energy needs from renewable sources by the year 2000. This extremely ambitious goal will, almost certainly, not be met but is indicative of Costa Rica's high level of commitment to environmental sustainability.

⁴⁵Paulo Manso, "Costa Rican AIJ Program," (Costa Rica: OCIC, 1997), 3.

Costa Rica clearly believes that to facilitate Joint Activities it must have an open market oriented, investment-friendly legal system in place. In its joint implementation web site, Costa Rica includes a comprehensive "Investment Overview." The Overview states that Costa Rica

encourages direct foreign investment, an attitude shared by major political parties and implemented in practice since the early eighties with the improvement of conditions to attract foreign corporations[including] legislation providing significant fiscal and operational incentives to companies in export related activities....Costa Rican laws, regulations and practices [which] foster competition and do not discriminate between locals and foreigners....rights to private ownership and the establishment of operations....no limitations on transferring capital or funds associated with an investment of any kind[and] no performance requirements or minimum investment levels for foreign investors in any activity.⁴⁶

While the investment climate in Costa Rica is already geared towards foreign investment, it is noteworthy that Costa Rica chooses to emphasize this in its joint implementation web site. This is a persuasive suggestion that there is a strong correlation between Joint Activities and the need for a legal framework which is compatible with open market systems.

Costa Rica sees itself as having three generations of AIJ.⁴⁷ The first generation is based on a implementing single projects, whether they are energy efficiency projects to reduce GHG or land management projects to sequester GHG. All of the current renewable energy projects fall into this category as do four of the forestry sequestration projects.

The second generation of AIJ applies, at least in theory, to both energy efficiency and forestry sequestration projects. It represents

a more sophisticated greenhouse gas (GHG) reduction instrument,

⁴⁶[http://www.unfccc/ccomfo/aoj\[rpg/aij.pcri.html](http://www.unfccc/ccomfo/aoj[rpg/aij.pcri.html)

⁴⁷Ibid, 2-4.

called 'Certifiable Tradable Offset' (CTO). CTO may be defined as a specific amount of greenhouse gas emissions, expressed in carbon equivalent units, reduced or sequestered, or to be reduced or sequestered by AIJ actions, in which all phases have already been completed. Each CTO is guaranteed for a period of 20 years and will give the bearer the right to claim the offset....the CTO Initiative could be a ground breaking global precedent of using financial markets to combat Global Warming.⁴⁸

CTOs, in essence, allow an investor to buy stock in a project rather than financing the whole project. The investor is not responsible for managing or selecting the projects undertaken-only for investing funds. The development of the CTO may be seen as analogous to the evolution of corporations in western financial history.

Costa Rica has begun what it considers third generation AIJ projects. These represent a new phase in forestry sequestration projects, at least in theory. The third generation will be national land use carbon sequestration "megaprojects" designed to create portfolios of investments using the commodity CTO approach. It is envisioned that this generation of AIJ will primarily be sold through an international stock exchange market. One could see this third generation as similar to mutual funds which allow one to buy stock in a broad range of investments.

There are a number of reasons to consider AIJ projects hosted by Costa Rica as case studies for Joint Actions. First, their proactive stance on AIJ and Joint Actions has led to more clearly articulated positions and policies than most other host countries. Second, both carbon sequestration forestry projects and emissions reduction technology projects are well represented in Costa Rica. Moreover, within these two basic types of projects there is a wide range of other

⁴⁸ Ibid, 2-3.

variables which can help illustrate the strengths and weaknesses of AIJ. Finally, Costa Rica has moved beyond the single project approach to its second and third generation of projects. These projects offer the potential to envision how AIJ might evolve into the Clean Development Mechanism.

NORWAY'S AIJ PROGRAM AND PROJECTS

In 1995, the Norwegian Parliament decided that AIJ "would be given priority as an important supplement to measures implemented domestically."⁴⁹ One important way in which Norway has implemented projects is, since 1996, to work in collaboration with the World Bank on AIJ projects. Norway supplies some of the funding, and the World Bank administers the projects (as well as supplying most of the rest of the funding through the GEF).

Norway's

overriding objective for all Pilot Phase activities is to contribute to the assessment of the possible global benefits and national economic, social and environmental impacts associated with Activities Implemented Jointly. The Norwegian programme.... aims to catalyze opportunities for broad participation among interested Parties and relevant actors with the view to maximizing learning value.⁵⁰

The objective of the World Bank for AIJ projects is very similar to that of Norway. The World Bank's AIJ program has as its main objective "...the maximization of participation and the learning value of the AIJ Pilot Phase."⁵¹

The World Bank also

intends to ensure that efforts made by the program will substantiate AIJ's ability to provide a major contribution to achieving the objective of the Convention....[and] ensure that developing countries perceive

⁴⁹ Government of Norway. "National Programme on Activities Implemented Jointly" (1997). website http://www.unfccc.de/fccc/ccinfo/aijprog/aij_pnor.html p.2

⁵⁰ Ibid.

⁵¹ Global Climate Change Unit, Global Environment Division, "AIJ Program Status Report," (Washington, DC: World Bank, 1997).

AIJ to be consistent with and favorable to their development objectives.⁵²

Norway's criteria for AIJ projects is relatively unique. It has based its choice of projects on those which fit into it having a broad-based "portfolio" of projects. Norway believes that such a portfolio will "maximize learning value during the pilot phase....[with] a diversified representation in terms of project type (e.g. sectors and technology involved) and geographical regions."⁵³

Projects that meet Norway's "portfolio" criteria are presented to a committee composed of representatives of the Ministries of Finance, Petroleum and Energy, Environment, and Foreign Affairs. Once projects have been approved, they are turned over to the Ministry of Foreign Affairs to negotiate the actual contract for the project with the host government (rather than with the private sector of the host country). The Ministry of Foreign Affairs is also the "governmental authority responsible for committing financial resources for AIJ projects."⁵⁴

Funding for Norway's AIJ projects comes from a special Governmental Climate Change Fund, originally established in 1991 and replenished annually. There are separate provisions for funding projects and related methodological work.

Of Norway's 6 projects which have been accepted by the UNFCCC, 4 of them are being implemented by the World Bank (with funding from Norway). These 4 projects-the Mexico high efficiency lightening project, the Poland coal-to-gas conversion project (which includes approximately 35 sub projects), the

⁵²Ibid.

⁵³ Government of Norway. "National Programme on Activities Implemented Jointly," 3.

⁵⁴ Ibid.

Burkina Faso sustainable energy management project, and the Indian integrated agricultural demand-side management project-were funded by Norway in the amounts of USD \$3 million, \$1.1 million, \$2.4 million, and \$4.6 million respectively.⁵⁵ The purpose of the four Norway/World Bank projects was enunciated as “the maximization of participation and the learning value of the AIJ Pilot Phase.”⁵⁶ Norway also undertook AIJ projects in Slovakia and Costa Rica.

It was somewhat difficult to extract the price per ton of CO avoided as Norway calculated the numbers using different methodologies and sometimes gave figures in tons of CO₂ avoided and sometimes in tons of Carbon avoided (in the India project for example). Nonetheless, it appears that the costs per ton of CO₂ avoided over the lifetime for the six projects was \$17.8t/CO₂, \$1.3,⁵⁷ \$1.6t/CO₂, \$8.4t/CO₂, \$2.6 t/CO₂, and \$2.7t/CO₂ respectively.⁵⁸ The average cost for the six projects was \$5.7t/CO₂. Relative to other nations costs per ton of CO₂ reduced ranks as 0.62.

The average of open market orientation for Norway's AIJ projects, taking

⁵⁵ Additionally, they all had GEF funding.

⁵⁶ World Bank, “Evaluation Guidelines for Potential World Bank Activities Implemented Jointly (AIJ) Pilot Projects.” (Washington, DC: World Bank, 1997).

⁵⁷ For the 30 Poland Projects implemented there was a huge range of costs per ton of CO₂ avoided per year, from \$3 to \$130-despite the fact that they were generally energy efficiency projects. There were two types of projects one with converted coal to gas and had an average cost_efficiency of \$1t/CO₂ and lasted 17 years and one which was energy efficiency for residential building which averaged \$1.56t/CO₂ and lasted 50 years. Jalon Galon-Kozakiwicz, AIJ Special Event-Experiences from the AIJ Project on Poland-Norway Coal to Gas Conversion, (Warsaw, Poland: National Fund for Environmental Protection and Water Management, International Department, Polish Government, November, 1998).

⁵⁸ Project data on Norwegian projects based on information from Norwegian government. The Norwegian government gave a number of different ways to calculate the figure for the first project and came up with amounts ranging from \$21.84 per tonne to \$61.06 per tonne-the average is \$31.63 per tonne.(June 1998). “Activities Implemented Jointly: List of Projects.” Listed at UNFCCC website <http://www.unfccc.de/fccc/ccinfo/aijact98> One analyst who came up with a far higher amount of CO₂ avoided by Norway apparently used a different methodology in determining the amount of CO₂ avoided. Schwarze, “Activities Implemented Jointly: Another Look at the Facts”.

both indicators into account is 0.72.

The Norwegian/Poland coal-to-gas conversion project is a good example of a Norwegian project. It has two primary components. On the one hand, there is a technical assistance component which covers project administration, management, consultancy services, training and monitoring. The technical assistance component costs about USD \$1.3 million. The second primary component is the actual investment in converting coal-fired boiler houses to being gas-fired which cost USD \$43.5 million.⁵⁹

Although it is counted as a Norwegian AIJ project, Norway's financial contribution is relatively small compared to the total project cost-only USD \$1 million. But Norway makes a point of stressing that its contribution is "new and additional to the Official Development Assistance and the country's financial obligations under the UNFCCC."⁶⁰ The GEF granted USD \$25 million for the project, and Poland is providing the remaining USD \$ 18.8 million.⁶¹ Poland's contribution is coming from a combination of government environmental funds and private investors. Norway's contribution will be primarily used to finance two demonstration projects.

The project involves "investments in about 30 non-industrial small to medium-sized heat plants (boilers) for their conversion from coal to natural gas. The projects are for residential houses and public buildings."⁶² It also includes

⁵⁹Robert Anderson, Joint Implementation of Climate Change Measures (Washington, DC: World Bank, 1995), 4.

⁶⁰ World Bank Global Climate Change Unit, "Activities Implemented Jointly-Poland: The Coal to Gas Conversion Project," (Washington, DC: World Bank, 1997).

⁶¹ Anderson, Joint Implementation of Climate Change Measures 4.

⁶² World Bank Global Climate Change Unit, "Activities Implemented Jointly-Poland: The Coal to Gas Conversion Project."

an energy efficiency component for building insulation.⁶³

The project is intended to stimulate technological and institutional changes by demonstrating that fuel substitution and energy efficiency can support Poland's environmental objectives while simultaneously reducing greenhouse gas emissions. Poland's environmental objectives might be met, for example, through improvements in local air quality by reducing SO₂, particulates, and NO_x.

The coal-to-gas conversion component of the project is anticipated to last 17 years with avoided CO₂ of 176,000 tonnes CO₂/year. This is because boilers have an average service life of 17 years before requiring replacement. The cost per tonne of avoided CO₂ from this aspect of the project is \$17 per tonne.

The energy efficiency component is anticipated to last 50 years with 400 tonnes of avoided CO₂ per year. This is based on a comparison between the requirements of the Polish building codes and the energy efficiency that the project will create. The cost per tonne of avoided CO₂ from this aspect of the project is anticipated to be between \$26-130 per tonne.⁶⁴

The project has not proceeded as rapidly as was initially anticipated. Although the project was initiated prior to the AIJ phase, the first fuel conversions did not begin until late 1997. The fact that the project was initiated prior to the AIJ phase also resulted in there being a lack of a clear distinction between the AIJ component and the non-AIJ component of the project.⁶⁵

⁶³ Galon-Kozakiewicz, AIJ Special Event-Experiences from the AIJ Project on Poland-Norway Coal to Gas Conversion, 2.

⁶⁴ Ibid.

⁶⁵ World Bank Global Climate Change Unit, "Activities Implemented Jointly-Poland: The Coal to Gas Conversion Project."

To understand Norway's AIJ contracts it is necessary to look at three different documents. This is because there are three separate parts to the agreements between Norway, the World Bank, and India/Burkina Faso.⁶⁶ First, there is an agreement between the donor country and the international institution. Second, there is an agreement between the countries. Finally, there is a project document between the donor country and the administering institution.

The agreement between Norway and the World Bank is relatively short. It states that Norway will make funding available for AIJ projects which the World Bank will administer. The Bank takes a 10% administrative fee,⁶⁷ and is responsible for administering the projects.

The intergovernmental agreement is also short—just over a page long. It briefly mentions the specific project but, based on this document alone, one would not know exactly what the project actually did. From the name of the project, “The Integrated Agricultural Demand Side Management Project,” one can deduce that it relates to demand side management of power. It is executed on behalf of the Norwegian Ministry of Foreign Affairs and the Indian Ministry of Power.

There is a somewhat more extensive description of the UNFCCC context for AIJ generally. Each of the three paragraphs of the agreement mentions the UNFCCC and the AIJ pilot phase. The project is clearly designed to generate

⁶⁶ Because I do not have the agreement between Norway, the World Bank and Poland, or even both parts of the agreement for a single project, I will use the intergovernmental agreement between Norway and India and the Norway/World Bank Project Document for a different project taking place in Burkina Faso.

⁶⁷ The Bank also gets to invest the monies until they are used in a project and, apparently, keep the proceeds of such investments.

information about AIJ generally.

The amount of the funding is referenced in the agreement. But it is made clear that it is “processed as a country-executed AIJ grant through the World Bank....between the World Bank and the Government of India.”

The Project Concept Document is between the Bank and the host country. It is structured as a loan between the Bank and the host country and contains far more information about the project and the financing. There is a detailed description of what the project is designed to do and how it will do it. The environmental impacts of the project, including but not limited to GHG, are described.

POLAND AS A HOST COUNTRY

In 1994 Poland's Minister of Environmental Protection, Natural Resources and Forestry (MoE) proposed the establishment of a Secretariat for Joint Implementation. Poland had decided that “JI projects would be highly advantageous to Poland and to other developing countries....[in order to] obtain access to ‘state of the art’ technologies, know-how and experiences in addition to actual assistance provided by multilateral and bilateral partners.”⁶⁵

After collecting input from a variety of government ministries and agencies, the Polish government decided to establish the Secretariat in late 1994. The decision was made to place the Secretariat within the international department of the National Fund for Environmental Protection and Water Management rather than the MoE because the activities of the National Fund were similar to

⁶⁵ Polish Secretariat for Joint Implementation, “Activities Implemented Jointly” (1988). website http://www.unfccc.de/fccc/ccinfo/aijprog/aij_ppol.html p.2

that envisioned for the Secretariat. The “terms of reference” for the establishment of Poland’s Joint Implementation Secretariat were approved in late 1995.⁶⁹

The guidelines for AIJ projects in Poland have two basic criteria at an initial first level. Projects must involve “technological development and upgrading of equipment, or involving financial resources to procure such technologies and equipment.”⁷⁰ Additionally, projects must directly reduce “the generation of GHGs in the production of goods and services...[and] remove greenhouse gases from the atmosphere.”⁷¹ The objectives of these criteria are to ensure that AIJ projects comply with the standards set forth by the CoP, are consistent with the environmental goals of Poland, and cost-effectively use public and private financial resources.

There is also a second level of criteria for Poland’s AIJ projects. The difference between the levels seems to be that level one criteria relate to Poland’s specific needs and level two criteria are more closely related to UNFCCC criteria such as the need to be able to estimate GHG reductions and ensure that there are not non-GHG negative environmental impacts. However, even the level two criteria include a number of somewhat unique items. These include encouraging recycling of waste materials, utilization of modern production processes, sensitivity to Poland’s macroeconomic policies and using only “economically viable” Polish partners.

Poland believes that Joint Activities projects will involve cooperation

⁶⁹ Henryk Gaj, Jaroslav Marousek, and Marie Havlickova, “Joint Implementation in Poland and the Czech Republic: A Government Perspective,” (Washington, DC: U.S. Environmental Protection Agency, 1996), 3.

⁷⁰ Polish Secretariat for Joint Implementation, “Activities Implemented Jointly,” 3.

⁷¹ Ibid.

between private sector members of investing and host countries. But, it feels that because “governments, not individual companies are responsible for meeting FCCC objectives....The credits for GHG reduction ...should be awarded to countries, with active participation of their governments.”⁷² It is not clear how much of an incentive it will be to the private sector to participate in projects if it does not receive any emissions reductions credit for them.

THE NETHERLANDS AIJ PROGRAM AND PROJECTS

The Netherlands' AIJ program is the result of a nation wide consideration of the issue. The Dutch government initiated

a broad debate on JI that formed the basis for the Dutch JI strategy. For example, to encourage a national discussion, the Netherlands held a major conference on JI in June 1994 and distributed a discussion paper to different non-governmental groups for consultation.⁷³

This document was based on “a round of consultations with advisory councils, industry, utility companies and environmental NGOs.”⁷⁴

In analyzing the purpose of the Dutch program, differences between it and the U.S. program are readily apparent. While the U.S. focused on establishing an “empirical basis for considering approaches to joint implementation internationally,” the Dutch wanted to “explore the advantages *and disadvantages* of Joint Implementation....with the objective of achieving a ‘real’ cost-effective and *equitable* environmental instrument.”⁷⁵ [italics supplied].

⁷²Ibid.

⁷³ Environmental Law Institute, Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly Under the Climate Change Convention, 7.

⁷⁴ Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, (The Hague, Netherlands: Ministry of Housing, Spatial Planning and the Environment, August, 1998), 2.

⁷⁵Ibid, 1.

Moreover, whereas the U.S. government simply facilitates private parties meeting to develop projects, the Dutch government is far more intimately involved.⁷⁶ The Dutch government is a whole hearted "initiator of JI projects."⁷⁷ The Dutch government also negotiates the baseline and emissions reductions between "the Governments of the relevant Parties on the basis of equality and mutual benefit."⁷⁸

The Netherlands set aside USD \$24 million for AIJ projects in developing countries and for Central and Eastern Europe from 1996-1999. Another USD \$18 million was used for funding (and leveraging funding) for AIJ projects in Central and Eastern Europe. Additionally, if private companies choose to get involved in AIJ projects, the Netherlands' government made the projects eligible for "Green Fund" investment funding and loans (which give them preferential advantages).

The Dutch government seems divided on the issue of how to fund AIJ projects. On the one hand, they appear to believe that they are required by EU rules to have all AIJ projects funded by the government. The Dutch claim that the

approval and implementation of AIJ projects is complicated by the state aid rules of the EU, OECD and WTO. *To comply with EU rules, the project must be subsidized for 100% and not just the additional component....The consequence of this situation is a low cost efficiency from a government perspective.*⁷⁹ (italics supplied).

⁷⁶ Although the Dutch do feel that "after the pilot phase it should be the private sector which starts JI projects." Gerard Wolters, "The Netherlands' Pilot Phase Programme on Joint Implementation," Regional Conference on Joint Implementation: Joint Implementation Projects, (Prague, Czech Republic: The Center for Clean Air Policy, 1996), 21.

⁷⁷ Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, 3.

⁷⁸ *Ibid*, 2.

⁷⁹ Netherlands Government, "Netherlands report on Activities Implemented Jointly: lessons learned" (Netherlands, 1999), 5. This draft document is on file with the author.

But on the other hand, the Netherlands says that it would like to encourage the private sector to participate and has offered a number of incentives to the private sector to do so.⁶⁰ Although it is not entirely clear exactly to what extent the private sector has participated, it appears that there has been some private sector participation in AIJ projects. The investor ranking is therefore estimated at 0.1.

Where the private sector funds projects, the Dutch government has decided that "Dutch companies can use certified emission reduction or sequestration efforts as part of future agreements with the government."⁶¹ This decision was based on the

Cabinet's view [that] those who set up JI projects during the pilot phase or even before ... 'first movers'- should be rewarded. In case these projects have long lasting and positive effects and fit within formal FCCC criteria, then they should at least be credited for their remaining project lifetime after 2000. Such a provision will undoubtedly encourage early JI activities.⁶²

In other words, Dutch companies will get credit from their government for any AIJ projects they are involved in.

In its criteria for screening projects, the Netherlands includes most of the same factors that USIJI does. But it adds a requirement that projects should have "clear benefits for the local environment as well....a training component for local authorities and/or companies in the host company....[and the project could] not been set up, for whatever reason, without AIJ funding."⁶³ The requirement of

⁶⁰Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, 3.

⁶¹Ibid.

⁶²Wolters, "The Netherlands' Pilot Phase Programme on Joint Implementation," Regional Conference on Joint Implementation: Joint Implementation Projects, 21.

⁶³Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, 4-5.

additional environmental benefits and training add extra benefits for the host country. However, it is the final point that shows the greatest divergence from open market orientation. Dutch projects are essentially prohibited if they would have been profitable enough to set up without "AIJ funding" from the government.

The organizational chart for the Netherlands' program also differs from that of the U.S. Like USIJI, the Dutch program involves multiple agencies. But the work is divided between different agencies. The environment ministry's primary responsibility is

compiling annual reports on the progress of the Netherlands' AIJ programme....the Ministry of Foreign Affairs bears the main responsibility for the assistance programmes for developing countries, while the Ministry of Economic Affairs is primarily responsible for the Netherlands bilateral support for programmes for Central and Eastern European countries. Their main responsibility within the AIJ programme is therefore to identify, select, finance and monitor AIJ projects in developing countries and Central and Eastern European countries respectively.⁸⁴

The Dutch also have an entity which at first glance might appear similar to USIJI, the "JI Registration Centre." However, the Centre's main responsibility is to "register, verify and certify emission reduction or sequestration achieved."⁸⁵ The U.S., in contrast, does not involve itself in verifying and certifying actual reductions and/or sequestrations. Rather, the U.S. has operationally required that projects have in place a system, usually through contract with an independent outside entity such as an environmental ngo, for monitoring and certifying.⁸⁶

⁸⁴Ibid, 5.

⁸⁵Ibid.

⁸⁶ The lack of such institutional monitoring may be considered one of the flaws of the U.S. program. If the U.S. was giving credit for early action, in a manner similar to the Dutch, it is possible there would be stricter requirements in this regard.

The Netherlands provides information on more than just the 8 AIJ projects which have been accepted by the UNFCCC.⁸⁷ 26 projects have been initiated and there has been some information provided on all projects. 13 projects are energy related, 5 are methane reduction, 4 are reforestation, 3 are technology transfer, and 1 is an agricultural project.

There is some variation in the costs per tonne of avoided CO₂ in the Netherlands projects. Of the 17 projects for which costs per tonne of avoided CO₂ are reported, the range is between \$15 per tonne (for a renewable energy project in Bhutan) and \$1 per tonne for some methane reduction projects. The average cost is \$2.4 per ton of CO₂ reduced which ranks as the cheapest reductions and is ranked as 0.84.⁸⁸

The average of open market orientation for Netherlands AIJ projects, taking both indicators into account is 0.94.

The "Sanitary Landfill and Energy Recovery Project" in Moscow is designed to "reduce the methane from landfill sites. The landfill gas is removed from the soil, cleaned and re-used: the part which cannot be used is burned."⁸⁹ The project is conducted at two landfill sites in the Moscow region with the AIJ component costing \$393,00 at each site for a total of \$786,000 being contributed by the Netherlands. An additional \$750,000 is contributed by the

⁸⁷Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, 9-19.

⁸⁸ One analyst has a much higher average cost per ton of CO₂ avoided for the Netherlands, \$7.16/CO₂. However, he only looked at eight Netherlands projects and this number would average the total amount of CO₂ avoided (as opposed to averaging each separate project). Schwarze, "Activities Implemented Jointly: Another Look at the Facts."

⁸⁹Ministry of Housing, Spatial Planning and the Environment, The Netherlands' Programme on Activities Implemented Jointly, 16.

local government.⁹⁰ The funding is primarily used to purchase the necessary equipment for collecting, cleaning and burning the methane and for measuring the amount of methane generated.

The project is the first gas extraction project in Russia. It is, therefore, anticipated to raise the general waste management practices in Russia. Landfill is an important aspect of GHG in Russia.

Not only does the project reduce the amount of methane emitted into the atmosphere, it also reduced “odor emission at both landfills” and created a relatively small amount of revenue from the sale of electricity produced.⁹¹

The total GHG emissions avoided over the projects’ lifespan are estimated to be approximately 265,000 tons in CO₂ “Global Warming Potential” equivalency. The cost per ton of CO₂ avoided is therefore approximately \$3 per ton.

There is a letter of intent between the Netherlands and Russia for the project which started in 1994. The project is estimated to last for 10 years although it will probably last longer. A Russian counterpart, Geopolis, was designated. Geopolis is responsible for monitoring the data and maintaining the equipment.⁹²

The Netherlands AIJ projects are generally developed on a country-to-country basis. The documents used to create such projects are, accordingly, “Letters of Intent” between countries rather than contracts between private

⁹⁰Government of the Netherlands, “Netherlands’ Programme on Activities Implemented Jointly,” (1998) website <http://unfccc.de/fccc/ccinfo/aijact/nldrus01.htm>. p 8.

⁹¹Ibid, 6.

⁹²Ibid, 4-5.

parties. The Letters of Intent are executed, on behalf of the Netherlands, by the Ministry of Housing, Spatial Planning and the Environment (which is responsible for AIJ projects), and by an appropriate environmental ministry of the host country.

In reviewing three such "Letters of Intent," with the Czech Republic, Russia and Rumania, there are many similarities that can be noted. First, all the documents are relatively short, only 2-3 pages long. Even more to the point is the fact that half of the documents are simply recitals about climate change, the UNFCCC, and AIJ generally and have nothing to do with the specific projects.

All of the agreements stress that a primary purpose is to "gain experience in joint implementation ...[and] provide a sound basis for future cooperation ...in the effective implementation of international environmental conventions."

The discussion of each specific project is approximately one page long. There is a general single paragraph description of the project, and an agreement that the countries will report on the project in accordance with the requirements of the UNFCCC. The financing of the projects, the amount of CO2 avoided, and other technical details of the projects are not fully described.⁸³ It appears that such details are to be decided in later consultations between the ministries of each country.

Two of the agreements reference the fact that "no credits shall accrue to any Party as a result of greenhouse gas emissions reduced or sequestered." But the agreement with Rumania takes a different tack. It includes an agreement

⁸³ The closest any Letter of Intent comes to describing funding is the statement (in the agreement with Russia) describing which agency of the Netherlands government shall provide the assistance.

that 65% of the credits for any CO2 emissions reductions during the period from 2008-2012 will be transferred to the Netherlands. The responsibilities of the different parties is described as is a schedule for the work.

SWEDEN'S AIJ PROGRAM AND PROJECTS

In mid-1992 the Swedish government initiated a program to improve energy systems in the Baltic States and in Eastern Europe through energy efficiency measures and increased use of renewable resources. The program later had the purpose of reducing GHG emissions from oil or coal-fired emissions added to it. The focus throughout has been on the "conversion of boilers in heating plants....in small and medium-sized towns and municipalities."⁹⁴

However, it was not until early 1997, that, under the "Swedish Energy Agreement of 1997," a working group was established by the Swedish government to "cooperate with other countries in the way envisaged by the Climate Convention, through so called joint implementation."⁹⁵ In other words, "Sweden's program actually began before AIJ activities were launched."⁹⁶

When Sweden began its AIJ program, it adopted a uniform reporting system for AIJ projects and established the Swedish National Board for Industrial and Technical Development ("NUTEK"). NUTEK is

*entrusted by the Government to implement environmentally adapted energy efficiency projects within the framework of the allocated financial resources....NUTEK's decision to engage in a project is guided by the expected obtainable climatic and environmental effects.*⁹⁷

⁹⁴NUTEK, Energy Efficiency and Increased Use of Renewable Energy Sources, (Sweden: NUTEK, 1997), 3.

⁹⁵ "Activities Implemented Jointly: List of Programmes-Swedish National Board and Technical Development." (1998). website http://www.unfccc.de/fccc/ccinfo/aijprog/aij_pwse.html

⁹⁶ Arguelles, National Programs and Pilot Projects Initiated Under Activities Implemented Jointly 17.

⁹⁷NUTEK, Energy Efficiency and Increased Use of Renewable Energy Sources, 3.

(italics supplied).

In selecting projects, NUTEK consults with the ministries responsible for energy and environment policies in host countries in order to ensure that projects are in line with the host's priorities. All projects are "evaluated from technical and economic points of view by local experts....special measurement programs and performance tests [of projects are] ...made by Swedish specialists with the assistance of local staff."⁸⁸

Funding for Swedish AIJ projects

are financed by loans from NUTEK to the owners of the plants. The conditions for the loans from NUTEK are in conformity with those applied by international finance institutions....Normally the projects show good profitability with short pay-off periods, around 3-5 years for boiler conversion projects. All repayments, including interest, are made to a special income account and are then to be returned to the programme's allowance account to finance future projects.⁸⁹

The Swedish program is financed by special allowances from the government budget. Part of this includes technical assistance to set up the projects which does not need to be repaid. Up to 1997, approximately U.S. \$40 million was allocated to NUTEK for Baltic and Eastern European projects. After the Swedish Energy Bill in mid-1997, an annual U.S. \$7 million per year for projects, and U.S. \$1.5 million per year for research and development and technology transfer, to countries in the Baltic and Eastern Europe was allocated.

Of the 97 AIJ projects which have been accepted by the UNFCCC, over half (50) are Swedish investor projects. Most of these projects involve district heating boiler conversion projects in Estonia (19), Latvia (22), or Lithuania (9).

⁸⁸Ibid, 5.

⁸⁹Ibid, 3-4.

Because the Swedish projects are so similar, and because they appear to have been largely motivated by Sweden's foreign relations considerations (the program was initiated before there even was an AIJ), they do not offer a great deal of information about the range of potential AIJ issues which may arise. However, the sheer number of the projects does mean that they should be considered in any study of AIJ-and it makes it easier to generalize from one case to all the Swedish cases.¹⁰⁰

Accordingly, this study will describe one specific Swedish project, the "Balvi District Heating Boiler Plant Conversion" in Latvia.¹⁰¹ The Balvi project involved the conversion of a coal-fired boiler to wood chip burning. The heating plant had consisted of two 1974 coal boilers. One of the boilers was modified so that it could use wood chips rather than coal. The modification did not effect the annual output of heat, but simply changed the type of fuel that could be used.

The work on the boiler conversion was actually finished (i.e., the new equipment was commissioned) in January of 1994-well before the initiation of the actual UNFCCC AIJ program. The cost of the conversion was USD \$450,000. Of this amount, USD \$150,000 was supplied by NUTEK as "technical support." The remaining USD \$300,000 was loaned by NUTEK to the city of Balvi, the plant owner, at 7.3% interest with ten years to pay off the loan (and a two year grace period). A "municipal guarantee" was given as security for the loan.

¹⁰⁰ It is not too much of an exaggeration to suggest that, with a few exceptions, the Swedish AIJ projects are all essentially identical-with only the names of those involved and the specific numbers changed.

¹⁰¹ Project description from the Center for Clean Air Policy, Regional Conference on Joint Implementation: Joint Implementation Projects, 74-75.

Approximately 75% of the funds for the project were actually spent in Sweden to purchase the combustion equipment and for technical support. This expenditure of funds within Sweden seems to be a pattern in most of the Swedish projects. No division of any greenhouse gas credits are “discussed,” so presumably any credits would accrue to the municipality of Balvi rather than to Sweden.

