

An Index of Rich-Country Environmental Performance:

2005 Edition

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Contents

I. Introduction

II. Theoretical Framework

III. Changes from 2004

IV. Calculating the Index

V. Index Components

A. Climate Stability

B. Sustainable Fisheries

C. Forest Protection

D. Maintaining Biodiversity

E. Sustainable Agriculture

F. Development Assistance

VI. Results

Appendix A: Calculating Scaled Data

Appendix B: Sources for Index Data

References

Tables

Table 1: Index Components and Weights

Table 2: Climate Stability Sub-Index

Table 3: Sustainable Fisheries Sub-Index

Table 4: Forest Protection Sub-Index

Table 5: Biodiversity Sub-Index

Table 6: Sustainable Agriculture Sub-Index

Table 7: Development Assistance Sub-Index

Table 8: Final Scores by Sub-Index Category

I. Introduction

For three years, the Center for Global Development's annual Commitment to Development Index has evaluated the effect of 21 rich nations' policies on the social and economic development of poor countries. The Index ranks 21 rich countries based on seven equally weighted components: aid, trade, investment, migration, environment, security, and technology.

This paper describes the methodology and rationale for compiling the index's environmental component, which measures the effect of rich countries' policies on the environment in the developing world. In many cases, the connection between a healthy environment and the ability to develop is clear. Crops do not grow in degraded soil; clean water cannot be extracted from polluted aquifers; overfished fisheries do not feed the coastal communities that have relied on them for centuries. Other links are less direct. For example, through a series of well documented connections involving weather, soil, and river flows, global warming is predicted to reduce access to clean drinking water and diminish the food security of many countries in Africa and Asia (African Development Bank 2003: ix).

The actions of 21 rich countries that, together, constituted over 75% of global GDP in 2002 have a tremendous effect on the Earth's ecosystems (WRI 2005a). Rich country demand for timber, fish, drugs, and food often shapes the growth strategies of poorer countries competing to supply this ongoing consumption. Energy demands of industrialized countries indisputably cause the extraction and combustion of fossil fuels, the main driver of climate change. As well, rich countries set the example for poorer countries in the realm of environmental cooperation. How can we expect China or India to limit carbon emissions when the United States refuses to? What basis does the European Union have to advise poorer countries to lift trade barriers when they are reluctant to revisit their Common Agricultural Policy?

In many cases, consistent, reliable environmental data are sparse or simply do not exist. We cannot accurately measure illegal timber imports, endangered species trade, or investments in environmental research and development for even a small subset of these 21 countries. Nevertheless, the amount of relevant and available data is increasing and this paper attempts to describe, through robust statistical analysis, how rich countries' policies measure up. We look here at six "sectors" of the environment where policies and practices have a notable effect on the global commons: Climate, Fisheries, Forestry, Biodiversity, Agriculture, and Development Assistance.

II. Theoretical Framework

Measuring the environmental implications of rich countries' policies could potentially involve hundreds, if not thousands of policies, laws, regulations and practices. We have focused on fifteen variables that have a clear effect on the global environment and can be measured objectively for the countries evaluated here (see Table 1: Index Components and Weights).

The conceptual framework developed for the 2005 environmental index evaluates the effects of rich country policies on poor countries' environment in three distinct ways: (A) *domestic practices* which impinge on the global environment; (B) *domestic policies* which encourage practices that impinge on the global environment; and (C) *international policies* that impinge on the global environment. We discuss each of these categories below.

Certain domestic practices of consumption have been proven to harm the ecosystems where the bare goods are extracted. We focus on the *practices* of rich nations when indicators about their *policies* are not available, using imports or consumption as a proxy for the policies regulating consumption. For instance, the extent to which the United States subsidizes oil production and use is hard to ascertain. Looking instead at per-capita emissions of greenhouse gases (GHGs) allows us to evaluate the effect of U.S. policies on global climate stability.

Domestic policies typically refer to regulations, trading systems, and subsidies which affect the global environment. Good regulation schemes can curb unsustainable extraction of natural resources abroad and manage pollution and other potentially harmful agents. Trading systems allow for efficient management of emissions and effluents. Poorly designed subsidies, however, can have a pernicious effect on the global environment because they encourage overproduction and monocultures in poor countries who struggle to compete with artificially low global commodity prices. Subsidies to the fishing industries of developed countries, for example, have been linked to diminished catch and depleted fish stocks in Argentina and Senegal (Seymour 2004:232).

International policies often take the form of multilateral environmental agreements (MEAs). In a little more than a decade since the Rio Declaration, culminating recently with the entry into force of the Kyoto Protocol, the world has witnessed an explosion in these international agreements which seek to protect the global commons by addressing issues such as climate change, desertification, biodiversity and ozone depletion. These treaties can improve the environment on a global scale; regulations on chlorofluorocarbons (CFCs), for example, have dramatically slowed the rate of ozone depletion. Due to their economic power and disproportionate influence in global decision-making, rich countries have an obligation to take a leadership role in producing and enforcing these agreements.

