Corruption & The Environment

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Executive Summary

Transparency International defines corruption as "the misuse of entrusted power for private gain." Corruption takes many forms, from bribes to extortion to patronage. Corruption flourishes where there are few institutional checks on power, where decision making is obscure, where civil society is weak, and where poverty is widespread.

Corruption has real political, economic, and social costs. It is an obstacle to democracy and the rule of law. It helps to keep countries poor because it causes the diversion of public funds and drives away foreign investment. Perhaps most insidiously, corruption leads to frustration and apathy among the citizens of corrupt states. This report highlights an additional cost of corruption: environmental degradation. In this analysis commissioned by Transparency International, graduate students of Public Administration, concentrating on Environmental Science and Policy at Columbia University investigated the intersection of corruption and environmental degradation as part of the Spring Workshop course, and found that environmental damage often occurs as a direct and indirect result of bribery, extortion, unfair policies, and other forms of corruption. These findings offer an opportunity for intervention on the fronts of conservation, preservation, and environmental justice – through the tool of transparency.

The workshop team was asked by Transparency International to investigate how corruption manifests itself in the environmental field and the extent to which it affects the environment. Based on the client's request, we conducted a global case study–based analysis of corruption's role in environmental degradation and explored the economic sectors most prone to corruption in the environmental sphere. Finally, we identified possible ways to prevent corruption from occurring in these sectors. We examined existing literature on corruption and environmental degradation, including the work of Transparency International and other organizations on these topics. We conducted interviews with scholars, experts, and officials from such institutions as the Earth Institute and the Lamont Doherty Earth Observatory at Columbia University, the World Resource Institute, and the World Bank.

Our findings indicate that the environment is managed by a host of different institutions, agencies, and customs that differ between countries depending on the specific economic, political, social, and natural conditions found there. When governing institutions work well, the environment is properly managed and its benefits contribute to the wealth of the country. Also, when environmental mismanagement occurs in countries with strong and transparent institutions, governments pass new laws or enforce the existing ones. This behavior provides a feedback loop that further reinforces the governing institutions. Unfortunately, corruption corrodes these institutions and interrupts the feedback loop. For instance, environmental laws are ignored, or environmental protection agencies are under-funded so that officials are forced to take bribes to survive. When institutions are weak, corruption interrupts the feedback by making governments less responsive to its citizens and more able to enact or ignore environmental damage.

The connection between corruption and environmental degradation is a broad issue and a challenging subject to study. Both corruption and environmental degradation are global problems. Due to the global reach of environmental degradation, we employed Conservation International's

Biodiversity Hotspots as a focusing tool from which to proceed with our analysis. Hotspots span every continent and many countries. They enclose the richest, but also the most threatened diversity of plants and animals. Hotspots tend, with some exceptions, to be located in countries that are perceived as moderately corrupt or highly corrupt on Transparency International's Corruption Perceptions Index. From a total of thirty-four, five hotspots were chosen: The Tropical Andes, Sundaland, the Mountains of Southwest China, the Guinean Forests of western Africa, and the Caucasus.

In each hotspot, we examined three economic sectors that pose the greatest threats to the environment: renewable resources, such as forests and wildlife exploitation; nonrenewable resources, especially oil, gas and mining; and infrastructure, such as big dams and road projects. The report elaborates on how corruption was found to occur in the sectors in several ways.

The case studies illustrate that corruption occurs at all levels, from small bribes at the local level to influence peddling at the highest level of government. Not all of the identified forms of corruption are illegal, but all are corrosive. They have real and significant costs on the environment, even if they sometimes elude measurement. For example, projects in all the sectors we examined pollute the air and water, lead to rapid resource depletion, and otherwise disrupt sensitive ecosystems. There are secondary effects: for instance, large infrastructure projects can displace people, some of whom may settle in other environmentally sensitive areas. The extinction of a species can lead to the extinction of other species that rely on it. Furthermore, corruption inhibits growth and prevents countries from escaping poverty, which is one of the factors that enhance or even cause environmental stress.

The workshop team identified a number of trends that characterized corruption in most of the cases, including:

- *Environmental corruption is especially prevalent in countries where there is low economic development.*
- *Corruption is prevalent across a wide spectrum of political systems, yet it is most severe in countries with weak democracies.*
- *Weaknesses in governance structures inhibit good governance and facilitate corruption in the environmental field.*
- *Monopolies, whether state controlled or controlled by a corporation, create opportunity for corruption within the economic sectors in the environmental field.*
- *The export partners of corrupt countries often exacerbate illegal activities which degrade the environment by providing the demand for natural resources.*
- *Countries that depend on the exploitation of their natural resources experience high levels of corruption, and hence poor environmental governance.*
- *The institutions and governments which provide economic assistance to developing nations, whether in the form of foreign direct investment or foreign aid, have the ability to influence behavior.*

These trends led to the following recommendations that Transparency International could adopt as part of a future campaign against environmental corruption:

- *Prioritize environmental initiatives that are preventative rather than reactive.*
- *Establish collaboration with organizations in the conservation sector.*
- *Expand TI's existing information network to include accessible information on issues of corruption and environmental degradation.*
- *Expand "education", TI's seventh global priority, to encompass the environment.*

By focusing on the effects of corruption on the environment, the discussion of corruption has been broadened to include some of the real social costs that are easily disregarded by economic planners. There are opportunities for conservationists and anti-corruption campaigners to work together. Conservationists could focus on campaigning against the incentives that facilitate environmentally destructive corruption. Anti-corruption campaigners could recruit new support by showing how the environment is a silent victim of corruption. The authors of this report hope that this evidence will persuade Transparency International to make environmental corruption the focus of its next Global Report.

1 Introduction

The Earth's ecosystems are under increasing pressure from human activities. Rising levels of greenhouse gases, habitat destruction, and pollution are directly related to many of today's most challenging issues, including global climate change, species extinction and water scarcity. The long-term effects from such dramatic environmental degradation are not just the concern of conservation biologists and their naturalist colleagues, however. Environmental degradation is a root cause of social disasters including poverty, disease, and conflict, while also damaging the world economy. For instance, while communities have relied upon the seas for centuries, over 70 percent of today's marine stocks are fished either at or above their maximum natural productivity.[1] Forests provide shelter, sustenance, and fuel to a growing human population and play vital roles in the global climate. The deforestation of over 13 million hectares a year leads to biodiversity loss, soil erosion, fuel scarcity, and social and economic problems for decades.[2]

There is growing understanding that corruption has substantial political, social, and economic costs. These costs are often difficult to quantify, since corruption by its nature can be difficult to measure, yet corruption leaves people worse off and impedes development all over the world. First, corruption is an obstacle to democracy and the rule of law. Second, corruption helps to keep countries poor because it causes the diversion of public funds and drives away foreign investment. Third, corruption leads to frustration and apathy. A fourth cost is environmental degradation. This report examines some of the ways that environmental damage can occur as a direct or indirect result of bribery, extortion, unfair policies and other forms of corruption.

Corruption plays a large role in the degradation of the environment, negatively affecting natural systems and their dependent communities. Governing agencies and industries can be drivers for sustainable development through the wise use of natural resources, but bribes and favors exchanged between these parties can have devastating effects when environmental protection is undermined as a result. Deficiencies in the basic needs of housing, clean water, sanitation, and health care are also environmentally important, as they can represent a disregard for the importance of environmental services. [3] These linkages suggest the need for framing environmental problems within a broader perspective that encompasses world poverty and inequality. Many problems of resource depletion and environmental stress arise from inadequate institutions to deal with environmental issues, disparities in economic and political power, and a lack of knowledge and awareness among the people.[4] Corruption can aggravate these conditions, increasing the potential for abuse and the amount of damage inflicted. On the other hand, the close relationship between corruption, civil society, and the environment presents exciting opportunities for collaboration among different organizations and stakeholders.

The environmental costs of corruption have been relatively underrepresented in many studies of the general costs of corruption. Intuitively, the natural environment is an obvious target for corruption: it is a source of much wealth in natural resources and rare plant and animal species; it often suffers from lack of clear ownership, which gives incentives to those who can control access to the environment to sell it off at prices below its true value; and it is an often disregarded victim of political and economic decisions made elsewhere. Studies by Transparency International (TI) have made reference to the environmental effects of corruption in specific sectors such as forestry and infrastructure.[5] Specialized organizations such as Global Witness

have studied in detail the role that environmental degradation can play in specific regional conflicts. Nevertheless, there have been relatively few studies that have examined the linkages between corruption and the environment as a subject in its own right.

This report addresses the questions posed by our client, Transparency International: does corruption affect environmental degradation? And if so, what are the opportunities for intervention? This report addresses the linkages between corruption and the environment through a comparative study of different regions of the world and different sectors of the global economy. It attempts to answer three questions throughout the report:

- How does corruption lead to environmental degradation?
- What are the costs of such corruption?
- What are the possible areas for intervention to prevent this corruption?

The report is structured to explain the connection between corruption and the environment; the methodology used, and specifically the use of biodiversity hotspots as a focusing tool to analyze the problem; the specific threats that corruption poses to environmental degradation illustrated by different region, biome, and economic sector; and finally, a discussion of common trends identified across the different sectors and regions. The report concludes with recommended action steps and opportunities for further research.

2 Environmental Governance and Corruption

Governance is a general term that describes not merely government but, more broadly, the various norms, rules, and institutions by which authority in a country is managed. The United Nations defines *good governance* as governance that is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law.[6] Whereas good governance is often associated with improved social and economic wellbeing, corruption is one of the factors that undermine governance. This section describes *environmental governance*, or the way different social, economic, and political institutions collectively manage the environment, and how corruption can lead to environmental degradation by undermining environmental governance.