The project is anticipated to continue in operation for between fifteen and twenty years. The GHG reductions are 13,200 tonnes of CO₂ per year or 231,000 tonnes based on an estimated 17.5 years for the project.¹⁰² There are also substantial reductions in SO₂ (51 tonnes per year), NO_x (5.6 tonnes per year) and particulate dust (33 tonnes per year). The overall cost of GHG reductions for the project is USD \$450,000/231,000 tonnes, or \$1.95/tonne.¹⁰³

All of the Swedish projects are financed by funding from the Swedish government. Private investors are not involved in financing the project. Therefore, the ranking for investors is 0.0.

The cost of the CO₂ emissions reductions can be calculated based on the total investments of NUTEK in the projects (NUTEK considers there to be 58 projects although only 50 of them have been approved by the UNFCCC). Of the fifty projects Sweden half of them to be “energy efficiency projects” while the other half are considered to be “renewable” energy projects (the majority of which use biomass for boilers).

¹⁰² The fuel to be used is wood chips from sawmill chip waste and sawdust. There would be no carbon sequestration from this (and in fact if it was allowed to rot naturally it would produce more GHG than if it is burned).

¹⁰³ This figure is lower than the average for Swedish boiler conversions in the Baltic which are generally about twice as expensive per tonne of GHG reduced.

The total amount of USD invested in the projects has been \$24,151,000. The CO2 emissions reductions will be 3,330,349 tons over the lifetimes of all projects (projects range from ten to twenty-five years with an average of 12 years per project). This means that the cost of reductions average \$7.25 per ton over the lifetime of the projects. Relative to other nations costs per ton of CO2 reduced this is scored as 0.51.

The average of open market orientation for Swedish AIJ projects, taking both indicators into account is 0.51.

JAPAN'S AIJ PROGRAM AND PROJECTS

In late 1995, the Japanese government established the "Japan Programme for Activities Implemented Jointly." The programme adopted "Evaluation Guidelines" which outlined how it operates.

The program's objectives are to

*accumulate experiences in order to contribute to the deliberative work pertinent to the formation of an international framework of Joint Implementation....establish a methodology to conduct comprehensive analysis for the net volume of greenhouse gas reduction....study the measures to encourage the participation of private sector for the Joint Implementation projects.*¹⁰⁴ (italics supplied)

Japan initially "did not have any international standard nor rules for the international AIJ projects."¹⁰⁵ However, it was ultimately decided by the government that the "criteria of the Japanese JI pilot program will generally be in line with those used by the USJI. However, the Government of Japan aims

¹⁰⁴ "Japan's Fundamental Framework for Activities Implemented Jointly" website <http://www.glocomnet.or.jp/gispri/aij/aij1.e.html>. p.2

¹⁰⁵ Naoki Kajita. Part of a speech by Naoki Kajita, chief representative U.S. for the Japanese New Energy and Industrial Technology Organization at the U.S./Japan/Germany Energy Experts Network Meeting held at Maryland University on February 22-23, 1999. p.2. On file with the author.

to apply the criteria for project approval not too strictly.”¹⁰⁶

Different projects can be run by different Japanese government agencies. Each supervisory agency is responsible for ensuring that projects satisfy Japan’s joint implementation criteria. The criteria require that GHG emissions with, and without, the project are predicted with “sufficient evidence” and make it clear that the project will lead to GHG reductions. Projects must also be funded in addition to ODA and be agreed upon by the host governments. Finally, the potential for GHG leakage and the non-GHG environmental, economic and social impacts should be evaluated.¹⁰⁷

Japan’s organizational structure for considering AIJ projects is headed up by an “Inter-Ministerial Agency Co-Ordination Committee for AIJ” (IMACC). IMACC is co-chaired by the Ministry of International Trade and Industry (MITI) and the Environmental Agency. The Ministry of Foreign Affairs is also a part of IMACC. IMACC has a secretariat which receives applications from the “competent ministry/agency”¹⁰⁸ to develop project proposals. The New Energy and Industrial Technology Development Organization (NEDO), a public corporation which is supervised by MITI, is responsible for AIJ outreach.

Although the Japanese Program initially had “no financial system to provide incentives to private sector participants and NGOs to invest in AIJ projects,” it soon set aside close to a million USD to “provide incentives to participants and

¹⁰⁶ “Japanese JI Initiative,” *Joint Implementation Quarterly*, 2, no.3 (Groningen, Netherlands), September, 1995.

¹⁰⁷ Environmental Law Institute, “Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly Under the Climate Change Convention.” Attachment II.

¹⁰⁸ Government of Japan, “Activities Implemented Jointly: List of Programmes” website http://www.unfccc.de/fccc/ccinfo/aijprog/aij_pjap.html. p2.

to promote the political dialog with host countries."¹⁰⁹ Perhaps more importantly, the government of Japan itself has been the project developer for most of its AIJ projects.

During Japan's first round of considering AIJ projects, some of the projects it received were

by the Government, some are by private firms—electric utilities and manufacturers, some are by municipalities, and some are by environmental NGOs.... The GoJ will launch a few energy conservation projects together with Asian countries.... The GoJ is currently considering to install some financial-type incentives to AIJ investors in the near future¹¹⁰

Some of the examples of the first round projects for Japan included

MITI energy conservation model projects in developing countries Furthermore, the Government considers to cooperatively carry out the setting up of new JI pilot projects, such as renewable energy projects.... Japan wishes to share its experience of efficient energy utilization, especially from the perspective of the reconciliation of the environment and the industry, with developing countries.¹¹¹

Despite the fact that Japan has instituted a number of AIJ projects, only one has been accepted by the UNFCCC. Information about the projects is therefore rather difficult to obtain. The Japanese government has listed eleven AIJ projects as "First Phase Authorized Projects."¹¹² There are short, one paragraph, descriptions of each project. Of the projects six are (re)forestation projects and five are technology projects including heat efficiency, electrification, and solar power.

Although participants are listed as including some private sector entities, it

¹⁰⁹ "Current Status and Improvements of AIJ Japan Program," Joint Implementation Quarterly, 2, no.2 (July, 1997).

¹¹⁰ "AIJ Japan Program Update," Joint Implementation Quarterly, 2, no.2 (June, 1996).

¹¹¹ "Japanese JI Initiative," Joint Implementation Quarterly, 2, no.3 (September, 1995).

¹¹² Japan's Fundamental Framework for Activities Implemented Jointly website, *ibid.*

appears that the Japanese government is responsible for funding the projects.

In fact, NEDO has stated that

the amount of each Japanese AIJ Project Funding is classified because of several reasons. One is very political. Japan's AIJ Project is 100% supported by the Government. But its budget is not included in the official ODA, however, it is one of ODA. [The] Japanese Government support each project by around 10-20 million \$. To disclose the budget for each JI/CDM study is also prohibited.¹¹³

Given this, it appears that Japan's open market orientation for the investor is 0.0.

It is difficult to estimate the number of CO2 tonnes avoid per dollar but NEDO has suggested that its technology projects avoid an average of 50,000 tonnes of CO2 per year.¹¹⁴ If the cost of the projects is actually averaging USD \$15 million (as NEDO suggests), then the cost is \$300 per avoided tonne per year. There is no indication of the length of Japanese AIJ projects other than the one project approved by the UNFCCC which is for 20 years. Assuming that the lifespan of most other projects was similar, the total cost of CO2 avoided over the lifespan of Japanese AIJ projects would be \$15 per tonne. Relative to other nations costs per ton of CO2 reduced this is the highest and so ranks as 0.0.

The average of open market orientation for Japanese AIJ projects, taking both indicators into account, is 0.0.

The Japan/China cooperation project on Coke Dry Quenching (CDQ) is only one of two AIJ projects yet approved in China, a country "regarded as holding

¹¹³ Letter from Naoki Kajita, Chief Representative of NEDO's Washington office, to author. On file with the author.

¹¹⁴ Naoki Kajita. Part of a speech by Naoki Kajita, chief representative to the U.S. for the Japanese New Energy and Industrial Technology Organization (NEDO) at the U.S./Japan/Germany Energy Experts Network Meeting held at Maryland University on February 22-23, 1999. p2. On file with the author.

great low-cost GHG mitigation potential.”¹¹⁵ The project is designed to promote energy efficiency by using the heat which is recovered from hot coke production to produce steam to generate electricity.

Project installation began in December of 1997 and is expected to be complete by early 2001. After that, the project should last for 20 years. Japan is investing USD \$24,874,000 in the project and China is investing USD \$14,674,000 in it.

On the Japanese side there are three participants, the Ministry of International Trade and Industry (MITI), the New Energy and Industrial Technology Development Organization (NEDO), and a private sector participant, the Nippon Steel Corporation (NSC). The Chinese side is similarly a mix of government organizations, such as the Ministry of Science and Technology (MOST), the State Development and Planning Commission (SDPC) and the State Metallurgical Industry Bureau (SMIB), together with a private sector company, the Shougang Iron and Steel Corporation.

An agreement for the project was executed between NEDO, SDPC and SMIB. Thereafter, NEDO signed an agreement to execute the Japanese side of the project with NSC. It appears that the Japanese funding is wholly from the government with NSC being, in essence, contracted to undertake the work. And, on the Chinese side, SDPC and SMIB agreed to fund the Chinese portion of the project and instructed the Shougang corporation to execute it.

¹¹⁵Jingfei Guo, “Joint Implementation Analysis: A Case Study of the Japan-China Coke Dry Quenching (CDQ) Project,” (Beijing, China: Tsinghua University, published in the proceedings from a workshop entitled Reconciling China's Economy, Energy, and Environment: From Local Needs to International Responses, held by the Harvard University Committee on Environment China Project, Harvard University, 1999), 4-3. The discussion of this project is from this source.

To calculate the emissions reductions from the project, a baseline GHG emissions was calculated (i.e., without the CDQ) and compared to the emissions with the CDQ. The baseline emissions was 267,345 tons of CO₂ per year. Given that emissions with the CDQ technology were calculated to be 199,080 tons of CO₂ per year, the amount reduced was 68,265 tons of CO₂ per year, for a total (over twenty years) of 1,365,300 avoided tons. Given the investment of USD \$24,874,000, the annual cost for the emissions reductions is USD \$1,243,700, or \$18.2 per ton of avoided CO₂.

THE GERMAN AND FRENCH AIJ PROGRAMS

Immediately after the first CoP, Germany decided to implement an AIJ program. The program is run by the “Joint Implementation Coordination Office” under the auspices of the Federal Ministry for the Environment, Nature conservation and Nuclear Safety (“BMU”). The BMU is involved in projects from the original proposal stage, through the development and implementation of projects.¹¹⁶

Germany has added its own special criteria to the general UNFCCC criteria for AIJ projects. Its special criteria include that projects; are to focus on emission prevention with state-of-the-art technology; relate to all greenhouse gases listed under the UNFCCC, and; receive adequate scientific accompaniment and documentation.

Although the aim of the German government program is to gain experience and insight, there was also concern that there was a risk of “distorting the results and experiences of the AIJ pilot phase...[and therefore] the Federal

¹¹⁶ Federal German Ministry for the Environment, Nature Conservation and Nuclear Safety, “Uniform Reporting Format: National Programme on Activities Implemented Jointly Under the Pilot Phase,” (Germany: Ministry for the Environment, Nature Conservation and Nuclear Safety, 1998).

Government has so far abstained from giving economic incentives."¹¹⁷

To date, Germany has only 2 projects which have been accepted by the UNFCCC. It has another project which has been approved by the host country but has not yet had the details worked out. There are another three projects which have not been approved by host countries but are expected to be. The German government is not preparing anymore AIJ projects, but is beginning to turn its focus to projects which could be formally approved as CDM or JI projects.¹¹⁸ There is information on the two UNFCCC approved projects but very little on the other projects.

The two approved projects, a gas transportation improvement and an experimental wind park, both involved private investors.¹¹⁹ However, in the wind park project the government financed half of the costs.

The gas transportation improvement project appears to be primarily motivated by the possibility of making profit. The project is listed as having a two year life span. The wind farm was developed for a number of reasons which included "environmental reasons...[and] reasons of international strategic cooperation."¹²⁰ It is listed as having a ten year life span. Since the wind farm will generate power for sale, the project will also make some profit.

The gas transportation project will, at a cost of USD\$700,000, avoid 225,000 tons of CO₂ over the lifetime of the project at a cost of \$3.11 per ton. The wind

¹¹⁷ibid, 2.

¹¹⁸ E-mail communication from Jurgen Hacker of the German BMU to the author. In personal file of the author.

¹¹⁹ German government, "Activities Implemented Jointly: List of Projects" (1998). Listed at <http://www.unfccc.de/fccc/ccinfo/aijact>

¹²⁰ibid, 9.

farm project is costing USD \$1,843,588 and will avoid 13,669 tons of CO₂ over the project's lifetime at a cost of \$135 per ton. Taken together, this averages \$10.7 per avoided ton of CO₂ over the project lifetimes.

The French government decided, in late 1996, to establish a "mechanism for instructing and registering projects that could be considered for joint implementation."¹²¹ The mechanism includes a JI Secretariat, which is primarily responsible for evaluating, implementing and reporting on AIJ projects. It also includes a Scientific Committee of the Evaluation Committee for Activities Implemented Jointly which is responsible for preliminary analysis of AIJ projects.

In describing its qualification criteria, the French government generally explained that it would use a "project-by-project basis focusing on a dynamic additive-oriented approach, striving to consider the relative situation of the country benefiting from the project and focusing on the objective of promoting innovative and climate-friendly technologies."¹²²

France has only had one project accepted by the UNFCCC.¹²³ The project is designed to reduce the amount of energy used (and hence CO₂ produced) in a cement manufacturing plant in the Czech Republic. The plant was purchased by the private French company Lafarge in 1992, and a total modernization

¹²¹ French Government, "Second National Communication of France under the Climate Convention," (France: French Government, November, 1997), 88.

¹²² *Ibid.*

¹²³ However, the French Development Bank, which is entirely owned by the government for financing social, economic and environmental programs, has financed a number of projects since 1995 which might count as AIJ projects. This includes sustainable forestry management practices, hydroelectric projects, as well as wind power and photovoltaic projects. The French government recognizes that these projects "have a positive impact on climate warming" but have apparently chosen not to include them as AIJ projects. French Government, "Second National Communication of France under the Climate Convention," 105.

program was finished in 1996.¹²⁴ One component of the modernization of the plant also had the additional benefit of reducing CO2 emissions.

Lafarge is the only investor in the project. The decision to modernize the plant was based on Lafarge's "industrial development policy. This choice had nothing whatsoever to do with reducing greenhouse gas emissions."¹²⁵

Lafarge estimates that of its overall investment in modernizing the cement plant, about one-fifth, or USD \$5.9 million, is the cost of the portion of work which had the additional benefit of reducing CO2 emissions (installation of a heat exchanger system which uses heat to generate more power). The avoided CO2 is calculated as being 168,000 tons over its lifetime, so the cost is USD \$35 per avoided ton.

SUMMARY OF AIJ DATA					
investing country	# of projects	investor ranking	\$/ton CO2 avoided/rank ¹²⁶	AIJ market score	Market Orientation
172					
U.S.	30	0.6	\$2.6/0.83	1.43	0.97
Netherlands	26	0.1	\$2.4/0.84	0.94	0.71
Norway	6	0.1	\$5.7/0.62	0.72	0.35
Sweden	50	0.0	\$7.3/0.51	0.51	0.13
Japan	11	0.0	\$15.0/0.0	0.0	-1.76

The "AIJ market score" which the different countries have shows a clear

¹²⁴ French government, "Activities Implemented Jointly: List of Projects," (1998). Listed in <http://www.unfccc.de/fccc/ccinfo/aijact98/czefra01-98.html> p.4.

¹²⁵ Ibid.

¹²⁶ Since the highest \$/tCO2 avoided is for the Japan (\$15.0) this will receive an open market orientation ranking of 0.0. If the cost was \$0.0 (i.e. the project broke even without the GHG component-as a renewable energy project might) then it would be ranked 1.0. For every \$/tCO2 avoided the open market orientation drops by 0.067 (i.e. 1/15).

correlation with the open market orientation of the countries.²⁷ The R square correlation is 0.84 (1.0 would be a perfect correlation), in other words 84% of the AIJ market score is explained by the market orientation of the investing country. The t statistic is 3.9 which also strongly suggests that there is a correlation between open market orientation and AIJ market score (anything over 2.0 indicates a significant correlation).

Regression analysis indicates that there is a highly significant correlation between a country's cultural and AIJ projects. Countries implement AIJ programs and projects very differently based on their cultural orientation towards open markets. The more open market oriented the country is, the more the private sector participates in projects and the more cheaply CO2 reductions are made.

This correlation is probably largely a function of the fact that the AIJ programs of open market oriented countries tend to facilitate greater private sector participation in AIJ projects. Additionally, in open market countries a more sophisticated private sector may be more cognizant of the potential benefits of participating in AIJ projects. Because the private sector is, a least relative to other sectors such as governments and NGOs, more oriented by profit, it would therefore be expected to seek a higher degree of economic efficiency in making CO2 reductions.

The lessons learned from AIJ are probably most applicable to the evolution of the Clean Development Mechanism (CDM). The CDM, one of the market

³ France and Germany are not included given their small number of AIJ projects. If they were included they would not correlate as well as the other countries considered given that the projects, particularly the single French one, were more private sector oriented than would be expected from their national open market orientation

mechanisms agreed to at Kyoto, will create a means by which developed countries can invest in GHG reducing projects in developing countries and receive “certified” emission reduction (CER) credits for such reductions.¹²⁶ One of the primary motivations behind developing country interest in the CDM was that it would provide a buffer of sorts between investors and host countries. Projects would have to go through some type of standardized approval and certification process. This will help to ensure a degree of process and methodological uniformity-thereby reducing the likelihood of investors being able to strategically “game” different host countries and projects against one another and against the overall system itself.

However, this analysis suggests that, even with the CDM in place, different countries may use the CDM differently based on their open market orientation. And, even if the mechanism itself ensures a degree of uniformity, the negotiations about how the CDM operates, and the interpretations of the results of the ultimate outcome of such negotiations, may well be colored by the open market orientation of those involved.

In one sense this correlation is not surprising. Countries with greater open market orientation could perhaps be anticipated to have greater private sector participation in AIJ projects. And the private sector might well be expected to seek greater CO₂ reductions per dollar spent than the public sector-even if credit is not yet given for such reductions.

However, there are a number of suggestive points raised by this evaluation. First, the idea of differential open market orientations, and the methodology

¹²⁷ A portion of the value of the CERs will also be used to cover the overhead of the CDM and assist particularly vulnerable nations in adapting to the impacts of climate change.

used to evaluate such differences, seem to be validated. Second, open market orientation does appear to play a significant role in the way in which countries develop AIJ programs and implement AIJ projects. Third, and this may be the most significant issue, open market orientation seems to impact the way countries consider GHG reducing mechanisms-*despite the fact that this difference between countries has not been articulated as an issue.*

It has largely been assumed that national positions on the mechanisms have been a function of their economic impact and the respective role of countries within various negotiating blocs in the UNFCCC. If open market orientation is a factor in countries approach to GHG reducing mechanisms, then a related question is raised. How does the impact of open market orientation compare to the impact of other factors in determining national positions?

The preceding question may be addressed by moving from consideration of AIJ to an examination of emissions trading-the quintessential open market mechanism. In order to answer this question it will be necessary to examine the theoretical basis for emissions trading, the differential economic impacts of emissions trading, and the various national positions on emissions trading. National economic interests and cultural orientations can then be compared to determine the relative role they both play in the positions on emissions trading which Parties adopt.

Chapter 7-Emissions Trading

"A market for commodities (i.e., GHGs) that have never before been traded or sold. To make the situation even more difficult, the commodities are invisible, odorless, tasteless and hard to measure."

International emissions trading in GHG emissions rights is simple-in theory. Entities, whether private or public, can transfer specific rights to emit GHG. The advantage of emissions trading, like Joint Actions, is that through the action of the "invisible hand" of the market, it facilitates emissions reductions being made where they are the cheapest. But, as in so many theoretically straightforward concepts, the devil is in the details.

A STEP BEYOND JOINT ACTIONS

Joint Actions and emissions trading have much in common.² They share the key element of allowing

the private sector (rather than government) to select the compliance strategies that work best....the trading Program gives those that can reduce their emissions most efficiently an incentive to 'over control' and sell their unused 'surplus' allowances to others that, perhaps for technical or fuel availability reasons, have higher on-site compliance costs.³

However, emissions trading might seem somewhat more threatening than Joint Actions to nations with a low open market orientation. This is because Joint Actions gradually introduce the concept of commercializing the right to emit GHG and the host of open market accessories required by such a mechanism. By commercializing the right to emit GHGs, Joint Actions could address some of the methodological, and psychological, obstacles to emissions

¹Pamela Wrexler and others, "Joint Implementation: institutional options and implications" Catrinus Jepma, ed. The Feasibility of Joint Implementation, (Dordrecht, Netherlands: Kluwer Academic Publishers, 1995), 129

² Permit trading systems have been called simply "a more developed form of JI whereby a fully fledged market mechanism is established....Economists favor this form of JI because of its high degree of decentralization and its perceived ability to achieve environmental standards at the least cost." Phillipe Cullet, Annie Kameri-Mbote, and Annie Patricia, "Joint Implementation and Forestry Projects: Conceptual and Operational Fallacies," International Affairs 74, no. 2 (April, 1998), 395.

³ Rachel Hopp, "Carbon Sinks and Sustainable Development Finance: The Emerging Public/Private Partnership," International Prospects for Joint Implementation: A South American Regional Workshop, (Washington, DC: The Law Offices of Hopp & Associates, 1995), 5.

trading. In this way, Joint Actions might induce non-market oriented developing Parties to accept the possibility of emissions in general.

Therefore, some have suggested that Joint Actions may largely be seen as a step towards an ultimate goal of emissions trading. Joint Actions may be seen primarily as another

form of international trade in which GHG emissions credits are commodities. It follows that JI and the establishment of an international market for trading emissions credits go hand in hand. The latter is a logical extension of JI and expands its benefits.⁴

However, there are some important differences between Joint Actions and emissions trading. Joint Actions (both in their original UNFCCC incarnation, and as they evolved in the post-Kyoto Clean Development Mechanism) focuses on creating actual projects which reduce GHG, allows emissions reduction activities by Annex I nations in non-Annex I nations, and may have relatively high transaction costs.⁵ Emissions trading, in contrast, has nothing to do with projects but is about trading of emissions rights obtained politically or economically, would be between Annex I nations only, and would have lower transactional costs than Joint Implementation or the Clean Development Mechanism.

INTERNATIONAL EMISSIONS TRADING IN THEORY

Emissions trading has become an increasingly popular topic for analysis in recent years. This is consistent with an increasing

world-wide recognition of the power of markets to promote low-cost and

⁴ Russell Lee and others, Understanding Concerns About Joint Implementation, (Knoxville, TN: Joint Institute for Energy and the Environment, 1997), xi.

⁵ The higher potential transaction costs are because Joint Actions have to bring investors and hosts together, be able to verify the amount of GHG that projects reduce (which requires establishing baseline emissions before the project and actual emissions after the project), and pay additional administrative costs.

high quality products and services. Although the environmental movement is only about about 30 years old, there already exists a substantial body of theory and evidence which confirms the power of economic instruments to achieve regulatory goals.”⁶

Emissions trading claims as its foundation the rock bed of rationalism that

Adam Smith first described [in which] markets efficiently and quickly provide goods and services. As though there is an invisible hand, markets move resources to their most efficient use. From this observation and from hundreds of confirming studies, it follows that the use of markets is the most cost-effective way in which we can achieve environmental goals.⁷

The idea behind international emissions trading of GHG emissions rights is theoretically straightforward. All nations that have agreed to emissions targets (ie, Annex I nations) would issue some type of certificates for each allowable emission unit (“AEU”) they have under the Kyoto Protocol or other agreement. An AEU simply represents a right to emit a certain amount, probably the equivalent of a ton of CO₂, of GHG into the atmosphere. Countries could sell, trade, or otherwise “devolve” their AEU’s to the private sector (“legal entities”) within their borders, to other countries, or to foreign legal entities. AEU owners could also transfer them in a secondary market.

The advantage of emissions trading, like Joint Actions, is that it would allow emissions reductions to be made where they are the most cost effective. If a company within an Annex I country can make emissions reductions relatively cheaply, then it would be able to sell the emissions rights which it did not need (assuming that it had such rights-devolved from, for example, its government) to

⁶John Palmisano, Establishing a Market in Emissions Credits: A Business Perspective, IEA Environment Briefing No.2, (Washington, DC: The Institute of Economic Affairs, 1996), 3.

⁷Ibid.

another company, or even another country.

For every GHG emission within an Annex I nation (in CO₂ ton equivalents) during the commitment period, an AEU would, at least in theory, be retired. If a power plant emitted X tons of CO₂, then AEU's equivalent to X tons would be turned into some type of authority and nullified. Obviously, some sectors will be more difficult to strictly control and may have to be treated differently. For example, states may receive AEU's from the national government for GHG related to intrastate transportation. If estimates of intrastate transportation related GHG are above the amount of AEU's a state has, it may have to purchase more. At a national level, countries would, regardless of what they choose to do with their AEU's, be the primary body responsible for the level of all GHG emissions within their borders.

Emissions trading offers incentives for countries to reduce GHG. It also can lead to economic rewards for countries with inefficient (i.e., high CO₂ emissions per unit of energy produced) energy technologies and/or fuel mix uses. One of the architects (and head of the U.S. delegation) of the Kyoto Protocol, Stuart Eizenstat, explained that international emissions trading of GHG

gives explicit value to emissions reductions. If the cost of abatement in a given country is low by world standards, and that country is therefore able to get below its emissions target, it would have allowances to sell to those countries where abatement costs are relatively high.⁸

GHG emissions are an integral part of the energy intensive lifestyles and economies of developed nations. Given the potential domestic difficulties of reducing GHG, there will be a tendency to search for ways to do this as cheaply

⁸ Speech by Stuart Eizenstat (then Under Secretary of State for Economic, Business, and Agricultural Affairs), "Fighting Global Warming: From Kyoto to Buenos Aires and Beyond" (Washington, DC: Center for National Policy. October 28, 1998).

as possible. International emissions trading is seen as one way to facilitate the search for cost efficient methods of reducing GHG. The United Nations Conference on Trade and Development has argued that

Any search for a control mechanism that could be used in a broad-based international agreement to limit greenhouse gas emissions must give high priority to the need to achieve such a limitation at the lowest possible economic cost. This means the identification and exploitation of the cheapest opportunity for abating emissions in the countries participating in the agreement....A successful control mechanism must therefore hold out the prospect that least-cost solutions to abatement objectives will be found, even when information on costs available to regulators is incomplete, and must also provide governments with flexibility in meeting their objectives. Transferable entitlement systems meet these criteria.⁹

The IPCC Working Group on Response Strategies has lent its support to the argument in favor of emissions trading. Compared to other ways of reducing GHG emissions trading "was considered to be most promising" because it offered "flexibility, efficiency in pollution abatement, direct control of total emission levels, a mechanism for trading reduction in different gases, and incentives for research into pollution abatement technology."¹⁰

It is the economic efficiency, and particularly the low transactional costs relative to Joint Implementation or the Clean Development Mechanism, which make emissions trading so economically attractive. The lowest cost option for reducing GHGs can, it is argued, only "be achieved by the open and free intra-national and international trading of GHG offsets."¹¹ Economists' "estimates of the cost savings due to international emissions trading are in the order of

⁹ United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits (New York, NY: United Nations, 1992), UNCTAD/RDP/DFP/1. pi.

¹⁰ IPCC Working Group on Response Strategies cited in Controlling Carbon Dioxide Emissions: the tradable permit system, (Geneva, Switzerland: United Nations, 1995), UNCTAD/GID/11.

¹¹ Paul Hasing, Catalyzing the Market for GHG Offsets: 'Jump-Starting' the Kyoto Protocol (Paris, France: OECD/IEA Forum on Climate Change, Organization for Economic Cooperation and Development, 1998), 4.

trillions of dollars.”¹²

Additionally, emissions trading is considered to have the potential to “trigger the large investments needed to deploy new and more efficient technologies to help realize overall reductions in GHG emissions.”¹³ The reason for this is that emissions trading

will encourage more technological progress in emissions control than would a system involving fixed targets or standards. This is because actors have an incentive to develop and apply technologies even when they are in compliance with the standard, since further abatement of emissions would give rise to ‘saleable’ entitlements that would generate income for the technology owner.¹⁴

Emissions trading is also seen as promoting the “polluter pays principle,” because it “recognizes that polluters [are] responsible for reducing their emissions, rather than regulators, [and] have the greatest incentive to minimize costs and therefore will seek new and innovative methods to reduce emissions if given the opportunity.”¹⁵

Michael Grubb, the “author of the first published work to advocate international emissions trading as an instrument for structuring an international agreement,”¹⁶ argued in favor of emissions trading on the grounds that it was “both equitable and efficient....leav[ing] countries with sovereign authority over

¹²Erik Haites, “International Emissions Trading and Compliance with Greenhouse Gas Emissions Limitation Commitments,” Working Paper W70 (Geneva, Switzerland: International Academy of the Environment, 1998).

¹³Hassing, Catalyzing the Market for GHG Offsets: ‘Jump-Starting’ the Kyoto Protocol 5.

¹⁴United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits i.

¹⁵Hassing, Catalyzing the Market for GHG Offsets: ‘Jump-Starting’ the Kyoto Protocol 7.

¹⁶Michael Grubb, “Implementing the Trading Mechanisms of the Kyoto Protocol,” Review of European Community and International Environmental Law (RECEIL) 7, no.2, (Cambridge, UK: RECEIL, July/Aug 1998).

the internal policies they use in responding.”¹⁷ However, “equity” is, to some extent, in the eyes of the beholder. Many developing nations feel that emissions trading may be inherently unfair (largely for similar reasons to the concerns they have expressed about Joint Actions).

Although an international emissions trading system will, almost by definition, be cost efficient, whether or not it is

more or less equitable than any other approach depends entirely upon how it is structured. Because the system would be created from scratch by negotiated agreement, its form and distributional implications would be determined by negotiated settlement rather than the ‘vagaries of the market’.¹⁸

This is an important point. The underlying structure, and particularly the “resource distribution” (i.e., emissions rights), of an “open market” for GHG rights are not determined by the objective action of the market. Rather, they developed through a political process which involves science, economics, international relations, and cultural orientation.

Nonetheless, even though the structure and distribution of the system will be politically determined, the Coase theorem suggests that the system should nonetheless reduce the costs of emissions reductions.

Assuming the market for entitlements is competitive, the advantages described above

can be secured in full whatever the initial distribution of entitlements. This is a significant characteristic, because it provides a means for tackling the development dimension of emission abatement in the

¹⁷ Michael Grubb, “Options for an International Agreement,” Combating Global Warming: Study on a global system of tradable carbon emission entitlements (New York, NY: United Nations, 1992), 11.

¹⁸ Grubb, “Options for an International Agreement,” Combating Global Warming: Study on a global system of tradable carbon emission entitlements, 17.

context of a fully cost-effective system.¹⁹

The greatest concern about emissions trading may be that it could lead to more emissions than would otherwise be the case. This is because emissions trading may allow countries to sell more emissions rights than they ultimately have (i.e., their domestic emissions combined with their sales of emissions rights may add up to more emissions rights than they have). Depending on the rules of emissions the emissions trading system that is agreed to, the sale of emissions rights which a country does not ultimately have may, or may not, be invalidated.