Table 1: Index Components and Weights				
	DOMESTIC PRACTICES	DOMESTIC POLICIES	INTERNATIONAL POLICIES	TOTAL WEIGHT (%)
CLIMATE STABILITY	Greenhouse Gas Emissions Per Capita (10%)		Kyoto Ratification Status (10%)	35%
	Percent Change in Greenhouse Gas Emissions 1990-2000 (15%)			
SUSTAINABLE FISHERIES	Shrimp Imports per capita (3.75%)	Fishing Subsidies (7.5%)		15%
	Tuna Imports Per Capita (3.75%)			
FOREST PROTECTION	Tropical Wood Imports per capita (10%)	Policy to Regulate Illegal Timber Imports (5%)		15%
BIODIVERSITY	Imports of selected species under the CITES Treaty (5%)		CBD Ratification Status (5%)	15%
			Indicative contributions to UNCCD core budget 2003 (5%)	
SUSTAINABLE AGRICULTURE	Coffee Imports (2.5%)	Relative level of protection on Agriculture commodities (5%)		10%
	Cocaine abuse prevalence (proxy for imports) (2.5%)			
DEVELOPMENT ASSISTANCE			GEF Payments, 3rd Installment (as a percent of GNI) (10%)	10%
TOTAL				100%

III. Changes from 2004

In 2004, the index was calculated using two broad categories: depletion of shared commons and contribution to international efforts. We have expanded this, as described above, to three broad categories: domestic practices, domestic policies and international policies and practices. A summary of the fifteen index components and weights is available in Table 1. We have added two sectors not present in last year's index (forest protection and sustainable agriculture) and new indicators to four sectors (climate stability, fisheries, biodiversity and development assistance). This year we have placed considerably more emphasis on domestic practices, such as the importation of shrimp, tuna, and tropical wood.

We have added ten new variables to strengthen categories covered in last year's index:

1. Percent Change in Greenhouse Gas Emissions 1990-2000,
2. Shrimp Imports Per Capita,
3. Tuna Imports Per Capita,
4. Policies to Regulate Illegal Timber Imports,
5. Tropical Wood Imports Per Capita,
6. Imports of Selected Species Under the CITES Treaty,
7. Indicative Contributions to the UNCCD Core Budget,
8. Coffee Imports,
9. Cocaine Abuse Prevalence (proxy for imports),
10. Relative Level of Protection on Agriculture Commodities

In addition, we have dropped the following four variables: share of gasoline taxes in end-user prices, consumption of ozone-depleting substances, signature to the Beijing amendment to the Montreal Protocol, and contribution to the multilateral fund under the Montreal protocol. While ozone continues to be an important area for global cooperation, the issue has to a large extent been resolved through international cooperation, and we have decided instead to focus on more pressing global concerns. A full description of last year's methodology is available online at http://www.cgdev.org/rankingtherich/docs/Environment_2004.pdf.

IV. Calculating the Index

The methodology for calculating the environmental portion of the index has not changed from 2004. Since environmental indicators are expressed in a variety of units, each of the 15 component variables has been scaled to a number between 0-10 with a mean value of 5 across countries; lower scores indicate a larger commitment to environmental sustainability in poor countries. Details on calculating scaled data from raw data are available in Appendix A.

Weighted averages are calculated with the scaled variables using the percent weights indicated in Table 1 above and the "Index Components" Section below. Countries are ranked within each of the six sub-index categories (climate, fisheries, forestry, agriculture, biodiversity, and development assistance), and these ranks are combined to produce a final score (see table 8 at the end of this paper for the final index results). A ranking of "1" indicates the highest level of commitment to environmental sustainability in developing countries.

V. Index Components

We describe the 15 elements of the environmental component of the Index by looking in-depth at the six areas of importance: climate stability, sustainable fisheries, forest protection, sustainable agriculture, biodiversity, and development assistance.

A. Climate Stability

Addressing climate change is one of the most important challenges facing the global community in the 21st century. With no changes in current greenhouse gas (GHG) emission trends, global temperature increases will decrease agricultural production, available water, and biodiversity in many regions of the world. Extreme weather events and vector-borne diseases are likely to increase in both their intensity and geographic scale. Populations in developing countries will be particularly vulnerable to these changes (Baumert 2003:1). These predictions are supported by a vast body of research conducted by the United States government, the European Union, and the Intergovernmental Panel on Climate Change (IPCC).

Table 2: Climate Stability Sub-Index							
RAW DATA			SCALED DATA			FINAL SCORE	RANK
Greenhouse Gas (GHG) Emissions per capita, 2000	Percent Change in GHG Emissions 1990-2000	Kyoto Ratification Status	GHG Emissions per capita, 2000	Percent Change in GHG Emissions 1990-2000	(higher numbers indicate a higher commitment to environmental protection)		
metric tons per person	percent	0=No, 5.5=Yes	Scaled 0-10	Scaled 0-10			
Australia	25.7	20.6	0	0.00	3.02	1.3	21
Austria	9.8	4.9	5.5	6.40	5.74	5.9	7
Belgium	14.5	10.8	5.5	4.50	4.71	4.9	13
Canada	22.0	20.4	5.5	1.49	3.06	3.3	19
Denmark	12.4	-0.6	5.5	5.32	6.70	6.0	6
Finland	13.3	0.7	5.5	4.96	6.47	5.8	9
France	8.6	-6.2	5.5	6.84	7.68	6.8	3
Germany	12.0	-18.6	5.5	5.48	9.83	7.3	1
Greece	11.0	20.4	5.5	5.89	3.06	4.6	14
Ireland	17.5	22.8	5.5	3.27	2.64	3.6	17
Italy	9.2	6.5	5.5	6.60	5.46	5.8	8
Japan	10.5	13.2	5.5	6.10	4.31	5.2	12
Netherlands	13.6	2.7	5.5	4.85	6.13	5.6	10
New Zealand	19.2	19.6	5.5	2.61	3.19	3.7	16
Norway	11.4	9.2	5.5	5.74	4.99	5.4	11
Portugal	7.9	38.0	5.5	7.14	0.00	3.6	18
Spain	9.4	32.0	5.5	6.55	1.04	3.9	15
Sweden	7.2	-3.6	5.5	7.42	7.23	6.8	4
Switzerland	7.0	-5.6	5.5	7.50	7.57	7.0	2
United Kingdom	11.3	-9.3	5.5	5.79	8.20	6.7	5
United States	24.3	15.2	0	0.55	3.95	1.9	20
Relative Importance (as a % of total index)			10%	10%	15%	35%	