Transparency International defines corruption as "the misuse of entrusted power for private gain".[7] Corruption is an insidious and pervasive activity that affects every country in the world, albeit to different magnitudes and with varying consequences. There are different kinds of corruption, ranging from bribes to extortion to patronage, and from overtly illegal behavior to actions that may be unethical but are protected by law. Corruption can be done in agreement between bribe payer and official, as when they conspire to rob the government of revenue by allowing illegal activities, or it can be highly centralized, as when government officials at the central level demand bribes for legal activities.[8] Another form of corruption is rent-seeking behavior, which describes efforts by private interests to induce decision-makers to make decisions that generate additional profits, or rents, for the special interests.[9]

Corruption is not an exclusive feature of developing countries, but empirical data indicate that countries with poor governance suffer from lower levels of economic development. One explanation for this may lie in the strength and independence of a country's regulatory institutions. When such institutions are not properly staffed and funded, individual administrators are often unable to resist corruption. Likewise, the independence of even properly funded institutions depends on the procedures for hiring and firing civil servants, how the institution is organized internally, and how specific legislation is implemented.[10] The strength and independence of the judiciary is also essential for the enforcement of existing legislation, for instance, by holding corrupt civil servants accountable.[11]

How does this all affect the environment? In 1987 the World Commission on Environment and Development published its report, *Our Common Future* that popularized the notion of sustainable development. The report, often known after its author, Gro Harlem Brundtland, defined sustainable development as "development that meets the needs of current generations without compromising the ability of future generations to meet their own needs." The United Nations Environmental Program has since clarified the use and implementation of the concept of sustainability thus:

> The intensified and unsustainable demand for land, water marine and coastal resources resulting from the expansion of agriculture and uncontrolled urbanization lead to increased degradation of natural ecosystems and erode the life supporting systems that uphold human civilization.[12]

Economically, sustainable development means that economic opportunities for future generations should not be threatened by the current generation's depletion of natural resources. This is explained as "cultivating prosperity today without diminishing the prospects for cultivating still more tomorrow."[13]

The Brundtland report pointed out that the environment does not exist in isolation from human actions, ambitions, and needs.[14] Rather, the environment is the context of human activity, and it is increasingly "governed" by humans. Environmental governance describes those laws, institutions, agencies, and customs that make or contribute to environmentally relevant decisions, or exercise authority over natural resource and the environment. This definition includes all levels of government, international conventions, the private sector, civic society, trade associations, shareholder groups, families, and individuals.[15] These groups create the policies, regulations, and laws that determine the management of natural resources; oversee monitoring and enforcement; and provide the public education and local capacity building necessary for effective implementation. The entities responsible for the environment and its relevant decision making regarding the development, use, or management of natural resources are often opaque or even obscured.[16]

Environmental governance is a concept that has been attracting increasing interest. As early as 1962, Rachael Carson's *Silent Spring* alerted US society to the previously disregarded costs of economic activity and helped to create the modern Western environmental movement of social activism. The Brundtland report built on such sentiment and called for an integrated approach to solving the world's economic and environmental crises by framing the issue of long-term economic development within the context of environmental wellbeing, two concepts previously considered mutually exclusive. The 1992 UN World Conference on Environment and Development (the "Earth Summit") articulated an emerging consensus that environmental protection should not be seen as solely an issue that concerned industrialized economies.

More recently, the 2000 Millennium Declaration and the accompanying Millennium Development Goals provided political legitimacy to the notion that improved governance, reduced poverty, and environmental stewardship are inseparable. Specifically, Goal Seven, "Ensure Environmental Sustainability", aims to heighten the awareness of the environment. The Goals assert that the integration of principles of sustainable development into country policies will help to combat degradation and loss of environmental resources, and that without good governance, the environment will not be protected.[17]

2.1 Corruption and Environmental Governance: A Conceptual Model

Environmental governance varies across countries depending on the specific economic, political, and social factors found there. Geographical conditions such as the country's location and natural resource base are also contributing factors. There is also a form of feedback between the state of the environment and how it is governed that depends on the strength of the governing institutions. In well-governed countries, the institutions respond to signals of environmental stress – as manifested for instance by public protest – by passing environmental laws or ensuring the enforcement of existing ones. Longer-term environmental problems may be more difficult to detect, however, we expect that transparent environmental governance will respond, even if inadequately, to mitigate problems like the accumulation of persistent organic pollutants, greenhouse gas emissions, and species extinction.[18] In poorly governed countries the feedback is interrupted, for instance, because governments profit directly from the activities that cause environmental degradation or because they are less responsive to citizens' needs. These different stages are illustrated in Figure 2.1 and elaborated in more detail below.

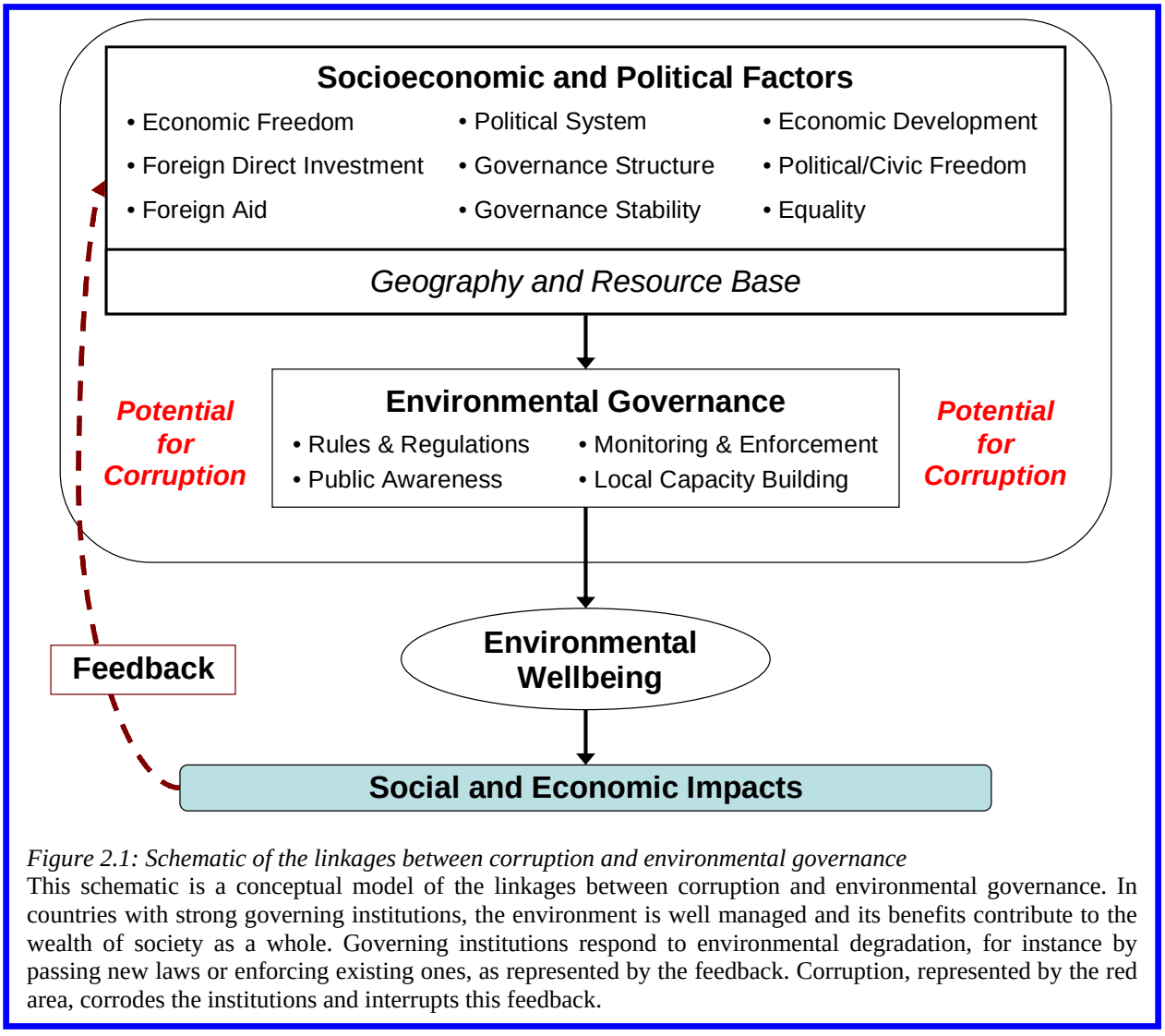


Figure 2.1: Schematic of the linkages between corruption and environmental governance
This schematic is a conceptual model of the linkages between corruption and environmental governance. In countries with strong governing institutions, the environment is well managed and its benefits contribute to the wealth of society as a whole. Governing institutions respond to environmental degradation, for instance by passing new laws or enforcing existing ones, as represented by the feedback. Corruption, represented by the red area, corrodes the institutions and interrupts this feedback.

Corruption pervades the environmental sphere for two main reasons. First, government officials may control access to valuable natural resources and can sell this access. Second, environmental issues are often given lower priority in the public policy arena, such that environmental management, conservation, and enforcement institutions receive insufficient funding, which creates opportunities for illegal activities.[19] Corruption in the environmental field can occur at all levels of government and, like in other areas, can take many forms. These include the use of bribes, gifts, influence peddling, favoritisms, nepotism, kickbacks, and embezzlement. At the highest level, corruption is a form of state capture, whereby the laws and policies themselves reflect special interests or are designed to facilitate private gain via illegal and non-transparent activities; in this sense the corruption is not necessarily illegal, but it fits the definition of a misuse of entrusted power. Corruption also occurs when government officials have high levels of discretion combined with a lack of transparency and accountability, disproportionate influence of wealthy external interests, and insufficient laws on financial disclosure and lobbying.[20] Mid-level and local officials especially are often in charge of the distribution of environmental resources, as well as permitting and certification processes. Poorly paid officials have an incentive not only to exploit loopholes in laws and regulations, but also to take bribes during environmental inspections and the policing of illegal, environmentally related activities.[21]

2.1.1 Natural Resources

A country's natural resource base can provide incentives for poor environmental governance. For example, the presence of valuable natural resources may lead to bribes that affect the awarding of concessions for natural resource extraction. Natural-resource endowments can also determine a country's terms of trade, especially in the developing world where national income is generally more reliant on the export of natural resources.[22] While the presence of valuable resources often provides added incentive to participate in corrupt activities, they do not necessarily lead to such outcomes. For example, Botswana, Sierra Leone, and Nigeria are all rich in resources, but Botswana has been able to form political consensus around the need to prevent corruption. Conversely, in Sierra Leone and Nigeria, natural resource exploitation has funneled much of the countries' wealth to the ruling upper class.[23]

2.1.2 Political Factors

The empirical evidence indicates that certain political systems are more likely to lead to transparent governance than others and, conversely, certain systems are more prone to corruption than others. For example, open democracies with a vibrant civil society and transparent and independent institutions are less likely to experience corruption than autocracies in which civil society is suppressed and the media is censored. Civil society and the media play an essential role in determining the level of corruption in a country. Civil-society organizations like nongovernmental organizations (NGOs) transfer information, raise awareness, and in may cases act as de-facto enforcement agencies for existing legislation. In some cases NGOs may themselves collude with corrupt practices, but at a high cost to their credibility. A free press has an opportunity to expose corruption, but a censored press, whether overtly or through self-regulation, has a much lower deterrent effect on corruption.[24] Civil society and the media contribute to the feedback loop in the schematic that describes how governments respond to environmental degradation. Some studies suggest there is a link between corruption and political instability.[25] This is because the transition from one political system or regime to the next is

accompanied by a periodic transition of societal norms and the breakdown of consensus. Political instability provides an opportunity for corruption to take hold throughout the fabric of society as the shifting power structure provides opportunities to gain additional power. This tendency is magnified where there are no strong political parties to counteract the ensuing power struggle.