But even if no country sells more emissions rights than it has, the sheer ability to sell emissions rights inevitably means that there will be more emissions than there would otherwise be (assuming that emissions commitments have been agreed to). This is because if emissions rights cannot be sold than any time a country emits less than it is allowed, the additional potential emissions simply never take place. But with emissions trading, such additional emissions rights would be sold to another country that would be able to use them to avoid making actual reductions in its own emissions.

MARKET PERMITS FOR ENVIRONMENTAL PURPOSES

Tradable permits to reduce pollution have been used in a wide variety of areas prior to being considered for GHG. For example, they were used to control non-point sources of water pollution in the United States and air pollutants in Germany (in a system that also allows the trade of emission permits for one pollutant for those of another, providing they have similar

¹⁹United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits i.

environmental effects). Poland is considering setting up a tradable permit system for pollutants, after having investigated and rejected a system of emission charges.²⁰

Canada and New Zealand, both members of the "Umbrella Group," have also had some limited experience with using the tradable entitlement concept. Canada has had an intra-utility form of trading designed to allow utilities in Ontario to meet aggregate emissions caps and New Zealand has used the concept to reduce the stress on its' fisheries.²¹

The U.S. experience with tradable permits spans over twenty years. It has focused on market-permit instruments either to attain, or to maintain, ambient air and water quality standards. As a representative of the international natural gas and energy giant Enron gushed,

since their inception, out of hundreds of academic and popularized studies and articles, there has not been a single study that challenges the superior efficiency outcomes which result from using tradable permits....Supporting all of these analyses is 20 years of real world experience and over five billion dollars in cost savings!²²

The U.S. successfully used emissions trading to reduce lead in gasoline. This early experience helped point out some of the inherent equitable issues raised by market permits. Realizing that there was an overall economic benefit

²⁰IPCC Working Group on Response Strategies cited in Controlling Carbon Dioxide Emissions: the tradable permit system, (Geneva: United Nations, 1995), UNCTAD/GID/11, 21.

²¹New Zealand imposed "catch quotas on fisherman for which they had to pay an annual fee. The revenues derived from this fee were used to buy out fisherman who were willing to forgo future fishing for the species in jeopardy. Essentially each one stated the lowest price that would be acceptable for leaving the industry; the regulators selected those who could be induced to leave at the lowest price, paid the stipulated amount from the tax revenues, and withdrew their license to fish the species concerned." Tom Tietenberg, "Relevant Experience with Tradable Entitlements," Combating Global Warming: Study on a global system of tradable carbon emission permits, 43-44.

²²Palmisano, "Establishing a Market in Emissions Credits: A Business Perspective, IEA Environment Briefing No.2," 3.

in reducing the amount of lead in gasoline (the standard being implemented, 0.01 grams of lead per gallon, was anticipated to reduce \$36 billion of adverse health impacts at an estimated cost to the refining industry of only \$2.6 billion), the Environmental Protection Agency wanted to introduce appropriate regulations. However, there was concern that rigid deadlines to implement the reductions might not be fair, or cost-efficient, since

while some refiners could meet early deadlines with ease, others could do so only at a significant increase in cost. Recognizing that meeting the [overall] goal did not require every refiner to meet each deadline, EPA initiated the lead banking programme to provide additional flexibility in complying with the regulations....Under this programme, refiners reducing lead more than required by the applicable standard in each quarter of the year could bank the credits for use or sale in some subsequent quarter. Banked credits were fully transferable among refiners. The lead banking programme, though plagued by less-than-perfect implementation procedures, eased the transition to the new and more stringent regulatory regime.²³

LESSONS LEARNED FROM POLLUTION ENTITLEMENT TRADING PROGRAMS

From these diverse experiences a number of lessons in how to design the market architecture for tradable emission permits have been derived. The lessons learned include that

tradable permit systems can produce greater environmental improvements at lower cost than systems based on non-transferable quotas; experience in the United States suggests that even hesitant steps towards a tradable permit system can provide the basis for evolution into a sophisticated and politically acceptable system; tradable permit systems work best for pollutants that are uniformly mixed (and do not require diffusion modeling) such as greenhouse gases; tradable permit systems facilitate technology transfer because they provide a means of sharing both cost and risks; a free distribution of permits would allow global warming targets to be reached more cheaply than through either traditional regulation or emission charges; additional revenue can be raised by levying low annual fees on each permit without prejudicing the cost effectiveness of a tradable permit

²³T. Tietenberg, "Relevant Experience with Tradable Entitlements," Combating Global Warming: study on a global system of tradable carbon emission permits 39-40.

system; and active markets require clearly defined property rights, and efficient accounting and clearing mechanisms.²⁴

In addition to the lessons based on the experience in trading emission permits, there are also lessons that can be derived from both theory and more general empirical research.²⁵ Theory suggests a number of such lessons.

First, theory suggests that if all participants are cost minimizers then a transferable emissions permit system could cost-effectively allocate the control responsibility for meeting a pre defined pollution target from various sources. Second, transferable permits encourage more technological progress than would occur in their absence because emitters have an incentive to reduce more than is required by regulations in order to sell any excess reductions.

Additionally, theory suggest that what constitutes a cost-effective system may depend on the nature of the pollutant involved. Systems may differ if the pollutant is uniformly mixed in the atmosphere (SO₂ does not uniformly mix but CO₂ does), lasts for long periods of time (i.e., the problem is more with stocks than with emissions flows), and can be monitored in different ways which give different amounts. Finally, as long as markets are competitive and transaction costs are low, the trading benchmark in an emissions trading approach does not affect the ultimate cost-effective allocation of control responsibility.

The lessons which can be derived from empirical research also suggest two lessons. First, the vast majority, although not all, of the relevant empirical studies have found that control costs are substantially higher with regulatory

²⁴ United Nations Conference on Trade and Development, "Controlling Carbon Dioxide Emission: the tradable permit system," 23.

²⁵These "lessons" are from Tietenberg, "Relevant Experience with Tradable entitlements," Combating Global Warming: study on a global system of tradable carbon emission permits 45-47.

command-and-control systems than with transferable emissions permits. Second, while theory suggests that larger trading areas and numbers of traders offer opportunities for larger savings, substantial savings can still be achieved with small trading areas and numbers of potential trades. Finally, although there have only been a limited number of empirical studies on market power problems, their results suggest that market power does not have a great impact on control costs in transferable emissions permits systems.

THE U.S. EXPERIENCE WITH SO₂ ALLOWANCE TRADING

The most significant experience with tradable permits to control pollution has undoubtedly been the U.S. program to reduce acid rain.²⁶ Based on ten years of research and analysis on “the environmental effects of SO₂ and the cost of reducing SO₂ emissions, a market based approach was proposed for addressing SO₂ emissions in 1989.”²⁷ The proposal was enacted in 1990 through the reauthorization of Title IV of the U.S. Clean Air Act which included a market based allowance trading program for SO₂.²⁸

Title IV of the Clean Air Act envisioned pollution control in a far different manner than the traditional command-and-control approach to environmental regulation. Instead of prescribing fixed emissions that each plant must make, it

²⁶Acid rain is created when SO₂ and NO_x react in the atmosphere forming sulfuric and nitric acids. Acid particles fall to the ground either in dry form or in wet form (usually in rain but also in snow). SO₂, the major precursor of acid rain, is the byproduct of coal power plants.

²⁷Fiona Mullins, Lessons From Existing Trading Systems for International GHG Emission Trading-Information paper for Annex I Expert Group on the UN FCCC (Paris, France: OECD Environment Directorate, 1997), 9.

²⁸The acid rain program set a goal of a 10 million tons nationwide reduction in U.S. electric power plant SO₂ reductions. The program is implemented in two phases. The first phase started in 1995 and continues through 2000. It applies to the highest emitting 110 utility plants. The second phase starts in 2000 and adds another 700 utility plants to the regulatory regime. In the first phase EPA, is responsible for issuing emissions permits and reviewing compliance plans that utilities develop. In the second phase these responsibilities will switch to individual states.

lets plants achieve their reductions "as a group."²⁹ Utility plants receive emissions allowances from the EPA that authorize a specific number of SO₂ emissions per year. Companies can choose how they will meet the overall required reductions. They can switch to fuel with lower Sulphur content, install pollution control devices, or purchase emissions allowances.

Therefore, if it costs more for a utility to reduce emissions in its own plant than the market price for allowances, it will buy allowances. Conversely, if it is cheaper to reduce its own emissions than the market price of allowances, utilities will make take the necessary actions to reduce their own emissions-and may even may make additional emissions reductions which can be sold to other companies.

Utilities have complied with Title IV of the Clean Air Act in a wide range of ways.

They have purchased allowances from other utilities, banked extra internally created allowances for future use, switched from high to low Sulphur coal, installed scrubbers and shifted electricity production from dirtier plants to cleaner ones. They have even gone so far as to encourage more efficient electricity use by customers.³⁰

A number of factors have helped led to the relative success of the program.³¹ First, the main participants are large, easily monitored sources. Anyone can participate in the trading program and the units of trade are clearly defined and homogeneous. There are no restrictions on trade and there are low

²⁹Rachel Hopp, "Carbon Sinks and Sustainable Development Finance: The Emerging Public/Private Partnership," International Prospects for Joint Implementation: A South American Regional Workshop, 4. Much of the discussion of the acid rain trading program is based on this piece.

³⁰Palmisano, "Establishing a Market in Emissions Credits: A Business Perspective, IEA Environment Briefing No.2," 21.

³¹ Some have suggested that the full impact of emissions trading-and whether it can be judged a success-will not be known until after the year 2000. F. Ackerman and W. Moomaw, "SO₂ Emissions Trading: Does it Work?" Electricity Journal, August, 1997.

administrative costs.³² Equally important is that there are relatively cost effective and efficient ways of measuring compliance by utilities. To guarantee that the program has environmental integrity, power plant emissions are monitored. Utilities which over emit forfeit allowances and also are required to pay “automatic fines set at several times the estimated average cost of compliance.”³³

Compliance with Title IV has generally been good. Perhaps more importantly for the purpose of considering the program as an example, the costs of implementing the program have been far cheaper than a command-and-control type of regime with clear savings. The General Accounting Office concluded that the program saves more than two-thirds the cost of a traditional command-and-control approach.³⁴ The U.S. General Accounting Office has estimated that the cost of compliance with SO₂ trading is \$2.0 billion per year- compared to a cost of \$4.9 billion for a traditional regulatory approach without

³² Another interesting aspect of the trading program is that the Chicago Board of Trade holds an annual auction of some allowances that the EPA holds back from each utilities annual allowance as a special reserve. The money generated is actually distributed to the utilities based on the number of allowances that were withheld from them. The purpose of the auction is to provide price signals and ensure that allowances are available for new producers or those that wish to increase their production. A strategic reserve of allowances has also been set aside that is used to reward utilities for demand-side management energy that is saved or renewable energy generated. Mullins, “Lessons From Existing Trading Systems for International GHG emission Trading- Information paper for Annex I Expert Group on the UN FCCC,” 10-11.

³³ Palmisano, “Establishing a Market in Emissions Credits: A Business Perspective, IEA Environment Briefing No.2,” 2. There is “a high degree of confidence in the allowance trading system because non-compliance is easily discovered and the penalty for non-compliance is expensive...Every excess ton of SO₂ emitted automatically incurs a fee of \$2,500. This fee is much higher than the price of SO₂ allowances (analysts expected the marginal cost of reduction to be between \$300 and \$800 per ton, but allowance prices were around \$100 per ton in 1996). In addition to this fee, the EPA deducts one allowance from the participant’s entitlement for the following year for each ton over their emission limit. This deduction is automatic....These strict enforcement provisions have facilitated political acceptance of trading.” Mullins, “Lessons From Existing Trading Systems for International GHG Emission Trading- Information paper for Annex I Expert Group on the UN FCCC,” 10.

³⁴ Palmisano, “Establishing a Market in Emissions Credits: A Business Perspective, IEA Environment Briefing No.2,” 24.

trading.³⁵ And it has been estimated that this kind of "internal trading under the Clean Air Act in the United States saved at least US \$ 10 000 million [\$10 billion] in costs."³⁶

The success of the SO₂ trading program has been cited as one of the most important proofs that market mechanisms work to reduce pollution-and that they could be successfully used to reduce GHG emissions globally.³⁷ It has been argued that

the United States experience has shown that trade in emission quotas is a very powerful policy instrument to combat environmental degradation. In principle, there is no reason why a similar system of freely tradable emission entitlements could not be set up at an international level.³⁸

DOMESTIC SO₂ TRADING AND INTERNATIONAL GHG TRADING

In any discussion of international emissions trading of GHG, proponents seem to automatically refer to the U.S. SO₂ trading program as proof that international emissions trading will work. Skeptics, on the other hand, inevitably point out the differences between a domestic system to trade the rights to emit substances produced by a small number of sources, and an international regime to trade in something as ubiquitous as CO₂.

There are a number of important differences between CO₂ and SO₂. For example, "CO₂ is not an immediate health or environmental threat to human

³⁵Mullins, "Lessons From Existing Trading Systems for International GHG Emission Trading-Information paper for Annex I Expert Group on the UN FCCC," 5.

³⁶United Nations Conference on Trade and Development, Controlling Carbon Dioxide Emissions: the tradable permit system, 16.

³⁷ By 1995, allowances for SO₂ emissions had been capped at 8.95 million tons-a fifty percent reduction from 1990 levels. In addition to the SO₂ reductions, government costs have also gone down with an estimated saving to the government of billions of dollars.

³⁸ Kjell Roland, "From Offsets to Tradable Entitlements" in United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits, 23.

populations or sensitive ecosystems. Additionally, CO2 does not result from impure fuels nor inefficient combustion; rather, it is the unintended byproduct of the energy production process.”³⁹ Because CO2 comes “from fossil fuels and from deforestation ...[activities] intimately associated with basic energy and agricultural development....the costs and political difficulty of limiting them could be onerous.”⁴⁰

Moreover, there “is no precedent for cross-border trading in greenhouse gas entitlements. The design and implementation of a global system of tradable carbon emission entitlements is, in consequence, an innovative endeavour.”⁴¹ There is a great difference between setting up a domestic tradable emissions system, in which the enforcement mechanisms are governed by nationally enacted law with clear penalties, and an international system in which the enforcement mechanisms have to be agreed upon by all participating nations.

The debate over the appropriateness of market mechanisms has a direct application to climate change negotiations, particularly over international

³⁹Mark Trexler, “Carbon Offset Strategies: a private sector perspective,” The Feasibility of Joint Implementation, Catrinus Jepma, ed. (Dordrecht, Netherlands: Kluwer, 1995), 234.

⁴⁰Michael Grubb and Adam Rose, “Introduction: Nature of the Issue and Policy Options,” United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits 1.

⁴¹United Nations Conference on Trade and Development, Combating Global Warming: study on a global system of tradable carbon emission permits VII .

emissions trading.⁴² In a discussion of GHG emissions trading, an Indian involved in coordinating India's AIJ projects explained that he was

not a fan of the concept of emissions trading, which is a great favorite of many "market-driven" economists ...[because] purely market-driven policies without social controls are not likely to lead to a fair, equitable or, in the long-term, efficient society....where the primary objective of the investors is maximization of profits within the shortest possible time. A democratic state should not only determine norms, standards and ground rules concerning paying for the costs of mitigating adverse environmental impacts; it should also ensure that the industry will be enabled to invest in environmentally sound technologies and project with longer pay-back periods. After all, social market systems in Western Europe have successfully reduced the emissions of Sulphur oxides from power plants under command and control policies without incurring higher costs than would have been the case under any emissions trading scheme.⁴³

EUROPEAN APPROACHES TO SO₂ REDUCTION

It is instructive to compare the U.S. approach to dealing with the issue of acid rain approach with some European approaches. The pollutants involved in acid rain "are similar from one country to another....[and] have habitually been addressed in a common sequence."⁴⁴ Despite these similarities, there is a great deal of difference between the U.S. program and that of Germany, the Netherlands and Sweden.⁴⁵

⁴²An issue which CO₂ and SO₂ trading share is that they both may raise, or at least highlight, "moral" considerations related to the concept of tradable entitlements to pollute. The general idea of tradable entitlements has also "...been attacked as giving immoral 'permits to pollute.'" Grubb, "Options for an International Agreement," Combating Global Warming: study on a global system of tradable carbon emission permits 20. Although the moral issue exists whether the system is domestic or international, in an international system the moral issue raises questions related to North/South inequities as well. However, it has been suggested that the moral "criticism is not well founded. Emission standards and targets are themselves 'permits to pollute'; if making them exchangeable provides a more practical, desirable and efficient means of control, that is all to the good. That 'of' is the useful area of debate. There are many complex questions that need to be address concerning the allocation, management and practical operation of such a system, as compared with the alternatives." Grubb, "Options for an International Agreement," Combating Global Warming: study on a global system of tradable carbon emission permits 20.

⁴³Joint Implementation Quarterly, Vol 3, No.1, April 1997. Groningen, Netherlands. p8-9.

⁴⁴Gregory Pratt, "Air Toxics Regulation in Four European Countries and the United States," International Environmental Affairs, 4 no 2 (Spring, 1992). p. 80.

⁴⁵ibid.

In Germany the focus is on “strict laws and regulations that are generally based on the best available technology rather than on public risk....[using] ‘state of the art’ [technology] for the control of air pollution emissions.”⁴⁶ In 1983 Germany developed uniform, nationwide emission limits “which were the toughest in the world, as well as detailed monitoring rules requiring expensive electronic equipment.”⁴⁷ This technology is mandated by traditional command-and-control laws and regulations. In essence, Germany simply decides what the best available technology is, and then requires utilities to use it.

The Netherlands and Sweden, in contrast, both “use a critical-loads concept in which a determination is made of the maximum pollutant load that a particular system can tolerate.”⁴⁸ Sweden has worked hard to encourage others to adopt the critical-loads concept and was successful in persuading the Nordic Council to adopt an action plan for air pollution that is based on critical-loads.⁴⁹ This concept of critical-loads is seldom used in the United States.⁵⁰

Once the determination of what the critical load for acid rain is for a given area is (and hence what emissions reductions are necessary), the Netherlands and Sweden follow somewhat different paths in trying to reach it. The Netherlands has a long range planning approach which relies on widespread

⁴⁶Ibid., 79-81.

⁴⁷ Sonja Boehmer-Christiansen and Jim Skea, Acid Politics: Environmental and Energy Policies in Britain and Germany. (London, UK: Bellhaven Press, 1991), 186.

⁴⁸Pratt, “Air Toxics Regulation in Four European Countries and the United States,” 84.

⁴⁹ Another way of comparing the critical-loads and regulatory approaches is to consider the former as following the “famous dictum of Paracelsus that ‘there are no poisons, only poisonous concentrations,’ [while the latter]....states that ‘dilution is no solution to pollution.’” Nigel Haigh, “New Tools for European Air Pollution Control,” International Environmental Affairs 1 (Winter 1989) citing Udo Simonis, Environmental Policies in East and West. (London, UK: Taylor Graham, 1987).

⁵⁰Pratt, “Air Toxics Regulation in Four European Countries and the United States,” International Environmental Affairs, 93.

public knowledge and participation. The Swedish system, on the other hand, is largely driven by industry's self regulation in reducing pollutants. Both the Netherlands and the Nordic countries encourage compliance beyond the minimum legal requirement by setting "goals and targets which may not always have strict legal standing."⁵¹

The differences between European and U.S. approaches to SO₂ are not only different, they are also suggestive of the different degrees of open market orientation the countries have. For example, the U.S. market approach to reduce air pollution seems consistent with its relatively high level of open market orientation.

However, in order to more closely examine whether countries attitudes towards market approaches to reduce air pollution are related to their levels of open market orientation, it is necessary to compare such attitudes with both cultural orientation and with rational interests. In other words, if the U.S. had economic reasons to prefer SO₂ trading, and if Germany had economic reasons to use command-and-control regulations and best available technology, and if the Netherlands and Sweden had economic reasons to use critical load analysis, then the fact that they all did so may not be a product of their cultural orientation towards open markets at all. Therefore, this study will next turn towards an analysis of the relative economic interests different nations have in the implementation of emissions trading.

⁵¹ibid.

Chapter 8-Rationalist Interests in Climate Change and Market Mechanisms

*Rationalists assume that actors make "rational decisions in situations of uncertainty. They are assessing the expected costs and benefits and acting consistently."*¹

The Rationalist focus is on the economic impacts of climate change. For most countries this is a comparison of lesser evils. On the one hand, countries must try to determine the risks that they face from climate change. And, on the other hand, they must estimate the economic costs they will incur in reducing GHG emissions.

THE REALIST PERSPECTIVE ON CLIMATE CHANGE

The realist perspective on climate change suggests that each individual country would only be willing to accept economic losses from reducing emissions to the extent that it would suffer economic losses from climate change itself. This means that "countries would want to undertake abatement unilaterally up to the point where each country's marginal benefit of abatement (the damage avoided by that country as a consequence of the abatement) just equals its own marginal costs of abatement."²

In order to evaluate the realist interests of a Party in the climate change negotiations requires consideration of both potential damage from a changing climate, and the potential negative economic impact of policies to reduce to GHG-the "costs of compliance."

Balancing the degree of damage concern against the costs of compliance (which is largely a function of the energy resources and technology each country has) is what William Nordhaus has tried to do on a global collective

¹ Mark Lichbach and Alan Zuckerman, "Research Traditions and Theory in Comparative Politics: An Introduction," Comparative Politics: Rationality, Culture, and Structure, Mark Lichbach and Alan Zuckerman, eds. (Cambridge, UK: Cambridge University Press, 1997), 23.

² Scott Barrett, "The Strategy of Joint Implementation in the Framework Convention on Climate Change," (Geneva, Switzerland: United Nations Conference on Trade and Development, 1995), 15. Doc # UNCTAD/GID/10.

basis in his “Dynamic Integrated model of Climate and the Economy” (DICE) model.³ The DICE model is designed to estimate the optimum path for both capital accumulations and GHG reductions to determine the most overall globally “efficient path for slowing climate change.”⁴

Using the DICE model, Nordhaus has estimated that stabilizing emissions at 1990 levels leads to a global economic loss of around \$11 trillion (in contrast to stabilizing climate to a no more than 0.2 C increase per year and a total of no more 1.5 C increase which would cost \$30 trillion).⁵

POTENTIAL DAMAGES FROM CLIMATE CHANGE

The potential degree of damages from climate change is based on countries' projected vulnerabilities to the impacts of potential climate change. In other words, parties concern about climate change, and interest in negotiations to reduce GHG emissions, is based on how much damage they think climate change will do to them.⁶

At the extreme of calculations of damage “are the small island states, some of whom stand to all but disappear as countries in some scenarios of global warming in the twenty-first century, and who have been the most vociferous advocates of cuts in CO2 emissions.”⁷ At the other extreme are countries such as the U.S. “which, under the Bush Presidency, had estimated the costs of

³ This acronym may be related to Nordhaus's belief that “humanity is today playing *dice* with its natural environment through...injecting atmospheric gases like the greenhouse gases.” (emphasis added). William Nordhaus, “Perspectives on Climate Change: Past and Present,” Critical Issues in the Economics of Climate Change Brian Flannery, Klaus Kohlhase and Duane LeVine, ed. (London, UK: International Petroleum Industry Environmental Conservation Association, 1997), 3.

⁴ Ibid, 17.

⁵ Nordhaus has based his estimates based on assumptions that climate change would be a gradual process rather than one in which unexpected and catastrophic impacts occur.

⁶ Matthew Paterson, Global Warming and Global Politics (London, UK: Routledge. 1996), 78.

⁷ Ibid.

climate impacts to the U.S. to be fairly mild.”⁸

In contrast to the U.S., European nations generally (with some exceptions) believe that “the costs of adapting to climate change could be high. In particular, Europe would arguably be more vulnerable to sea-level rise than the US.”⁹ Additionally, in Europe “large numbers of environmental refugees may be created as sea-level rises....[making Europe] vulnerable to increasing migration from worst hit areas.”¹⁰

Estimates of the costs of global damage from climate change have generally focused on a 2 x CO₂ scenario with a corresponding 2.5C warming.¹¹ The best “guess central estimates of global damage, including non market impacts, are in the order of 1.5-2.0% of world GNP for 2 x CO₂ concentrations.”¹²

⁸Ibid. Another realist interest relates to the degree to which different countries might be able to, or are perceived as being able to, use emissions trading to their advantage. For example, A Columbia University study of EU positions on emissions trading and other market mechanisms concluded that it was primarily realist concerns over emissions trading that disturbed the EU. “EU resistance to global emissions trading stems from perceived economic and practical advantage that the US has, as it is familiar with trading mechanisms. According to sources familiar with EU policymaking, the EU was against ET at Kyoto because of the fear that it could dilute the unique advantage of the EU bubble....Because EC growth in the 1990s was slower than the US and because member state and EU-wide industry activities promoting energy efficiency have already reduced emissions, the EU wants to ensure that flexible measures do not give Annex I countries, the US in particular, the means to exploit cost-effective options that would give them an economic advantage over the EU.” Pamela Chasek and others, “European Union Views on International Greenhouse Gas Emissions Trading,” (New York, NY: Columbia University, School of International and Public Affairs, Environmental Policy Workshop, 1998), 6.

⁹Paterson, Global Warming and Global Politics 86.

¹⁰Ibid.

¹¹ Not surprisingly, if the temperatures warm more than 2.5C, then damage estimates are higher. In a poll of experts, the mean estimates of world GDP damage from climate change was 4.8% for a 3C warming by 2090, 17.5% for a 6C warming by 2090 (but if the 6C warming doesn't happen until 2175 then the damages were estimated to be lower-at 12.1%). William Nordhaus, cited in James Bruce, Hoesung Lee, and Erik Haites, Climate Change 1995: Economic and Social Dimensions of Climate Change-Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, (Cambridge, UK: Cambridge University Press, 1996), 208.

¹²Bruce, Lee, and Haites, Climate Change 1995: Economic and Social Dimensions of Climate Change-Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, 209.

In general, non-OECD developing countries are anticipated to have larger GDP negative economic impacts from climate change in terms of GDP-but smaller impacts in terms of actual dollar losses than OECD nations (because their economies are smaller).¹³ For example, in a survey of "experts on the economic impacts of climate change," most felt that impact would be "considerably higher for low-income countries than in high-income countries."¹⁴ The economic damage to the bottom economic quintile of nations was estimated to be from 1.75 to 10 times the level of damage, measured in GDP, than to the top quintile.

In analyzing potential damages from climate change a number of issues are considered. Although there is a great deal of uncertainty in such estimates, for the purposes of this study it is not necessary to pinpoint the absolute degree of damage each nation might suffer, or even a range of such damages. Rather, what is important is to have a general sense of the damages that those nations being considered might suffer relative to each other. The fact that such estimates are, at this point in time, still highly uncertain does not negate their value for two reasons. First, the level of uncertainty is roughly similar for the nations being considered. Second, and perhaps even more importantly, such estimates, however uncertain they might be, are still the basis of each countries' own understanding of their potential vulnerabilities.

The potential degree of damages from climate change are, of course, an important component of a rationalist analysis of countries' positions in climate

¹³ For example, "Faulkner (1995) estimates 2 x CO₂ damages for all effects at about \$180.5 billion (1.3% of GDP) for OECD countries and about \$89.1 (1.6% of GDP) for non-OECD countries." *Ibid*, 197.

¹⁴ William Nordhaus, "Perspectives on Climate Change: Past and Present," Critical Issues in the Economics of Climate Change, Brian Flannery, Klaus Kohlhase and Duane LeVine, eds. (London, UK: International Petroleum Industry Environmental Conservation Association, 1997), 13.

change negotiations. Those who are anticipated to suffer the most should, according to the rationalist perspective, be the most likely to push for stronger reductions in GHG emissions. This means they will be less likely to accept market mechanisms that might undermine the global reductions of GHG.

There is, obviously, a wide range of potential damages which can result from climate change. Coastal zones, where about half of the world's population currently lives, are especially vulnerable to climate change. Rising sea levels and an increase in storm-surge hazards will exacerbate the stress coastal zones already face. And as sea levels rise, fresh water resources may be at risk. Changes in climate are anticipated to "exacerbate periodic and chronic shortfalls of water, particularly in arid and semi-arid areas of the world."¹⁵

Climate change will also add to the stress on food production, particularly in developing nations. The impacts will be through changes in temperatures, rainfall, length of growing season, timing of threshold events for crop development, and amount of ambient CO₂.¹⁶

Human health impacts of climate change are also expected to more severe in the developing world. Increases in heat-stress mortality and tropical vector-borne diseases are anticipated. Diseases such as dengue, malaria and cholera, which have increased in recent years, are anticipated to accelerate

¹⁵ Robert Watson and others, "Summary for Policy makers: The Regional Impacts of Climate Change-An Assessment of Vulnerability," A Special Report of the IPCC Working Group II, Intergovernmental Panel on Climate Change, (New York, NY: Cambridge University Press, 1997), 3.

¹⁶ Although the impact is expected to be adverse to food production in the developing world (where the vast majority of those suffering from malnutrition are), global agricultural production is anticipated to be maintained relative to baseline production for the growing population. This is largely because food production in northern latitudes may experience increases in productivity in many crops. Watson and others, "Summary for Policy makers: The Regional Impacts of Climate Change-An Assessment of Vulnerability," 4.

their growth.

Some general, albeit tentative, conclusions about the differential damages that nations will suffer from climate change can be offered. This discussion will be limited to those countries considered in this study, although there are many others who will suffer more (such as small island states) or less (perhaps Russia for example), than the countries being considered.

The U.S. has significant differences in its vulnerability to climate change in different sectors and subregions. Effects on ecosystems are "likely to include both beneficial and harmful changes."¹⁷ Water resources and coastal systems may suffer, but food production and human health are thought to have low vulnerability.¹⁸ The overall impact of climate change on the U.S. is expected to be mixed. U.S. vulnerability to climate change, relative to the other countries under consideration, can be ranked low-medium.

The impact of climate change on Japan will be negative but the degree is uncertain. In large part, this is because of questions remaining about how the Asian monsoon and El Nino-Southern Oscillation will be effected by climate change. Rising sea levels are expected to cause a major threat to Japan as a 1 meter rise would threaten 50% of Japan's industrial production (e.g. Tokyo, Osaka and Nagoya) and 90% of its sand beaches.¹⁹ A 1 meter sea-level rise would leave over 4 million people and assets worth more than \$900 billion below the high-water mark.²⁰ Coastal protection could cost as much as USD

¹⁷ Watson and others, "Summary for Policy makers: The Regional Impacts of Climate Change-An Assessment of Vulnerability," A Special Report of the IPCC Working Group II, Intergovernmental Panel on Climate Change, 12.

¹⁸Ibid.

¹⁹Ibid, 14-15.

²⁰Masatoshi Yoshino and Su Jilan and others, "Temperate Asia," Robert Watson and others, A Special Report of the IPCC Working Group II, Intergovernmental Panel on Climate Change, 358.

\$80 billion.²¹

Additionally, it is expected that Japan will suffer structural changes in temperate forests and large reductions in boreal forests. A decrease in water supplies may force stringent water management. While there are mixed projections regarding impact on agriculture and aquaculture, it is expected that the overall impacts will be negative. Increases in vector borne diseases are also anticipated. In general, particularly given its large percentage of coastal areas, the threat to Japan from climate change can be ranked high.