In this index, we evaluate both the policies and practices by which rich countries affect climate stability using three indicators for a total weight of 35% of the final index score. Relying on the theoretical framework outlined earlier, we measure domestic practices through greenhouse gas (GHG) emissions per person and the change in GHG emissions since 1990. Emissions levels and changes in emissions are a direct result of a number of governmental policies outlined in the 2004 environmental performance calculation: efficiency regulations and incentives, energy taxes, land-use planning, and transportation funding (Roodman 2004:3). Energy trading schemes and renewable energy generation targets can also decrease emissions.

Ideally, the index would directly compare domestic policies and rank them based on their effect on climate stability. Unfortunately, policy descriptions are inherently qualitative, and it is not possible to objectively assign ranks to countries at this time based on criteria such as renewable emissions targets, energy trading schemes, efficiency regulations, and funding for clean energy alternatives. In the future, as the Kyoto Protocol enters into force and pilot emissions reductions schemes are mainstreamed, we should be able to directly quantify the effectiveness of these policies on mitigating climate change, rather than relying on proxy measures (i.e. emissions).

The only international policy that we consider here is ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. The Kyoto Protocol remains the most important international effort to prevent climate change, as it sets legally binding limits on GHG emissions. The countries ranked here face a moral imperative to lead or at minimum join the global process to mitigate climate change. Not only do these 21 countries have the financial means to do so, they are home to only 14% of the world's population, yet accounted for more than 40% of all GHG emissions in 2000 (WRI 2005b).

The three indicators incorporated into the Climate Stability portion of this index are described below:

- 1. Greenhouse Gas (GHG) Emissions per Capita (10% of total).** Per capita greenhouse gas emissions were obtained from WRI's Climate Analysis and Indicators Tool (CAIT) for the most recent year available (2000) by dividing total emissions by total population. To show the global warming potential of six different GHGs in a single indicator, emissions of all gasses are expressed in their terms of carbon dioxide equivalent; for example, since methane is 21 times more effective at trapping heat in the atmosphere than CO₂, a ton of methane emissions would be counted as 21 tons of CO₂ equivalent in the totals listed here. We have counted emissions of the six major gasses listed by the IPCC as the largest contributors to global warming: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur hexafluoride (SF₆).
- 2. Percent Change in Greenhouse Gas Emissions Since 1990 (15% of total).** Change in GHG emissions measures the effect of recent policies and rewards countries that have taken proactive steps toward stabilizing the global climate. Data were obtained were obtained from WRI's Climate Analysis and Indicators Tool (CAIT) for the most recent year available (2000). Six gasses are included (see description of GHG emissions per capita, above). Since the IPCC has chosen to measure emission changes relative to 1990, we have chosen 1990 as our base year. We measure the change in *total* greenhouse gas emissions.
- 3. Kyoto Protocol (10% of total).** To maintain a standard mean 5 scale, countries are assigned a value of 5.5 if they have ratified the Protocol and a value of 0 if they have not.

B. Sustainable Fisheries

Fisheries provide a primary source of protein for millions of the world's poor and employment for some 35 million people, the vast majority in developing countries. These crucial resources for the food and livelihoods of developing nations are currently being overexploited--FAO estimates that some 75 percent of commercial fisheries are either being overfished or are fished to their biological capacity (Kura, 2005).

Fishing subsidies exacerbate this crisis by lowering the cost of production, which harms the environment in and around fisheries and takes away the livelihoods of the many poor people who rely on them for their primary employment. Subsidies contribute to the ongoing overexploitation of the world's fisheries, impeding attempts to manage fish stocks, create "no take" zones, enforce marine protected areas, and ban destructive fishing techniques (WWF, 2001:ii). Fishing subsidies are one of the most perverse producer subsidies; they reduce the ability of national governments and international regimes to protect this area of the global commons.

Shrimp and tuna are two of the most important commodities in the fish trade, constituting 17.5% and 8.6%, respectively, of the value of global fisheries imports (Kura 2005:28). The domestic practice of consuming these species can either harm the environment where these marine life are produced or deplete global fisheries stocks.

Shrimp capture is perhaps the most destructive of all fishing techniques. Trawlers that comb the ocean floor to catch shrimp or other species are highly disruptive to the marine ecosystem. Shrimp trawling has one of the highest bycatch rates (up to 95%) of any type of fishing; numerous other species are inadvertently destroyed in order to catch shrimp (WRI 2005d).

When shrimp are produced in developing countries through aquaculture systems, the farming displaces other types of ecosystems which are more sustainable. For instance, shrimp production hurts wetlands and mangroves through salinization of surrounding waters and pollutant levels that are more concentrated than most types of aquaculture. Shrimp production often depletes natural young shrimp stocks in order to create large-scale farms. In other cases, the construction of aquaculture ponds displaces more sustainable croplands.

Many tuna species, including bluefin, yellowfin and bigeye, are overfished to the point that continued capture depletes the global commons. Continued demand from rich countries in the high-value "sashimi" market exacerbates this problem. Tuna ranching, the practice of catching young high-value tuna before they are mature, and then raising them in overfed cages, has an especially damaging effect on fish stocks, as the tuna are caught before they can reproduce (Kura, 2005: 51). As low-value albacore or skipjack tuna imports generally do not have negative environmental effects, these species are not included in the index.