Corruption flourishes in institutional structures where officials have monopoly and discretionary power and the institutions have low levels of accountability and transparency.[26] Officials are entrusted with enforcing the legislation passed by the government and are also involved in the drafting of such legislation. The ability of officials to demand bribes depends on many factors, including the level of discretion held, the level of remuneration, competition from peers, the extent of supervision, and how the superiors collude with the extortion. In some countries, corruption is vertically organized with collusion to the highest level of government. In such cases, the official may have purchased his position and is expected to generate income both to get a return on his investment and to pass on to his superiors.[27] Examples of environmentally consequential areas where officials have high discretion include the issuance of licenses and permits, border controls, price controls, public contracting, and the imposition of fines for non-compliance with pollution standards.[28]

2.1.3 Socio-Economic Factors

The introduction of environmental legislation in many countries is a result of the increasing importance of environmental protection. One reason for this is the introduction and ratification of new international environmental agreements, such as the Convention on International Trade of Endangered Species of Wild Flora and Fauna. The legislation that is introduced to implement such agreements offers new opportunities for corruption at the stage of legislative drafting and in the enforcement of the new legislation.[29] Another important factor is the complexity and logic of the legislation. Complex regulations, especially when they offer individual officials room for discretion, can give rise to additional corruption as firms seek to avoid the legislation.[30] Environmental legislation is an example of feedback whereby the government responds to domestic or international demands for improved environmental regulation. The quality of this legislation depends on the governing institutions.

The institutions of economic governance also have direct effects on environmental governance. Although good environmental governance depends on a society's social and political systems, a country's economic strength is a major underlying factor and indicator of environmental performance.[31] For example, the 2006 Environmental Performance Index reveals a statistically significant correlation between gross domestic product (GDP) per capita and environmental performance, especially for certain indicators like indoor air pollution, adequate sanitation, drinking water, and child mortality (see Figure 2.2).[32] The tendency for environmental indicators to improve with income after an initial increase in degradation is described in the economic theory of the Environmental Kuznets Curve, which observes that some kinds of pollutions appear to decline once per-capita income levels reach a certain level.[33] This phenomenon is by no means applicable to all pollutants (empirical data only exists for air pollution and some kinds of water pollution, and the phenomenon may not apply for transboundary or persistent pollutants), and its occurrence in the past is not a prediction that it will occur in the future.[34] Nevertheless, the relationship between pollution and income levels is important for the discussion on corruption

and the environment for two reasons. First, corruption is thought to depress economic growth, and poverty places additional burdens on the environment. Second, corruption may cause a country's Environmental Kuznets Curve to peak at a later point than otherwise, which means that corrupt countries that are experiencing economic growth are likely to experience environmental degradation long after average per-capita incomes pass the level at which pollution began to decline in industrialized countries.[35]

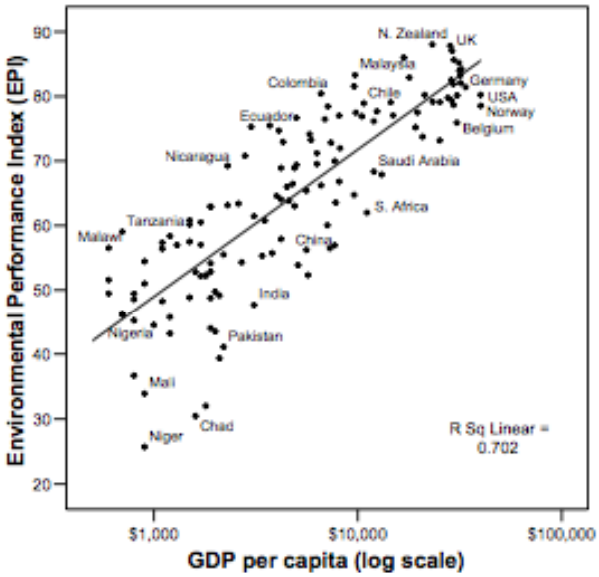


Figure 2.2: Relationship of Environmental Performance Index (EPI) ranking and Gross Domestic Product (GDP) per capita.
Source: CIESEN

Another factor is a country's economic freedom, which is a measurement of its openness to international trade and investment and the institutional safeguards for market activity. Some studies suggest that trade openness promotes development and provides citizens with more flexible income that can eventually be channeled towards environmental health improvements.[36] Other beneficial effects are technology transfer, improved environmental standards, and opportunities to use multinational corporations as vehicles for environmental good through consumer campaigns, for instance.[37] These potentially beneficial effects are dependent on levels of corruption, however. Increases in corruption can possibly amplify the effects of trade liberalization on growth and policy stringency. Conversely, the effects of corruption on the environment are heightened in areas with low levels of trade openness, where the stringency of environmental policy is prone to decrease.[38] In many cases, trade can also create new risks for corrupt behavior in the form of customs inspections and bids for international products to be purchased by local governments.

Foreign direct investment (FDI) is another indicator of corruption because corruption deters investment, by increasing financial risk while reducing economic and political incentives for investment.[39] This is one reason why FDI has largely bypassed the less developed nations. Evidence also indicates that corruption deters FDI, and countries with higher levels of FDI per GDP tend to have lower levels of corruption.[40] Finally, when FDI does occur, it may directly profit from or contribute to corruption as foreign investors can bribe governments for the granting special privileges, such as tariff protection or release from national environmental and other regulations. This type of scenario is especially true for the extractive industries, where concessions can be highly lucrative and there is much room for discretion. In this sector multinational companies play widely divergent roles in contributing to corruption depending on their structure, relationship to the ruling elite, and the relative position of the company to other companies in the host country.[41]

Finally, Official Development Assistance (ODA) plays a significant role in a country's environmental governance. ODA, which includes grants or loans from governments, international organizations and international financial institutions to developing countries or countries in transition, is often intended to enhance the economic development of beneficiary countries.[42] ODA levels reached USD 78.6 billion in 2004. The experience of the several decades of assistance suggests that the impact of ODA is largely dependent on the political and civil liberties of the beneficiary countries: in countries with less political accountability, ODA has been less effective in promoting economic growth.[43]

3 Environmental Threats in the Biodiversity Hotspots

Conservation International and the global scientific community currently recognize 34 biodiversity hotspots as priority areas for conservation. Biodiversity hotspots are defined as regions that contain at least 1,500 species of vascular plants (more than 0.5 percent of the world's total) as "endemic" species, or species that are not found anywhere else in the world; and that have lost at least 70 percent of their original habitat. Collectively, the hotspots hold as endemic species 44 percent of the world's plants and 35 percent of terrestrial vertebrates in an area that formerly covered only 11.8 percent of the Earth's land surface. This area has now been reduced to only 1.4 percent of the Earth's land surface.[44] These hotspots are a useful lens through which the link between corruption and environmental degradation can be analyzed. Like corruption, environmental degradation is a worldwide problem, but there is a particular overlap between the two issues in the biodiversity hotspots. With some exceptions, hotspots are predominantly located in parts of the world with moderate or high levels of perceived corruption (see Appendix 1). Because corruption has environmental consequences, the effect of corruption could be especially significant in the hotspots because their ecosystems are sensitive to threats, and because environmental degradation in the hotspots has global consequences in terms of lost biodiversity. For this reason, hotspots are priority areas for environmental conservation, which also means that they attract much international funding and attention. We chose five hotspots according to criteria developed in the methodology outlined below, to illustrate the environmental effects of corruption. The five hotspots are:

- *The Caucasus,* which includes Azerbaijan, Georgia, Armenia, Turkey, Russia, and Iran
- *The Mountains of Southwest China,* which includes China and Myanmar
- *The Guinean Forest of Western Africa,* which includes Liberia, Cote D'Ivoire, Ghana, Togo, Benin, Guinea, Sierra Leone, Cameroon, and Nigeria, as well as four islands in the Gulf of Guinea
- *Sundaland,* which includes Malaysia, Singapore, Brunei, Indonesia, Thailand and the Nicobar islands
- *The Tropical Andes,* which includes Venezuela, Argentina, Chile, Peru, Ecuador, Columbia and Bolivia

3.1 Methodology for Hotspot Selection

The hotspots were chosen to represent a broad distribution of countries in terms of geography, socioeconomic indicators, and biological diversity. The inclusion of hotspot countries in existing Transparency International studies, or the presence of Transparency International chapters, was an important consideration. The methodology considered previous or current investments or analysis conducted by international financial institutions such as the World Bank, which places a high emphasis on good governance as a condition for its assistance. Another factor was whether or not the hotspot crossed national boundaries. Given Transparency International's global focus, those hotspots that were transboundary – spanning biomes and borders – were favored over those located in a singular country or ecological niche. The hotspots were also considered based on two indices: Transparency International's Corruption Perceptions Index (CPI) and the Environmental Sustainability Index (ESI), which is managed jointly by Columbia University's Center for International Earth Science Information Network (CIESIN) and the Yale Center for

Environmental Law and Policy (see the indices, Appendix 2). Finally, the hotspots were chosen on the basis of the diversity of economic sectors such as fishing, mining, and logging that were present there.

We collected case studies from different economic sectors, referred to as “renewable”, “non-renewable” and “infrastructure”, were collected that represented some of the greatest threats to the biodiversity of the hotspots to allow for a vertical analysis across various regions, sectors, and levels of government. We compared findings from these case studies across different countries to make general conclusions about the linkages between corruption and the environment.

3.2 Environmental Threats in the Hotspots

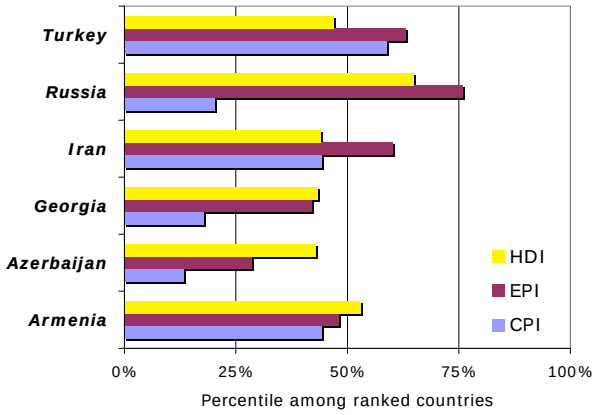
Within the five selected hotspots, a wide range of economic sectors are present, many of which threaten the fragile and diverse ecosystems found there. These threats include logging, mining, the building of large dams, and the hunting of endangered animals. Many of these threats are exacerbated by the fact that the activity is often illicit, and therefore largely uncontrolled. The hotspots suffer from a broad lack of good governance, as manifested for instance by poor enforcement of existing environmental laws, inadequate funding for environmental efforts, and poorly planned development. The following sections outline in more detail the specific environmental threats in each hotspot, and the extent to which these threats are governance-related.