Climate change will have differential impacts on Europe.²² Although “national differences may be hidden by the regional average,” very few country specific studies of damage, particularly in dollar terms, have been carried out for Europe.²³ The “best estimates” for the annual regional impact of a doubling of CO₂ is between -1.6% to -1.4% of the GDP for western Europe as a whole.²⁴

The general fragmentation of European ecosystems makes them more sensitive to climate change. While the Scandinavian countries may have benefits to their agricultural production, more southerly countries might face crop reductions. There may be flooding in the northern parts of Europe and drought in the southern areas. Countries with extensive coastal systems, particularly the Netherlands, but also Germany to a lesser degree, face the

²¹Bruce, Lee, and Haites, Climate Change 1995: Economic and Social Dimensions of Climate Change-Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, 210.

²²Watson and others, “Summary for Policy makers: The Regional Impacts of Climate Change-An Assessment of Vulnerability,” A Special Report of the IPCC Working Group II, Intergovernmental Panel on Climate Change, 10-11.

²³Martin Beniston and Richard Tol and others, “Europe,” Robert Watson and others, “Summary for Policy makers: The Regional Impacts of Climate Change-An Assessment of Vulnerability,” A Special Report of the IPCC Working Group II, Intergovernmental Panel on Climate Change, 178.

²⁴Ibid.

prospects of serious damage from rising sea-levels and storm surges.²⁵ Positive and negative impacts on human health should, largely, balance out. For the European nations being considered, the degree of damage appears to be high for the Netherlands, medium for Germany and France and low-medium for Norway and Sweden.

Putting this information together it appears that the degree of damage is as follows: Japan/Netherlands (0.25) > Germany/France/ (0.50) > U.S./Norway/Sweden (0.75). The numerical assessments are simply rough approximations which refer to the relative degree of damage. Higher numbers are assigned for lower degrees of damage because this makes it more likely, under the rationalist perspective, that countries would be inclined towards market mechanisms (for example, small low lying island nations would have a damage degree of almost 0.0 and Russia might have a damage degree of close to 1.0). In other words, since the U.S., Norway and Sweden are the least threatened by climate change, they have the least to fear from the market mechanisms undermining the environmental integrity of the UNFCCC and therefore they should be relatively more in favor of such mechanisms.

This analysis is, however, something of a two-edged sword. Essentially it assumes that the Kyoto Protocol has been ratified by the participants and that the rules of emissions trading are still to be decided on. In fact, the U.S. has made it clear that it will not ratify the Protocol until the rules for trading and the other market mechanisms are in place (and perhaps not even then).

Accordingly, a country which is at a high degree of risk from climate change, such as the Japan, may feel that in order for the Protocol to be ratified, and

²⁵ For example, a 1 meter sea level rise could lead to capital losses of \$186,000,000,000 in the Netherlands and \$7,500,000,000 (in 1990 US \$) in Germany. Beniston, "Europe," A Special Report of the IPCC Working Group II. Intergovernmental Panel on Climate Change, 173.

hence for there to be *some* quantified agreement to reduce emissions, an agreement on emissions trading will be necessary.

Mixed rationalist reasons for being in favor of emissions trading, by itself, suggests that the degree of damage should not, from a rationalist perspective, be considered to have the same degree of influence as the costs of reducing GHG. Additionally, the damages from GHG are expected to be more long-term than the damage from the costs of reducing GHG. It is a political reality that decision makers focus more keenly on more immediate harms than those in future. Accordingly, this analysis will consider the degree of damages to be less important than the costs of reducing GHG for a rationalist decision maker and they will contribute 1/6 of the total quantified factor.

COSTS OF REDUCING GHG

The degree of damages and the domestic costs of reducing emissions ("compliance"), together constitute the major information upon which the rationalist perspective on climate change is based.²⁶ The primary measure this study will use to develop an estimate of the cost of compliance will take into consideration three factors-economic, political and scientific-on which there is good data on for most countries. The greater the cost of compliance for a country, the more likely it is to need emissions trading in order to meet its reductions commitments.

First, this study will examine what is primarily an economic factor-the

²⁶ The costs of reducing GHG emissions varies widely between nations. Differences in the costs for different nations to reduce GHG emissions is also a function of "indigenous resources, supply infrastructure, and energy-use patterns." Bruce, Climate Change 1995: Economic and Social Dimensions of Climate Change-Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, 313.

projected increase in GHG emissions for the country between 1990 and 2010. The greater the projected increase, the more of a need there will be for the country to use the market mechanisms to meet its emissions reductions commitments. This calculation will take into account the second factor—the political decision in Kyoto as to the degree of emissions each nation will be entitled to during the commitment period.

Finally, this study will look at a scientific factor—the current carbon intensity of each nation as measured by its current CO₂ emissions per unit of energy consumed. A high degree of carbon intensity indicates that a country is using energy technologies and fuel mixes which produce a relatively high amount of CO₂—and hence has more opportunity to domestically make reductions by changing technologies. So, for example, because the U.S. uses much more coal and oil than France (which relies largely on nuclear power) for power production, it will be easier for the U.S. to make domestic changes to reduce its GHG emissions.

Therefore, in determining each country's need (from a realist perspective) for emissions trading, projected increases in emissions will be divided by current carbon intensity. In other words, a country's need for the emissions trading will be reduced by its ability to make those reductions domestically.

Additionally, there are a number of estimates of the actual monetary savings that different nations (unfortunately most of them treat the EU as a whole) will achieve through the use of emissions trading. These estimates, which are primarily based on factors similar to those outlined above, will be compared to the analysis.

The first factor is the projection of additional energy consumption each country will have in 2010 relative to 1990. Given the close relationship between energy consumption and economic growth one may consider this an “economic” factor. If the projected increase in energy consumption is large, then there will be a greater need for emissions trading to offset it. For example, Germany is projected to have an increase of under 15 percent in its energy consumption between 1990 and 2010. This means that Germany will have less of a need for emissions trading than Japan (which is projected to have an increase of over 30% in energy consumption in this period).

The second factor is the political decision made at Kyoto as to the level of emissions reductions each country is responsible for.²⁷ All other things being equal, Japan's agreement to reduce emissions by 6 percent between 1990 and, approximately, 2010, will be harder to meet than Norway's agreement to increase emissions by 1 percent.²⁸ Of course, all other things are not equal, and the three factors will all be considered in determining countries overall need for emissions trading.

The third, “scientific,” factor is the level of technological development of the country as measured by the carbon intensity of its energy supply. Carbon

²⁷ Although one can, of course, assume that agreement to the Kyoto Protocol's differential reductions is largely on countries' calculations about their ability to make reductions which, in turn, hinges on their projected growth in energy consumption and the carbon intensity of energy production.

²⁸ Under the Kyoto Protocol the U.S. would reduce emissions, relative to 1990 levels, by 7%, Japan by 6 percent, and Norway is allowed to increase by 1 percent. Although the EU as a whole agreed to reduce emissions by 8 percent, it has divided the amount of reductions each individual member must make. The most recent intra-EU breakdown (which may change) is that Germany will reduce by 21 percent, the Netherlands by 6 percent, France will stay the same and Sweden will be allowed to increase by 4 percent. Personal communication to author from John Richardson, Charge d'Affaires for the EU delegation to the U.S. dated September 22, 1999. On file with the author.

intensity is the amount of carbon emitted per unit of energy produced.²⁹ A country with a high carbon intensity is using a higher percentage of high GHG emitting fuels (like coal and oil), rather than low emitting GHG fuels (such as gas, nuclear or hydroelectric).

But a country with a high carbon intensity has more opportunities to make domestic changes in its energy production in order to lower CO2 emissions than a country with low carbon intensity. For example, the U.S., which has a relatively high carbon intensity due to its proportionally large reliance on coal as compared to Norway (which relies largely on hydroelectric power) or France (which relies largely on nuclear), will have an easier time making reductions through domestic changes. The U.S. would, all other things being equal, therefore have less of a need for emissions trading than France or Norway because they are already low in carbon intensity. Another way of thinking of this is that, in the absence of emissions trading, it will generally be more expensive to make emissions reductions in countries which already have a low carbon intensity.

Accordingly, the primary measure this study will use to estimate each countries' relative need for emissions trading (and similarly for Joint Actions)

²⁹ Energy/GDP ("energy intensity") is another measure that can be used. However, this is a more problematic measure for a variety of reasons. First, GDP can be difficult to standardize between nations. Second, energy intensity can largely a product of the specific stage of growth a country is in and less an indicator of the degree of GHG emissions which can be reduced. Finally, carbon intensity is a more direct function of both the fuel mix and the technology that is used in a country. It should also be noted that "intensities are not the exact inverse of efficiencies. Intensities reflect behavior, choice, capacity or system utilization and other factors besides just engineering ones." Lee Schipper, Fridtjof Unander and Celine Marie, "One Man's Carbon is Another Man's Bread: Understanding Differences in the Structure of Carbon Emissions," 3. Unpublished. On file with the author.

will be a product of all three factors.³⁰ The difference between the 1990 levels of energy consumption will be subtracted from the projected energy consumption in 2010.³¹ This is the amount of additional energy that would, in a “business as usual” scenario, be needed by each country between 1990 and 2010.³²

The 1990 energy consumption levels will be then be adjusted based on the Kyoto Protocol. The Kyoto adjusted figures will be subtracted from the 2010 projections to derive the amount of energy consumption that the country is would forego by virtue of the Protocol. However, energy consumption and CO2 emissions are not synonymous given the different levels of energy efficiency and fuel mix different countries have. Therefore, the amount of energy consumption given up by each country in Kyoto will be divided by the carbon intensity of each country (in 1995-admittedly this might change dramatically by 2010-both in absolute and relative terms). The product will be used to gauge the degree of relative level of “pain” each country will have in meeting its Kyoto commitments.

The result of this calculation will be to balance the three factors. For example, even though the U.S. is expected to increase its energy consumption

³⁰ This is an estimate because the Kyoto reductions are based on emissions reductions of a basket of gases which includes, but is not exclusively limited to CO2 and because the reductions may be made over the average of the period of 2008-2012. Additionally, CO2 itself is not synonymous with energy consumption (or even production) given the variability in carbon intensities. Nonetheless, the differences in reductions agreed to in Kyoto do lead to substantive differences in the ability to consume energy.

³¹ The data used in these calculations comes, with the exception mentioned regarding Norway and Sweden in the footnote below, from the Energy Information Agency, International Energy Outlook 1999-With Projections to 2020, (Washington, DC: U.S. Department of Energy, March 1999), DOE/EIA-0484(99), GPO Stock No.061-003-01965-2. Pages 151 and 157.

³² A more comprehensive approach would disaggregate sectors, such as freight, travel, light manufacturing, heavy manufacturing, services, home energy, and home heat and would then look at what structural, intensity and fuel mix changes could be made, and how easily they could be made, to lower emissions. Schipper, “One Man’s Carbon is Another Man’s Bread: Understanding Differences in the Structure of Carbon Emissions,” 12. However, there is not clear data-particularly given that this involves future projections, on such information.

more than any of the other countries, the fact that it agreed to a 7 percent reduction (versus Germany's agreed reduction of 21 percent for example), combined with its relatively high carbon intensity, would, all other things being equal, ameliorate its need for emissions trading compared to other countries. This is because the U.S. has the economic and technical potential to make substantial domestic reductions in emissions.

Calculations of the amount of projected energy increase between 1990 and 2010 (divided by the carbon intensity) will be done on both an absolute and a percentage basis. Absolute numbers relate to the absolute difficulty of making emissions reductions. The U.S., with the largest amounts of emissions increases, will have the greatest difficulty in absolute terms in making reductions, i.e., it will cost the most in total dollars. But, it may be just as (or more) difficult, for example, for the much smaller Netherlands to make a lesser amount of absolute emissions reductions (if they represent a greater *percentage* of reductions). This relates to the impact on a country's GDP of emissions trading.

For the purposes of policy making it would seem that the percentage of economic pain is probably more of a factor than the absolute economic pain of a policy decision. A million dollars to the U.S. government is, after all, less of a factor than a million dollars to the Republic of Palau.³³ Nevertheless, it does not seem appropriate to dismiss consideration of absolute economic losses from a rationalist perspective. Accordingly, the absolute increase/carbon intensity (standardized) will, like the degree of damages, contribute 1/6 to the total rationalist decision making and the relative percentage/carbon intensity (also

³³ A small island nation with a population of approximately 20,000 (which the author represented at the third and fourth CoPs).

standardized) will contribute 2/3.³⁴

It is important to keep in mind that the numbers generated by this calculation are being used to compare the different countries being considered and it is their values relative to each other which have meaning. Finally, the results of this analysis will be compared to studies which have estimated the relative gains and losses (in terms of GDP) that emissions trading will lead to.³⁵

SUMMARY OF ECONOMIC INTERESTS IN EMISSIONS TRADING DATA

	2010 proj energy use ³⁶	1990 energy use ³⁷ (Kyoto)	2010- 1990 abs/(%)	carbon intensity (1995)	increase/ intensity (%/int)	stand eco pain abs/rel	dam score/ stand	total ³⁸ rat et need
U.S.	2,793	2,115 (1,967)	826(42%)	1,411/ 2,278=-0.62	1,333(68)	2.2/0.21	0.75/1.2	0.63
Japan	614	456 (429)	185(43%)	281/52 =-0.54	343(80)	0.077/1.2	0.25/-1.7	0.86
Netherlands	110	83 (78)	32(41%)	57/89 =-0.66	48.5(62)	-0.55/-0.28	0.25/-1.7	-0.24
Sweden	70	55 (57.5)	12.5(22%)	21/60 =-0.35	35.7(63)	-0.58/-0.2	0.75/1.2	-0.11
France	302	235(235)	67(29%)	97/257 =-0.38	176(76)	-0.28/0.87	0.50/-0.24	0.62
Germany	424	372(294)	128(44%)	235/358 =-0.66	194(67)	-0.24/0.13	0.50/-0.24	0.13
Norway	52	41(45)	7(16%)	12.7/44.4 =-0.38	18.4(42)	-0.62/-1.90	0.75/1.2	-1.25

³⁴ Using GDP percentage loss to measure the welfare pain is consistent with the methodology of most analysts. See H. Asbjorn Aaheim, "The Appropriateness of Economic Approaches to the Analysis of Burden Sharing," *Fair Weather? Equity Concerns in Climate Change* Ferenc Toth, ed. (London, UK: Earthscan Publications, 1999), 98. Additionally, note that the degree of damages, ranging from 0.25 to 0.75, are *not* standardized.

³⁵ It should be noted that one study which used a very similar methodology for determining the need for GHG offsets estimated European needs at much lower figures (the U.S. and Japan were approximately the same) because it used each countries own projections of emissions in 2010 in their national communications to the UNFCCC and considered energy policies being negotiated in the EU. ZhongXiang Zhang, "Estimating the Size of the Potential Market for the Kyoto Flexibility Mechanisms." (Groningen, Netherlands: University of Groningen, 1999). On file with the author. However, the study admitted that its projections of European offset needs showed a "sharp difference between other economic modeling studies." *Ibid*, 9.

³⁶ This number is derived by multiplying the standardized economic "pain" (relative) by 4, and adding this to the standardized economic pain (absolute) and the damage score (not standardized) and then dividing by 6.

³⁷ In million tons oil equivalent.

³⁸ In million tons oil equivalent.

This analysis suggests that, from a rationalist perspective, Japan needs emissions trading more than the other nations considered. The U.S. and France also have a high degree of need for emissions trading. Germany, Sweden and the Netherlands all have a lesser degree of need for emissions trading, while Norway needs it the least.³⁹

In developing this quantitative degree of need for emissions trading, many assumptions were made. While each may have seemed reasonable, there is still a high degree of uncertainty involved-particularly in the relative weightings of relative percentage of economic pain, absolute economic pain and damages. Therefore, it will be helpful to compare these general conclusions about the relative need for emissions trading with other similar analyses on the economic impact of emissions trading.

OTHER ECONOMIC ANALYSES OF EMISSIONS TRADING

A number of studies have compared the impact of emissions trading on GDP

³⁹ The data for making the calculations for Sweden and Norway is not specifically listed in "International Energy Outlook 1999 with Projections to 2020" in which "Other Western Europe" is treated collectively. However, in the Energy Information Agency, International Energy Annual 1997, (Washington, DC: U.S. Department of Energy, April, 1999), DOE/EIA-0219 (97), GPO Stock No.: 061-003001066-1, Sweden and Norway are separately broken out for both energy consumption and CO2 emissions. Even though the units are different (Btu versus tons oil equivalent and metric tonnes of CO2 versus metric tons of carbon) in the International Energy Annual 1997 and the International Energy Outlook 1999 this is irrelevant since the calculations from the International Energy Annual 1997 determine what the *percentage* of Norway and Sweden's energy consumption and emissions are relative to the "Other Western Europe" as a whole and this study then applies those percentages to the units in International Energy Outlook 1999. This, of course, assumes that the percentages of Norway and Sweden's energy consumption and emissions relative to "Other Western Europe" (which includes Austria, Belgium, Denmark, Finland, Greece, Ireland, Portugal, Spain and Switzerland) will remain roughly the same as one projects out to 2010. The results of these calculations are that Norway's energy consumption is 9.7% of "Other Western Europe" in 1990 and 9.8% in 1995, while Sweden is 13.2% in 1990 and 13.2% in 1995. The consistency over the five years also suggests that the projection to 2010 is substantially accurate. For emissions in 1995 Norway is 4.7% of "Other Western Europe" while Sweden is 7.7%. (pages 189 and 235 of the International Energy Annual 1997). These percentages are then applied to the figures for "Other Western Europe" in International Energy Outlook 1999-With Projections to 2020 to derive the figures used for Norway and Sweden. This method of analysis was recommended by Linda Doman, one of the authors of international energy consumption projections in International Energy Outlook 1999.

and on the implicit price of carbon.⁴⁰ The results are based on the projections of economic growth, current levels of energy prices, and opportunities for cheap carbon (similar to the type of data used in this analysis to generate the level of a country's need for emissions trading). Unfortunately such studies have, with few exceptions, treated Europe as a monolithic entity. Nonetheless, they offer an important set of data, and tend to validate the results developed in this analysis.

A few months before the third CoP, a U.S. government study compared the impact of trading on the U.S., Japan and Western Europe as a whole.⁴¹ It analyzed the costs of stabilizing emissions at 1990 levels in 2010-and the impact of trading within Annex I countries on GDP. Given that the study did not take into account the emissions reductions agreed to in Kyoto, even though the relative impacts are relevant to this enquiry the actual amounts of the impact are not applicable.

The study found that with no trading, the impact on GDP would be substantially less (-0.2 %) on the U.S. in 2010, than on Japan (-0.6%) and on Western Europe (-0.7%).⁴² With trading, the impact on GDP is reduced to -0.1% for the U.S., -0.1% for Japan and -0.2% for Western Europe.⁴³ The important

point to be derived from this study is that it indicated that Japan and Western

⁴⁰ Of course, there is an argument that all economic models "almost always confirm the prior prejudices of their host governments, usually as a result of the assumptions built into them....In the majority of cases, rumors of Alan Greenspan, head of the Federal Reserve, having a mild head cold would probably have a greater effect on GDP in practice." John Lanchbery, "Expectations for the Climate Talks in Buenos Aires," *Environment*, 40, no. 8, (October, 1998). p.45.

⁴¹ Interagency Analytical Team, "Economic Effects of Global Climate Change Policies: Results of the Research Efforts," (Washington DC: U.S. Executive Branch, 1997). On file with the author.

⁴² The study looked at the impact for the years 2000, 2005, 2010, 2015 and 2020. At each period the impacts were relatively similar (although they are the largest in 2010) with the cumulative total being -1.5% for both Japan and Western Europe and -0.7% for the United States. Interagency Analytical Team, "Economic Effects of Global Climate Change Policies: Results of the Research Efforts," 19.

⁴³ Cumulative negative impacts were U.S.= -0.3%, Japan= -0.3% , and Western Europe=0.5%.

Europe both benefit more (in approximately the same amounts) from emissions trading than does the U.S.⁴⁴

Two lessons may be derived from this study. First, decision makers apparently consider the impact on GDP, similar to the relative economic pain, the relevant factor. Second, it is roughly consistent with the finding of this study on the difference between the relative economic pain the U.S., Japan and Europe-particularly the U.S. and Japan given that the analysis herein focused on a limited number of European nations-would face based on whether or not there is emissions trading.

Another study that came out just prior to CoP 3, by one of the originators of the idea of emissions trading for GHG reductions, approached the issue of the impact of trading from a slightly different angle.⁴⁵ Grubb focused on the marginal cost slope for "no regret" abatement opportunities. Like the impact on GDP analysis, this looks at relative rather than absolute impacts. Grubb suggested that the cost slope would be higher for the EU than for the U.S., and higher for

⁴⁴The same study compared implicit prices of carbon in the different countries with no trading (this suggests the relative need for trading by different countries). With no trading, Japan was projected to have an implicit price of carbon per ton of \$268 (USD 1995), Western Europe a price of \$130, and the U.S. a price of \$82. The difference is because "Japan, for example, is projected to have relatively slow economic growth and already has relatively high energy prices and an extensive nuclear program....Western Europe fares somewhat worse than the United States, since its economic growth is projected to be stronger, and its energy policies have already been raised...[The United States] has more 'cheap' carbon-abating opportunities. Thus, it is somewhat easier to the United States to reach emission targets [without trading] than other regions, which have already 'picked the low fruit.'" Interagency Analytical Team, "Economic Effects of Global Climate Change Policies: Results of the Research Efforts," 19-20. The following year the Pacific Northwest National Laboratory (operated by Battelle for the U.S. Department of Energy) analyzed the economic implications of reducing GHG emissions and the possibility of emissions trading. It estimated that carbon permit prices per ton by 2020 would be \$199 for the U.S., \$208 for Western Europe (with new nuclear capacity, if there is no nuclear capacity it is estimated at \$247), and \$430 for Japan without emissions trading. J.A. Edmonds, C.N. MacCracken, R.D. Sands, and S.H. Kim, "Unfinished Business: The Economics of the Kyoto Protocol," (Washington, DC: Pacific Northwest National Laboratory, 1998), 13.

⁴⁵ Michael Grubb and Christiann Vrolijk, Defining and trading emission commitments in the Kyoto Agreement, (London, UK: Royal Institute of International Affairs, 1997).

Japan than for the EU (with the U.S. slope standardized at 1.0 the EU's slope was 1.2 and Japan's was 1.4).

The difference in the slope was because the U.S. has low energy prices, and higher levels of availability of natural gas and renewable sources. This makes it cheaper for the U.S. to enact "no regrets" policies than for the EU which is limited by relatively high historical energy prices and the fact that the EU already extensively uses natural gas. And Japan's existing high energy efficiency levels and prices, combined with a lack of natural gas and renewables, makes it even more expensive to enact "no regrets" policies.

The slope of the marginal cost of abatement is directly related to the relative benefits each country (or group of countries) could derive from emissions trading. A "relatively high marginal cost of abatement means that it [a country] gains more from emissions trading."⁴⁶ Therefore, between the U.S., the EU and Japan, Grubb estimated that Japan stands to gain the most, in relative terms, from emissions trading.⁴⁷ This result, which has Japan most in need of emissions trading, followed by the EU and then the U.S. is consistent with the relative economic pain suggested herein for the different countries.

In 1999 McKibbin and Wilcoxon studied the economic impact of emissions

⁴⁶Grubb, Defining and trading emission commitments in the Kyoto Agreement, 8.

⁴⁷ Even though the EU has a steeper slope for marginal abatement costs, Grubb estimates that it the U.S. might benefit from emissions trading more than the EU, apparently because of the belief that "most of the EU's needs could be met mostly by the consequences of absorbing the 'new EU' countries, while the U.S., Japan and other OECD countries vie for emission quotas from Russia and other EIT countries." Grubb, Defining and trading emission commitments in the Kyoto Agreement, 9. The discussion of why the EU benefits less from trading than the U.S., despite having higher costs to make "no regrets" changes, was not completely clear.

trading taking into account the effect of the Kyoto Protocol.⁴⁸ They looked at the impacts on GNP of the Kyoto commitments for the U.S., Japan, and "Other OECD" countries (primarily the EU) and compared the impacts without emissions trading, with trading between Annex I nations, and with worldwide emissions trading.⁴⁹ Three periods, 2005, 2010 and 2020 were looked at.

The cumulative impacts on GDP over the three periods without trading were -1.0% on the U.S., -1.5% on Japan, and -2.6% on "Other OECD" countries. The cumulative impacts with Annex I trading were -1.0% on the U.S., -1.1% on Japan, and -1.4% on "Other OECD" countries. This study suggests that the EU benefits far more, relatively speaking, than Japan and the U.S. from emissions trading, and that Japan benefits more from emissions trading than the U.S.⁵⁰

The rather surprising result, that the U.S. does not gain from trading, is largely based on an assumption that, without trading "U.S. exports are more competitive relative to those from other OECD countries" due to the lower costs

⁴⁸ Warwick McKibbin and Peter Wilcoxon, "Permit Trading Under the Kyoto Protocol and Beyond." Paper prepared for a United Nations conference on "The Sustainable Future of the Global System" held in February 23-24, 1999. (Tokyo, Japan: The United Nations University, 1999). The authors have a unique proposal which would set the price of emissions trading permits at a fixed cost (below what the models suggest a stabilizing permit price would be) rather than let the market set the price itself. But this has more bearing on the absolute rather than the relative value of trading to different countries. This work updated an earlier analysis on the economic impact of stabilizing GHG by McKibbin and Wilcoxon in 1995 which was limited to estimating the percentage GDP loss from stabilizing emissions (by a carbon tax) in 2000, 2010 and 2020. It found that the GDP loss was the greatest for "Other OECD," next greatest for Japan, and the least for the U.S. Over the three periods the cumulative GDP loss for "Other OECD" countries was -1.29%, for Japan -0.93%, and for the U.S. -0.11%. Warwick McKibbin and Peter Wilcoxon, "Economic Implications of Greenhouse Gas Policy." Paper prepared for the PAFTAD conference on "Environment and Development in the Pacific" held in Ottawa on September 7-9, 1995. On file with the author.

⁴⁹The authors choose to focus on GNP impacts rather than GDP impacts because they felt this was better measure of the total income of the residents of a country.

⁵⁰ The McKibbin and Wilcoxon study also found that the cumulative impacts on GNP with worldwide emissions trading (i.e., CDM) were -0.4% on the U.S., -0.4% on Japan, and -0.5% on "Other OECD countries". Given that without CDM the impact was -1.0% on the U.S., -1.5% on Japan, and -2.6% on "Other OECD" countries, it seems that the CDM (and hence AIJ) is more economically beneficial for the EU than for Japan, and more beneficial for Japan than for the U.S.

of abatement, but that this advantage is lost when emissions trading makes the cost of emissions rights the same.⁵¹

In mid-1999 there was a “comprehensive report on a comparative set of analyses of the economic and energy sector impacts of the Kyoto Protocol.”⁵² The report included work by thirteen modeling teams, half of which were based in the U.S. and half of which were outside the U.S. A variety of issues were addressed including, but not limited to, the impact of emissions trading.

Roughly averaging the projections of the differences in carbon tax prices (in 1990 US\$/TC) in eleven of the studies based on whether there was emissions trading or not indicated that the difference in the tax would be the highest in Japan (\$320), the next highest in the EU (\$260) and the cheapest in the U.S. (\$120).⁵³ This result is roughly consistent with the findings on the relative economic pain that the different nations looked at herein would suffer without emissions trading.

An approximation of the average of the projections for GDP losses based on whether there was emissions trading or not (in billions of 1990 US\$) indicated that the total GDP loss without trading would be highest in the U.S. (\$65 billion), next highest in the EU (\$55 billion) and lowest in Japan (\$30 billion).⁵⁴ The explanation for this difference is that “GDP loss in the USA is higher [without trading] even though the carbon tax is lower than in other countries because

⁵¹McKibbin and Wilcoxon, “Economic Implications of Greenhouse Gas Policy,” 17-18.

⁵²John Weyant and Jennifer Hill, “Introduction and Overview,” The Energy Journal, (Kyoto Special Issue, May, 1999): vii.

⁵³These approximations are based on my estimates from bar graphs. The numbers are, accordingly, not precise but do indicate relative costs. Weyant “Introduction and Overview,” The Energy Journal, xxxi-xxxii.

⁵⁴These approximations are based on my estimates from bar graphs. The numbers are, accordingly, not precise but do indicate relative costs. Weyant, “Introduction and Overview,” xxxiii-xxxiv.

more carbon is used in the baseline projection. That is, the price of carbon is lower, but the quantity is higher in the USA.⁵⁵ This, of course, relates to the absolute economic impact rather than the relative percentage economic impact.

The findings that, in absolute terms the U.S. would suffer the greatest loss without emissions trading followed by the EU and then Japan, are completely consistent with the findings of the analysis herein (keeping in mind that the total EU economic losses being considered-Germany's 194 and France's 176-are greater than Japan's 343 even without the rest of the EU).

One team found that the absence of trading would cause "Other OECD" nations a GDP loss of 0.9% (from -0.6% with trading to -0.1.5% without trading), Japan a loss of 0.2% (from -0.4% to -0.6%), and the U.S. a loss of 0.2% (from -0.4% to -0.2%).⁵⁶ The greater relative degree of economic pain for the EU than for the U.S. is consistent with the analysis herein although this team suggested that Japan would suffer a lower relative economic pain.

Another team looked at the impact of trading versus no-trading on the "welfare" (a combination the impact on international trading and the disaggregated impact on selected industrial sectors-it is related to, but not identical to GDP) of the U.S., the EU and Japan.⁵⁷ It found that welfare losses would be the greatest in Japan without trading (from -0.23% to -0.64%-a loss of 0.41%) but the same in the U.S. (from -0.36% to -0.56-a loss of 0.20%) and the

⁵⁵Mikiko Kainuma, Yuzuru Matsuoka and Tsuneyuki Morita, "Analysis for Post-Kyoto Scenarios: The Asian-Pacific Integrated Model," The Energy Journal, (Kyoto Special Issue, May, 1999): 218.

⁵⁶ Warwick McKibbin and others, "Emissions Trading, Capital Flows and the Kyoto Protocol," The Energy Journal, (Kyoto Special Issue, May, 1999): 307. Similarly, it projected that carbon permit prices would be the most expensive for "Other OECD" countries ((\$261), the second most expensive for Japan (\$112) and the least expensive for the U.S. (\$87).

⁵⁷ Paul Bernstein, W. David Montgomery, Thomas Rutherford and Gai-Fang Yang, "Effects of Restrictions on International Permit Trading: The MS-MRT Model," The Energy Journal, (Kyoto Special Issue, May, 1999): 221-256.

EU (from -0.25% to -0.45%-also a loss of 0.20%).⁵⁸ The showing of the greatest relative economic pain in Japan is consistent with the analysis herein.

The only study which analyzed European nations separately found that the negative impact of a lack of emissions trading was greater on all European nations, in terms of relative percentage of GDP, than on the U.S.⁵⁹ It projected that not having trading would cause France a loss of 1.7% of GDP (from -0.6% with trading to -2.3% without trading), Germany a loss of 1.4% (from -0.8% to -2.2%), Japan a loss of 1.3% (from -0.5% to -1.8%) and a loss of 1.2% for the U.S. (from -1.4% to -2.6%).⁶⁰ Correspondingly, this study found that the cost of a carbon tax (without trading) would have to be the highest in France (\$1,261 in 1997 \$US) versus \$873 in Germany, \$1,067 in Japan and \$407 in the U.S.⁶¹

There is some rough accord between this study and the analysis herein. Both see the U.S. and Germany as having the least relative need for emissions trading and France and Japan having the greatest need. However, the relative need between the U.S. and Germany and between France and Japan, differs.