Table 3: Sustainable Fisheries Sub-Index								
RAW DATA				SCALED DATA (higher numbers indicate a higher commitment to environmental protection)			Final Score	RANK
Fishing Subsidies per person, 1997	Shrimp Imports per capita	Tuna Imports per capita	Fishing Subsidies	Shrimp Imports per capita	Tuna Imports per capita			
	kg per person	kg per person						
Australia	1.8	0.9	0.02	6.1	5.4	5.6	5.8	18
Austria	0.0	0.2	0.00	6.4	5.6	5.6	6.0	21
Belgium	0.3	3.9	0.00	6.3	4.6	5.6	5.7	16
Canada	25.6	1.6	0.06	1.9	5.2	5.5	3.6	4
Denmark	11.5	20.1	0.02	4.4	0.0	5.6	3.6	3
Finland	4.8	0.5	0.00	5.6	5.6	5.6	5.6	11
France	1.9	1.3	0.13	6.1	5.3	5.4	5.7	15
Germany	0.6	0.3	0.00	6.3	5.6	5.6	6.0	19
Greece	3.7	0.3	0.00	5.7	5.6	5.6	5.7	14
Ireland	25.3	0.6	0.02	2.0	5.5	5.6	3.8	5
Italy	1.1	0.9	0.67	6.2	5.4	4.2	5.5	10
Japan	23.3	2.3	2.38	2.3	5.0	0.7	2.6	2
Netherlands	1.9	3.1	0.00	6.1	4.8	5.6	5.6	13
New Zealand	10.7	0.5	0.02	4.5	5.5	5.6	5.0	7
Norway	36.4	4.3	0.00	0.0	4.5	5.6	2.5	1
Portugal	3.8	1.3	0.22	5.7	5.3	5.2	5.5	9
Spain	4.3	3.1	2.69	5.6	4.8	0.0	4.0	6
Sweden	4.9	2.6	0.00	5.5	5.0	5.6	5.4	8
Switzerland	0.0	0.6	0.00	6.4	5.5	5.6	6.0	20
United Kingdom	1.7	1.5	0.01	6.1	5.3	5.6	5.8	17
United States	3.2	1.5	0.09	5.8	5.3	5.4	5.6	12
Relative Importance (% of total index)				7.5%	3.75%	3.75%	15%	

The indicators incorporated into the fisheries sub-index account for 15% of the total index value and are described below:

- 1. Fishing subsidies per person (7.5% of total index).** In 2001, the World Wildlife Fund published very rough estimates of the amount of fishing subsidies of developed nations. WWF combined estimates from the OECD, Asian-Pacific Economic Cooperation (APEC) and the World Trade Organization (WTO) to calculate the amount individual countries contribute to fishing, through a variety of sources. These sources include transfers of funds, forgone government revenue, and price or income supports, among other factors.
- 2. Shrimp Imports per capita (3.75% of total index).** We used publicly available data from the Food and Agriculture Organization of the United Nations' (FAO's) FishStat resource. Import quantity data on shrimp and prawns were combined from the following major categories: shrimp and prawns, dried or salted; shrimp and prawns, fresh or chilled; shrimp and prawns, frozen; common shrimp, chilled or boiled; frozen shrimp; and, canned shrimp. Data were then divided by United Nations population estimates.

3. Tuna Imports per capita (3.75% of total index). Using FAO’s FishStat resource we combined import quantity data from the following major categories: Bigeye tuna, fresh, frozen, or chilled; Yellowfin tuna, fresh, frozen, or chilled.

C. Forest Protection

Forests provide habitat for two-thirds of the estimated 5 to 30 million species on earth, absorb the carbon dioxide emitted through natural and man-made processes, and contribute a total of US\$4.7 trillion in goods and services to the global economy each year. These ecosystems remain under threat, however. Anywhere from 70,000 to 170,000 square kilometers of tropical forests are lost annually, the equivalent of 21 to 50 soccer fields per minute (WRI 2005c). The formulation of good global policy is further hindered by the fact that forest cover and deforestation rates are inherently difficult to measure; definitions can vary and satellite data frequently conflicts with official government estimates. Furthermore, the link between policies in developed countries and deforestation in developing countries is difficult to establish.

We have chosen two indicators to measure the how the policies in rich countries affect developing country forest cover: the value of tropical wood imports per capita and the presence of regulation on illegal timber imports. While the domestic practice of

Table 4: Forest Protection Sub-Index					
	RAW DATA		SCALED DATA		RANK
	(higher numbers indicate a higher commitment to environmental protection)				
	Tropical Wood Imports	Presence of a Policy to regulate illegal timber?	Tropical Wood Imports	FINAL SCORE	
US Dollars per Person	2=No,6=in process thru EU, 10=Yes	Scaled 0-10			
Australia	4	2.0	5.61	4.4	17
Austria	0.4	6.0	6.61	6.4	3
Belgium	24.2	6.0	0.00	2.0	21
Canada	1.6	2.0	6.27	4.8	11
Denmark	3.8	2.0	5.66	4.4	15
Finland	1.4	6.0	6.33	6.2	4
France	6.8	6.0	4.83	5.2	8
Germany	1.8	10.0	6.22	7.5	1
Greece	2.8	6.0	5.94	6.0	6
Ireland	11.2	6.0	3.61	4.4	16
Italy	7.1	6.0	4.75	5.2	9
Japan	10.7	4.0	3.75	3.8	19
Netherlands	15.6	7.0	2.39	3.9	18
New Zealand	3.4	2.0	5.77	4.5	13
Norway	3.6	2.0	5.72	4.5	14
Portugal	17.6	6.0	1.83	3.2	20
Spain	6.2	6.0	5.00	5.3	7
Sweden	2.2	6.0	6.11	6.1	5
Switzerland	0.6	2.0	6.55	5.0	10
United Kingdom	2.7	10.0	5.97	7.3	2
United States	2.2	2.0	6.11	4.7	12
Relative Importance (as a % of total index)		5%	10%	15%	