3.2.1 Caucasus

Figure 3.1: The Caucasus hotspot

Source: Conservation International

Figure 3.2: Key indicators for the Caucasus hotspot



Source: UNDP, Transparency International, ESI

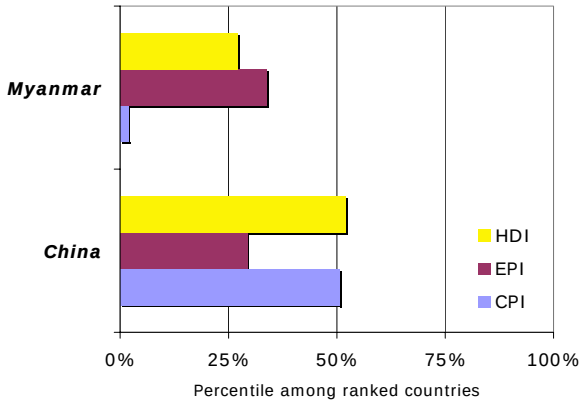
Social, religious and economic disputes within the Caucasus have created difficulties for a coordinated ecological protection effort. The relatively low ranks earned by the six Caucasus countries in TI's Corruption Perception Index indicate that governance plays a roll in the poor economic conditions within the region. The hotspot's average 2005 Corruption Perception Index was 106 out of 158.[45] The Critical Ecosystem Partnership Fund has identified the three root causes of environmental degradation in the area to be political, socioeconomic and institutional issues.[46] Conditions such as political conflict, poverty and poor governance have created a situation where over fishing, poaching, illegal logging, pollution and overgrazing are largely unchecked.[47] The resulting losses of habitat and natural resources have placed further stresses on local human, plant and animal populations. Since the collapse of the Soviet regime in 1990, environmental protection within the Caucasus has been fragmented. Each country has established ministries with specific responsibilities for natural resources and the environment, but environmental protection suffers from problems of poor legislation, ineffective public administration and conflicting policies.[48] Lack of funding and institutional capacity have further slowed the progress of ecological protection.[49] Despite having signed many international conventions, including Wetlands of International Importance, CITES, and the Convention on Biological Diversity, the six countries within the Caucasus struggle to fulfill their treaty obligations due to overlapping jurisdictions, ineffective internal policies—including conflicting legislation—poor regional coordination, as well as lack of adequate funding and support.[50]

3.2.2 The Mountains of Southwest China

Figure 3.3: The Mountains of Southwest China hotspot

Source: Conservation International

Figure 3.4: Key indicators for the Mountains of Southwest China hotspot



Source: UNDP, Transparency International, ESI

Although China has begun to turn its attention to environmental protection in recent decades, its economic development has been accompanied by rising environmental degradation. In both China and Myanmar, lack of institutional capacity and constraints on civil liberties have provided conditions for poor environmental governance in the hotspot. The hotspot is important not only for the endemic biodiversity it contains, but also because of the effect its environmental health has on other regions in China and Southeast Asia. For instance, a nationwide logging ban enacted in 2000 has helped reduce timber production and erosion in Southwest China, but the ban has simply shifted the environmental impact to other countries with less effective law enforcement.[51] In particular, extraction of wood, especially teak, has increased in Myanmar, which shares a border with China and suffers from weak institutional capacity and internal conflicts.[52]

Other threats include overgrazing by horse, sheep, goats and yaks, and the conversion of forests to pastureland occurs in man areas within the hotspot. The construction of the largest dam in history, the Three Gorges Dam on the Yangtze River, will continue to threaten biodiversity. The Chinese government has also proposed the construction of eight large dams on the upper reaches of the Lancanjiang (Mekong River). Illegal hunting and the collection of plants and animals for traditional medicine are problems. Development pressure continues to increase as the population has grown in the area of the upper Yangtze by 120 percent since 1949 to over 160 million people.[53] Another threat stems from collectivization in the 1950s and subsequent reprivatization in the 1990s which has led to insecure or ambiguous land titles. In some places this forces villagers to harvest wood illegally from nearby forests. Inconsistent or conflicting policies are also a problem. Finally, the Chinese government has designated 12.4 percent of the country's land as nature reserves, but the reserves are poorly governed and under funded.[54]

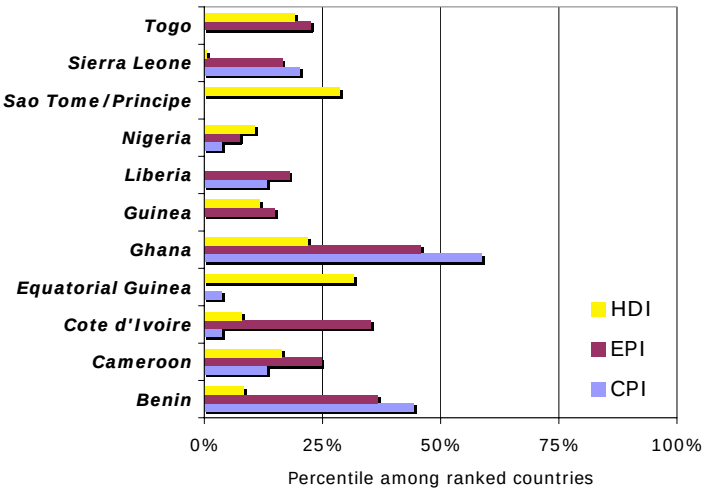
3.2.3 Guinean Forests of West Africa

Fragmentation of the Guinean Forests of Western Africa hotspot and the transnational nature of the forests are the chief threats to the biodiversity of this hotspot.[55] Illegal logging, poaching for bushmeat, and the growing population and increased cultivation of land for agriculture have reduced the original forests to 15 percent of their original extent.[56] The forests' abundant resources are open to over-exploitation for two reasons. First, the increase in population has resulted in new roads and easier access to the more remote parts of the forests. Second, the enforcement of laws in all the countries of this region is weak. This creates an environment prone to corruption. Cultural traditions of kinship and gift-based business dealings make corruption perception a difficult hurdle in convicting corruption-based crimes like bribery or cronyism. The abundance of porous borders and bribable border guards also provides opportunities for the illegal export of goods. Stakeholder-based conservation efforts exist throughout the region, primarily in efforts to retain forest habitat and fight extinction of critically threatened species. Corruption represents an impediment to these efforts through increased resource extraction concessions and a lack of enforcement for protected forest regions. Even within countries experiencing success for transparency efforts in public and private sectors corruption remains endemic throughout the hotspot.

Figure 3.5: The Guinean Forests of West Africa hotspot

Source: Conservation International

Figure 3.6: Key indicators for the Guinean Forests of West Africa hotspot



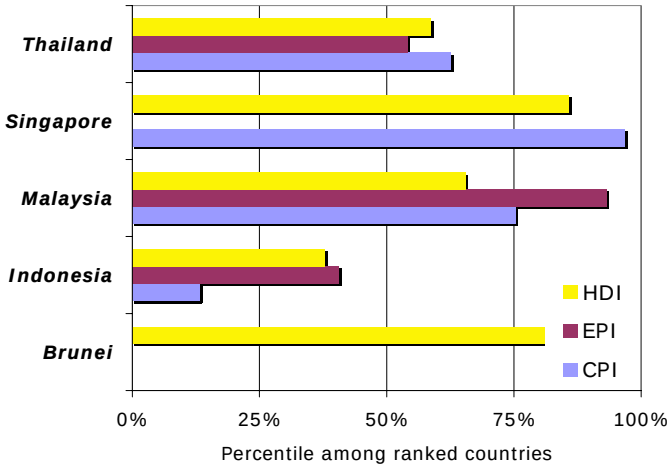
Source: UNDP, Transparency International, ESI

3.2.4 Sundaland

Figure 3.7: The Sundaland hotspot

Source: Conservation International

Figure 3.8: Key indicators for the Sundaland hotspot



Source: HID, TI CPIC, ESI

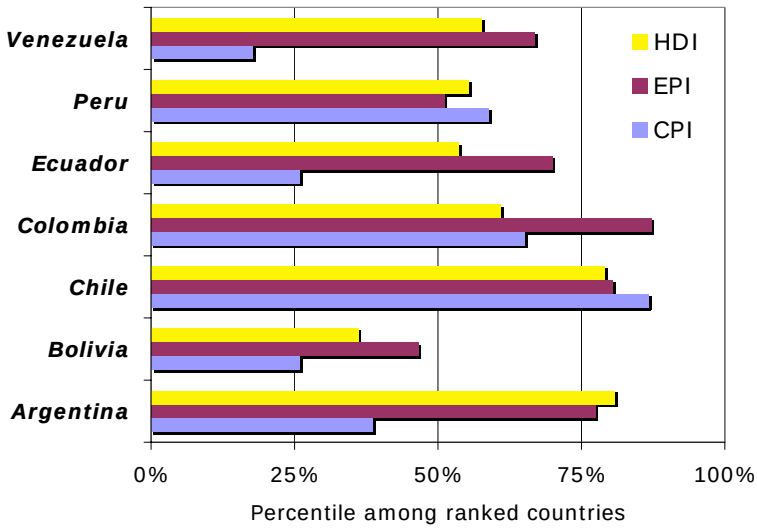
Deforestation due to both commercial and illegal logging has devastated the Sundaland hotspot, which is one of the most biologically rich of the 34 hotspots.[57] Chiefly in danger to logging are the low-lying forests, which are estimated to have declined by 20 million hectares, or twice the size of Pennsylvania, from 1987 to 1991.[58] The pace of this deforestation has only increased in the subsequent years, yielding concerns about the complete obliteration of low-lying forests in Sundaland in the next one to two years. Indonesia has already lost almost three quarters of its ancient forest areas, and Indonesia's forestry ministry estimates that deforestation occurs at 2.8 million hectares per year.[59] Corruption occurs in illegal logging both at the local level, with bribes and concessions given to local communities to gain access to forests, and at the national level, where government and forestry officials extend contracts to special interests, take bribes from logging companies, and open access to national parks. Indonesia and Malaysia make up the bulk of this hotspot, and Indonesia is in particular danger of environmental corruption due to the legacy of three decades of autocratic rule by General Mahomed Suharto, who was deposed in 1998. Corruption has been widely accepted as part of governance in Indonesia and many laws are still based upon corrupt practices.[60] As a newly and rapidly democratizing country, Indonesia continues to have poor transparency at the local level of governance and a dysfunctional relationship between local councils.[61] The central government is still adjusting to the role as an overseer of local governments, thus appropriate monitoring systems remain to be developed. Due to the reliance on kickbacks from illegal logging in all countries in Sundaland, the problem of environmental degradation is difficult to combat. Corrupt police officers and officials protect illegal loggers at the expense of local communities[62]. Oil extraction, mining, civil unrest, and illegal animal trade are also threats.