Two of the studies did suggest that GDP loss in the U.S. without trading might actually be the highest. They found that the GDP loss from no emissions trading would be higher in the U.S. (0.45% and 2.0%) than in the EU (0.31% and 0.9%) and Japan (0.25% and 0.7%).⁶² However, these same studies found that

⁵⁸Ibid, 235.

⁵⁹ Adrian Cooper and others, "The Economic Implications of Reducing Carbon Emissions: A Cross-Country Quantitative Investigation using the Oxford Global Macroeconomic and Energy Model," The Energy Journal, (Kyoto Special Issue, May, 1999): 335-365.

⁶⁰Ibid, 351-356.

⁶¹Ibid, 349. The lower U.S. tax is primarily attributable to the fact that "the scope for carbon substitution is still high because of its relatively high dependence on coal." Ibid, 348.

⁶² Kainuma, "Analysis for Post-Kyoto Scenarios: The Asian-Pacific Integrated Model," The Energy Journal, 218 and Vivek Tulpule and others, "The Kyoto Protocol: An Economic Analysis Using GTEM," The Energy Journal, (Kyoto Special Issue, May, 1999): 273 respectively.

the cost of emissions reductions (in the no trading scenario) would be substantially cheaper in the U.S. (\$153/tC and \$346/tC) than in the EU (\$198/tC and \$714/tC) and Japan (\$234/tC and \$693/tC).⁶³ This second component of these two studies is consistent with the findings on relative economic impact of trading in the analysis herein.

The impact of a number of other relevant issues were also examined in the report. For example, one of the studies in the report specifically examined the economic impacts of limitations on restrictions on the amount of emissions that can be achieved through emissions trading-the "ceilings" issue. The EU has generally been in favor of ceilings and the U.S. in opposition to them.⁶⁴ Nonetheless, the study found that "when compared to unrestricted trade, the *USA tends to gain from restrictions on emission trade* while other OECD countries are likely to be harmed."⁶⁵ [italics supplied].

The reason the U.S. would be less harmed by ceilings was that it was projected that the U.S. would have to purchase only about 45% of their reductions while other OECD countries would have to purchase between 75-85% of their reductions (approximately 75% for the EU and 85% for Japan). This was based on the fact that the "domestic reduction effort in the USA is relatively large, because their abatement costs are lower compared to the other OECD regions."⁶⁶

⁶³ Kainuma, "Analysis for Post-Kyoto Scenarios: The Asian-Pacific Integrated Model," 218 and Tulpule "The Kyoto Protocol: An Economic Analysis Using GTEM," The Energy Journal, (Kyoto Special Issue, May, 1999): 269 respectively.

⁶⁴ Johannes Bollen, Arjen Gielen and Hans Timmer, "Clubs, Ceilings and CDM: Macroeconomics of Compliance with the Kyoto Protocol," The Energy Journal, (Kyoto Special Issue, May, 1999): 177-206.

⁶⁵ *ibid*, 177.

⁶⁶ *ibid*, 191. This same study projected that with trading the uniform price for a ton of Carbon (in 1992 US \$) would be 20 US\$/tC in 2010. Without trading the cost per ton was projected to be 44 US\$/tC for the U.S. and almost twice as much, 82US\$/tC for the EU.

Another study in the report focused on the ability of nations to turn over capital stock in order to meet their commitments.⁶⁷ The study found that the capital stock turnover rate would tend to ensure that "trading in emission allowances could lower the costs [of emission commitments] substantially, *particularly for Europe and Japan.*"⁶⁸ [italics supplied].

There are a number of points from these studies which are relevant to the analysis herein. First is that there is a wide divergence in the analyses of the economic impact of emissions trading both in terms of substantive outcome and in terms of the analytical methodologies used. However, there are two pertinent methodological observations and one substantiative observation that can be made.

First, most studies tend to focus on the opportunities that countries have to reduce emissions domestically as the primary factor to evaluate the relative need of countries have for emissions trading. This suggests that the analytic methodology in the analysis herein was appropriate—at least insofar as it is an attempt to quantify this factor. Second, most studies focus on the percentage impacts on GDP of emissions trading—in other words they look at the relative rather than absolute economic impact. This suggests that the relative impact is more important for policy makers (making the perhaps dubious assumption that modelers are trying to generate results which decision makers are interested in) than the absolute economic impacts.

Substantively, it may be seen that most, although certainly not all, studies

⁶⁷ Henry Jacoby and Ian Sue Wing, "Adjustment Time, Capital Malleability and Policy Cost," The Energy Journal, (Kyoto Special Issue, May, 1999): 73-92.

⁶⁸Ibid, 91.

indicate that emissions trading appears to lead to greater relative benefits for Western Europe than for the United States and to even higher benefits for Japan (this also applies to Joint Actions-for example, in one study the price of carbon reductions would drop dramatically to \$9 per ton with global Joint Actions allowed⁶⁹).

Putting these studies together it appears that the relative economic benefits of emissions trading would Japan > EU > U.S. This finding agrees with the relative economic impact of emissions trading generated by the analysis herein. If this analysis treated the EU as a monolithic bloc for the purpose of estimating absolute economic damage (rather than focusing on separate countries) then even when the additional factors, such as the absolute levels of economic pain and the degree of damage that climate change might lead to, were taken into consideration, this analysis would have a similar ranking. We next turn to a comparison of countries' economic interests in market mechanisms and cultural orientation toward open markets and the relative effect of each on their national positions on emissions trading.

⁶⁹ Interagency Analytical Team, "Economic Effects of Global Climate Change Policies: Results of the Research Efforts," 20. On reason that both the Interagency and the Battelle work suggest that Japan would benefit more from emissions trading than the EU may be the assumptions built into one of the models they both used-known as the Second Generation Model ("SGM"). The SGM assumes that Western Europe can respond "to a constraint on carbon emissions by shifting to non-carbon generating technologies-in particular, nuclear power. This is a case that may be either politically or technically impossible to realize. Outside of France few nations would allow a significant expansion of nuclear power. Furthermore, given the lead time required to build and deploy a new nuclear facility, even in France, this options will be available for only a a brief period if it is to impact emissions by the beginning of the budget period." J.A. Edmonds, C.N. MacCracken, R.D. Sands, and S.H. Kim, "Unfinished Business: The Economics of the Kyoto Protocol," (Washington, DC: Pacific Northwest National Laboratory, 1998), 17. On file with the author.

Chapter 9-Positions on Emissions Trading

Although “many scholars maintain that pure economic interests ...provide better explanations of what happened in the past and what is likely to happen in the future,” it “is important to observe the increasing recognition of the potential importance of culture-based explanations in understanding regional differences in perceiving and interpreting global environmental risks.”¹

In “a market-oriented society one would expect market mechanism, such as tradable permits and price incentives, to be the primary policy mechanisms.”²

There has been a gradual evolution of international acceptance of emissions trading to reduce GHG. The U.S. has consistently argued in favor of an international agreement on emissions trading. Other developed nations, particularly European ones, have been far less enthusiastic. Although emissions trading was agreed to in Kyoto, the EU has subsequently suggested a number of restrictions which, the U.S. argues, would inhibit the development of a robust emissions trading market.

THE U.S. AND EU POSITIONS ON EMISSIONS TRADING BEFORE KYOTO

The U.S. government strongly and consistently advocated the use of an international GHG emission trading program. This is a key component of “the main policy objective of US strategy”, which

was to establish flexibility in all dimension. This was a result of the country’s confluence of political interest and economic ideology.....

Economically, US thinking was dominated by general equilibrium concepts that focus upon economic efficiency and imply that flexibility achieves the same environmental benefits at lower costs: hence, the more flexibility the better.³

In early 1997, the U.S. published a suggested framework for the upcoming Kyoto Protocol with emissions trading at the heart of it. This was followed by the release, in October of 1997-just one month before CoP 3, of the U.S. Climate Change Plan.

¹ Ferenc Toth, “Fairness Concerns in Climate Change,” Fair Weather? Equity Concerns in Climate Change, Ferenc Toth, ed. (London, UK: Earthscan Publications, 1999), 5.

² Anne Johnson, “The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States,” Environmental Values, 7 (1998): 223-44. White Horse Press, Cambridge, UK. p.228

³ Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 113.

The U.S. Climate Change Plan argued that

the costs of protecting the environment is substantially lower if we harness the power of markets to do so...[through] flexible and market-based mechanisms....similar to the highly successful permit trading system that has dramatically cut acid rain at a fraction of the predicted cost.⁴

This argument led to strong U.S. support for using international emissions trading because “the principle of emissions trading is to use the efficiency of the market place to achieve environmental objectives at the lowest possible cost.”⁵

The U.S. position on emissions trading came as no great surprise. It had been articulated earlier in a number of widely publicized proposals made by at international meetings. At the second CoP in 1996, for example, the head of the U.S. delegation, Under Secretary of State for Global Affairs Timothy Wirth, urged

that future negotiations focus on an agreement....met through maximum flexibility in the selection of implementation measures, including the use of reliable activities implemented jointly, and trading mechanisms around the world.⁶

In a “non-paper” (prepared for the December 1996 meeting of the Ad Hoc Group on the Berlin Mandate but introduced earlier) the U.S. made it clear that it felt that it was “critical that provisions for international greenhouse gas emissions trading and joint implementation be included in the Kyoto agreement

⁴ President Clinton’s Announcement of the United States Climate Change Policy, National Geographic Society, October 22, 1997.

⁵ Ibid.

⁶ Timothy Wirth’s 1996 Address at the Second Conference of the Parties Framework Convention on Climate Change, Geneva, Switzerland, July 17. Cited in Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 54.

in order to meet the new commitments at the lowest cost."⁷

In the last UNFCCC meeting before CoP 3 in Kyoto, (in Bonn in October of 1997) an environmental NGO summarized the U.S. position as "tell[ing] the world that whoever wants the atmosphere cleaned must be prepared to accept, among other things, emissions trading and joint implementation."⁸

At Kyoto the U.S. stated that it's primary goal was to ensure that "flexible market-based mechanisms" were the cornerstone of any agreement reached.⁹

The head of the U.S delegation said that the

broad Presidential objective was to make sure that countries can use flexible market mechanisms to reach their targets rather than the mandatory 'policies and measures' such as carbon taxes, favored by the E.U. and many other developed countries. The Kyoto Protocol enshrines a centerpiece of this U.S. market-based approach-the opportunity for companies and countries to trade emissions permits.¹⁰

In the approach to Kyoto the U.S. both organized and took a leadership role in the "Umbrella Group." The Umbrella Group is basically all Parties to the UNFCCC which aren't in the EU or the G77 and China. The Group has been defined, by the U.S. Chair of the Council of Economic Advisors, as a "subset of Annex I countries [that] shares a common interest in promoting market-based mechanisms, most specifically, fully flexible rules for international trading of emissions permits."¹¹

⁷ Eileen Clausen, "Climate Change." Unpublished U.S. Non-Paper. (Washington, DC: U.S. Department of State, Oceans and International Environmental Scientific Affairs Bureau, 1996). Cited in David Harris, "Considerations in Designing and Implementing an Effective International Greenhouse Gas Trading Program," (Cambridge, MA: National Economic Research Associates, 1997).

⁸ "Why Africa Should Reject the US Proposal," *Eco*, Vol XCVII, No.4, October 27, 1997, p5.

⁹ Stuart Eizenstat, Statement before the House International Relations Committee, May 13, 1998, p.4.

¹⁰ *ibid*, 5.

¹¹ Testimony of Dr. Janet Yellen, Chair, Council of Economic Advisers Before the House Commerce Committee of the Economics of the Kyoto Protocol, March 4, 1998, p15.

The difference between the U.S. position and EU position on emissions trading in the lead up to CoP 3 was that while the U.S. argued for emission targets and trading the European Union wanted policies and measures. The "key debate in the policies and measures area,"

revolved around a fundamental clash of political and governmental cultures between the EU and United States. The EU, familiar and comfortable with internal harmonization and a single market ...argued strongly for a coordinated approach, specifying a wide range of policies and measures, some of which would be mandatory. US negotiators, anti-interventionist by inclination ...determined to build into the Protocol as much flexibility in meeting its targets as possible.¹²

The primary difference between the U.S. and EU position has also been described as being that

the Europeans have expressed a strong predilection for taxes [while] the United States is more inclined toward tradable permits for several reasons. First, the American public and their congressional leaders have repeatedly evidenced an aversion to energy taxes, making tradable permits schemes, the default policy of choice. Second, the costs of a tradable permit program are less explicit than those for a tax program. Given the public's uncertainty about the seriousness of the climate change problem and its reluctance to spend a lot of money on policy responses, the former is likely to be more politically feasible. Third, tradable permit schemes tend to be more appealing to special interests. Environmental interest groups are more comfortable with tradable permit systems because they know exactly how much pollution is being reduced. Business interests prefer permits because of the opportunity to make shrewd abatement decisions and be correspondingly rewarded in the marketplace. Finally, the US

¹² Grubb, The Kyoto Protocol: A Guide and Assessment, 65. The G77 and China position on emissions trading was, at least in theory, simple. It was that "allocations in emissions trading should be based on per capita entitlements." G-8 Ad Hoc Group on Climate Change, "International Emissions Trading Issues," July 17, 1998, p4. The issue of "technology transfer" has, to some extent, raised similar positions. The G-77 and China has argued that there should be a technology transfer mechanism which would allow developing countries to obtain environmentally sound technologies on "non-commercial and preferential terms." However, the U.S. has opposed the reference to "non-commercial" terms and has insisted that when the Convention was being negotiated "the market was understood as the best way to proceed." The EU has taken a middle ground by supporting a "clearing house mechanism similar to the one under the Convention on Biodiversity."

experience with sulfur dioxide (SO₂) permit trading is considered an environmental and economic success and advocates hope to replicate it with carbon dioxide.¹³

In discussing why countries approach policy mechanisms to reduce GHG emissions differently, one analyst noted that “many European countries finance not only their public administration system but also their health system, social security and teaching system by raising funds from taxes levied directly or indirectly on wages.”¹⁴ However, the “fiscal system is very different in the US and in Japan *as a practical translation of different views of social organization.*”¹⁵ [italics supplied]

In an interview regarding climate change with 24 policy makers (in a sample of European countries in 1991), differences between the U.S. and European attitudes on climate change were examined. The authors wanted to explain “why the United States has resisted strong action [on climate change]” compared to the Europeans.¹⁶ The authors found that Germany and Sweden were “more concerned” about climate change than other European countries.¹⁷ Although the article did not focus on the differential attitudes towards emissions trading of the different European countries, it implied that Germany would not be

¹³Henry Lee, “Designing Domestic Carbon Trading Systems: Key Considerations,” (Cambridge, MA: Harvard University, Belfer Center for Science and International Affairs, 1998), 2.

¹⁴Jean-Charles Hourcade and John Robinson, “Mitigating Factors: Assessing the Costs of Reducing GHG Emissions,” Critical Issues in the Economics of Climate Change, Brian Flannery, Klaus Kohlhase, and Duane LeVine, ed. (London: International Petroleum Industry Environmental Conservation Association, 1997), 68. It has also been suggested that Europeans prefer environmental taxes to tradable permits because it allows them to attach a “tangible pain.” Leyla Boulton, Financial Times, May 15, 1995. Cited in Jim Perkhaus, “Restricted Access!” (1998). On file with the author.

¹⁵Ibid.

¹⁶Willet Kempton and Paul Craig, “European Perspectives on Global Climate Change,” Environment, Vol 35, No 3 (April, 1993).

¹⁷Ibid, 17.

overly enthusiastic about emissions trading.¹⁸

Interestingly, the authors pointed out that in comparing attitudes about climate change, the “biggest split was not across countries, not between government and industry, and not even between those who were for and against quick action on global climate change. Rather, the biggest split was between those who had a traditional economic perspective and everyone else.”¹⁹

Shortly before CoP 3, a consortia of environmental NGOs evaluated the national plans for climate change mitigation for all OECD countries.²⁰ One factor in the evaluation was whether the “country supports emissions trading.” The evaluation concluded that the U.S., Netherlands and Norway supported emissions trading without caveats. Japan and Germany were respectively listed as supporting emissions trading with “conditions” and “cautiously.”

France was listed as being against emissions trading.

¹⁸ Similarly, before CoP 1, the EU position on joint implementation was that it did “not intend to meet its current emissions target through JI project, [but] will support JI projects between developed and developing countries once JI is guided by ‘clear and unambiguous criteria...to ensure the credibility of JI.’” Julia Dore and William Westermeyer, Climate Change and Energy Use: Status and Options for European Policy, European Parliament Scientific and Technological Options Assessment, Vol. I: Final Report, (European Union, March 1995), PE 165.092. p.110. Quoting an EU communication to the INC for its tenth session in Geneva, August 22-September 2, 1994 published in note A/AC.237/MISC.37.

In the initial CoP 1 discussions of joint implementation France, on behalf of the EU, “...called for a progressive approach beginning with a pilot phase that is transparent, well defined and credible, with no credits for Annex I Parties.” Earth Negotiations Bulletin 12, no.15 (1995) p.1. And Germany’s Chancellor opened the ministerial segment of the CoP with a speech in which he announced that “...I know there are reservations on the part of the developing countries against joint implementation. I take these concerns seriously. ‘Joint Implementation’ must therefore be an instrument of joint responsibility and must not mean that the industrialized countries can neglect their own efforts at climate protection.” Joint Implementation Quarterly 1, no.1 (Summer 1995) p.3.

¹⁹ Kempton and Craig, “European Perspectives on Global Climate Change,” 42. The authors also suggested that one difference was that “the Europeans expressed multi generational concerns in more concrete terms, considered a greater time length, and tied responsibility for the future to national identity.” Ibid, 17-18.

²⁰ Climate Network Europe, “Independent NGO Evaluations of National Plans for Climate Change Mitigation: OECD Countries,” (UK: Em Print, 1997).

During meetings shortly before Kyoto, the EU proposed a substantial reduction in greenhouse gas emissions-15 percent for three greenhouse gases (CO₂, CH₄ and N₂O). The EU proposal included the idea of "burden sharing" among EU member states to meet the EU's target. However, "the inclusion of flexible mechanisms was a point of contention between the US and EU. The EU delegation was opposed to emissions trading and skeptical about joint implementation."²¹

The U.S. response, made by its delegate to the last UNFCCC meeting leading up to Kyoto (the seventh session of the Ad Hoc Group on the Berlin Mandate held in July-August, 1997), was that

it was not possible to decide what kind of numerical target might be undertaken without knowing what constraints would be imposed on....emissions trading, joint implementation, a budget process and a banking process to increase flexibility and reduce costs.²²

Going into Kyoto the U.S. proposal for Kyoto was based on "the use of this [emissions trading] mechanism, together with JI and 'borrowing and banking'."²³

NEGOTIATIONS IN KYOTO

Herman Ott, a noted analyst of the climate change negotiations, has noted that "the agreement on a system for the trading of emissions was one of the main objectives of Non-European industrialized countries in the negotiations on the Kyoto Protocol. It was, however, quite a contentious demand."²⁴ The EU Commissioner for the Environment made it clear that "domestic action should

²¹Pamela Chasek and others, "European Union Views on International Greenhouse Gas Emissions Trading." (New York, NY: Columbia University, School of International and Public Affairs, Environmental Policy Workshop, 1998), 5.

²² Earth Negotiations Bulletin, 12, no. 50 (August 1, 1997) p.2

²³ John Lanchbery, "Negotiating a Protocol," *Implementation Matters* 1 (1997), 5.

²⁴ Herman Ott, "Emissions Trading in the Kyoto Protocol-Finished and Unfinished Business," linkages/journal, 3, no.4 (Oct 26, 1998) p.18. www.iisd.ca/linkages/journal

provide the main means for meeting the commitments."²⁵

The EU argued that emissions trading was unacceptable because it had the potential to create environmental loopholes.²⁶ This objection is, in part, based on a relatively stronger commitment to the value of environmental sustainability for the EU than for the U.S. In contrast to the U.S. push for emissions trading, the EU "proposed including obligatory policies and measures" for countries to reduce GHG emissions.²⁷

However, there are other reasons for the EU position. The fact that the Netherlands, a generally pro-environment government, objected less to emissions trading than some other EU members is suggestive of the fact that culture may play a role in these positions. Within the EU, France took the most vigorous position in opposition to emissions trading, flatly stating that it "should not be used until quantifiable reductions have been achieved" by a country.²⁸

While the U.S., and others (Japan, USA, Switzerland, Canada, Australia, Norway and New Zealand) "declared agreement on this instrument to be an indispensable element of any protocol, this demand was met with caution by most Member States of the EU and most developing countries."²⁹ The G-77 and China argued that emissions trading was "extraneous to the Berlin Mandate and would not lead to GHG emissions limitation and reduction."³⁰

²⁵ Speech by Ritt Bjerregaard to the Third CoP, Kyoto, December 8, 1997. Published by the European Union. On file with the author.

²⁶ Earth Negotiations Bulletin, 12, no.74 (December 9, 1997) p.1.

²⁷ Lanchbery, "Negotiating a Protocol," *Implementation Matters*, 54.

²⁸ Earth Negotiations Bulletin, 12, no.74 (December 9, 1997) p.2.

²⁹ Herman Ott, "Emissions Trading in the Kyoto Protocol-Finished and Unfinished Business" linkages/journal, 3, no.4 (Oct 26, 1998) p.18. www.iisd.ca/linkages/journal

³⁰ Earth Negotiations Bulletin, 12, no.73 (1997) p.2.

The reasons that European countries and developing countries were wary of emissions trading differed to some extent although there were some shared issues as well. Both the EU and the G-77 and China were concerned that "trading might provide a cheap way for the US, Canada, Australia and New Zealand to 'buy' themselves out of their obligations."³¹ In other words, the EU and developing countries had a shared rationalist concern that certain members of the Umbrella group, especially the U.S., would be able to take economic advantage of a trading system. They would be able to "buy themselves" out of their commitments-while others would still be forced to make domestic changes to meet their commitments. Essentially, the fear is that the U.S. and others would be able to do relatively better out of an emissions trading system than the European members of Annex I.³²

The G-77 and China also scornfully considered emissions trading as "offshore extra-territorial implementation of targets."³³ This phrasing is suggestive of the underlying the G-77 and china have with emissions trading-that it might perpetuate existing power/economic relationships.³⁴ The main objection of developing countries to emissions trading is

with regard to equity. Quite clearly, the approach taken by the Kyoto Protocol does not take equitable distributional considerations into account, since emission allocations are based on past emissions-the so-called 'grand fathering approach.' This *structural* deficit will have to be remedied once these countries are supposed to enter the trading

³¹ Ott, "Emissions Trading in the Kyoto Protocol-Finished and Unfinished Business" linkages/journal, 18.

³² Japan and the EU shared a similar concern that the U.S. would be able to use "its political leverage to gain preferential access, particularly *vis-a-vis* the likely Russian surplus." Grubb, The Kyoto Protocol: A Guide and Assessment, 129.

³³ Earth Negotiations Bulletin, 12, no.74 (December 9, 1997) p.1.

³⁴ "However, emissions trading also has the potential to "significantly influence the pace and direction of the evolution of the international trade and financial system."

system.³⁵ (italics supplied)

This suggests that while a rationalist perspective may explain some of the overlapping concerns of the EU and the G-77 and China about emissions trading a structural perspective better explains those concerns unique to developing nations.

Despite the objections, the U.S. continued to place “top priority on reaching an agreement on....the possibility to ‘trade’ surplus emission reductions with other parties.”³⁶ Ultimately, the EU gave in to the U.S. demand, “in the end, the EU agreed to an 8% reduction of six GHGs for the European Union as a whole, and conceded to the inclusion of Article 17 on emissions trading.”³⁷ Specific emissions limitations would be accepted-but flexibility in how those limitations could be met would be allowed. With the EU having agreed to emissions trading, albeit “cautiously by most of the European countries,” the G-77 and China had little choice but to follow.³⁸

POST KYOTO POSITIONS AND POSTURING

After Kyoto, a team of scholars at Columbia University attempted to outline different European views on emissions trading.³⁹ The Columbia study

³⁵ Ott, “Emissions Trading in the Kyoto Protocol-Finished and Unfinished Business” linkages/journal, 18. An additional structural concern of the G-77 and China is based on a “demand to be fully included in detailed discussion on trading. They were effectively excluded from the key negotiations on the issue at and before Kyoto. To continue to exclude them in Buenos Aires and subsequent meetings would thus be a big mistake and would be likely to result in their continued opposition to any developed country deal.” John Lanchbery, “Expectations for the Climate Talks in Buenos Aires,” Environment, 40, no. 8 (October 1998) p.20

³⁶Herman Ott, “The Kyoto Protocol to the UN Framework Convention on Climate Change-Finished and Unfinished Business” Global Climate, Yearbook of International Environmental Law, 8 (1997). <http://www.wupperinst.org>

³⁷Chasek, “European Union Views on International Greenhouse Gas Emissions Trading,” 5.

³⁸ Ott, “The Kyoto Protocol to the UN Framework Convention on Climate Change-Finished and Unfinished Business.”

³⁹Chasek, “European Union Views on International Greenhouse Gas Emissions Trading.”

compared the positions on the Kyoto mechanisms between the Netherlands, Germany and France. The study was based on analyses of the positions expressed in official communications and documents, and interviews with relevant government officials, industry leaders and environmental non-governmental organizations.

The Netherlands have, the study concluded “expressed a strong interest in alternative policy instruments, such as ET [emissions trading].”⁴⁰ However, the Netherlands believe that sinks and CDM should be more important than emissions trading for making emissions reductions.

The German position was, prior to Kyoto, relatively unenthusiastic about emissions trading. However, after Kyoto, Germany “seems to have accepted the fact that emissions trading has been incorporated into the Kyoto Protocol and the policy question is no longer whether there will be emissions trading, but what form it will take.”⁴¹

France, “an outspoken opponent of emissions trading as proposed by the United States,” went “so far as to characterize it as ‘unethical’....even supporters of of emissions trading in France make their approval conditional”.⁴² The extreme end of the European position on emissions trading (and Joint Activities) was expressed by French President Jacques Chirac in a letter to President Clinton between CoP 3 and CoP 4. President Chirac admonished that “at best flexibilities will be of secondary importance.”⁴³

⁴⁰ibid, 22.

⁴¹ibid, 29.

⁴²ibid, 36.

⁴³Jacques Chirac. Letter to President Clinton regarding climate change. July 13, 1998. On file with the author.

Another post-Kyoto study surveyed potential participants in GHG emissions trading in Europe, the U.S. and Japan.⁴⁴ It asked how they likely they thought it was that their country would be involved in emissions trading. Respondents from the private and public sector ranked the likelihood of their country adopting regulations, tax regimes or emissions trading to reduce GHG emissions.⁴⁵

European companies ranked regulation and tax regimes as most likely. Although they were familiar with the U.S. SO₂ trading program, European companies did not believe that cap-and-trade policies would become an important component of European emissions reductions policies.⁴⁶ However, European governments appeared slightly more willing “to utilize market-based tools (carbon taxes and cap-and-trade) than European companies believe them to be.”⁴⁷ U.S. companies, on the other hand, “ranked cap-and-trade as the most likely option.”⁴⁸

U.S. companies also tended to believe more strongly than European companies and governments that a secondary market in emissions rights was essential. Additionally, European governments were less concerned about the risks associated with emissions commitments not being met by governments and more worried about the risks that a secondary market could create.⁴⁹

Between CoP 3 and CoP 4 the EU opposition to emissions trading in general

⁴⁴ Donald Larson and Paul Parks, “Risks, Lessons Learned and Secondary Markets for Greenhouse Gases Reductions” (Washington, DC: World Bank, 1999).

⁴⁵ The study included eighteen European companies and business federations, five North American companies, five European governments, Two European NGOs, and one Japanese utility. Most of the companies are major GHG emitters and several are large energy companies.

⁴⁶ Larson Risks, Lessons Learned and Secondary Markets for Greenhouse Gases Reductions,” 21-22.

⁴⁷Ibid, 22.

⁴⁸Ibid.

⁴⁹Ibid, 30.

began to gradually shift. The evolving new EU position was that any credits from emissions trading which a country used to offset domestic emissions reductions should have “ceilings”-i.e., they should be supplemental to-rather than in lieu of-domestic reductions.

After CoP 3 the EU position on “ceilings” for market mechanisms became more clearly articulated. For example, the EU submission on the Kyoto mechanisms, submitted to the UNFCCC Secretariat on June 12, 1998 (midway between Kyoto and Buenos Aires), argued that “domestic action should provide the main means of meeting commitments under Article 3, and that there should be a concrete ceiling established on the use of flexible mechanisms to ensure this.”⁵⁰ And a paper by the European Commission Staff (which explained the “scheme” of emissions trading and noted that the U.S. was “keen to see early operation” of emissions trading), argued that emissions trading should “be supplemental to domestic action.”⁵¹ The Commission Staff also suggested that it was an open question as to whether to “allow private companies to trade internationally.”⁵²

At the Meetings of the Subsidiary Bodies between CoP 3 and CoP 4 (in June of 1998 in Bonn), the EU continued to stress the importance of domestic action-rather than use of the Kyoto mechanisms-to reduce GHG emissions. The EU continued to express concern that the market mechanisms could lead to loopholes that weaken the environmental effectiveness of the commitments. The U.S. responded by simply urging that a clear and simple set of rules for

⁵⁰ Paper submitted to the UNFCCC on June 12, 1998 as the “Preliminary Response of the EU and Switzerland to the initial list of issues raised by G77 (and China) on Mechanisms of the Kyoto Protocol.”

⁵¹ European Union Commission Staff, “An Analysis of the Kyoto Protocol,” (Environmental Council of the European Union, March 1998). On file with the author.

⁵² Ibid.

emissions trading be specified which would help to ensure that there were no loopholes. The U.S. also reiterated its position that there be no limits to the percentages of emissions rights that could be bought or sold.⁵³

Shortly before CoP 4, the U.S. feelings about emissions trading were summarized in a article authored jointly by Carol Browner (administrator of the U.S. Environmental Protection Agency) and Stuart Eizenstat (head of the U.S. delegation in Kyoto and Buenos Aires, then an Undersecretary of State). After explaining that emissions trading is “a market mechanism that promotes cost-effective reductions by allowing countries or companies to trade emissions allowances,” they lamented that “many countries and organizations most passionately committed to solving the problem are, in our view, mistakenly opposed to emissions trading or determined to place counter productive restrictions on it.”⁵⁴

Browner and Eizenstat argued that

limits on how much of a nation’s Kyoto target can be met through international emissions trading ...is a deeply flawed idea. Limits on trading would greatly increase administrative costs, be exceedingly difficult to implement, and generally make it much more expensive to address climate change.⁵⁵

There was also a lightly veiled threat to the EU in the Browner and Eizenstat article. They claimed that within the EU “measures to control greenhouse gases are as much as *six times* more expensive in some countries than in others.” [italics supplied] Given this, they went on to suggest that the adverse impact of trading restrictions would “be even greater in Europe than in the US: restrictions

⁵³Earth Negotiations Bulletin, 12, no. 78 (June 3, 1998) p.4.

⁵⁴ Carol Browner and Stuart Eizenstat, “Cut-price emissions,” Financial Times October 28, 1998. p.12.