importing tropical wood does not always indicate environmental damage, consumption in developed countries can support a destructive pattern of harvesting and forest degradation. Domestic policies regulating illegal logging in rich countries can limit deforestation in developing countries ; more than 50% of the wood collected in Southeast Asia and South America is harvested illegally (WWF 2004). International initiatives such as forest certification schemes and tropical forest action plans do not yield any indicators that can directly measure rich countries' commitment to forest protection in developing countries.

The two indicators incorporated into the Forest Protection portion of this index account for 15% of the total index, and are described below:

- 1. Tropical Wood Imports (5% of total).** This indicator is obtained directly from the Organization for Economic Cooperation and Development (OECD) and measures the value per person of cork and wood imported from non-OECD tropical countries.
- 2. Presence of Policy to regulate illegal timber (10% of total).** To maintain a standard mean 5 scale, countries are assigned a value of 10 if they have a policy in place, 6 if they are pursuing a policy through the European Union , and 2 if there is no policy in place . Japan's score was raised from 2 to 4, and the Netherlands score from 6 to 7 to account for agreements that they have signed with individual developing countries to prevent illegal timber imports . Data were obtained from the Forests and the European Union Resource Network (FERN) and Greenpeace International.

D. Maintaining Biodiversity

Biodiversity measures the variety of life in all forms; it includes diversity among species, ecosystems and genetic material. The estimated 13 million species found on Earth have been evolving for 3.5 billion years (UNEP 2000:2) , and in sum they comprise the ecosystem goods and services that all humans require for survival. However, since the beginning of this century, species have been disappearing at 50-100 times the natural rate (UNEP 2000:5).

We measure the impact of rich country policies on the biodiversity of poor countries using three basic indicators: threatened species imports per capita under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), ratification of the United Nations Convention on Biodiversity (CBD), and contributions to the United Nations Convention to Combat Desertification (UNCCD) core budget. The domestic practice of importing endangered or controlled species heightens their risk of extinction and, due to unregulated harvesting, can further damage the ecosystems from which they are collected.

As an international policy, the CBD establishes three main goals: the conservation of biodiversity, sustainable use of the components of biodiversity, and sharing the benefits arising from the commercial and other utilization of genetic resources in a fair and equitable way. Nations that ratify the treaty agree to create national action plans that incorporate the preservation of biodiversity into numerous sectors such as forestry, agriculture, fisheries, and energy (UNEP 2000:9). The United Nations Convention to Combat Desertification addresses the problems of land degradation in arid, semi-arid, and dry sub-humid areas. This degradation is caused primarily by human activities and climatic variations. While the UNCCD is a less comprehensive multilateral treaty than the CBD, it is primarily of interest to developing countries. The measure of UNCCD core budget contributions, then, can directly indicate the extent to which rich countries are willing to contribute to the ecosystem health of developing countries.

Table 5: Maintaining Biodiversity Sub-Index

	RAW DATA		SCALED DATA			FINAL SCORE	RANK
	(higher numbers indicate a higher commitment to environmental protection)						
	Per Capita Imports of selected species under the CITES Treaty	Contributions to UNCCD core budget 2003	CBD Ratification Status	Imports of selected species under the CITES Treaty	Indicative contributions to UNCCD core budget 2003		
	number per 1,000 population	Per \$million GNI	1=No, 5.2=Yes	Scaled 0-10	Scaled 0-10		
Australia	0.025	0.236	5.2	6.94	4.53	5.6	7
Austria	1.656	0.278	5.2	5.96	7.15	6.1	2
Belgium	1.635	0.267	5.2	5.98	6.50	5.9	3
Canada	2.142	0.229	5.2	5.67	4.11	5.0	12
Denmark	1.817	0.261	5.2	5.87	6.09	5.7	5
Finland	0.199	0.237	5.2	6.83	4.62	5.6	8
France	6.645	0.268	5.2	2.99	6.56	4.9	15
Germany	5.270	0.298	5.2	3.81	8.42	5.8	4
Greece	2.700	0.227	5.2	5.34	4.01	4.8	16
Ireland	0.011	0.175	5.2	6.94	0.72	4.3	18
Italy	11.654	0.255	5.2	0.00	5.70	3.6	19
Japan	3.171	0.324	5.2	5.06	10.00	6.8	1
Netherlands	1.688	0.255	5.2	5.94	5.71	5.6	6
New Zealand	0.213	0.231	5.2	6.82	4.21	5.4	10
Norway	0.448	0.211	5.2	6.68	3.00	5.0	14
Portugal	2.483	0.231	5.2	5.47	4.23	5.0	13
Spain	10.366	0.222	5.2	0.77	3.68	3.2	20
Sweden	1.494	0.249	5.2	6.06	5.37	5.5	9
Switzerland	8.903	0.283	5.2	1.64	7.46	4.8	17
United Kingdom	1.114	0.220	5.2	6.29	3.58	5.0	11
United States	5.049	0.152	1	3.94	-0.67	1.4	21
Relative Importance (as a % of total index)			5%	5%	5%	15%	

The indicators incorporated into the Biodiversity sub-index account for 15% of the total index value, and are described below:

- 1. Per Capita Imports of Threatened Species (5% of total).** More than 30,000 species are protected under CITES; here we have compiled information for seven indicator species groups from the World Conservation Monitoring Center for the year 2004. For each of the 21 countries ranked in the index, we added together

imports of live parrots, live coral, live lizards, crocodile skins, cat skins, lizard skins, and snake skins, and divided this total by the total population (in thousands) in 2004.