3.2.5 Tropical Andes

Figure 3.9: The Tropical Andes hotspot

Source: Conservation International

Figure 3.10: Key indicators for the Tropical Andes hotspot



Source: UNDP, Transparency International, ESI

The Tropical Andes is also one of the most threatened regions on the planet. The Andes hotspot is subject to extremely high levels of deforestation, degradation, and pollution. Originally the hotspot was comprised of 1,542,644 km^2 of land, but only 385,661 km^2, or roughly 25 percent of the area, is left intact today.[63] The most prevalent direct threats include vulnerable and poorly maintained protected areas, hydrocarbon development, mining, logging, road construction, new colonization, dam construction, inadequate information sharing among stakeholders, and insufficient information on the biological and socio-economic profile of the region.[64] Unfortunately, only 16 percent of the original area comprised by the hotspot lies within protected areas.[65] On top of this, many of the protected areas are small and fragmented, making them highly ineffective at achieving conservation goals. The intensity varies among the various countries within the hotspot. The dry inter-Andean valleys are currently thought to be the most threatened area in the hotspot where most of the original forest cover has disappeared, leaving on average less than 10 percent of the trees.[66]

The most recent and severe threat to develop in the Tropical Andes hotspot is that posed by the oil industry. This is particularly a growing concern in Colombia, Ecuador, Peru and Bolivia. So far, oil concessions have been issued for large tracts of pristine forest in Peru and Bolivia, but this is merely the beginning of the threat.[67] The expansion of this extractive industry is likely to create unsustainable pressures on the environment as well as on native peoples living in the region.

3.3 Transboundary Issues of Corruption and Environmental Degradation

Many factors exist in common across the five hotspots chosen for this analysis. In the case of the Caucasus for example, the root causes of environmental degradation in the area have been identified as political, socioeconomic and institutional issues.[68] In both China and Myanmar, lack of institutional capacity and constraints on civil liberties have also provided conditions for poor environmental governance.[69] The hotspots also include a range of socio-political development and corruption perception scores. Countries such as Singapore and Chile rank relatively well on the Corruption Perceptions Index, whereas Nigeria, a country with a poor record of political participation, shares a hotspot with Benin and Sao Tome e Principe, countries with recently successful records of improved governance. This range in development allows for a comparison across as well as within the hotspots of the factors that link corruption and environmental degradation. The next section outlines how corruption is manifested in three broad economic sectors.

The analysis across the different hotspots provides a large body of case studies that describe how corruption occurs in the same economic sectors across different regions. Three broad economic sectors – renewable resources, nonrenewable resources, and infrastructure – form the basis of analysis for all of the case studies in this report.

4 Corruption and Environmental Degradation in the Biodiversity Hotspots

This section outlines how corruption occurs in three different economic sectors. *Renewable Resources* refers to natural products that are regenerative, such as forests and fisheries. *Non-Renewable Resources* primarily refers to the extraction of depletable resources such as mining and the oil industry. *Infrastructure* covers such large projects as bridges, dams, and roads.

4.1 Renewable Resources

Corruption is widespread within the renewable resources sector but especially within two areas: illegal logging and the poaching of wild animals and the illegal trade of rare plants for export, food, or medicinal uses. Illegal logging includes illegal harvest, transport, processing, exporting, or selling. This process robs the local communities of much needed income, compromises the prices of legally harvested timber and other forest products on the world market, financially fuels domestic and regional clashes and discourages sustainable and effective forest management.[70] The Forestry Integrity Network notes that corruption is a major cause of worldwide forest degradation.[71] TRAFFIC, a group that works to assist the implementation of the Convention on the International Trade of Endangered Species (CITES), notes that the wildlife trade is estimated to be worth billions of dollars annually. Nearly 65 percent of the illegal wildlife trade is comprised of timber, followed by food and bushmeat, forest products, animal products, and the pet and ornamental plant trade. It is impossible to know how much of the overall wildlife trade is comprised of illegal activities.[72]

We examined a number of case studies that illustrate how corruption in the renewable resources sector occurs, including illegal logging in Cameroon, China, and Myanmar, and poaching of sturgeon in the Caspian Sea (see Appendix 4 and Box 4.1). There are several common characteristics in these case studies. The first is that regulations exist that pertain to the illegal activity but they are not often followed. In Cameroon, the logging permits available for Cameroon nationals are circumvented as nationals purchase concessions for foreign logging companies from both developed and developing countries.[73] Laws exist in Myanmar and China to prevent the illegal trade of timber, but are similarly ineffective.[74] In Azerbaijan, authorities do not enforce the laws against poaching sturgeon.[75] Second, bribery is common in each of these cases, often fueled by the types of legislation in place. In Cameroon, illegal payments are required either to obtain the logging permits or to obtain them quickly.[76] In Myanmar, profits from illegal logging support regional military groups and are used to purchase temporary ceasefires from groups as concessions.[77] Azerbaijani officials often patrol the Caspian Sea, but to collect fines rather than stop poaching.[78]

Third, corruption in this sector is often fuelled by demand for illegal products in export markets, often but not always in Western countries. The profits to be made from illegal exports makes the breaking the law both profitable and a worthwhile risk. The illegal logging in Myanmar is often managed by Chinese companies, which have a waiting market in China since the logging ban introduced there in 1998.[79] The lucrative market for caviar in Azerbaijan is fueled by exports to European and American markets.[80] In Cameroon, as in many Central African nations, much of the logging is carried out by European companies and the majority of wood exports from this region go to European timber markets (see Box 4.1).[81] Demand in China drives the illegal trade of rare plants and animals for medicine and wood for domestic consumption.[82] Finally, border

issues also are a large contributor to environmental problems. Countries that have more lax or poorly enforced regulations as well as poorly monitored borders are often exploited by neighboring countries to elude stricter regulations, as in the example of illegal logging in Myanmar by Chinese companies (see case study in Appendix 4).

An analysis of different indicators reveals some common trends across the countries from which case studies were taken (see Appendix 2 – Indices). These countries have high perceived levels of corruption, low scores in the World Bank Governance Indicators, and rather low rankings in the Human Development Index. Although these countries have relatively small ecological footprints, they all have low environmental performance indices. The clearest similarity among the countries studied may be that they tend to rank as highly "unfree" in the 2006 Economic Freedom ranking. In addition to the lack of economic freedom, the overall economic situations in the countries have led to conditions where corruption flourishes. Often officials are more concerned with economic growth than reining in corruption, except in some cases where corruption directly causes the central government to lose money.[83] Indonesia, another country which has experienced a great deal of illegal and corrupt logging, and Myanmar both suffered financial crises in the 1990s, which may have led to higher black market trade when formal markets are disrupted.[84]

The case of black caviar harvesting in Azerbaijan illustrates the issue of poaching and its effects (see case study in Appendix 4). In this case, the collusion between many countries on the national and local governmental level is perpetuating the illegal harvesting of sturgeon caviar and its export to developed countries. It is estimated that 80 percent of the remaining sturgeon population in the Caspian Sea is male due to the selective harvesting of female fish, and the corrupt practices of the fishermen and officials in the region continue to exacerbate the problem.[85]

Box 4.1:
Case Study: Illegal Logging in Cameroon

In a 2001 report, the nongovernmental organization Forests Monitor showed how the forests of Central Africa are being destroyed by poor governance. Cameroon's forests are protected, in theory, under a 1994 law that requires logging to be licensed and loggers to plant new trees in place of the harvested ones.[86] Unfortunately, the law facilitates deforestation rather than regulating logging activities. The law requires that concessions be awarded after a tendering process for 15 years, renewable for 15 years, with three-yearly inspections, with a maximum area granted of 200,000 ha. In addition, there are provisions for forest exploitation which in theory are available only to Cameroon nationals but in practice are often contracted by Cameroon nationals to foreign loggers. Logging companies pay for their permits but then also pay bribes to the officials in charge of issuing those permits to issue the permit in the first place or to expedite the process. Moreover, the companies to which permits were issued are often owned or controlled by government and military officials.[87]

Foreign, mainly European, companies have exploited the forests of Cameroon by selective logging. This practice, once promoted as environmentally sensitive but now regarded as unsustainable, focuses on harvesting selected valuable species but in the process causes road building and, subsequently, further exploitation and fragmentation of the forest.[88] The companies must purchase logging concessions but the rules governing forest management are complex and arbitrary. Even if companies obtain concessions legally, their high price gives the companies an incentive to recover their costs, including by logging over their quota. Much of the timber is also traded illegally. For example, in 1998, the declared exports of logs from Cameroon to Portugal were only half the declared imports at Portugal's end. European importers often willingly purchase timber that cannot be verified as legal and thereby provide markets for illegally logged timber.[89] False documents for Cameroonian timber are created to create the illusion that the timber is from another country and merely passing through Cameroon. European importers often obtain timber that cannot be verified as legal and, hence, stand complicit in the illegal logging trade. Five EU-based companies operating in Cameroon had official actions taken against them by the Cameroonian government, including fines, disqualification from new concessions, and suspensions, due to a variety of infractions. These included exploitation of endangered or unauthorized species, exploitation without license, and serious wrong-doing in forest management activities. Although the European Commission has recognized the need for regulation and a code of conduct for European logging companies, the recommended guidelines have yet to be established.[90]

Although the logging industry in Cameroon earns revenues, it makes little or no contribution to poverty alleviation. Instead, local people are trapped in a spiral of a worsening environment, the degradation of their livelihood, and the need to participate in still more unsustainable logging to earn a living. There are also many examples of conflicts of interest: for instance, a logging road in Cameroon was owned by the president's son.[91] According to a Greenpeace report, European companies are active participants in the deforestation of western Africa because they import the illegally harvested timber and other forest products.[92]

4.1.1 Costs of Corruption in the Renewable Resources Sector

Deforestation is thought to lead to floods, landslides, and forest fires. For example, flash floods in the area of Bahorok, Northern Sumatra, were attributed to illegal logging.[93] Although the link between deforestation and flooding is controversial, disastrous flooding has caused countries like Indonesia and China to introduce new measures to protect forests and other natural resources. Corruption can also lead to the non-enforcement of laws that protect the environmental. Timber companies can bribe officials to ignore inconvenient and expensive regulations, resulting in toxic effluents and other byproducts of industry being released unchecked into the environment.[94]

Poor environmental governance can lead to species loss. The habitats of thousands of species are being destroyed as land is being deforested for timber or to create space for palm oil and rubber plantations, or because of the flammable ground cover igniting forest fires due to illegal logging. Indonesia is home to 80 percent of the world's few remaining orangutans, and rampant logging on Borneo and Sumatra has seen their population dwindle by half in the past decade.[95] Illegal logging is a major contributor to the poaching of orangutans, as they are displaced and made vulnerable to poaching. The tsunami of December 2004 and its aftermath have driven locals in

Southeast Asia to extreme measures, including poaching of orangutans and their illegal trade to China and Japan.[96] Orangutans are important to the jungles of Indonesia because they seed the forest through the fruit that they eat. In this respect they are known as a keystone species, which means that their extinction would lead to extinctions of other species that rely on them.[97] Although there are many orangutan orphanages in the region, it is estimated that for every rescued infant four adult females and three infants die.[98]