⁵⁵Ibid.

currently proposed by some governments could well double carbon allowance prices in the US and triple those allowances prices in the EU.”⁵⁶

Underlying this statement is the U.S. suggestion that the rules on emissions trading might apply to intra-EU exchanges even under the EU Bubble. This suggestion is one which the U.S. has been consistently making-and which the EU categorically rejects. A few months before the Browner and Eizenstat article, the EU announced in a press release that the “existence of the EU bubble does not prevent the EU from fully participating in international emissions trading.”⁵⁷ Nonetheless, it is a somewhat ambiguous issue under the Kyoto Protocol, and one which the U.S. will probably keep raising until the rules on the market mechanisms have been resolved.⁵⁸

This argument may be one reason why, at a meeting of environmental ministers shortly before CoP 4, the EU Commissioner for the Environment announced that the EU might consider softening its previous insistence that there had to be a “concrete ceiling on the use of flexible instruments.” However, she added that “flexible instruments under the Kyoto Protocol will only be acceptable to the 15 EU member states if they are strictly policed....rules should stipulate who would be allowed to transfer, acquire and trade emission reduction units, and how trade should be reported, monitored and policed.”⁵⁹ However, in the EU paper on emissions trading published just before CoP 4 the EU returned to its position that “trading is [to be] supplemental to domestic

⁵⁶Ibid.

⁵⁷European Union Press Release, “Climate Change-The European Commission Presents the First Steps for an EU Post-Kyoto Strategy,” June 3, 1998. No.51/98.

⁵⁸ It has even been suggested that the U.S. was “happy to accept the EU’s internal bubble in principle....[because it helps give] a stranglehold over EU resistance to emissions trading.” Grubb, The Kyoto Protocol: A Guide and Assessment, 86.

⁵⁹Joint Implementation Quarterly 4, no.3 (September 1998) p.3.

action.”⁶⁰

At a pre-CoP 4 EU Council meeting, Germany proposed that the use of the mechanisms be limited to five percent of a Party's annual emissions. This position was supported by Denmark, Luxembourg and Spain. However, it was opposed by the Netherlands, Sweden, Finland and Ireland who argued that the formula was too rigid. The Netherlands suggested that ceilings should be decided on when the CoP decides on overall mechanisms.⁶¹

At CoP 4 the EU ultimately took the position that “domestic actions should be the primary means of emissions reductions and the mechanisms should be supplemental.”⁶² The G-77 and China continued to rail against the market mechanisms, albeit with a certain amount of division in its ranks.⁶³

Not surprisingly, the Umbrella Group at CoP 4 argued that the flexibility mechanisms should be open, market-based, cost-effective and without restrictions on the amount that could be traded. It argued that restrictions on emissions trading would be “inequitable, costly, arbitrary and difficult to

⁶⁰ Non-Paper on Principles; Modalities; Rules and Guidelines for an International Emissions Trading Regime set forth by the European Community, Bonn June 5, 1998. On file with the author

⁶¹ “No EU Agreement on ‘Ceilings’,” Joint Implementation Quarterly 5, no.1 (March, 1999) p.13.

⁶² Earth Negotiations Bulletin 12, no. 90 (November 5, 1998) p.1.

⁶³ CoP 4 in Buenos Aires was noteworthy for the beginning of a potential fracturing of the G-77 (and China). The most obvious example of this was the decision by Argentina, the host country, to accept an emissions target. Early on in the conference, Argentina had infuriated much of the G-77 and China by suggesting the inclusion on the agenda of discussion of the idea of developing country commitments. While this idea was rejected, there was little that the G-77 (and China) could do to stop Argentina (and then Kazekstan) from making a dramatic announcement of a voluntary acceptance of an emissions target (although the exact amount, or even the methodology for determining the amount had not been worked out). This action was followed by the U.S. signature of the Kyoto Protocol in New York within 24 hours (although it has not yet been submitted to the Senate for ratification). It was therefore no surprise that Argentina also announced its firm support for emissions trading, saying that it was “an innovative solution to market failure.” Earth Negotiations Bulletin 12, no. 97 (November 16, 1998) p.11.

implement".⁶⁴

To drive home its point, the head of the U.S. delegation, Stuart Eizenstat stated that emissions trading

will allow the world to achieve greater greenhouse gas reductions at a faster pace and a lower cost for all Parties. At a time of global financial uncertainty, it should be clear to all that we cannot afford a system that makes the reduction of a ton of carbon more expensive than it needs to be....a robust system of flexible mechanisms with clear rules-and without arbitrary limits-is the key to unlocking the energies and ingenuity of the private sector to meet the challenge of climate change.⁶⁵

In post CoP 4 Umbrella Group meetings to discuss emissions trading Japan has suggested that, while it supported emissions trading in general, it did not necessarily feel that emissions rights should devolve to the private sector in order to be traded. In other words, some countries might choose to have the national government be the only entity permitted to trade emissions rights. This position would seem to be at odds with most members of the Umbrella Group who believe that in order for an emissions trading regime to be robust it should engage the private sector to the greatest degree possible.

After CoP 4, the EU Council of Ministers for the Environment debated the issue of a ceiling on the use of the Kyoto Mechanisms, "formulating a common EU viewpoint on 'ceilings' for CoP 5. As a result, the EU "called on the U.S. to be more ambitious in domestic programs to cut greenhouse gas emissions instead of opposing the EU's proposal to limit the use of flexibility mechanisms to reduce a country's emissions."⁶⁶ At the 10th Subsidiary Bodies Meeting in

⁶⁴Earth Negotiations Bulletin 12 , no. 90 (November 5, 1998) p.1.

⁶⁵ Stuart Eizenstat. Remarks prepared for delivery at the UNFCCC Fourth Conference of the Parties. November 12, 1998. On file with the author.

⁶⁶ Sarah Roberts, "Climate Change Update" (Washington, DC: The World Bank, May, 1999), 4. Roberts is citing Climate-L@Mbnet.Mb.Ca, May 28, 1999, no. 3, p.5-7.

Bonn in June of 1999 (the first large post CoP 4 meeting), the EU again proposed capping the use of the Kyoto mechanisms, particularly emissions trading.

Going into CoP 5, many members of the EU continued to fear that “market mechanisms are simply a way for countries to break their Kyoto promises without making ‘genuine’ cuts at home; in effect, they believe that *emissions trading is bad in itself*.”⁸⁷ (italics supplied). This belief has led the EU to suggest that developed nations must “make more than half of the cuts promised under the Kyoto deal through domestic action, rather than trading their quotas....The Europeans want to strike out of the agreement the idea that trading should be unfettered.”⁸⁸

The U.S., joined by its Umbrella Group allies, opposed the EU proposal. In doing so, the U.S. made the arguments that caps would reduce the flow of resources to developing countries, impede the cost effectiveness of the mechanisms and hinder acceptance of the Protocol. The U.S. also went on to threaten that caps would “re-open the ‘package’ agreed in Kyoto....and create a double standard by not clarifying how it [caps] applies to Article 4 (EU ‘bubble’).”⁸⁹

Taking all of the studies and statements discussed above together, one can roughly group countries into four categories. The U.S. is clearly and unequivocally in favor of emissions trading. Next are those who appear to be in favor of emissions trading with some reservations. This includes Norway, Japan, the Netherlands (in that order). A third group, consisting of Germany

⁸⁷ “Hotting Up,” The Economist 353, no. 8143 (October 30, 1999) p.22.

⁸⁸Ibid

⁸⁹Earth Negotiations Bulletin 12 , no. 101 (June 2, 1999) p.2-3.

and Sweden, appears to be in favor of emissions trading with greater reservations and restrictions. Finally, France appears to be the least in favor of emissions trading.

Given the above information, scores will be assigned as follows for positions on emissions trading (with 1.0 being the most favorable and 0.0 being the least favorable): U.S.=1.0; Norway, Japan and the Netherlands =0.65 (average, respectively they are 0.70, 0.65 and 0.60); Germany and Sweden=0.35, and; France=0.0. It should be noted that this ranking is not assuming that all Umbrella statements, or all EU statements, may be equally attributable to all members. Additionally, calculations of market orientation plus emissions trading need and of market orientation minus emissions trading need are included. These numbers are only meant to show the relative differences and similarities between cultural orientation and rational economic need for emissions trading.

The importance of these numbers on national positions is, for the purpose of this dissertation, how they compare to rationalist economic interests and cultural market orientation. Such a comparison may shed light on the complex process by which national positions are reached. Viewing

climate change through the lens of cultural theory may make it possible for us to better understand the process of policy implementation within a given country as well as the country's choice of policy to reduce the specific threat of global warming.⁷⁰

⁷⁰Anne Johnson, "The Influence of Institutional Culture on the Formation of Pre-Regime Climate Change Policies in Sweden, Japan and the United States," Environmental Values, 7 (1998) p.225.

**MARKET ORIENTATION, ECONOMIC INTEREST
AND ET POSITION DATA**

	total rational et need	open market orient	position on emissions trading	market orient plus rational need	dif market orient and rational need
U.S.	0.63	1.0	1.0	1.63	0.37
Japan	0.86	-1.75	0.65	-0.89	2.61
Netherlands	-0.24	0.7	0.60	0.46	0.94
Sweden	-0.11	0.1	0.35	-0.01	0.21
France	0.62	-0.6	0.0	-0.02	1.22
Germany	0.13	0.3	0.35	0.43	0.43
Norway	-1.25	0.35	0.70	-0.9	1.6

Underlying cultural, rational, and structural factors all appear to play a significant role in determining Parties' positions on emissions trading. An analysis of the data suggests that the most important factor may be the cultural orientation a country has towards open markets. This can be seen when cultural orientation and economic interests are opposed (a large difference between market orientation and rational need).

However, it also clear that economic rationality does play a very important role in determining national positions on emissions trading. To a lesser extent, institutional structure also appears to have an impact on national positions (the figures for "market orientation plus rational need" help to illustrate this). The "total rational et need" is a combination of a variety of factors.⁷¹

A multiple regression analysis of the correlation between the independent variables of open market orientation and rational need for emissions trading and the dependent variable of the positions on emissions trading reveals little by itself. The R squared correlation is 0.12 and the t statistics are 0.1 for rational

⁷¹ This number is derived by multiplying the standardized economic "pain" (relative) by 4, and adding this to the standardized economic pain (absolute) and the damage score (not standardized) and then dividing by 6. For a discussion of how the data for making the calculations for Sweden and Norway was derived (they are not specifically listed in "International Energy Outlook 1999 with Projections to 2020") see footnote 514.

need and 0.7 for market orientation. This is largely because the two independent variables are divergent for most of the countries considered and hence pull the positions on emissions trading in different directions.

Although it is difficult to apportion the exact relative weights of the different factors in determining negotiating positions, it does seem clear that all three are involved. Where the three factors coincide, the national position is unambiguously consistent with all three.

The congruence of all three factors may be seen in the case of the U.S. The U.S. is culturally oriented towards open markets, economically needs the Kyoto market mechanisms, and structurally encouraged towards emissions trading. This conjuncture of cultural orientation, economic interest and structural dynamics may explain why the U.S. position on emissions trading is the most favorable of all countries considered. No other country examined has as great a degree of consistency in the cultural, rational and structural interests. And no other country has as positive a position on emissions trading.

To a somewhat lesser degree Sweden and Germany also have consistency in all three factors (consistency between cultural orientation and economic interest is evidenced by the low difference between the two figures). German and Swedish positions are relatively compatible with the other factors. Both of these nations are close to the average (i.e., a standardized z-score of close to zero) in both their cultural orientation and economic interest and both have a similar position on emissions trading (in favor but with greater restrictions).

Somewhat surprisingly, it appears that where economic interests and cultural

orientations conflict, cultural orientation may have a slightly greater role in generating the position than economic interests. For four of the countries considered there is a large degree of divergence between their rational interest in emissions trading and their open market orientation. Japan, Norway, and France and the Netherlands all have a difference between their standardized z-scores of over, or close to, 1.0.

For three out of these four countries, their positions on emissions trading appear to be more a product of the cultural orientation towards open markets than the rational need for emissions trading. Of the four countries with the greatest divergences between economic interest and cultural orientation-Japan, Norway, France and the Netherlands-all but Japan have positions which appear to be more driven by their cultural orientation than their rational interest.

France's low degree of cultural orientation towards open markets (the second lowest) seems to far outweigh its high rational need for emissions trading (virtually tied for the second highest) in determining its position (the lowest of all countries).

Additionally, Norway's relatively high degree of open market orientation (the third highest) appears to have outweighed its low rational need for emissions trading (the lowest of all countries) in determining its high level of approval for emissions trading (tied for the second highest of all countries). Similarly, the Netherlands high degree of open market orientation (the second highest) appears to have outweighed its low rational need for emissions trading (the second lowest) in generating its relatively high level of approval for emissions trading.

In contrast, Japan's low degree of cultural orientation towards open markets (the lowest of all countries considered) appear to have been outweighed by its high rational need for emissions trading (the highest of all countries considered) in determining its position.

The structural factor of group membership also seems to have played a role in Parties' positions. Individual country positions might be expected either move towards the group position or at least be reinforced by it. National positions slightly towards the group position. A comparison of the overall emissions trading factors, i.e., "market orientation plus rational et need" and the "position on emissions trading" suggests that this is the case.⁷²

Two of the countries which have divergent economic interests and cultural orientations, Norway and France, are also structurally members of groups (the Umbrella Group and the EU Bubble respectively) that further encourage their cultural orientation (towards emissions trading in the case of Norway and against it in the case of France). The other two, Japan and the Netherlands are structurally in groups which run counter to their cultural orientation. Japan's membership in the Umbrella Group is at odds with its low market orientation, while the Netherlands' membership in the EU Bubble runs contrary to its high degree of market orientation.

⁷² However, although membership in the EU Bubble is not based on climate change related issues, one might think that Umbrella Group membership could be based on whether or not a country is already in favor of emissions trading (in which case this relationship could be somewhat tautological). But Umbrella Group membership is also partially a function of some industrialized countries, such as Norway and Japan, as having no other opportunities to leverage their individual positions into a more powerful voice by virtue of being part of a larger group (i.e., as the G-77 [and China], the EU Bubble and the Umbrella Group hardened into a trilateral power dynamic isolation from all three groups could dilute the ability to implement ones' arguments-and the Umbrella Group was the only group which was open to Norway and Japan).

In Japan's case, the structural factor may play an important role in moving Japan more towards emissions trading than its' cultural orientation would predict. Japan's position might also be a product of Japan's membership in the Umbrella Group whose *raison d'être* is to encourage emissions trading. Similarly, Norway's positive but modest cultural orientation towards emissions might be reinforced by its membership in the Umbrella Group. And France's anti-open market cultural orientation might be buttressed against its rational economic need for emissions trading by its membership in the EU Bubble.

The Netherlands position at first seems to contradict the idea that group membership influences positions on emissions trading (i.e., the Netherlands position is considerably higher than would be expected from its overall factors especially given its Bubble membership). However, the Netherlands has, more often than would be expected from its size, played a pivotal "broker's role" in international environmental negotiations. It may be that the Netherlands pro-emissions trading position, may be related to its structural desire to be able to work most effectively with different groups to "broker" agreements.⁷³ This may have structurally moved the Netherlands more towards favoring emissions trading more than their cultural orientation or rational need alone would have done.

⁷³ For example, Grubb notes that when the European Council of Ministers met to discuss the issue of emissions trading shortly before CoP 3, it was "under the guidance of the Dutch presidency [which] crafted a compromise between the majority of governments that remained hostile to emissions trading and the small band of supporters." Grubb, The Kyoto Protocol: A Guide and Assessment, 94.

Chapter 10-Conclusion: A Three Dimensional Perspective on Climate Change

*"Culture has been called 'the hidden dimension,' unseen, yet exerting a pervasive influence on the behavior of individuals, groups, and societies. From this premise it has been but a short step for researchers to recognize the potential for dissonance and misunderstandings in situations of intercultural communication....What one cultural takes to be self-evident, another may find bizarre. Concepts central to one culture are peripheral to another. The boundaries between ideas are drawn in different places. Strangely enough, international negotiation has, implicitly or explicitly, been excluded by many political scientists from this general tendency. Yet few activities require such a synchronization of moves, conventions, and meanings across interlocutors as does negotiation. And indeed, in the cases investigated, involving the United States and a group of non-Western nations, it was seen that cross-cultural discrepancies may strongly affect the conduct and outcome of such talks."*¹

A three dimensional perspective, which takes into account structuralist, realist and cultural factors, leads to a more accurate model of the reality behind international negotiations. It may also help to reduce barriers to successful agreement in such negotiations. For example, overlooking the role of culture in the climate change negotiations, such as the orientation towards market mechanisms, may be particularly problematic given the wide disparity of cultural values and institutional relations between the Parties to the UNFCCC- especially between Annex I countries and key developing countries. Consideration of the impact of cultural differences in international business negotiations and in ethno-political conflicts may suggest some possible prescriptions for reducing cultural dissonance.

THE DIMENSIONS OF CLIMATE CHANGE NEGOTIATIONS

The appearance of a conflict between rationalists, culturalists and structuralists is an illusion. But there are differences in both the focus of the beholder and where the eye is looking. The three analytical perspectives all start from different ontologies and are all aimed at different aspects of the decision making process. Instead being mutually exclusive, such differences can provide multiple insights. Because the reality behind international negotiations is complex and multifaceted, a comprehensive understanding of this process must be equally multidimensional. Each perspective can

¹ Raymond Cohen, Negotiating Across Cultures: International Communication in an Interdependent World, (Washington, DC: United States Institute for Peace:1991), 215.

strengthen and enrich the others if our analytical frame of reference recognizes the validity of the other perspectives, and the feedback between them.

Structuralism, rationalism and culturism each have a different “ontology....Reasons, rules, and relations are the various starting points of inquiry” for rationalism, culturism and structuralism respectively.² Because of this, the three perspectives tend to use different analytic tools in developing their explanatory strategies. For example, cultural analysis has historically been undertaken through qualitative case studies. Culturists study the deep underlying “rules that constitute individual and group identities....[seeking] interpretive understandings.”³ Rationalists have instead searched for explanations in quantitative comparisons and statistically oriented analysis. They examine “how actors employ reason to satisfy their interests....[using] comparative static experiments.”⁴ In contrast, structuralists use specific institutional settings in which the roles the players assume defines the outcome of the process. They “explore relations among actors in an institutional context[studying] the historical dynamics of real social types.”⁵

One way of bringing into focus the different perspectives is to recognize that they are qualitatively aimed at understanding and explaining different aspects of the decision making process. Culturists believe the fundamental characteristic that motivates group behavior is cultural orientation. They look to the deep underlying values which underlie how nations define themselves and what motivates them as a group. Rationalists see the decision making process as a product of a complex calculus which balances gains and losses.

²Mark Lichbach and Alan Zuckerman, “Research Traditions and Theory and Comparative Politics: An Introduction,” Comparative Politics: Rationality, Culture, and Structure 7.

³Ibid.

⁴Ibid.

⁵Ibid.

Rationalists try to explain how a nation's leadership makes the decisions which will maximize national interests-how to most efficiently achieve what is valued by the group. Structuralists that decisions are about what interests can be met are a function of a nation's power and its relationships with others. They attempt to map out the actions which nations take to meet their goals in terms of international relationships and respective power. In summary, "[rationalists] study how actors employ reason to satisfy their interests, culturists study rules that constitute individual and group identities, and structuralists explore relationships among actors in an institutional context."⁶

Because they are looking at different aspects of how multilateral agreements are forged no single perspective can fully or accurately describe the process.⁷ Culturists "rightly point out that the material incentives that are central to rational

⁶ Ibid, 249.

⁷ One might also see the relation between the three analytic perspectives in terms of whether each one was able to broaden, or "thicken," its field of vision to encompass the other two perspectives. As one author has eloquently put it, "rationalists study individual action and social outcome. Thin rationalists are pure intentionalists who see reasons as causes of action. They have a reductionist view of conditions and culture that understands them as individual beliefs and desires. For example, economists who do public choice (e.g., Becker 1976) focus on a supposedly universal human nature and its laws: diminishing marginal utility, irrelevance of fixed costs, substitutes and complements in choice, market equilibrium of supply and demand, etc. Hence thin rationalists might be more accurately called 'human-nature rationalists.' One can extend the boundaries of the rational approach by deepening the micro, and hence studying culture, and exploring the macro, and hence examining institutions (Lichbach 1995: chap 10)Culturists study subjective and inter subjective values and beliefs. Thin culturalists include the survey researchers who maintain that actors make culturally informed choices. They also maintain that material structures must always be filtered through ideas-values and beliefs. Culturalists broaden their perimeter by analyzing how culture defines choices and structures. Thick culturalists thus explore the decision rules behind choice and how actors are constituted by culture....Structuralists study civil society, the state, and the international system of states....Since they see choice and culture as derivative of structures, thin structuralists often do not even bother to examine them. Structuralists thicken their approach by studying how the reason and non rationality contained in structures are manifested in actions and orientations." Mark Lichbach, "Social Theory and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure, Mark Lichbach and Alan Zuckerman, eds. (Cambridge, UK: Cambridge University Press, 1997), 259-260.

choice explanations of behavior are themselves cultural constructs.”⁸ They argue that because “our values are programmed early in our lives, they are non-rational (although we may subjectively feel ours to be perfectly rational!). In fact, values determine our subjective definition of rationality.”⁹ In other words, “just as humans need culture to make sense of the world, rational choice needs culture to make sense of human behavior.”¹⁰

And yet culture alone does not accurately explain the behavior of actors. This is because “the effects of culture on collective action and political life are generally indirect, and to fully appreciate the role of culture in political life, it is necessary to inquire how the impact of culture interacts with interests.”¹¹

Moreover, as structuralists point out, their perspective, unlike culturism or

⁸Doug McAdam, Sidney Tarrow, and Charles Tilly, “Toward an Integrated Perspective on Social Movements and Revolution” Comparative Politics: Rationality, Culture, and Structure 158-159. Or, as another author has put it “cultural theory also provides a clear explanation for empirical phenomena that cannot be explained by other models, including behavior that appears irrational from the point of view of conventional rational choice assumptions about goals and actions....Hence, far from subverting rationality, cultural theory provides an invaluable resource for rational choice theorizing, allowing it to explain phenomena that have fallen beyond the reach of its conventional assumptions about preferences and beliefs.” Aaron Wildavsky and Sun-Ki Chai, “Culture, Rationality, and Political Violence,” Culture and Social Theory, Aaron Wildavsky, Sun-Ki Chai and Brendon Swedlow, eds. (New Brunswick, Canada: Transaction Publishers, 1998), 295-296. Another author has added that, “if the state is the ‘form’ of the community or nation, it is not clear why the ‘national interest’ should not be crucially related to the very conceptions of identity and interests of these communities rather than to some positional considerations or to the abstract convention called ‘power,’ in terms of which allegedly all interests can be measured.” Friedrich Kratochwil, “Is the Ship of Culture at Sea or Returning?,” The Return of Culture and Identity in IR Theory, Yosef Lapid and Friedrich Kratochwil, eds. (Boulder, CO: Lynne Rienner Publishers, 1996), 205.

⁹Hofstede, Geert, Culture’s Consequences: International Differences in Work-Related Values, (Beverly Hills, CA: Sage Publications, 1980), 19. And, one might add, “the purely rational human being, whose thought and behavior are the crystallization of absolute reason, is a fictional character who can never exist in the real world.” Donald Calne, Within Reason, (New York, NY: Pantheon Books, 1999). Calne argues that one should cultivate a “double awareness” of reason, defending “it against forces of unreason while at the same time giving up any hope that it alone can ‘supply the content of human motivation.’” As cited in Richard Restak, “Rational Explanation,” The New York Times Book Review, November 21, 1999, p.66.

¹⁰ Wildavsky, “Culture, Rationality, and Political Violence,” Culture and Social Theory, 295-296.

¹¹Marc Ross, “Culture and Identity in Comparative Political Analysis,” Comparative Politics: Rationality, Culture, and Structure, 42.

rationalism, explains “how interpersonal networks shape actor’s perceptions of political objects,” and thereby “incorporates a far more complex set of situated interactions that shape collective outcomes.”¹²

Integrating all three perspectives sheds light on the complex feedback between them. For example, while cultural values underlie rational calculations on how to maximize interests, rational considerations may also influence cultural orientations. When a nation’s leadership, whether it be in contemporary U.S. or nineteenth century Britain, calculates that it stands to gain through open markets, intense efforts are made to promote the value and linkages suggested between markets and other cultural values (U.S. concepts of democratic liberalism or British notions of imperial “honor”).

It is also easy to see how shared cultural values or rational interests can produce new structural groupings. The EU Bubble is, for example, ultimately based on concepts of a shared European culture while the Umbrella Group was created by countries whose members all stand to gain from the purchase or sell of emission rights.¹³ But group structure can also influence cultural values and rational calculations. Although the value of “equity” within the UNFCCC is loudly promoted by the majority the members of the G77 and China, this may in

¹²Theda Skocpol, States and Social Revolution: A Comparative Analysis of France, Russia and China, (Cambridge, UK: Cambridge University Press, 1979), 26.

¹³ One might also see the G77 and China opposition to market mechanisms as tempered by rationalist considerations. For example, developing nations may join together in opposition to market mechanisms because they believe that market systems inherently favor the North due to its greater resources and experience in the market. Additionally, they may fear that open markets will lead to “external shocks and pressures [which] are threatening to developing countries because their slack resources and adjustment capabilities are so limited. Shocks are particularly troubling for political leaders because they are likely targets of unrest generated by sudden declines in material well-being....International organizations based on authoritative rather than market-oriented principles can limit the discretionary behavior of Northern actors by redefining property rights, including, in the most extreme case, compelling additional resource transfers from the North to the South.” Stephen Krasner, Structural Conflict: The Third World Against Global Liberalism, (Berkeley, CA: University of California Press, 1985), 5-6.

large part be due to the fact that the G77 and China have chosen, as a group, to rally around this as a core value. And by banding together as a group the small island nations have been able to have far more influence than any would have had separately-and this has impacted on their rational calculations about what they might be able to accomplish within the negotiations.

National positions may thus be seen as a product of the interplay between cultural orientation (what a nation values), rationalist interest (the calculations on how to achieve what is valued), and structuralist relationships (the group affiliations and power that allow a nation to achieve its interests). This tripartite distinction has correlations with, but is not identical to, the three “factors of compliance” suggested by Harland. Harland’s factor of politics (international and domestic) is similar to the structuralist focus on the relations between, and within, nations and their respective power. But the two other factors, science and economics, are actually combined in the calculations made by the rationalist perspective. The cultural perspective may therefore be seen to generate new information which adds a fourth “factor” to the international environmental decision making process. Culture, whether considered as an analytic perspective or a fourth factor of compliance, may play an especially important role in cases where there are large rational and/or structural differences in the interests and abilities of those involved.

RATIONAL AND STRUCTURAL PROBLEMS FOR KEY COUNTRIES

In the UNFCCC negotiations China, India and Brazil are generally considered to be the three most critical developing countries. This is a function of the size of their economies and populations, their technological sophistication and resource availability, and the leadership roles they have

played within the negotiations. While agreements certainly have been, and undoubtedly will continue to be, reached without the enthusiastic endorsement of these three countries, their participation is generally considered "key" to the ultimate success of the Convention.¹⁴ Yet these nations have clear rational and structural reasons to oppose market mechanisms such as emissions trading.

Because developing countries will not be able to participate in emissions trading (since they do not have emissions commitments) it does not provide them with economic benefits. In fact, developing countries believe that emissions trading will lead to economic disadvantages for them. First, developing nations worry that emissions trading will be used by developed countries in lieu of the CDM (so the economic benefits of CDM from investments in sustainable energy technologies and other revenues will be reduced) because of the lower transactional costs associated with emissions trading.

Developing nations are also concerned that emissions trading could lead to their being pressured into participating in emissions trading (which would

¹⁴ The Clinton administration has targeted these as three of the most important "key" developing countries for the purpose of climate change negotiations. In statements about climate change, Republican and (potential) Reform party candidates also identified similar critical countries. Gary Bauer noted that the Kyoto Protocol was "foolish" because it exempted China, Patrick Buchanan called the Protocol "virtual economic treason" because of the exemption for "mega-polluters like China, India," and George W. Bush referred to the Protocol as "ineffective, inadequate and unfair" because it exempted most of the world, including "major population centers such as China and India." Issue Forum, "The Presidential Candidates Sound Off," The Washington Post, October 25, 1999, p. A16. China is undoubtedly the most important of the three developing countries considered herein because it's population and economy is the largest. Additionally, China is expected to surpass the U.S. as the number one emitter of GHG in the next few decades. The Clinton administration has made overtures to the Chinese leadership at the highest levels to discuss climate change generally, and the Kyoto market mechanisms specifically. India is the second most important developing country and the U.S. has been active to engage the Indian government in the market mechanisms. On October 26, 1999 the Indian government signed a Joint Statement with the U.S. in which they agreed to "work towards early agreement on the elements of the Kyoto mechanisms....to work closely with other countries to develop agreed international rules and procedures for the Kyoto mechanisms, including the Clean Development Mechanism."

require taking on quantified emissions targets with potential economic harm).¹⁵ In the post-Kyoto environment, and particularly in the wake of the Byrd-Hagel Senate Resolution, there has been a move amongst developed nations, and especially from the U.S., to encourage developing countries to “meaningfully participate” in reducing GHG emissions.¹⁶ As *The Economist* magazine explained, “though America agreed to make binding cuts at Kyoto, it now insists on ‘meaningful participation from key developing countries.’”¹⁷ In trying to convince developing countries to participate “meaningfully” it is generally suggested that this might allow them to engage in emissions trading (and benefit economically therefrom).¹⁸

The fact that developed nations have been publicly debating how much

¹⁵Some have suggested that since developed countries have already agreed to cut emissions in the Kyoto Protocol, it is irrelevant to developing countries if emissions trading makes it cheaper (and it may even be in their relative economic interest if it is more expensive for developed countries to make emissions reductions since this may make their products more economically competitive). Of course, developed countries have generally not yet fully agreed to the Protocol (i.e., ratified it) and may not do so without the market mechanisms in place.

¹⁶ Senate Resolution 98 (generally known as the “Byrd-Hagel Resolution”) was approved 95-0 on July 25, 1997 (shortly before CoP 3 in Kyoto) and provides, in part, that the U.S. should not sign an agreement which would “mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new scheduling commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period, or would result in serious harm to the economy of the United States.”

¹⁷ “Hotting Up,” *The Economist*, 353, no. 8143 (October 30, 1999), 22.

¹⁸“Meaningful participation,” means that developing nations should agree to some type of quantified emissions reductions. The U.S. negotiating position between CoP 3 and CoP 5 encouraged developing countries to consider emissions reductions. In late 1999, President Clinton personally gave Chinese leadership a detailed report summarizing potential economic and health benefits for China were it to adopt a growth target and participate in emissions trading. Developed countries might assume emissions reductions through “growth targets.” Growth targets would tie future emissions to some other future factor—such as GDP. See Kevin Baumert, R. Bhandari and N. Kete, “What Might A Developing Country Climate Commitment Look Like?” Washington, DC: World Resources Institute (1999) and Jeffrey Frankel, “GHG Emissions,” Brookings Policy Brief #52 (1999) www.BROOKINGS.ORG/comm/PolicyBriefs/pb052 And *The Economist* has noted that “China and India could voluntarily take steps (such as ending coal subsidies) that would benefit everyone, boosting their economies and their citizens’ health, and also helping to win over a hostile American Senate.” “Hotting Up,” *The Economist*, 22.

economic pain their own emissions reductions commitments will lead to makes it very difficult to persuade developing nations that taking on any type of quantified emissions commitment-even a "growth target"-will be in their economic advantage. Most developing countries, particularly the "key" ones for climate change purposes, simply do not yet believe it is in their rational economic interest to take on any type of quantified emissions commitment.