- 2. Convention on Biodiversity Ratification Status (5% of total).** Information was obtained directly from the Convention Secretariat. To maintain a standard mean-5 scale, the 20 countries that have ratified the Convention were assigned a value of 5.2, and the United States—the only country in this index that has not ratified the CBD—was assigned a score of 1.
- 3. Indicative Contributions to the UNCCD core budget (5% of total).** Amounts pledged at the Sixth Conference of Parties (COP) in Havana, August, 2003, by each country were divided by Gross National Income (GNI) in million \$US to obtain contribution rates as a percentage of each nation's economy.

E. Sustainable Agriculture

Rich countries' agricultural policies affect developing nations in several ways. Their subsidized products often crowd out otherwise competitive exports of developing countries. Even so, the United States, Europe and Japan contain enough of the world market that developing countries still shape their exports to meet demand from wealthy nations. Agricultural products created for this export market can result in environmentally demanding monocultures which harm ecosystems and livelihoods in poor countries. The agriculture section of this index considers three elements of rich country policies and practices that affect poor countries' environment and development: coffee imports, cocaine imports and the level of agricultural subsidies.

After oil, coffee is the highest value commodity traded in the world. In 2003 coffee exports were valued at \$US 8.2 billion. (FAO 2005). While almost all coffee is produced in developing nations, the majority is consumed in developed nations. The United States alone imports (by volume) over 20% of the coffee produced globally (FAO 2005). Notwithstanding recent trends towards purchasing shade-grown, fair-trade and sustainably harvested coffee, imports have a deleterious effect on the environments of the countries that produce the crop. Since the 1970s some 40 percent of coffee is produced in “sun” monocultures, which do not support the same diversity of species as shade-grown plantations. The monocultures support 90 percent fewer bird species (NRDC 2004), contribute to soil erosion, and necessitate increased use of fertilizers and pesticides.

Putting aside the serious political, social, and economic problems caused by the production of cocaine, cultivation and processing of the coca plant results in substantial environmental damage in producer countries. Due to a combination of lucrative pricing and high demand from rich nations, cocaine often supplants other types of agriculture in poorer countries, particularly in Latin America. Both the production and processing of cocaine harm the environment. The farming of cocaine is often practiced on clear-cut lands denuded specifically for coca, leading to deforestation and erosion. Cocaine is

processed using acid and lye enter, untreated, into local streams, polluting riparian

Table 6: Sustainable Agriculture Sub-Index

Units	RAW DATA			SCALED DATA (higher numbers indicate a higher commitment to environmental protection)			Final Score	RANK
	Coffee Imports, 2002	Cocaine abuse prevalence (proxy for imports)	Relative level of protection on Agriculture commodities	Coffee Imports	Cocaine abuse prevalence (proxy for imports)	Relative level of protection on Agriculture commodities		
	kg per capita	percent of population ages 15-64	percent	scaled 1-10				
Australia	3.4	1.5	0.15	6.6	3.5	6.8	5.9	3
Austria	11.1	0.6	0.63	3.9	6.4	5.2	5.2	10
Belgium	22.5	0.8	0.61	0.0	5.8	5.2	4.1	19
Canada	6.1	1.2	0.44	5.6	4.5	5.8	5.4	7
Denmark	12.1	0.8	0.60	3.6	5.8	5.3	5.0	12
Finland	12.5	0.2	0.65	3.5	7.7	5.1	5.3	8
France	7.1	0.3	0.60	5.3	7.4	5.3	5.8	5
Germany	11.5	0.8	0.61	3.8	5.8	5.2	5.0	11
Greece	5.1	0.5	0.59	6.0	6.8	5.3	5.8	4
Ireland	2.7	2.4	0.62	6.8	0.6	5.2	4.5	16
Italy	6.8	1.1	0.58	5.4	4.8	5.3	5.2	9
Japan	3.5	1.0	1.24	6.6	5.0	3.1	4.4	17
Netherlands	10.7	1.1	0.57	4.1	4.8	5.4	4.9	13
New Zealand	4.4	0.5	0.05	6.2	6.8	7.1	6.8	1
Norway	9.3	0.7	2.15	4.6	6.1	0.0	2.7	21
Portugal	5.1	0.3	0.59	6.0	7.4	5.3	6.0	2
Spain	6.0	2.6	0.58	5.7	0.0	5.3	4.1	18
Sweden	10.0	0.1	0.63	4.3	8.2	5.1	5.7	6
Switzerland	10.3	0.9	1.49	4.2	5.5	2.2	3.5	20
United Kingdom	3.1	2.1	0.61	6.7	1.6	5.2	4.7	15
United States	4.5	2.5	0.23	6.2	0.3	6.5	4.9	14
Relative Importance (% of total index)				3%	3%	5%	10%	

ecosystems.

Agricultural subsidies account for some 40 percent of the total value of production in Europe and 25 percent in the United States. These subsidies are a major impediment to both the development and environmental protection of developing countries. High levels of subsidies on cotton and maize in the United States and sugar and other commodities in the European Union impede the ability of poorer countries to compete in world markets. Furthermore, unfair barriers to entry of agricultural markets encourage environmental degradation by removing small-scale agriculture as a viable means of income for millions of poor farmers living in developing countries. In an effort to compete they may turn to more destructive forms of income, such as slash-and-burn farming.