Illegal logging and species trade have direct economic costs. Money from timber extraction that could benefit the local economy is lost to bribes to local governments and foreign companies who engage in illegal activities.[99] The World Bank estimates that developing countries lose up to $18 billion a year in potential government revenues to illegal logging.[100] Local communities are displaced by invasive logging practices or oppressed by complicit authorities, and they often do not benefit from the funds generated by the timber companies.[101]

4.1.2 Areas of Possible Intervention in the Renewable Resources Sector

The more successful attempts to tackle corruption in the Renewable Resources sector have attempted to encompass the large number of entities that come together to commit corrupt acts that harm the environment. The Cameroonian government agreed in 2002 to cooperate with the World Resource Institute in a satellite monitoring program that aims to help track down illegal logging operations.[102] Citizens watch groups can help citizens to resist the temptation to collaborate with logging companies in protected forests. Community based activities in patrolling forests can lead to the fining of logging companies, and the result is increased revenues to local governments as well as protection of the forest. An example of successful citizen watch groups comes from outside our hotspots, in India. In Orissa State, village women physically blocked the passageway to the forest and monitored who was entering and exiting the forest.[103]

Another option is to invest management of forest areas with local villages rather than the central governments, since local villages have a higher stake in preserving their habitats. In Tanzania, this approach resulted in a slowing of illegal logging and charcoal harvesting.[104] Villagers in regions of charcoal forests chose to fight illegal loggers and poachers by overseeing the forests themselves.[105] Other options include the holding of public auctions for leases on timberland to reduce the scope for patronage. In general, the longer-term the lease, the more likely a company will care properly for the land.[106] Citizen oversight over government budgets have also helped to promote government accountability. The district of Slemen in Indonesia has implemented financial management procedures and reporting requirements that increased revenues from 15 billion to 75 billion rupiahs (US$1.6m to US$8.3m) in five years of decentralization.[107]

Priorities in reforms should focus on defining the roles and responsibilities of local and central governments, fostering trust between these organizations, reforming civil services and benefits to communities to strengthen local autonomy, decentralizing taxes, instituting grants to fund national health care and other services such as education, fostering transparency and accountability at all governmental levels, and encouraging and empowering the citizens to be involved in government.[108] Though government has been recently decentralized in many of the

areas that have vast reserves of timber, little power has been given to local citizens to be able to support biodiversity and protection of local forests.[109]

Some countries are attempting to reduce corruption within their borders. Cameroon has implemented new logging regulations with help from the World Bank.[110] Indonesia established an anti-corruption commission in 2003 and Malaysia has begun working on timber certification schemes.[111]

Foreign countries have roles to play. Neighboring countries that are fuelling demand for illegally traded products could prevent domestic companies from taking advantage of a country's poor governance. Stimulating the interest for certified products by overseas countries will reduce the incentive to produce goods through illegal means. As found in the case of palm oil imports in the United Kingdom, corporations are often not aware of the specific sources of their imports and what the environmental ramifications of those production areas are.[112] A 2005 survey found that of 96 palm oil importers, none was able to trace all their palm oil back to non-destructive plantation sources, and the majority had no knowledge of their palm oil's origin.[113]

4.2 Non-Renewable Resources

The extraction of oil, gas, and minerals often leads to systemic corruption at all levels of government. Corruption in the oil and mining sectors has not only inhibited economic development by diverting revenues away from the state into the hands of a few individuals, but it has also led to severe environmental degradation in the areas surrounding oil and mineral extraction. Companies have either actively participated in, or failed to prevent, unethical and unsustainable environmental practices such as dumping oil and waste materials into local waterways. The water, air, and soil pollution and accompanying biodiversity losses resulting from extraction activities have affected local and surrounding communities.

Public contracting is a particularly problematic area of the oil sector, with revenues often vanishing into the pockets of oil executives, middlemen and local officials.[114] A lack of transparency and cronyism in the bidding process for oil contracts and throughout state run monopolies in charge of the allotment of contracts has enabled both state and local officials to siphon off revenues from extraction. Corruption in contracting has been facilitated by limited bidding processes, direct contracting, and a lack of oversight for independent agencies and civil society.[115] Due to the initial corruption in the contracting process, oil companies may have strong ties to government agencies responsible for the regulation and enforcement of extraction activities.

Corruption in the judiciary is a common phenomenon in developing countries.[116] It is likely to occur when the power is concentrated in the hands of a few officials and when there are complex procedural rules, inconsistencies and lack of information about historical precedence, an absence of alternative conflict-resolution organizations, and the existence of organized crime.[117] A weak judiciary often facilitates corrupt activity in the oil and mining sectors. In return for bribes, judges can rule against complaints of environmentally damaging activities and contract violations.

Box 4.2
Case Study: Oil Extraction and Pollution in Ecuador

Ecuador has experienced severe oil pollution over the past thirty years as a result of oil extraction. A US oil-extraction company, Texaco, was accused of dumping 18 billion gallons of toxic waste into local waterways from the early 1970s until 1992.[118] The pollution was thought to have significantly affected the five indigenous groups living in the region and forced two of them close to extinction.[119] The contaminated area has one of the highest cancer rates in the country.[120]

Even though Texaco agreed to spend $40 million in 1996 to clean up the contamination site, an environmental consultancy company, Global Environmental Operations, found in an environmental assessment of 2003 that the site was still contaminated. Texaco denies that there are toxins present in the region and the Ecuadorian Supreme Court has supported their findings, citing problems with the plaintiffs' reports against Texaco.[121]

Despite multiple suits by indigenous groups directly affected by this dumping, Texaco has not been forced to compensate fully those affected.[122] According to the Review of International Social Questions, "the civil justice system [in Ecuador] has never imposed a judgment of more than $1 million on an international oil company despite environmental damage in this case estimated to exceed $1 billion.[123] Victims were unable to bring class action suits in the United States because US courts ruled that the Ecuadorian judiciary had jurisdiction. Until 2003, however, the Ecuadorian judiciary refused to hear suits against Texaco.

The first trial against Texaco (now owned by Chevron) in Ecuador began in 2003. According to Amazon Watch, "the forensic evidence of widespread toxic contamination has steadily mounted; all 22 sites inspected by the court so far have been found to be contaminated, and one site had levels of Total Petroleum Hydrocarbons at 900,000 parts per million, or 9,000 times higher than allowed in most US states."[124] The trial continues today, and due to the continued anxiety about corruption in the Ecuadorian judiciary an International Commission of Jurists was just called in to monitor the proceedings for illegal activities.[125]

The case of oil extraction by Texaco in Ecuador provides an example of centralized (or grand) corruption. While there is no evidence of bribes paid, numerous reports state that Texaco had strong ties to the Ecuadorian judiciary. In addition, characteristics of the judicial system facilitated corruption: for instance, the judiciary does not force witnesses to testify, merely requiring all questions to be submitted in writing.[126]

Corruption in the mining sector is thought to occur because large sums of money flow from the companies to governments in the form of royalties, taxation, and other payments, and great discretionary power lies in the hands of those responsible for collecting and distributing these revenues, as well as those who grant the license and monitor the operations at both the permitting and the operational phase.[127] Partly for these reasons, countries whose economies are dominated by the oil and mineral sectors tend to suffer from high levels of corruption: In 2004, Transparency International concluded that oil-rich countries such as Angola, Azerbaijan, Chad, Ecuador, Indonesia, Iran, Iraq, Kazakhstan, Libya, Nigeria, Russia, Sudan, Venezuela, and Yemen exhibit some of the highest levels of corruption in the world. The presence of high levels

of corruption in the mining sector in countries in Latin America and Southeast Asia suggests that mineral resources increase the conditions for corruption within a country.

4.2.1 Costs of Corruption in the Non-Renewable Resources Sector

Corruption in the non-renewable resources sector has worsened the environmental degradation of an already destructive industry. Corruption in bidding and the awarding of concessions removes many of the penalties for operating in an unsustainable manner. Lax environmental laws coupled with corrupt government officials often allow companies operating in this industry to regulate themselves, in exchange for kickbacks or bribes. This can lead to illegal discharges of pollutants. Mining companies are generally not held to strict environmental standards, and often bribe officials to look the other way in terms of environmental damage. Mining operations produce mining tailings, smelter gases, overburden flotation chemicals, and oxidization products including acids, air pollutants and sludge as by-products.[128] Most of these hazardous pollutants can be found downstream from mining operations. In Peru, for instance, the run-off from mining operations has contaminated a river that supplies 70 percent of the drinking water to Lima's population.[129] Mining activities also lead to vast land degradation and soil erosion.[130] Many companies are not held liable for the damage they cause due to a lack of enforcement of environmental regulations. Erosion and land degradation can lead to flooding and can also divert drainage systems.

The extractive industries are also responsible for deforestation and other forms of land degradation. By its nature, the oil industry pollutes. Toxic releases, spills and storage of waste materials have been shown to pollute the surrounding ecosystem and waterways. Due to the fact industries can essentially bribe their way out of regulation when corruption is prevalent, oil extraction results in amplified environmental degradation. Oil extraction has resulted in numerous oil spills in environmentally sensitive areas. Government complicity has often resulted in weak or non-existent clean-up measures. The environmental implications are amplified when spills involve an area of rainforest, such as was the case in Ecuador (see Box 4.2).[131] Oil spills can cause the loss of biodiversity unable to survive in the oil toxicity of the remaining habitat.[132] Also, development of the oil industry in rainforest environments leads to infrastructure development in the form of roads, and new colonization of previously uninhabited areas.[133] Colombia, Ecuador, Peru, Bolivia, and Nigeria have substantial oil operations in rainforest areas. Oil companies have also been known to participate in a process known as flaring, which is the ignition of natural gas (a by-product of oil extraction) into the atmosphere. Aside from the obvious environmental emissions, it has also been known to create forest fires.[134]

4.2.2 Areas of Possible Intervention in the Non-Renewable Resources Sector

The most immediate way to decrease corruption in the non-renewable sector is to increase transparency and accountability. The Extractive Industries Transparency Initiative (EITI) seeks to do just that by making public revenues generated by governments from extractive industries and likewise, the companies that supply this revenue.[135] To meet this objective, the EITI fosters dialogue with all major stakeholders, including the private sector, civil society, government, and international institutions, as each of these entities has a stake in the outcome of the EITI.[136] EITI has no specific environmental component: it is focused on transparency of revenue. EITI is dependent on the commitment of participating countries and the resources they commit to it. For

example, in Kyrgyzstan the EITI's relative success depended on the competent official assigned to it. EITI is voluntary but once the mechanism is in place, the effects gain strength and build upon each other. For instance, in Azerbaijan the EITI has led to strong conditionality in the European Bank for Reconstruction and Development's (EBRD) dealings with the country. EITI is also increasingly used as an indicator, especially in IMF monitoring reports, which are subsequently the basis for most private investment flows.[137] Another significant initiative for the extractive industries is The Publish What You Pay campaign, which invites international extractive companies in the oil, gas and mining sectors to entirely disclose all their financial transactions to the governments where they operate (see Section 7 below).