Of course, China, India and Brazil are also all members of the G77 (and China) which is structurally opposed to taking on quantified GHG reduction commitments and the Kyoto market mechanisms. Developing countries have steadfastly made it clear that they will not, as a group, agree to limiting emissions. This position was clearly articulated in a two-day Ministerial conference of over forty developing countries, including China, Brazil, and India, held shortly before the Rio Conference in order to develop and solidify common positions.¹⁹ And at CoP 4 in Buenos Aires, when Argentina and Kazakhstan both indicated that they might take on some type of quantified emissions reductions, this caused an enormous degree of dissension within the G77 (and China), because it raised structural fears that the group could splinter.

Within the context of the climate change negotiations the G77 (and China) has been very vocal in expressing concerns over, and objections to, the market

¹⁹"The Beijing Declaration on Environment and Development" stated that developing countries "are gravely concerned with the continuous increase in greenhouse gases leading to climate change and its likely implications for the global ecological system....Responsibility for the emission should be viewed both in historical and cumulative terms....it is the developed countries which must take immediate action...Developing countries cannot be expected to accept any obligations in the near future." "Beijing Declaration on Environment," Beijing Review, July 3-14, 1991, p12.

mechanisms.²⁰ This is part of a larger problem that developing nations as a group have with open market oriented regimes generally. The G77 (and China) has consistently opposed such regimes and “endorsed principles and norms that would legitimate more authoritative as opposed to market-oriented modes of allocation.”²¹ This makes it even less likely that any of these three nations would tend to be inclined to favor market mechanisms such as emissions trading.

Additionally, in negotiating between developing and developed nations structural inequalities may tend to emphasize cultural differences. This can make it difficult to reach agreement because when

one party fears that the other side will seek to impose its culture or to use it to dominate....cultural differences became equated with differences in power between the two sides. If one side represents a dominant culture, the weaker side may view the dominant culture as a weapon that will damage the weaker side's interests.²²

FROM CULTURAL DISSONANCE TO CULTURAL SHOCK WAVES

This analysis has correlated the cultural open market orientation of seven countries with their programs and positions on market mechanisms to reduce GHG. Yet all seven of the countries considered are highly developed economically, and six of the seven are members of the same Western

²⁰For example, at the Subsidiary Body Meeting of June 1, 1999 China complained that “emissions trading contained several extraneous elements, such as competitiveness and market size.” Earth Negotiations Bulletin, (International Institute for Sustainable Development), June 2, 1999, p.1. And an African environmental NGO complained that because of “the market-based approach to the CDM, Africa will be marginalised.” Grace Alaanu, “Emissions Avoidance and Equity,” Eco, June 7, 1999, p.2.

²¹ Stephen Krasner, Structural Conflict: The Third World Against Global Liberalism 5.

²² Salacuse, “Implications for Practitioners,” 202 . Moreover, when one side perceives feels threatened by the culture of another, it will use “ its own culture as a fortress to protect itself from cultural onslaught....[therefore negotiators should] avoid all actions and statements that other side might interpret as cultural arrogance and aggressiveness. Insisting on structuring a transaction the ‘way it is done in America’ may....seem a manifestation of a cultural arrogance that will be met with a defensive response.” *Ibid*, 203-4.

“civilization” (the broadest level of “culture and cultural identities”).²³ The seventh nation, Japan, made a concerted national effort in the 1800s to take on western attributes (during the “Meiji Restoration”), had its constitution written by the U.S. (in the aftermath of World War II), and is deeply integrated into the global economy. These seven nations, while by no means homogeneous in their values and beliefs, are relatively similar—at least when compared with less developed members of other “civilizations.” In contrast, China, India and Brazil represent the largest members of their respective Sinic, Hindu and Latin American civilizations. These “civilizations” are quite culturally distinct from the U.S. and other OECD nations.

In cross cultural negotiations the general rule is that the “more pronounced the cultural contrasts between the negotiating parties,” the greater the possibility that the parties will not understand each other “and the more time they will lose ‘talking past each other.’”²⁴ This may add to the difficulty in convincing key developing nations that market mechanisms are the best way to save the environment if their cultural orientation towards open markets is significantly lower than that of developed countries.

China, India and Brazil can all be evaluated according to their respective degrees of cultural open market orientation by using two of the four measures used for the primary seven countries considered.²⁵ For an explanation of the methodology and significance of the scoring from the *Human Values Sourcebook* and the *Global Competitiveness Report* see the discussion of

²³ At least according to Samuel Huntington. See Samuel Huntington, *The Clash of Civilizations and the Remaking of World Order*, (New York, NY: Simon and Schuster, 1996), 26-27.

²⁴ Raymond Cohen, *Negotiating Across Cultures: International Communication in an Interdependent World*, 17.

²⁵ Only the measures from the *Human Values Sourcebook* and the *Global Competitiveness Report* are used as the other two do not include China, India and Brazil.

“Open Market Orientation of Selected Countries” in Chapter 4.

There are three questions which relate to open market orientation which are used in the *Human Values Sourcebook*. First, was asked whether “government ownership of business and industry should be increased.” Second, if “the state should take more responsibility to ensure that everyone is provided for.” Finally, if respondents agreed that “competition is harmful. It brings out the worst in people.” The greater the percentage of people in each country who answered affirmatively to each question, the less each culture is open market oriented.

Open market orientation from the *Human Values Sourcebook* ²⁸

	more govt ownership	more state responsib	comp harmful	total score	standardized	new stan
U.S.	7	14	10	31	-0.87	-1.0
Sweden	14	11	7	32	-0.81	-1.0
Germany	9	22	8	39.5	-0.41	-0.72
Norway	14	21	7	42	-0.27	-0.63
Netherlands	10	23	14	47	0	-0.44
France	18	19	16	53	0.32	-0.21
India	31	20	7	58		-0.2
Japan	17	55	13	85	2.06	0.99
China	6	33	5	104		1.7
Brazil	37	41	18	95		1.4

The other measure of open market orientation which can be used to evaluate China, India and Brazil is the actual degree of governmental market “openness.” The *Global Competitiveness Report* ranks countries on their openness to foreign trade and investment, financial flows and exports. It considers a number of factors which are used to derive a country’s “openness.”

²⁸ Ronald Inglehart, Miguel Basanez and Alejandro Moreno, Human Values and Beliefs: A Cross Cultural Sourcebook-Political, Religious, Sexual, and Economic Norms in 43 Societies: Findings from the 1990-1993 World Values Survey, (Ann Arbor, MI: The University of Michigan Press, 1998), pV251, V252, V254.

National openness ranking from *Global Competitiveness Report*²⁷

	Governmental openness	Standardized score	New stand
Netherlands	2	-1.34	-1.2
Norway	6	-0.91	-1.0
Germany	11	-0.36	-0.74
U.S.	12	-0.25	-0.69
Sweden	20	0.62	-0.25
France	21	0.73	-0.20
Japan	28	1.50	0.18
China	45		1.1
Brazil	49		1.3
India	53		1.5

Combining the data from both measures yields the total open market orientation in the seven developed countries and in China, India and Brazil.

OPEN MARKET ORIENTATION OF DEVELOPING COUNTRIES DATA

	Indiv/uni (7 Cultures)	Indiv (Cult Cons)	Govt own/comp (Human values)	Govt open (Global Report)	new stand ²⁸
U.S.	1.16	1.6	0.87	0.25	-1.1
Netherlands	0.75	0.73	0.0	1.34	-1.0
Norway	---	-0.13	0.27	0.91	-0.73
Germany	0.77	-0.29	0.41	0.36	-0.66
Sweden	0.31	0.02	0.81	-0.62	-0.35
France	-1.48	0.02	-0.32	-0.73	-0.2
Japan	-1.51	-1.95	-2.06	-1.50	0.59
India					0.74
Brazil					1.35
China					1.4

²⁷World Economic Forum, *The Global Competitiveness Report 1998*, Geneva, Switzerland: World Economic Forum, 1998), 112, 114, 134, 146, 150, 170, 184.

²⁸A higher standardized score (average deviation) means a country is less open market oriented. The "new stand" column rescales all countries on a common scale. This was necessary inasmuch as not all the measures were available for all countries (i.e., Norway was not included in the *Seven Cultures of Capitalism* and the developing countries were only measured in the *Human Values* and *Global Report*). The respective average scores for developed countries with all four measures were U.S.=0.97, Netherlands=0.71, Norway=-0.35, Germany =0.31, Sweden=0.13, France=-0.63, and Japan=-1.76 (this is elaborated on in Chapter 4). When only the *Human Values* and the *Global Report* are used (because these are the only ones which include developing countries) the open market orientation is quite similar for the developed countries compared to using all four indicators (i.e., the U.S. is the only country which changes in its relative open market orientation when only two measures are used-dropping from first place to third). The respective average scores for developed countries with the two measures are Netherlands=0.67, Norway=0.59, U.S.=0.57, Germany=0.39, Sweden=0.10, France=-0.53, and Japan=-1.78. Note that the addition of the scores of developing countries changes the overall standardized scores (average deviation) of the developed countries although the respective order remains the same.

As may be readily seen, China, India and Brazil are all substantially less open market oriented than even Japan, by far the least market oriented of the seven developed countries considered. The similarity of the “open market score” of Japan and India-two very different cultures in general-underscores that this only measures one element of culture, albeit a very important one.

The degree to which the three key developing countries are less market oriented than the developed countries indicates that there will be even more of a cultural barrier in persuading these nations of the appropriateness of market mechanisms (such as emissions trading) than in persuading nations such as France and Japan. The fundamental cultural differences in open market orientation creates an ethical impasse. At an underlying level, the initial “rejection of trading in Kyoto stemmed from a fundamental ethical question that has been repeatedly raised by G-77 countries, especially India and China, for years.”¹ This suggests “whether [emissions] trading is right is probably not amenable to consensus-based agreement.”²

CONCLUSION: BRIDGING CULTURAL CHASMS-OR UNDERSTANDING THEY EXIST

Cultural differences are inevitable. Such differences can lead to new and creative ideas, or they can block meaningful and productive communication. The solution is not to try to eliminate the differences-it is to ensure that parties understand that they exist and respect them for their value to their negotiating

¹John Lanchbery, “Expectations for the Climate Talks in Buenos Aires”, *Environment*, Vol 40, No 8, October 1998. p19-20.

²Ibid. The “ethical question” raised is whether it is morally appropriate to allow the rights to pollute to be bought and sold-i.e., whether market mechanisms should apply to the use of the atmosphere as a dumping ground for waste products.

partners.

All negotiations involve the possibility of miscommunications which can jeopardize the potential of reaching agreement. This potential is increased in cross-cultural negotiations. Even with bilateral negotiations with negotiators who "come from different cultures, say, from the United States and Japan, the risks of misunderstanding during a negotiation increase exponentially."³

Scholars have generally considered how to deal with the issue of cross-cultural communication in two rather different contexts. On the one hand, there is a fair amount of literature on the role of culture in international business negotiations. On the other hand, culture has been considered as an integral part of ethnopolitical conflicts. In both of these areas, culture-particularly the core elements of it that relate to social identity-can act as a critical barrier to reaching agreement. And in both cases the primary prescription seems to be that each side must seek to understand the other.⁴ A variety of different tools have been used to help accomplish such understanding.

Most of the studies on international business negotiations argue that the most important step to bridge the gap between cultures is to study the other sides' "culture and history, and not just the issue at hand."⁵ As one author explained it, "the first task you face in an international deal is to identify the

³ Jeswald Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad, (New York, NY: Times Books, 1991), 45.

⁴ It should be noted that both international business negotiations and ethnopolitical conflicts are generally bilateral. However, international environmental negotiations are usually multilateral which exponentially increases the challenges faced by the negotiators. And if "international negotiation is a cumbersome process" in general, then this is even more so "when the issue is global, the agenda is immense, perspectives are widely divergent, and the stakes are high." Michael Grubb, Christiaan Vrolijk and Duncan Brack, The Kyoto Protocol: A Guide and Assessment, (London, UK: The Royal Institute of International Affairs, 1999), 62.

⁵ Raymond Cohen, Negotiating Across Cultures: International Communication in an Interdependent World, 225.

cultural group to which your counterpart belongs and then to learn something about that culture.”⁶ A third author suggested that the first two steps in having a “culturally responsive negotiation strategy” are to “reflect on your culture’s negotiation script [and] learn the negotiation script of the the counterpart’s culture.”⁷ This requires understanding how cultures define themselves. “Most experienced international practitioners know that the....most difficult cultural problems are those that center around differences in values-particularly when those values concern national identity.”⁸

To learn how cultures define themselves, one must understand the ideologies upon which they are based. This is because when the cultural differences relate to ideology, it is even more important to be sensitive to the them. In order to

deal with the barrier of ideology at the negotiating table....*know your own ideology....even if our political beliefs seem to us to be obvious and eternal truths, acknowledged by mankind as laws of nature, those beliefs will inevitably appear to be an ideology to somebody on the other side of the negotiation table....Once you have learned your own ideology, don't preach it....At the very least, your gratuitous praise of 'free enterprise' in a socialist country will be interpreted to be a criticism of the country's prevailing ideology....Know the other side's ideology and take it seriously....understanding the other side's ideology helps you to understand its interests.*⁹ [italics in text]

International business negotiators can be aided in understanding of other cultures through literature on the cultures and training by appropriate experts. Those involved in the negotiation of international agreements could similarly benefit from such information and training. The critical point is to develop the

⁶ Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad 52.

⁷ Stephen Weiss, “Negotiating with ‘Romans’-Part 2,” Sloan Management Review (Spring 1994), 86.

⁸ Jeswald Salacuse, “Implications for Practitioners,” 200.

⁹ Jeswald Salacuse, Making Global Deals: What Every Executive Should Know About Negotiating Abroad, 77--8.

ability to apply an objective (at least relatively objective) perspective on one's own subjective world views.

Although foreign affairs officials often have such training prior to service in specific countries, there is not necessarily a cultural overview of the major players in various negotiations which is given to negotiators.

Such training might be especially critical for those officials who have not traditionally been involved in international negotiations but are increasingly becoming important players in them. For example, in the U.S. the environmental protection agency has become deeply involved in the climate change negotiations even though it is traditionally a domestically focused agency. For cultural issues such as open market orientation, it may be especially important to have economic officials, who might not normally participate in international negotiations, given such training.

Another very different arena in which one finds recommendations on dealing with cultural differences is in violent ethnopolitical conflicts. In such conflicts, "groups that define themselves using ethnic criteria make claims on behalf of their collective interests....culture is the core of the identity of most groups."¹⁰ Ethnopolitical conflicts are "fought not just about resources or power, but about protecting group status, culture, and identity. Identity and belief are non-negotiable."¹¹

One important tool for reducing ethnopolitical conflict is the "unofficial third-

¹⁰ Ted Gurr, "Peoples Against States: Ethnopolitical Conflict and the Changing World System," *International Studies Quarterly* 38(1994), 348.

¹¹ Ibid, 365. However, it should be noted that ethnopolitical conflict can be exacerbated by "cleavages" such as the "widening ecological, demographic, and material gap between North and South." Ibid, 358.

party approach.” This technique generally involves holding “problem-solving workshops [which] are intensive meetings between politically involved, but entirely unofficial representatives of conflicting parties.”¹² Workshop discussions are private and confidential. The third party creates an atmosphere conducive to honest and unfettered discussions in which both sides speak, and more importantly, listen to each other. These informal interactions help to ensure that “concerns are on the table and have been understood and acknowledged, the parties are encouraged to engage in a process of joint problem solving.”¹³

Workshops have two primary purposes. They are designed to influence the attitudes of workshop participants by jointly developing ideas. Perhaps more importantly the informality of the interactions within workshops helps to ensure that “the new insights, ideas and proposals developed in the course of the workshop are fed back into the political debate and the decision-making process.”¹⁴

Workshops seek to transform conflict relationships by changing “the underlying assumptions that each party in a conflict holds of the other.”¹⁵ Such transformations occur in three stages. First, parties increase their respective willingness to explore the underlying assumptions governing the conflict. Second, they must be willing to modify such assumptions based on evidence. Finally, changes in assumptions must be sustained through continued interaction.¹⁶

¹² Herbert Kelman, “Coalitions Across Conflict Lines: the Interplay of Conflicts Within and Between the Israeli and Palestinian Communities,” Conflict Between People and Groups, J. Simpson and S. Worchel, eds. (Chicago, IL: Nelson-Hall), 238.

¹³Ibid., 239.

¹⁴Ibid.

¹⁵ Eileen Babbitt and Tamra D’Estree, “An Israeli-Palestinian Women’s Workshop: Application of the Interactive Problem Solving Approach,” Managing Global Chaos Chester Crocker and Fen Osler Hampson, eds. (Washington, DC: USIP Press, 1996), 524.

¹⁶Ibid.

The workshop approach has been applied to the climate change negotiations. The Consensus Building Institute has held workshops on climate change for those “deeply involved in the climate change negotiations” before CoP 3 and CoP 4. Both workshops invited negotiators and other experts to discuss “issues related to the Convention in an environment free from the constraints of formal negotiation.”¹⁷

The workshops invited senior negotiators and experts in law, policy and technology and science to “explore and probe more fully their own and others’ ideas and suggestions, with the aim of seeing how these issues might fit into an overall package more satisfactory to all.”¹⁸ Although many participants have official roles in the UNFCCC negotiations, they attended the workshops in their personal capacities, and nothing they said was for attribution.

The workshops helped to identify “areas of common ground and some of the important differences that remain to be bridged.”¹⁹ The workshops were largely designed to help facilitate the possibility of bringing forth potential “win-win” solutions that might be more difficult to generate within the confines of the formal negotiations. However, they also allowed the Parties with very different cultural orientations to have a chance to examine each others’ underlying cultural issues in a less confrontational arena.

The informal interaction approach could receive more support from the
¹⁷ Abraham Chayes, William Moomaw, Kilaparti Ramakrishna, and Lawrence Susskind, “A Report of the Schlangenbad Workshop on Climate Change,” (Cambridge, MA: Consensus Building Institute, October, 1997), 1. See also William Moomaw, Kilaparti Ramakrishna, Lawrence Susskind and Janet Martinez, “Report of the Pre-COP Informal Workshop on Climate Change: Buenos Aires,” (Cambridge, MA: Consensus Building Institute, October, 1998).

¹⁸Chayes, “A Report of the Schlangenbad Workshop on Climate Change,” 1-2.

¹⁹Ibid, 3.

governmental and non-governmental bodies involved in the negotiations. There are different types of support that different participants, from governments to foundations to academic institutions, could provide.

The most important aspect of such workshops is ensuring that appropriate individuals are involved-particularly from relevant governments. Governments are sometimes reluctant to encourage, or even allow, their officials to participate in such informal interactions. Governments may worry that their officials will make agreements, or even indicate flexibility to make agreements, that the governments oppose. For informal interactions to work most effectively it is extremely important that governments both allow and encourage their officials to participate in informal workshop interactions. However, this will require that workshop organizers take extra care to alleviate such governmental concerns.

Although governments can help fund informal workshops, it will probably be most effective if they do so through multilateral international bodies such as various United Nations organizations. Otherwise some countries, particularly developing countries, may feel that the financial backing could translate into some unfair leverage in such workshops. Similarly, it is very important that developing countries feel that they have input into the process by which workshops are organized.

Additionally, there are a number of semi-formal/governmental processes already set up within the context of the UNFCCC which might be facilitate cross cultural understanding. For example, within the IPCC process, there been a tendency to try to reduce differences-rather than to acknowledge and understand them. Governments and international organizations could

encourage an examination of cultural differences within such processes.

The philanthropic thrust of foundations, many of whom have spent substantial resources and time on international environmental issues, may provide an ideal source for funding such workshops. Although foundations have traditionally tended to “convene people and NGOs in situations that do not involve differing points of view,”²⁰ they might productively turn their resources towards helping organize workshops of participants with very different perspectives-and focus on understanding such differences.

Because many foundations with the resources to help facilitate informal workshops are from developed countries, there might still be some perception by developing countries that the workshop are prejudiced against them. One way of reducing such perceptions might be to try to convene workshops in academic settings in developing countries. Having workshops in academic settings might also make it easier for government officials to focus more creatively on theoretical issues and less inflexibly on their government positions. Finally, having such informal interactions in developing countries might help sensitize participants to the concerns of developing countries.

There have been efforts to help countries, both developing and developed, understand some of the implications of international emissions trading. For example, in May of 1999 a consortium of 19 European electricity companies from 14 countries “launched a simulation of CO₂ and electricity trading....to explore the usefulness as well as the technical features of CO₂ emissions

²⁰ Wendy Vanasselt, “Promoting North-South NGO Collaboration in Environmental Negotiations: The Role of US Foundations,” New Directions in International Environmental Negotiation, Lawrence Susskind and William Moomaw, eds. (Cambridge, MA: PON Books, 1999), 41.

trading in the context of an open international electricity market."²¹ In playing the simulation over eight weeks, the participants "quickly became accustomed to CO2 trading as a market mechanism."²²

Similar simulations could be used in workshops to help make countries more comfortable with emissions trading-and suggest how they might economically benefit from it. However, one might also try to develop appropriate role playing simulations in which countries were more exposed to non-open market systems.

In the final analysis it is not academic institutions, philanthropic foundations, international organizations, or governments which will make the difference-it is the members of civil society. Cautionary remarks about the potential impact of open markets, such as those cited earlier by individuals ranging from Pope John Paul II to George Soros, are an important component of this. However, civil society's strongest statement on open markets came on the first week, of the last month, of the last year, of the last century, of the last millennium.

At the "Battle of Seattle" close to six hundred persons were arrested, the National Guard was called out, a civil emergency was declared, police were ordered to disperse citizens with tear gas, pepper spray and rubber bullets, and over \$10 million of damage was done.²³ The spark that set off the battle was a four-day World Trade Organization intended to begin a new round of negotiations to further expand open markets. Protesters ranged from "farmers

²¹ Richard Baron and Raymond Cremades, "Greenhouse Gas and Electricity Trading Simulation," (Paris, France: UNIPEDE/EURELECTRIC, 1999), 1.

²²bid.

²³ "The Shipwreck in Seattle," The New York Time (December 5, 1999), p. 14, "Free Trade, Free Speech," The New York Time (December 5, 1999), p. 5, and "The Battle in Seattle: What Was That All About?" The Washington Post, (December 5, 199), p. B1.

and feminists, defenders of butterflies and Tibetan monks, right-wing nationalists and left-wing anarchists.”²⁴ What they all shared was a belief that open market systems can create more problems than they solve. Perhaps most importantly, the Battle in Seattle was a graphic demonstration that “the terms of debate about free trade have changed,”²⁵ and that one cannot blindly assert that open markets are either inevitable or even beneficial.

There is nothing inherently wrong with open markets. President Clinton may well have been correct when he told those assembled in Seattle that “increasing economic cooperation is in the interest of the ordinary citizens of the United States and the rest of the world.”²⁶ But this does not mean that different countries cannot legitimately disagree on what the rules and parameters for economic cooperation should be. To treat market systems as inevitable is to confuse human created cultural artifacts with natural laws of science.

Such confusion is not only factually inaccurate, it is counterproductive if one wishes to forge international agreements. This analysis has demonstrated that, in addition to rational economic considerations and international structural features, national cultural orientations play an important role in the process of reaching international agreements. As globalization continues, there will be increased pressure for the different nations of the world to become part of a single global village-with standardized and universal rules. Until we recognize that not all members of the village share the same underlying value systems, there will continue to be enormous difficulties-both in reaching global agreements and in understanding the reasons for the difficulties.

²⁴ “Trade Theory Collides with Angry Reality,” The Washington Post, (December 3, 1999), p. 1.

²⁵ Ibid.

²⁶ “Clinton Defends Open Trade,” The Washington Post, (December 2, 1999), p.1.

APPENDIX A-GAME THEORY AND CLIMATE CHANGE NEGOTIATIONS

One way in which climate change has been analyzed which embodies both the realist and structural perspective is game theory.²⁷ It assumes that parties are trying to maximize their gains but that how they can do so is a direct function of the relationship between them. The two parties which we will consider are the industrialized North (with the U.S. as the leader) and the developing South.

Three games traditionally applied to the analyses of crisis negotiations are potentially relevant to climate change negotiations. They are the "Prisoner's Dilemma," "Chicken," and "Bully."²⁸ Each game has different outcomes for the players which range from win, lose or compromise. Where actors prefer to lose rather than have a crisis (or catastrophic weather) the game (and the preference structure of the actors) is "Chicken." If actors are prepared to go to war rather than lose but would prefer compromise to war then the game is the "Prisoner's Dilemma." If actors prefer to have a crisis than to compromise the game is "Bully." For the purpose of climate change a win would be if the other party agreed to limit CO2 emissions but the first party was not so constrained. A loss would be if the first party agreed to limit CO2 emissions but the other party was not so constrained. A compromise would be if both parties agreed to limit CO2 emissions.

Is the South a bully or a strategic prisoner? The South said that it will not agree to limiting emissions. This position was formulated by the South in the Beijing Declaration on Environment and Development-the product of a two-day

²⁷ Game theory may be seen as a structuralist construct in which actors are assumed to behave "rationally."

²⁸ Described in James Richardson, Diplomacy: The Great Powers since the Mid Nineteenth Century, (Cambridge, UK: Cambridge Press, 1994).

Ministerial conference of over 40 countries, including China, Brazil, India, Indonesia and Mexico (the largest and most important CO2 emitters in the South) held shortly before the Rio Earth Summit in 1992 in order to develop and This appears to be the game of Bully. However, this may also be seen as a negotiating tactic-with the South really prepared to compromise (i.e., play “Prisoner’s Dilemma”), rather than accept catastrophic weather.

The South’s position was originally accepted by the North in the Rio Declaration, in the UNFCCC’s initial commitment by the North to the “aim” of returning to 1990 emission levels by 2000 while the South has no commitment whatsoever regarding emissions reductions and in the Berlin Mandate’s call for the North to accept binding emissions limitations by 1997. It was reified in Kyoto when the North agreed to quantified emissions reductions and limitations in which it appeared that the North was playing “Chicken.” It is worth noting that the predicted outcome where one side is playing Chicken and the other side is playing Bully, or even Prisoner’s Dilemma, is that the side playing Chicken capitulates.

However, in mid 1997, the United States Senate passed a non-binding resolution announcing that the Senate would not sign off on any climate change agreement which would reduce emissions for the North unless it also “reduces greenhouse gases for Developing Country Parties within the same compliance period.” This suggests that the United States, a Northern leader, was no longer playing “Chicken” but had decided to play “Prisoner’s Dilemma” instead. If the South is willing to play “Prisoner’s Dilemma” then the model suggests that compromise will be reached. However, if the South is actually committed to “Bully” then the model suggests that the result will be no agreement on limiting

CO2 emissions and GHG emissions could lead to catastrophic weather.

It has also been suggested that climate change negotiations should be considered a new game dubbed "Cooperator's Loss."²⁹ In Cooperator's Loss "the total benefits of cooperation outweigh the total benefits of noncooperation, but for one of the two players, total noncooperation nevertheless remains a more attractive alternative than total cooperation."³⁰

Because GHG emissions disperse throughout the entire atmosphere and the benefits of emissions reductions are shared by the world as a whole, actors have a strong incentive to "free ride" on the agreements of others. This is one of the primary reasons why a global agreement on emissions limitations is sought. This situation, in and of itself, leads to a classic "Prisoner's Dilemma" because each party perceives noncooperation as ... "maximizing its individual welfare, there is a perverse incentive for two parties not to cooperate even though cooperation would maximize total benefit."³¹

However, there

is an additional complication which differentiates negotiation on global warming from the Prisoner's Dilemma. Certain nation may have more to lose by cooperating in an international GHG abatement scheme than they have to lose from unabated global warming itself, even though the value of their cooperation to the world might exceed their internalized costs of cooperating.³²

This asymmetric combination of Prisoner's Dilemma and Deadlock Aronson refers to as Cooperator's Loss. The South may face less costs from the impact

²⁹ Adam Aronson, "From 'Cooperator's Loss' to Cooperative Gain; Negotiating Greenhouse Gas Abatement," The Yale Law Journal, 102, p.2143.

³⁰Ibid, 2144.

³¹Ibid, 2149. This is a reference to the classic Prisoner's Dilemma choice box.

³²Ibid, 2150.

of catastrophic weather than from reducing CO2 emissions for a number of reasons. First, most climate change models predict that areas closer to the equator (which most of the “South” is despite its label) will experience less extreme temperature changes. Second, the industrialization phase which the South is in (and which one might argue that the North is moving out of and into an “information” phase) requires GHG emissions. Finally, a clean environment may be a “luxury” good that the South values less than the North.³³

While one can disagree with the foregoing analysis of the South (and this author does) it is clear that there will be large asymmetries in the gain-loss calculus of different actors which will become clearer as the scientific understanding of catastrophic weather and of the cost of GHG abatement policy measures becomes more sophisticated. Therefore, Aronson’s bargaining model might to climate change. The problem posed by Cooperator’s Loss is to develop an international regime which would allow transfers between actors (in his scenario from the North to the South) and that would place both actors in a better position (in total) than they would be absent such transfers.

Joint actions are proposed as such a solution because they benefit both actors and would maximize the efficiency of international GHG emission reductions given the marginal cost differences in emissions reductions. Such a proposal is, in fact, emissions trading (although the South can’t participate in it under the Kyoto Protocol but can be a part of the slightly more transactional burdensome CDM). However, it is key to note that the idea of having the North, in essence, pay the South for its pollution can be derived from game theory completely independently of any of the normative principles of inter or intragenerational equity which the South has made.

³³Ibid, 2151-2152.

Another approach to the application of game theory to climate change has been in the specific context of joint implementation. "A game-theory perspective is," it has been argued "useful for understanding concerns about JI"³⁴ (this was written prior to Kyoto and is probably more applicable to CDM at this point).

Basic concepts from game theory were used

to develop a framework for considering the concerns about JI....There are many types of 'games' in JI. The first type is about the protocol for the JI program. The players in this case are the Parties to the Convention, as well as other parties who have a stake in JI....A second type of JI game is the negotiation to reach agreement on individual JI projects. In a JI project, investors and host partners are the primary negotiators-though....the investors' countries and host countries will have authority to approve or reject any JI contract.³⁵

The players in the "Joint Implementation Game" can be broken down into the global community, investors, host partners, investors' countries and host countries. Each of the players will have their own goals and strategies in both of the different games. Game theory can help to explain the relationship between the goals and strategies for each of the players.

The goals of the global community in the "Joint implementation-Protocol Game" are sustainable development including the minimization of climate change. The strategy is to develop mutually acceptable compromises into a framework for joint implementation. The goal of investor and host partners are only indirectly represented through their country's participation in the COPs and their strategy is to lobby their governments. Investor and host governments both have the strategy of maximizing their countries' well being but investor countries see this

³⁴Russell Lee and others, Understanding Concerns About Joint Implementation, (Knoxville, TN: Joint Institute for Energy and the Environment, 1997), xi.