The three indicators in the agricultural sub-index account for 10% of the total index value, and were obtained from three different sources:

- 1. Coffee imports (2.5% of total index).** Coffee import data were obtained from the International Coffee Organization (ICO). Imports are calculated based on export data from member countries of the ICO and from other sources, such as the United States

Department of Agriculture. WRI converted these data into per capita imports using population figures from the United Nations Population Division.

2. **Cocaine imports (2.5% of total index).** Cocaine imports are based on the abuse prevalence statistics found in the World Drug Report 2004. We used prevalence of abuse as a percentage of the population aged 15-64 as a proxy for imports. Reliable statistics on importation are unavailable.
3. **Agricultural Subsidies (5% of total index).** These data were obtained from the "Trade" Component of the 2004 Ranking the Rich Index.

F. Development Assistance

Official development assistance and aid from the 21 countries listed here totaled nearly \$70 billion dollars in 2003. Notwithstanding the growing importance of private investment and trade, official aid remains critical to the world's poorest nations, accounting for 3% of Gross Domestic Product in the 64 countries classified by the World Bank as "Low Income." (World Bank 2005). One of the seven components of the Commitment to Development Index is devoted exclusively to aid; we chose to include development assistance in the environmental component as well, since financial commitments directly measure the influence of developed countries policies on the environment in developing countries. Ideally, the development assistance sub-index described here would measure official environmental spending on aid, in total. Typically, however, the environment is mainstreamed into development aid in sectors like agriculture, forestry, and energy, with mixed results, so we were unable to include these numbers here.

	GEF Payments, 3rd Installment (as a percent of GNI)	FINAL SCORE (scaled)	RANK
Australia	0.0105	4.3	15
Austria	0.0129	4.8	9
Belgium	0.0179	5.9	6
Canada	0.0159	5.5	8
Denmark	0.0251	7.5	3
Finland	0.0245	7.3	4
France	0.0123	4.7	11
Germany	0.0123	4.7	10
Greece	0.0044	3.0	19
Ireland	0.0061	3.4	16
Italy	0.0000	2.1	21
Japan	0.0106	4.4	14
Netherlands	0.0186	6.1	5
New Zealand	0.0114	4.5	13
Norway	0.0163	5.6	7
Portugal	0.0052	3.2	17
Spain	0.0034	2.8	20
Sweden	0.0369	10.0	1
Switzerland	0.0256	7.6	2
United Kingdom	0.0122	4.7	12
United States	0.0046	3.0	18
Relative Importance (as a % of total index)		10%	

It is possible, though, to compare contributions by rich countries to the Global Environmental Facility (GEF). The GEF was established in 1991 to provide grants to developing nations to fund environmental projects in six areas: biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants (POPs). It has provided US \$19 billion in grants and co-financing revenues since 1991 (GEF 2005). The most recent payments to the GEF by the

21 countries ranked here totaled US \$500 million. Payments per unit Gross National Income (GNI), described below, constitute the only variable incorporated in the "development assistance" sub-index, worth 10% of the total environmental component.

- 1. Contributions to the Global Environment Facility per GNI (10% of total).** This index measures the total payments expected from third funding cycle of the GEF (fiscal years 2003-2006). Expected installment payments were converted into US dollars and divided by each country's Gross National Income (GNI) for 2003, the latest available year for these data.

VI. Results

Commitment to Development Index 2004: Environmental Protection Sub-Component								
Table 8: FINAL SCORES by Sub-Index Category								
	Climate Stability	Sustainable Fisheries	Forest Protection	Biodiversity	Sustainable Agriculture	Development Assistance	TOTAL	RANK
Sweden	6.8	5.4	6.1	5.5	5.7	10.0	6.5	1
Germany	7.3	6.0	7.5	5.8	5.0	4.7	6.4	2
United Kingdom	6.7	5.8	7.3	5.0	4.7	4.7	6.0	3
Switzerland	7.0	6.0	5.0	4.8	3.5	7.6	5.9	4
Finland	5.8	5.6	6.2	5.6	5.3	7.3	5.9	5
Austria	5.9	6.0	6.4	6.1	5.2	4.8	5.8	6
France	6.8	5.7	5.2	4.9	5.8	4.7	5.8	7
Denmark	6.0	3.6	4.4	5.7	5.0	7.5	5.4	8
Netherlands	5.6	5.6	3.9	5.6	4.9	6.1	5.3	9
Greece	4.6	5.7	6.0	4.8	5.8	3.0	5.0	10
Italy	5.8	5.5	5.2	3.6	5.2	2.1	4.9	11
Belgium	4.9	5.7	2.0	5.9	4.1	5.9	4.7	12
New Zealand	3.7	5.0	4.5	5.4	6.8	4.5	4.7	13
Japan	5.2	2.6	3.8	6.8	4.4	4.4	4.7	14
Norway	5.4	2.5	4.5	5.0	2.7	5.6	4.5	15
Canada	3.3	3.6	4.8	5.0	5.4	5.5	4.3	16
Portugal	3.6	5.5	3.2	5.0	6.0	3.2	4.2	17
Spain	3.9	4.0	5.3	3.2	4.1	2.8	3.9	18
Ireland	3.6	3.8	4.4	4.3	4.5	3.4	3.9	19
Australia	1.3	5.8	4.4	5.6	5.9	4.3	3.8	20
United States	1.9	5.6	4.7	1.4	4.9	3.0	3.2	21
Relative Importance (% of total index)	35%	15%	15%	15%	10%	10%	100%	

Using the weights noted in the last row of Table 8, we calculated final rankings for each of the 21 countries. Due to strong scores in climate stability, forest protection and development assistance as well as better than average scores in other sectors, Sweden was the country most committed to protecting the environment of developing countries. Germany and the United Kingdom measured second and third, respectively, with similar rankings in all categories. Both countries are strongly committed to climate stability, forest protection and sustainable fisheries, with average scores in development assistance and sustainable agriculture.