One positive example of transparency in the extractive industries comes from Sao Tome e Principe in the Guinean Forest Hotspot. In response to a new supply of oil discovered off the shores of the small nation, President Fradique de Menezes declared in 2004 that government revenues from the oil will serve to benefit economic and social progress, including public access to information on the disbursement of revenues.[138] The Revenue Management Program is being implemented using the model that the country of Chad currently uses. The revenues from oil to the country of Sao Tome will be directed to an outside bank. This money goes into a permanent fund that will not be able to be fully accessed until the oil is depleted and revenue is no longer flowing in. Some funds can be withdrawn during the period of extraction, but only if certain conditions are met.[139] The program will be regulated by a separate agency – the Petroleum Oversight Commission.[140] The efforts of Sao Tome and Principe to ensure transparency are exemplary, but the shared waters and the influence of its extremely corrupt neighbor, Nigeria, may stand as an impediment to these measures.

4.3 Infrastructure

Infrastructure comprises a country's long-term public improvement projects and can vary from minor roads to international highways and from fishing docks to large dams. Each of these components has an impact on the environment, with the level of impact largely determined by the way in which the project is governed. The design, site choice, and construction of a road, pipeline or industrial facility can pose significant threats to local, regional, and even global ecosystems. Moreover, the typical 'lifetime' of an infrastructure project lasts long after the initial construction phase is complete. Ongoing operation and maintenance of such facilities can continue for decades, compounding the initial social and environmental damage. In this way, large infrastructure projects can set a long-term unsustainable course, affecting future generations and irrevocably altering ecosystems.

The development of infrastructure is characterized by large amounts of funding, concentrated centers of decision-making, and, in many cases, relatively little oversight by outside agencies and the public. These conditions can breed situations where the interests of a few override environmental and social concerns. Specifically, corrupt behavior between government officials and private industry can divert resources away from sustainable development efforts, weaken environmental impact assessment, and curtail compliance with existing environmental laws.

Corruption can occur at every stage of a project's development. At conception, individuals may decide to move forward with building a road or bridge, for example, simply to channel funds into

their personal coffers. Site choice, contracting, material procurement, displacement procedures, and ongoing maintenance for an infrastructure project can fall victim to poor governance and cronyism.

Illustrating the importance of infrastructure-related services to communities, the Human Development Report includes information regarding the electricity consumption per capita as well as the percentage of a country's population with sustainable access to improved sanitation (see Appendix 2 – Indices). Further, environmental indices, such as the Environmental Sustainability Index (ESI), have also incorporated infrastructure into their country rankings. For example, variables such as safe drinking water supply and renewable energy production are factored into a country's total score.[141]

While all forms of infrastructure cause environmental stresses and their development is subject to corrupt practices, this sector analysis focuses on dams, with special attention on large dams. Of all major types of infrastructure projects, dams cause some of the most extensive environmental damage to regional ecosystems, and are also ripe for corruption and rent-seeking behavior. Corruption can affect nearly every aspect of dam development. The selection of contractors, allocation of water reserves, compensation for displaced persons, and assessment of environmental effects can be negatively impacted by corrupt practices.[142] Despite their ability to control floods and produce electricity, dams can pose significant public health threats by reducing water quality and creating the possibility of catastrophic dam breaches. Dams can similarly destroy riparian ecosystems by creating reservoir lakes where rivers previously existed. This sudden and dramatic change can greatly affect habitat for animal species, reduce forest cover leading to increased soil erosion, or inundate arable farmland. When land is flooded without proper mitigation, as commonly occurs, abandoned buildings, vehicles, and dumping sites are left to leach toxic chemicals into the water. With increasing international focus on climate change, dams, and their smaller level of greenhouse gas emissions, are being discussed as a superior energy alternative to fossil fuels. The importance of dams to both economic development and environmental sustainability is laid out in the 2000 World Commission on Dams report.[143] An analysis of dams, their governance, and environmental impacts is thus pertinent and crucial to both conservation and anti-corruption efforts.

Many less developed countries have attempted to base their development largely through intensive dam construction. These structures have been marketed as opportunities for host countries to build large, sustainable sources of electricity that can spur further economic growth. International agencies, multi-national banks, water resource experts, and politicians alike have pushed for more and larger dams. A dam is categorized by the industry as large if it reaches a height of over 15 meters. In 2003 there were over 45,000 of these structures across the planet.[144] Dams are constructed for a variety of end uses, and while there are usually multiple reasons for each dam, their marketed purpose is often limited to one primary explanation. The most commonly cited reasons for dam building are irrigation, electricity, flood control, and water supply.[145]

The form that corruption takes, and the level of its incidence, is not only specific to the country or countries of concern, but also the industry being considered. Infrastructure development, and specifically dams, present particular types of decision-making processes and associated areas of

potential discretion. Unlike mining and logging, which are generally more systemic in nature, dam construction is relatively rare for most cities or regions. This often means significant flows of foreign direct investment into a developing country, as well as lucrative contracts for firms managing the project. When such high-stakes negotiations take place outside of the public eye and within relatively unaccountable political structures that pay little attention to combating corruption, the results often place environmental concerns well under those of short-term profits. This account suggests the importance of an active and critical media focusing on the infrastructure sector, thereby increasing the chance that decisions that impact entire communities, as is the case with dams, reflect not just the interests of a few but the general interest of those communities.[146] As illustrated in the Bio-Bio case study (see Appendix 6), corruption high in the decision making process led to unfair treatment of indigenous communities, as they were forced to leave their ancestral homes while a few officials and private developers reaped large profits.

With the international transfer of technology from rich to poor nations being slower than expected, developing nations are eager to participate in foreign-invested infrastructure projects. This enthusiasm often places economic growth at a higher priority than environmental sustainability. Poor governance can exacerbate this problem, whereby environmental regulations currently in place are overlooked such that projects can be pushed forward without any additional costs or time delays. Therefore, dams present both anti-corruption, environmental conservation, and human health professionals with an imposing dilemma. With politicians, development firms, and international financial institutions promoting dams as vehicles for economic growth and flood protection, those affected communities and ecosystems near the site are often viewed as unfortunate sacrifices for the greater development of a country. Increased transparency throughout the process of choosing a site, designing, constructing and managing a dam can minimize environmental degradation and help local communities be treated as justly as possible. As the Brundtland report put it, “Choosing an energy strategy inevitably means choosing an environmental strategy”.[147] What is not so clear is that the implementation of this energy strategy can often end up in the hands of unaccountable, corrupt officials who make decisions behind closed doors.

4.3.1 Costs of Corruption in the Infrastructure Sector

Corruption and poor governance can exacerbate the social and environmental issues that dams present to communities and ecosystems where demand for economic growth is great, opportunity is low, and power is concentrated. For example, corrupt oversight can undermine environmental impact statements used in publicly disclosing the long-term impacts of a dam. Reduced transparency in the decision-making process of dam location and construction can lead to misallocation of funds and poor construction practices. These, in turn, increase the costs associated with managing the dam as well as the risk of dam breaches. Corruption in the oversight of dams can similarly lead to insufficient monitoring of environmental and public health conditions, after the structure is built, leaving local communities with despoiled water systems and unhealthy environments. When regulations relating to dams exist, bureaucrats with discretionary powers must be willing and able to ensure they are implemented.[148] As with all sectors, those public management activities that involve discretion are in most need of reform and monitoring, especially when the socially desirable regulations are vital to the greater health of the environment and the public at large.[149]

Efforts to assess the environmental effects of dams have been difficult because of limited research and comprehensive methodologies.[150] Nevertheless, dams have significant social, economic and environmental impacts. Large dams disturb hydrological flows and destroy aquatic as well as terrestrial ecosystems.[151] Other impacts include the effects of dams on downstream aquatic ecosystems, the disruption of seasonal river flow changes on which local species depend, and blockage of migration and breeding pathways (see Appendix 6: the case of the Bio-Bio dam in Chile).[152] Dams can generate long-term and often irreversible damage on ecosystems and biodiversity. As many species prefer valley bottoms for feeding and reproduction, large-scale inundation can lead to dramatic reductions, or possible elimination, of species.[153] Many large dams lead to the displacement of entire villages, for instance in Xinanjiang, China (see Box 4.3).[154] Along with the social, economic, and political equality, displacement can also lead to further environmental damage as people settle in other potentially sensitive lands. According to official Chinese statistics, only one third of those displaced have been able to 'reestablish their lives at satisfactory standards,' another third have settled into subsistence livelihoods, while the remaining third have become mired in poverty.[155] When government authorities ignore these concerns, corruption threatens to lock-in an unsustainable energy source for at least a generation, making environmental conservation efforts increasingly difficult. Furthermore, while a proposed dam may in fact be built with or without the presence of corrupt officials, the level of environmental care taken in its development is always subject to change.

Box 4.3:
Case study: Dams and Development in China

More than 600 dams per year were built in China in the three decades following the Cultural Revolution of 1949.[156] The World Bank is the largest financier of large dams in China, as in most countries, but the UNDP, USAID, and other development assistance agencies have contributed funds as well.[157] The World Bank has dropped out of one significant project, the Three Gorges Dam in South-central China due to concern over its social and environmental costs. As a result, the project is now largely financed from domestic sources, many of which have less stringent social and environmental policies.[158]

China's transition from a state-controlled system to a market economy has led to the largest ever reduction in poverty in such a short time span (using China's poverty standard of $1 a day), although this has been accompanied by an overall increase of inequality over the past two decades.[159] Like India and South Korea, China's economic success of the last few decades has coincided with a gradual opening of trade barriers.[160] During this time China has become the largest recipient of Foreign Direct Investment among emerging economies, including continued investment in large dams.[161] At the same time, the Chinese government has maintained strict control over the media, judiciary and civil society. No officials are elected above the village level and the Chinese Communist Party CCP controls all organs of state.
Dam construction in China has had costs for both river basin communities and the environment, especially when these dams are built without proper planning or safety guidelines. The world's most catastrophic series of dam bursts occurred in 1975 in the Chinese province of Henan, leaving approximately 230,000 dead in its wake.[162] Despite warnings from hydrologists concerning the structural soundness of the dams, economic planners as well as local and national

governmental officials forged ahead, leading to the catastrophe. Moreover, the Chinese government has come under significant criticism for covering up this disaster and its associated casualties for over 20 years. To place this incident in context, the other 200 dams that were breached or overtopped worldwide in the 20th century resulted in an estimated 13,500 casualties.[163] With proper governance, where environmental and social impacts are given appropriate consideration along with economic growth, the costs forewarned by hydrologists and others would be taken into more full account, and mistakes like these could possibly be avoided. Moreover, the relative concentration of money and power typical of large infrastructure projects has the potential to distort decision-making toward the benefit of private interests rather than maximizing social welfare.