³⁵Ibid, 5-6.

goal as requiring the development of an international agreement that lets them meet their emissions reductions commitments in the most “cost effective way, without jeopardizing their economic competitiveness.”³⁶

In meeting their goals within the Joint Implementation-Protocol Game investor and host countries have different strategies. While investor countries emphasize the positive aspects of joint implementation for technology transfer, economic stimulus, local environmental benefits host countries want to make sure that joint implementation benefits their countries.

Within a specific “Joint implementation Project Game” the global community, as represented by some organization which has the goal of reducing GHG emissions, has the goal of ensuring the integrity of the system. The strategy of the global community as a whole is designed to verify project emissions reductions integrity. Investors goals are to meet their reduction commitments in the most cost effective way with acceptable levels of risk. The strategy of investors is to develop cost-effective projects and negotiate the best terms for themselves. Host Partners improve their economic well being by negotiating to acquire advanced technology and other compensation.

Investor countries have the goal of improving their countries' economic well being in a way that minimizes adverse impacts on their economies. Investor country strategy is to meet GHG emissions commitments in the most cost effective way. Host country goals are to maintain sovereignty while maximizing economic growth and and improving other factors such as local air pollution. Their strategy to accomplish this is to ensure that contracts between investors and host partners are controlled to benefit the host country.

³⁶ Ibid, 9.

APPENDIX B-AN “ADDITIONAL” ISSUE

One of the most important issues in Joint Actions is that of “additionality.”

Additionality brings together three closely related but very distinct issues. First, there is a narrowly defined financial additionality. This means that project funding is supposed to be “additional” to ODA funding. Second, there is a more broadly defined financial additionality, perhaps more clearly labeled as “project” or (within USIJI) “program” additionality. This means that a project would not have taken place in the absence of AIJ, USIJI, etc. Finally, there is environmental (a.k.a., “emissions”) additionality which refers to whether a project reduces GHG emissions “additional” to those that would have occurred in the absence of the project.

Financial additionality is something that developing countries insisted on. Their concern was that it would be quite easy for the developed world to simply shift some of its official development aid into GHG emission reduction projects- particularly if they might ultimately get some type of credit for so doing. In order to guard against this possibility, the G77 (and China) wanted a guarantee of financial additionality.

Financial additionality is easy to define, and relatively easy to make operational in the context of a program like USIJI in which the government is not involved in the actual implementation of projects. For other countries such as Sweden, Norway, Japan, etc., in which the government is more deeply involved in actual project implementation, financial additionality is more problematic.¹

¹ For example, in discussing the Norwegian joint implementation program at a lecture at CoP 4 in Buenos Aires, a Norwegian delegate answered a question about how their program dealt with financial additionality by saying, in effect, that while Norway tried to avoid it there wasn't much they could do about it.

If governments are involved in investing in Joint Actions it may, in the real world, be difficult, if not impossible, to determine if there was any financial additionality. If a country unilaterally, albeit non publicly, makes a decision to switch funding from regular development aid to GHG reducing projects how would anyone outside the government know? And even in the absence of a conscious and articulated decision to make such a switch, it would be difficult, if not impossible, to measure what development aid, in the absence of GHG reducing aid, would have been.

Program additionality is more difficult to clearly define. In general, a project lacks program additionality if it would have occurred anyway as “business-as-usual”-even in the absence of a Joint Actions project. For example, a reduction would not be program additional if it were simply the result of a plant upgrading equipment for economic reasons completely unconnected to climate change, the UNFCCC or AIJ. This issue was “closely debated at the 9th Session of the Intergovernmental Negotiating Committee for the Framework Convention.”²

At the 9th Session of the INC it was decided that program additionality was necessary in order to ensure that credit was not given for projects that would have happened anyway because it is, in essence, creating more hot air.³ The reason for this is that if GHG reduction would have taken place in any case but calling it a Joint Action means that credit for the emissions reduction is given, that credit can be used to allow more emissions than would otherwise have been allowable.

²Vol. 59, No. 104 Federal Register, (June 1, 1994), p.28444.

³A number of ways to operationalize program additionality have been suggested including having narrow categories of projects which are *a priori* considered additional, assessing project-specific barriers, applying a financial test, using comparisons to sector-specific projections, or creating general guidelines to assess additionality. All of the approaches have different strengths and weaknesses.

It should be noted that program additionality is not identical to profitability because even a profitable project may be additional if the Joint Actions component makes it more profitable, or if it helps to overcome other barriers to implementation. Nonetheless, an extremely difficult problem with program additionality is that it, to some extent, requires knowing the intent of the developer-not only if a project would take place but also when it would take place. Program additionality will become particularly relevant in the context of the CDM. If a project is one that developers would have done anyway because it would have made a sufficient profit for them, then to include it as a CDM project would allow overall emissions to increase.

Environmental additionality means that a project reduces GHG. It is integral to the integrity of the AIJ pilot phase and any future system of project based emission credits. Assessing environmental additionality requires the development of future emissions projections both with, and without, the project. Comparing these projected baselines allows one to determine if a project is environmentally additional, i.e., if it leads to reductions in GHG emissions that would not otherwise have taken place. The primary problem is developing a projected baseline in the absence of the project. There are a number of approaches that can be used which can roughly be broken down into "Top-Down" baselines (which derive an emission rate from existing national and/or sectoral data) and "Bottom-Up" baselines (which are determined on a more case-by-case basis using specific technologies or reference cases for comparison).

Within the UNFCCC the concept of additionality developed primarily in the

context of financial additionality. Article 4(3), for example, states that developed nations shall “provide new and additional financial resources” to developing nations. However, it was really with the first CoP that the development, and differentiation, of the concept of additionality began.

At the first CoP, when the Parties decided to initiate the pilot AIJ phase, they were forced to more closely examine the concept of additionality. Financial additionality was clearly discussed with the statement that “financing of activities implemented jointly shall be additional to the financial obligations of Parties ...[under] official development assistance (ODA) flows.” Environmental additionality is also clearly covered. The Parties decided that “*activities implemented jointly* should bring about real, measurable and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such *activities*.” (emphasis added).

However, it is not entirely clear that the idea of program additionality is the necessary product of this decision. Most analysts seem to have interpreted both “activities implemented jointly” and “such activities” in the preceding paragraph to mean the concept of AIJ generally. From this assumption it is logical to develop a concept of program additionality, i.e., the reduction in GHG emissions would not have taken place if there wasn’t such a thing as AIJ.

The ambiguity created by the description of “activities” may be one of the costs of using such an ungainly phrase. Both “activities implemented jointly” and “activities” could refer to the specific action of a specific project. Under this interpretation (or even if “activities implemented jointly” refers to AIJ generally, but “activities” refers to the specific action of a specific project) the statement

could be interpreted as only meaning that any specific project had to have environmental additionality.

At the third CoP in Kyoto, there was further elaboration of the concept of additionality. In Kyoto, the concept of joint implementation evolved into Joint Implementation within Annex I countries and the Clean Development Mechanism (CDM) between Annex I and non-Annex I countries. Because CDM has the potential to reward projects that don't truly limit emissions, or that might have happened anyway, it is within the context of CDM that additionality is now primarily considered an issue.

The Kyoto Protocol specifies that any GHG emission reductions under a CDM project must be "additional to any that would otherwise occur in the absence of the certified project activity." It is, perhaps, worth noting that the precision of this language could suggest that the original language in the UNFCCC (which was less precise) should not be interpreted as meaning that program additionality was required in AIJ.

Critics of program additionality have suggested that it places too onerous a burden on the evaluators because they have to "gauge why participants undertook specific measures,"⁴ effectively getting into the heads of developers to know their intentions. Perhaps even more pointedly, it has been argued that program additionality could exclude profitable projects (which in the absence of credits for AIJ would be particularly problematic), although in fact it would exclude not all profitable projects but only those which were not quite profitable enough to be initiated in the absence of AIJ-but in which AIJ somehow made the difference in initiating the project.

⁴Federal Register, June 1, 1994. Vol. 59, No. 104. p.28444.

APPENDIX C-THE RANGE OF COSTA RICAN AIJ PROJECTS

Joint implementation is very important for Costa Rica. There are currently four major AIJ renewable energy projects in Costa Rica (of which four are USJI projects). Together, these projects, three wind farms and a hydroelectric dams, represent investments of close to \$135 million and account for about 415 G Wh/yr-close to 10% of Costa Rica's national installed power capacity.¹

Costa Rica AIJ projects present excellent case studies for a variety of reasons. Because of the close relationship (within the AIJ arena) between the United States and Costa Rican government almost all of Costa Rica's AIJ projects are based on U.S. investments.² This removes the country as a variable from the projects. Additionally, Costa Rica has a wide range of AIJ projects ranging from the highly technical to forest conservation. There are also a variety of project motivations. Some projects were clearly designed to make money as investments, while others were primarily to preserve rainforests.

Four projects will be examined and compared. They involve two energy projects and two forestry projects. They also involve projects with a variety of degrees of emissions and programmatic additionality. There is also a wide variety of non greenhouse gas environmental impacts that may be seen in the projects.

KLINKI FARMING FOR SEQUESTRATION AND PROFIT

Dr. Herster Barres is enthusiastic about the klinki pine tree (*Araucaria hunsteinii*). A species native to Papua New Guinea, and one of the few pine trees that grows in the tropics, the klinki tree can produce high-quality lumber.

¹ Paulo Manso, "Costa Rican AIJ Program," (Costa Rica: OCIC, 1997), 9.

² There is one Norwegian forestry project.

Dr. Barres, who has worked with klinki trees for decades and who is the initiator of the project, says that the klinki's combination of rapid rate of growth and high-quality wood creates the potential for it to be one of the best lumber producing trees from the tropics.³

The "Klinki Forestry Project" establishes relatively small commercial tree plantations on privately owned farms in Costa Rica. The plantations are set up in areas that have previously been deforested or converted to pasture lands.⁴ It takes a fair amount of effort to maintain the plantations and requires a sustained commitment on the part of the landowner.⁵

Landowners are paid USD\$1,000 for every hectare of klinki trees planted with the funding spread over the first five years.⁶ The total costs of planting a hectare with klinki trees is just over double (costs are \$1,000 per acre) what the land owners are paid which covers the costs of the trees and the developmental costs of the project. The owner agrees that they will pay the money back if they cut the trees down before forty years is up (or if they sell the property and the new owner does not agree to maintain the trees). However, Dr. Barres believes that after the first five years, the real motivation for the land owner to maintain the plantation until the trees reach maturity is the value the trees will have as lumber at that point.⁷

³ Personal interviews with Dr. Herster Barres in March and April of 1999 (on file with the author).

⁴ Environmental Law Institute, "Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly under the Climate Change Convention," (Washington, DC: Environmental Law Institute, 1997), 46.

⁵ Personal interviews with Dr. Herster Barres.

⁶ Carlos Chacon, Rolando Castro and Steve Mack, Steve, "Pilot Phase Joint Implementation Forest Projects in Costa Rica: A Review," Carbon Conservation: Climate Change, Forests and the Clean Development Mechanism, (Washington, DC: Center for International Environmental Law, 1998), 41.

⁷ Personal interviews with Dr. Herster Barres.

The klinki trees are relatively effective at sequestering carbon but they are an exotic species in Costa Rica. Accordingly, growing klinki trees does not have the same biodiversity benefits that, for example, the Ecoland project (or other projects which are designed to preserve existing forests) has.

However, the availability of klinki for lumber eventually should reduce the pressure on natural forests. Moreover, klinki trees are relatively widely spaced in the plantations and other biota can be mixed with them. As they grow older, they create a fair degree of shade which is advantageous for many rainforest species. Dr. Barres is actively experimenting with different matrices of vegetation which grow well with the klinki.

The klinki project is being undertaken on a relatively small scale thus far. There are two U.S. partners in the projects (in addition to specific organizations which wish to make offset their emissions), Dr. Barres' Reforest the Tropics environmental ngo and the Yale School of Forestry and Environmental Studies. Two Costa Rican ngos, the Cantonal Agricultural Center of Turrialba and the Tropical Agricultural Research and Higher Education Center, are also involved in projects. But the primary local partners are small relatively small local land owners.

Dr. Barres has worked with a number of land owners to find those who are reliable in maintaining the trees. For example, in the last two years he has worked with five farmers who each had small 6 hectare plantations. Of these, two have successfully maintained the trees and three have not. This process has allowed Dr. Barres to find land owners who will be responsible for maintaining plantations which can be expanded.

In the U.S., Dr. Barres tries to find organizations, including businesses, schools and churches, which would like to have their CO₂ emissions calculated and then offset through Klinki plantations. Thus far, his largest project is a 30 acre project which offsets the CO₂ emissions of Harry Hintlian, a nut roaster in Cambridge, Massachusetts. He estimated that the nut roasting plant emitted approximately 500 tonnes of CO₂ per year (assuming that the plantation would sequester 16 tonnes per acre). The nut roaster has, apparently begun marketing his nuts as more environmentally friendly than other nuts with some financial success.

If the projects remain viable for forty years then the costs of sequestration would be USD $\$1,000/(16 \times 40) = \$1.56/\text{tonne}$ of CO₂ sequestered. This assumes that the value of the trees as lumber is sufficient incentive for the landowners to maintain the plantations for the full forty years. If the trees are not maintained after the landowners have been paid (the fifth year) than the sequestration costs would be eight times as high ($\$12.48/\text{tonne}$ of CO₂).⁸

ECOLAND-CARBON SEQUESTRATION AND BIODIVERSITY

The Ecoland/Esquinas National Park in Costa Rica is primarily a carbon sequestration project.⁹ The project is to result in the preservation of between 2,500 hectares of tropical rain forest which is located in the Esquinas National Park. The Esquinas National Park was created in 1993 but almost all of the land within its borders is privately owned. This project was designed to

⁸ Of course if a non-maintained plantation leads to the trees rotting or otherwise releasing their carbon into the atmosphere then the sequestration will be substantially reduced.

⁹ Information on this project is from the U.S. Environmental Protection Agency, Activities Implemented Jointly: Third Report to the Secretariat of the United Nations Framework Convention on Climate Change, Vol.2, (Washington DC: Environmental Protection Agency, 1998) and from Environmental Law Institute, "Transparency and Responsiveness: Building a Participatory Process for Activities Implemented Jointly under the Climate Change Convention," 44.

purchase such land and transfer it to the Costa Rican Park Service.

The project involves six partners. U.S. partners include; a U.S. private sector company (Tenaska Washington Partners) a power company which paid for most of the project; a U.S. environmental ngo (the U.S. National Fish and Wildlife Foundation) which also assisted in the financing, and; a U.S. project developer who specializes in such projects (Trexler and Associates). Costa Rican partners were a governmental entity (Costa Rica Ministry of Natural Resources, Energy, and Mines) which is one of the governmental entities involved in Costa Rica's joint implementation office and an environmental ngo (the COMBOS Foundation) involved in project administration. The final partner is an Austrian environmental (Rainforests of Austria) which runs a ecolodge in the park and is involved in monitoring the protection of the area.

The purchase of property for the project began in early 1995. All 2,500 acres of the project have now been purchased and transferred to the government of Costa Rica. The transfer of property was only accomplished in 1998 because the developers decided to wait until all the property was purchased and because of "the usual government slowdowns."¹⁰ The extra time to consummate the transfers may have been a product of "a lack of sufficient funds for management....obviously, additional funds should have been included for providing management and control for lands after their purchase."¹¹

The majority of the 2,150 hectares of the land is forested, but 350 hectares have been cleared (although forest regeneration is expected). The project

¹⁰ Personal interview with Laura Kosloff of Trexler and Associates on April 14, 1999 (on file with the author).

¹¹ Chacon, "Pilot Phase Joint Implementation Forest Projects in Costa Rica: A Review," Carbon Conservation: Climate Change, Forests and the Clean Development Mechanism, 40.

represents approximately 20% of the total area of the Esquinas Park which is 12,500 hectares. The rest of the park remains in private hands and much of it is covered by logging concessions (which means that if it is not purchased by the government the owners are entitled to log it).

Funding for the project was split between Tenaska, Rainforests of Austria and the National Fish and Wildlife Foundation. Tenaska paid the initial \$150,000 in project development costs and over half (\$500,000) of the \$950,000 that it cost to implement the project. Rainforests of Austria paid for \$200,000 of the implementation costs and the National Fish and Wildlife Foundation paid \$250,000. The vast majority of the project implementation costs were used to purchase the land with \$40,000 set aside as an endowment to cover annual implementation costs.

Both the National Fish and Wildlife Foundation and the Rainforests of Austria contributed to the project primarily because it was consistent with their environmental mission. Rainforests of Austria also was developing an eco-lodge in the park and this fit in with those plans.

Tenaska invested in the project as part of a business obligation. Tenaska had been building a power plant in Washington State with power to be sold to the Bonneville Power Administration. The Bonneville Power Administration had required that any bidders to sell its power included a CO2 mitigation proposal. Tenaska had agreed to USD\$ one million in mitigation and won the bid. It decided to spend USD\$500,000 on the Ecoland project and \$500,000 on reforestation in Washington state.¹²

¹² Personal interview with Laura Kosloff.

An important non-GHG benefit of the project is that the area is “critical habitat for large mammals and birds that are extirpated (locally extinct) or threatened in other parts of their range. By securing habitat for species under threat of extinction, the project will help maintain the rich biodiversity in the area. The Esquinal Forest was identified by biodiversity experts as the most important concentration of biodiversity not under adequate protection in Costa Rica. This was part of the basis for selecting the ECOLAND project over other project opportunities inside and outside of Costa Rica.”¹³

On the other hand, the project did cause “some discontent among local residents of the area, most among those who did not sell their lands and face certain hardships caused by the inclusion of their lands in a national park.”¹⁴

Costa Rica’s National Park Service performs the routine monitoring to forest conservation activities within the park and insures that it is protected from logging. Additionally, the staff at the Rainforests of Austria eco-tourist lodge provides on site monitoring of the protection status of the project area.

The estimated carbon sequestration is 235 tonnes/hectare. Of this, 125 tonnes is assumed to be stored in the soil and 110 tonnes in the vegetation. It is assumed that deforestation would take place at an average rate of 143

¹³ U.S. Environmental Protection Agency, Activities Implemented Jointly: Third Report to the Secretariat of the United Nations Framework Convention on Climate Change, Vol.2. p.10.

¹⁴ Chacon, “Pilot Phase Joint Implementation Forest Projects in Costa Rica: A Review,” Carbon Conservation: Climate Change, Forests and the Clean Development Mechanism, 41.

hectares/year and that the entire area would be deforested in fifteen years.¹⁵

Deforestation is estimated to cause a 60% loss of soil carbon and a 80% loss of vegetation carbon. Therefore, it is anticipated that 163 tonnes of Carbon/hectare would be released per year ($0.6 \times 125 + 0.8 \times 110$).

Given the assumed rate of deforestation of 143 hectares per year, this means that the project sequesters 23,363 tonnes of Carbon/year, or 89,516 tonnes of CO₂ (using the multiplier of 44/12 for the comparative molecular weights of CO₂ and C). Given these figures, the project is estimated to sequester 1, 342, 733 tonnes of CO₂ over a 16 year life span. Given the total project cost of USD \$1,100,00 this means that the project sequestered CO₂ at approximately 0.82\$/tonne.

TIERRAS MORENAS WIND FARM

This project is a privately owned 20-megawatt power plant which consists of 32 separate 750-kilowatt wind turbine generators. The project generates approximately 76 gigawatt hours annually. All electricity generated by the plant is sold to the Costa Rican electrical grid.¹⁶

The costs of developing the wind farm was USD \$31,500,000 with annual operating costs of USD \$1,100,000. Operational costs are approximately USD \$0.15 per kilowatt hour. A Costa Rican private company, Molinos de Viento del

¹⁵ Although the assumption that the entire area would ultimately have been deforested was probably accurate when the project was developed, in Costa Rica "approaches to conservation are changing....[and] attitudes towards forested lands are changing. In contrast with the situation a decade ago, forested lands today attract higher prices than deforested land. Faced with these facts, new options exist for conservation on private lands....[recently] land owners were reportedly interested in placing binding conservation easements on their properties rather than face the possibility of being forced to sell their land." Ibid, 40.

¹⁶ Information from the U.S. Environmental Protection Agency, Activities Implemented Jointly: Third Report to the Secretariat of the United Nations Framework Convention on Climate Change Vol.2. Information from project proposal and personal interview with project developer Bruce Levy on April 13, 1999 (on file with the author).

Arenal (MVA), which was formed specifically for this purpose, financed about one third of the costs with the rest of the financing being primarily from loans from U.S. development and commercial banks. The project was originally developed by the New World Power Corporation.

The New World Power Corporation, however, did not survive long enough to see the Tierras Morenas wind farm completed. It ran into financial problems and was forced to sell all of its assets, one of which was its interest in the wind farm. The purchaser was EnergyWorks, a high profile renewable energy company recently established by two large utility companies. EnergyWorks moved forward on the project but it also ran into financial problems (the two utilities that established it felt it was losing too much money and simply stopped funding) and the project was sold to Energia Globale.

Any greenhouse gas credits are to be distributed between the equity partners of the project. Because New World Power, which was originally planning to be an equity partner, lost its interest in the project and outside Costa Rican interest primarily became debt oriented, MVA should have any credits.

Given that the national grid would otherwise be using a fuel mix which would include, at least, some hydrocarbons, it is relatively clear that the project has emissions additionality. It is estimated that it would avoid 103,037 tonnes of CO₂ initially but, if Costa Rica switches to all renewable energy sources by the year 2001, this would dwindle to zero by 2001. The estimate of overall avoided emissions of 314,283 tonnes of CO₂ is based on this assumption of a Costa Rica switching to all renewable energy (which it does not look likely to do).¹⁷

¹⁷ It is also based on an assumption that the wind farm would become operational in 1996 and, since it did not become active until 1998 this would lower the amount. I essentially balance the two factors and use the original estimate of the avoided tonnes of CO₂ in the project proposal.

Since no official development aid was used for the project, it also clearly has financial additionality. The developers claim that programmatic additionality exists because acceptance by USIJI would assist in obtaining project financing. However, given that the project was initiated before there was an AIJ program and is clearly for profit, it seems that programmatic additionality does not really exist.

The non-greenhouse gas environmental impacts of the project are primarily related to the development of the plant itself. This is essentially limited to a small amount of clearing of land. An environmental impact study concluded that these effects would not be severe or unmitigable.

THE DONA JULIA HYDROELECTRIC PROJECT-A DEVELOPER'S LAST DAM

The Dona Julia Hydroelectric project is a privately constructed and operated 16 megawatt plant that is estimated to produce approximately 85 gigawatt hours of electricity per year.¹⁸ Although the project was initiated in 1991, four years before the USIJI program even started,¹⁹ the plant did not become operational until late 1998.²⁰

The project has always had only two partners. First, there is the local Costa Rican land owner and operator, Compana Hydroelectica Dona Julia. Second, there is the international project developer and financier. This second participant has changed a number of times since the project's inception.

¹⁸ U.S. Environmental Protection Agency, Activities Implemented Jointly: Third Report to the Secretariat of the United Nations Framework Convention on Climate Change Vol.2.

¹⁹ Personal interview with project developer Bruce Levy.

²⁰ Although USIJI was initially advised that the dam would be operational in 1996, it was not until December of 1998 that it became fully operational. Personal interview with Bruce Nelson.

The New World Power Corporation, however, did not survive long enough to see the Dona Julia dam completed. It ran into financial problems and was forced to sell all of its assets, one of which was its interest in the dam. The purchaser was EnergyWorks, a high profile renewable energy company recently established by two large utility companies. EnergyWorks moved forward on the project but it also ran into financial problems (the two utilities that established it felt it was losing too much money and simply stopped funding) and the project was sold to Energia Globale.

The project cost of USD \$28 million was financed with a combination of 70% debt financing and 30% equity. Under Costa Rican law the equity portion of project capital must not exceed more than 65% non-Costa Rican.

It is estimated that, over a fifteen year lifespan, the dam will generate, 1,275 GWh of electricity. One would normally assume that this would otherwise require the burning of fossil fuels (with a fuel mix of diesel and fuel oil consistent with Costa Rican usage of approximately 7 x 1). However, since Costa Rica had announced the goal (which will not, it seems, be met) of having 100% of all energy be renewable by 2001, the developers assumed a phase out of fossil fuels beginning in 1998 and continuing through 2001. Based on this phase-out, the amount of CO₂ avoided was calculated to be 210,566 tonnes.

Given that Costa Rica will probably not completely phase out non-renewable energy by 2001, the amount of CO₂ avoided will probably be higher. But even if it was doubled, to 421,000 tonnes, the cost of the CO₂ avoided would be relatively high at \$66.5 per tonne.

This suggests that the potential value of carbon offset credits wasn't a major factor in developing the project although the USIJI proposal noted that if there were credits they would be distributed among the equity participants. The project developer did say that USIJI approval was a "non-quantifiable, warm fuzzy" help in getting financing for the project.²¹

The primary individual responsible for the initial project development confided that he would never do another dam project. The site for the dam was, he said, a beautiful river surrounded by lush jungle. When he looked at all the equipment that was gathered at the site, and reflected on the impact it would have to the local environment, he made a personal decision never to do "another damn project."²²

COMPARISON OF FOUR DIFFERENT COSTA RICAN AIJ PROJECTS

	emiss ad	non ghg impact	prog ad	GHG\$ nec/not suff	mil \$	mil CO2 tonnes ²³	\$return
Klinki	+	+	+	+	3.8 ²⁴	7.2	+
Eco Park	+	++	+	- not suffic?	1.1	1.34	-
Tierras Wind Farm	++	/	--	-not necess	31.5	0.314	++
Dona Julia Hydroelec	++	-	--	-not necess	28	0.21	++

²¹Personal interview with project developer Bruce Levy.

²²Ibid.

²³This is the total CO2 which is anticipated to be avoided-not the annual amount. Therefore, the energy projects are underestimated since they assume that the baseline will be based on all Costa Rican energy production being renewable by the year 2000.

²⁴This is the amount which could, in theory, be used for this project. In practice, far less has been invested.

APPENDIX D-UNDERLYING METHODOLOGICAL ISSUES

As discussed throughout this analysis, there are different ways in which the economic interests and cultural orientations of countries might be ascribed. The various subfactors that contributed to a determination of interests and orientations might have been given different relative weights (and other subfactors might have been used) in determining the overall impact of interests and orientations. See also the discussion of the methodological issues in measuring open market orientation in Chapter 4.

In order to develop a quantification of primary factors for economic rational interest and cultural orientation it was necessary to quantify the subfactors upon which each factor was built. In doing so, there has been an attempt to ensure that the methods, and the weightings, used were as reasonable and transparent as possible. Each decision about what data was used is explained. This means that alternative ways of building the factors might also be considered. The majority of the data is based on the relative impact of various subfactors. Hence, the actual numbers assigned are of less importance than the relative results. And, perhaps most importantly, the relative results are consistent with more qualitative factors for the countries considered. For example, regardless of what actual number one assigns, it seems accurate to culturally rank open market orientation with the U.S. and the Netherlands on the top, Norway, Germany and Sweden in the middle, and France and Japan on the bottom.

Nonetheless, one might well still ask whether it is appropriate to make quantified comparisons between factors that are so qualitatively different. Quantifying rationalist factors may seem appropriate. In fact, models which are based on such quantifications appear to play an explicit and formal role in the

decision making process as may be seen in the section which discusses “other economic analyses of emissions trading” in Chapter 8. But the quantification of cultural factors, and then the comparison of such factors to rationalist ones, may appear more problematic.

In part, this problematic appearance may be based on the fact that the different perspectives “also differ with respect to explanatory strategy: Rationalists perform comparative static experiments, culturists produce interpretive understandings, and structuralists study the historical dynamics of real social types.”¹ Each perspective not only evaluates very different things-it also tends to evaluate them in different ways. This analysis has attempted to enrich the traditional approach of culturists by generating and using quantitative data about cultural dimensions (more similar to the way rationalists seek to explain actions). This was, I would argue, appropriate in testing the proposition that culture has a significant, albeit largely ignored, role in national positions related to climate change, *and particularly to compare the influence of cultural orientation with that of economic rationalism.*

It must, however, be noted that quantification can lead one into what the philosopher Alfred North Whitehead described as the “Fallacy of Misplaced Concreteness.”² Just because numbers are assigned to various items (such as whether one would turn in a co-worker for drinking), does not mean that such numbers-and the relationships between different numbers-have either an absolute or a precise meaning. They are merely rough and relative reflections

¹Mark Lichbach and Alan Zuckerman, “Research Traditions and Theory and Comparative Politics: An Introduction,” Comparative Politics: Rationality, Culture, and Structure, Mark Lichbach and Alan Zuckerman, eds. (Cambridge, UK: Cambridge University Press, 1997), 7.

² For a further discussion of this fallacy see Alfred North Whitehead, Science and the Modern World (New York, NY: The Free Press, 1967), 51-59.

of reality.³ It would, therefore, be inappropriate to ascribe too much significance to the absolute numerical results of this analysis.

There are two additional methodological issues which must be acknowledged. First, it is not always clear that cultural comparisons should be bounded by national borders. Treating cultures as "independent units of political analysis can be troubling indeed."⁴ However,

despite the methodological problems this can present, we cannot ignore culture if we think that it is important, and we should make decisions about units of analysis based on what we are trying to explain....The point is that the the task for research is to identify relevant groupings in whatever situation is under study.⁵

In this analysis, the relevant groupings are nations, since they are the parties which have developed AIJ programs and who negotiate the rules of the UNFCCC. Moreover, some nations explicitly define themselves in terms of the specific cultural orientation considered-namely open market orientation.

A final methodological issue is the role of change in cultural analysis. A general criticism of the culturalist approach

is that it does not deal adequately with change....It is common to view culture as something basic and unchanging, and, hence, to find the lack of continuity in most components of culture an argument against cultural explanations. But culture is learned [and hence changes].⁶

The specific cultural variable examined in this analysis-open market orientation-is one that many would undoubtedly argue is rapidly spreading. Additionally,

³ To some extent this issue is symptomatic of the consideration of climate change generally where the degree of certainty of projections is difficult to determine and there can be difficulty in generating the appropriate role of speculative data.

⁴ Marc Ross, " Culture and Identity in Comparative Political Analysis," Comparative Politics: Rationality, Culture, and Structure, 61-62.

⁵ Ibid.

⁶ Samuel Barnes, "Electoral Behavior and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure, 119.

as discussed, there appears to be a growing backlash against the problems raised by open markets.⁷

However, even if countries are growing more (or less) open market oriented, there will still be differences in the relative degrees of such orientation. It is this relative difference which is examined herein, and which will continue to create potential problems in reaching agreement on the Kyoto market mechanisms. In order to solve such problems it is vital that the consideration of climate change negotiations be as multifaceted as the subject itself.

⁷ One sophisticated explanation of this has been developed by Ronald Inglehart who has a "theory of value change that has held up through two decades of empirical research and criticism (1977, 1990). His thesis is that people value most-place higher on their value hierarchy-that which they felt deprived of in their youth. The result is a shift from materialist values among those socialized in less secure times and places to post materialist values among those who did not suffer such insecurities. Note that he refers to the ranking of values, not to their absolute level: Post materialists are not anti materialists. Rather, they take material well being for granted and focus on other concerns. Inglehart's research shows that post materialism is associated with many important shifts in public opinions....it yields a measure that is strongly associated with pro environmentalist views, the new left, a civic culture, and choice in lifestyles....The current revival of concern with questions of identity-national, ethnic, and others-also stems from a renewal of concern for aspects of culture." Barnes, "Electoral Behavior and Comparative Politics," Comparative Politics: Rationality, Culture, and Structure 130.

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