At the other end of the index, Australia and the United States performed the most poorly, pulled down by poor climate policy. Neither country has ratified the Kyoto protocol, and the United States stands alone in refusing to sign the Convention on Biological Diversity. Additionally, Australia performed poorly in forest protection and both countries had minimal commitments to environmental development assistance.

Four countries had significant changes from last year's index. Finland was alone in having a substantial improvement, moving up eight spots to fifth. Finland showed above average scores in all categories with especially strong scores in forest protection and development assistance. Belgium, Portugal and Spain each ended up significantly worse, falling to 12th, 17th, and 18th due to the inclusion of per capita consumption measures in this year's index.

Appendix B: Sources For Index Data

A. Climate Stability

Greenhouse Gas (GHG) Emissions per Capita and Percent Change in Greenhouse Gas Emissions 1990-2000:

World Resources Institute. 2005. *Climate Analysis Indicators Tool (CAIT) version 2.0*. Available at <http://cait.wri.org/cait.php?page=yearly>. Washington D.C.: World Resources Institute.

Kyoto Protocol Ratification Status:

United Nations Framework Convention on Climate Change (UNFCCC). 2005. *Kyoto Protocol Status of Ratification*. Bonn: UNFCCC. Available Online at: http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf.

B. Sustainable Fisheries

Shrimp Imports Per Capita and Tuna Imports Per Capita:

Fishery Information, Data and Statistics Unit, Food and Agriculture Organization of the United Nations (FAO). 2004. *FISHSTAT Plus: Universal software for fishery statistical time series, Version 2.3* Fisheries commodities production and trade 1976-2002 dataset. Available on-line at <http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp>. Rome: FAO.

Fishing Subsidies Per Person:

World Wildlife Fund-United States (WWF). 2001. *Hard Facts, Hidden Problems: A Review of Current Data on Fishing Subsidies*. Washington, D.C.: WWF.

C. Forest Protection

Tropical Wood Imports per capita:

Organization for Economic Co-operation and Development (OECD). 2004. *Selected Environmental Data*. Available on-line at <http://www.oecd.org/dataoecd/11/15/24111692.PDF>. Paris: OECD.

Policies to Regulate Illegal Timber Imports:

Forests and the European Union Resource Network (FERN), World Wildlife Fund (WWF), and Greenpeace International. 2004. *Facing Reality: How to halt the import of illegal timber in the EU*. Available on-line at http://www.fern.org/pubs/reports/facing_reality.pdf. Gloucestershire, UK: FERN.

D. Biodiversity

Imports of selected species under the CITES Treaty:

World Resources Institute. 2005. *EarthTrends: The Environmental Information Portal*. Available at <http://earthtrends.wri.org>. Washington D.C.: World Resources Institute.

Original Source data is from:

World Conservation Monitoring Centre of the United Nations Environment Program (UNEP-WCMC). 2004. *Convention on International Trade in Endangered Species of*

Wild Fauna and Flora (CITES) annual report data, CITES Trade Database. Cambridge, UK: UNEP-WCMC.

Indicative Contributions to the UNCCD core budget:

United Nations Convention to Combat Desertification (UNCCD). 2003. *PROGRAMME AND BUDGET - Report on the status of contributions to the Convention's trust funds in the biennium 2002-2003 (as at 20 August 2003)*. Available on-line at <http://www.unccd.int/cop/officialdocs/cop6/pdf/2add7eng.pdf>. Bonn: UNCCD.

E. Sustainable Agriculture

Coffee imports:

International Coffee Organization (ICO). 2005. *Historical Statistical Data*. Available on-line at <http://www.ico.org/frameset/traset.htm>. London: ICO.

Cocaine abuse prevalence:

United Nations Office of Drugs and Crime (UNODC). 2004. *World Drug Report 2004*, pp. 394-395. Available online at http://www.unodc.org/pdf/WDR_2004/Chap6_drug_abuse.pdf. Vienna: UNODC

Relative level of protection on Agriculture commodities:

Gibson, Paul, Wainio, John, and Whitley, Daniel. 2002. "Agricultural Tariff Data," in *Global Trade, Assistance, and Production: The GTAP 5 Data Base*. Available on-line at <http://www.gtap.agecon.purdue.edu/databases/v5/default.asp>. West Lafayette, IN: Center for Global Trade Analysis, Purdue University.

F. Development Assistance

Contributions to the Global Environment Facility per GNI:

World Bank. November 2004. *Trustee Report*. Prepared by the World Bank for the Global Environment Facility (GEF) Council. Available on-line at http://www.gefweb.org/Documents/Council_Documents/GEF_C24/C.24.Inf.3_Trustee_Report_FINAL.doc. Washington, DC: World Bank.

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World Resources Institute. 2005d. "The Impact of Global Trawling: Mapping Our Footprint on the Seafloor", from *EarthTrends: The Environmental Information Portal*. Available on-line at http://earthtrends.wri.org/features/view_feature.cfm?theme=1&fid=10. Washington D.C.: World Resources Institute.