Nevertheless, some efforts have been made in recent years by the national government to increase environmental awareness.[164] In 2004, the Chinese government set the target of "building a socialist harmonious society… in which man and nature co-exist in harmony".[165] At the national level, the 2002 Chinese Human Development Report lists 12 ministries or agencies with environmental responsibilities.[166] However, despite reforms since the 1990s that have seen increased decentralization of the economy and a concomitant growth in the authority of local officials, the implementation of this message has not permeated to the local level. Many local governments, motivated by regional protectionism and the primacy of economic development, are reluctant to punish heavily polluting industries, especially if they are major taxpayers. As recently as the late 1980's the government legitimized rent-seeking activities, whereby all agencies and public institutions were told "if you want more funds for your routine operations and for paying your staff's bonuses, go out and find the money yourselves".[167]

Chinese civil society is becoming increasingly vocal in the development of large dams and hydropower projects in China. Some NGOs have achieved some significant success in Sichuan and Yunnan, but at the cost of fierce political battles and some personal risk. Green Watershed of Yunnan, Wild China, Green Earth Volunteers, Friends of Nature, and China Rivers Network have all protested against dam construction on China's rivers. At great personal risk, Yu Xiaogang of Green Watershed, organized trips for villagers slated for relocation at one dam site in Yunnan to speak with villagers from other dam sites, whose relocation had been far from successful. His damming report to the Central Disciplinary Committee in Beijing as well as the Yunnan Provincial government almost caused the NGO to be closed and Yu to be arrested. In October 2005, up to 100,000 farmers from seven townships in Sichuan Province protested against their proposed compensation and relocation as a result of the Pubugou Dam construction. A local newspaper reported that local officials had budgeted one billion less in relocation compensation than had been promised. At the conclusion of an investigation, several local officials were fired.[168]

4.3.2 Areas of Possible Intervention in the Infrastructure Sector

International institutions such as the World Bank and International Monetary Fund hold significant sway in countries where large infrastructure projects are taking place. Yet the IMF does not recognize the global citizen's basic right to know, meaning that no citizen anywhere can find out what their representing public institutions are doing.[169] Not only do these institutions provide much of the financing for large dams throughout the developing world, but also because their lending conditions are often used as benchmarks for other national and regional institutions.

Increased transparency throughout the process of choosing a site, designing, constructing and managing a dam can also minimize environmental degradation and help local communities be treated as justly as possible. Transparency International has already drawn attention to some of the environmental impacts of corruption in the infrastructure sector, for instance in the construction of hydropower plants, nuclear power plants, dams, and incinerators, notably in the section "The environment at risk from monuments of corruption" in TI's 2005 Global Corruption Report.

5 Common Trends in Corruption and Environmental Degradation

As outlined in the conceptual model presented earlier and demonstrated by the analysis of each economic sector, environmental governance varies according to the socio-economic and political factors present within each country. Research into corruption across the different sectors has revealed several ways in which the feedback within the system is interrupted. The twelve trends presented here represent the various dysfunctions which have resulted because of corruption and in turn caused environmental degradation in the case studies.

Environmental corruption is especially prevalent where economic development is low.
Although corruption is widespread, it tends to be especially prevalent in poorer countries. Corruption is not an inevitable consequence for impoverished countries, but rather is itself a contributing limitation to development. Corruption and poor environmental performance are common in lesser developed countries, but they are not unavoidable characteristics of underdevelopment, as demonstrated by Chile, which has less bribery than many fully industrialized countries (although corruption remains a problem: see Box 5.1).[170]

Corruption has direct economic costs, such as the diversion of public resources to private individuals, as well as longer-term consequences such as reduced foreign investment and reduced legitimacy of the state, which, in turn, drives economic activity underground.[171] At the same time, the empirical evidence suggests a strong relationship between economic development and environmental performance. The Environmental Performance Index demonstrates that environmental performance tends to be stronger in countries with higher levels of GDP per capita. The link between corruption and poverty on the one hand and poverty and environmental performance on the other hand suggests an avenue through which impoverished countries and corruption act collaboratively with the result of an increased likelihood of environmental degradation.

Box 5.1.
Case Study: Armenia

Corruption permeates throughout business and government in Armenia. Despite recent legislative attempts to “crack down” on corruption within the forestry sector, efforts have come up short as Parliament has yet to adopt many of the measures that will make anti-corruption laws enforceable. These environmental stresses have been caused by a host of factors. Armenia has no institutional history of forestry management since until the early 1990s a centralized Soviet government ran this sector, with minimal felling taking place within the country.[172]

Corruption is prevalent across a wide spectrum of political systems, yet it is most severe in countries with weak democracies.
Democracy may offer the best institutional arrangement for transparent information and accountability of elected representatives, but democracies are not immune from corruption, as recent high-profile scandals in the United States have shown. Yet corruption in the environmental field appears to occur at the most severe levels in countries with weak traditions of democracy or where democracy has only recently been introduced. The states of the former

Soviet Union demonstrate how weak political and governance structures create conditions for corruption.

Weaknesses in governance structures inhibit good governance and facilitate corruption in the environmental field.
Countries where power is concentrated and where institutions that might otherwise provide checks and balances are weak also trend toward inadequate environmental governance. When the judicial and legislative branches are corrupt or weakened by a corrupt executive branch, they are unable or unwilling to hold industries accountable for the social and economic costs of environmental degradation. Often, the ruling elite may also feel that accountability measures like access to information are a threat to their control. Controlling information can lead to impunity and decision-making that is not in the best interests of the public.[173] This has direct environmental consequences because unaccountable industries are less likely to take into account the social and economic costs of their activities.

- Judiciary: The judicial branch of governments is among the most critical entities for environmental protection. Corruption here affects both regulation of environmental practices and authorization of corrupt practices to be approved or to go forward. The bribery of officials in the judiciary by corrupt individuals to avoid prosecution for violating environmental regulations or to circumvent the enforcement of these laws is among the most devastating means for corruption to harm the environment. Government officials that profit from corrupt environmental practices have an incentive to keep the judiciary weak in order to continue either receiving bribes or benefiting from the export goods that are illegally traded in an environmentally corrupt agreement.

- Legislature: In many governments, legislation and regulation exists to fuel corruption rather than to protect the environment or the animals that inhabit it. Therefore, laws sometimes facilitate corrupt behavior rather than impede it. In the case of poaching sturgeon in Russia, for example, the laws in place to protect this endangered fish are used in practice by officials to profit from bribes.

The weakness of the governance structures also creates a situation in which bribery becomes prevalent. Although there are distinctions between corruption at higher levels of government such as the legislative, executive, or judicial branches and those corrupt practices in which local officials or private companies engage in through facilitation payments or bribes, ultimately corruption at the lower levels is a part of the systematic breakdown of good governance. Therefore, meager payments received by a patrol person charged with protecting a natural area or animal may seem insignificant, but actually have a significant impact on the protection of environmental resources. Furthermore, private companies who pay low level officials to speed up or obtain routine administrative processes are perpetuating and allowing corruption in the countries in which they do business.

Box 5.2
Case Study: Bio-Bio River Dam in Chile

In Chile the Ralco Bio-Bio River Dam was constructed at the expense of many native plant and animal species as well as the displacement of local indigenous communities. Though the indigenous peoples brought suit against the dam to the government, the Supreme Court refused to hear the case. Links made between Endesa, the company that built the dam, and governmental authorities point to corruption and the refusal of the government to consider the case. In order to endure proper regulation and equitable consideration of environmental regulations, the judiciary arm of the law must be able to honestly hear cases and prosecute those who violate the law.

Monopolies, whether state controlled or controlled by a corporation, create opportunity for corruption within the economic sectors in the environmental field.
Favoritism based on friendship or family ties, also known as patronage or cronyism, is more likely to occur in a monopoly than in a transparent government with checks and balances. When one entity controls the government, that entity has the propensity and the incentive to engage in corrupt activities because they hold ultimate control of all policy. A country that is governed by monopolistic rule has the power to grant contracts based on cronyism. An example of this is the case of Indonesia, which adopted democracy after three decades of monopolist rule under General Mohamed Suharto. Suharto granted leading national contracts for logging, toll roads, and car companies to his children who became wealthy on the incentives, tax breaks, and import tariffs that Suharto awarded these industries.

The export partners of corrupt governments often exacerbate illegal activities which degrade the environment by providing the demand for natural resources.
Corruption thrives because there is a demand for goods that can be met by corrupt practices. Although the case studies have focused on environmental corruption in developing nations, this corruption is often facilitated by their trade relations with developed countries. The likelihood of a good's provider being corrupt is less likely if the good's purchasers maintain transparent practices. The governments and private corporations in developed nations have a large role to play, for good or ill. Some European private corporations are contributing directly to the destruction of Cameroon's rainforests illegal logging and the import of illegally harvested timber and other forest products.[174] Other private companies from developed nations are participating in oil extracting and mining activities in developing nations. Governments in developed nations are also complicit by accepting to become import/export partners with countries that export illegal timber, animal, or forest products. The governments of these developing nations often turn a blind eye, thus not only fueling the corruption culture in their countries, but also degrading the environment and in turn negatively impacting human health.

Countries that depend on the exploitation of their natural resources experience high levels of corruption, and hence poor environmental governance.
Many cases show how corruption tends to be a problem in countries whose economies depend heavily on natural resources. Although this link is not inevitable, certain factors of economic activity that are based on the exploitation of natural resources lend themselves to corrupt practices, such as rent-seeking behavior and a close association between political power and

control of the resources. With such a wealth of natural resources at hand, a developing country with little other economic incentives may become dependent on these resources for development at the expense of alternative industries. The lack of diversification in these economic sectors of development as well as the lack of transparency leaves poor countries open to exploitation both by governmental entities looking for ways to maximize profits to stay in power and by external corporations attempting to maximize on foreign resources before their competition.

The institutions and governments which provide economic assistance to developing nations, whether in the form of foreign direct investment or foreign aid, have the ability to influence behavior.

Multilateral development institutions and bilateral donor agencies often stress the importance of good governance as a condition of aid, and increasingly in the environmental field. For instance, in Peru, the World Bank mandated the government create an environmental protection agency before granting loans for further investment in mining industries. Similarly, in Benin, the US Agency for International Development funded the country's Supreme Audit Institutions, which support transparent governance.[175,176] Such institutions are well positioned to analyze whether development initiatives that have an environmental impact are more or less prone to corruption and whether the environmental degradation of those initiatives increases with corrupt activities. Donors can design policies such that they do not unintentionally increase the conditions that are favorable to both corruption and increased environmental degradation. Institutional environmental standards required alongside transparency initiatives in lending or granting terms can have the positive effect of either ensuring environmental protection or spotlighting degradation and corruption, as occurred when the World Bank withdrew its financing from China's Three Gorges Dam. Nevertheless, demanding environmental and transparency requirements can have the effect of driving beneficiaries toward partnerships with donors that have fewer such requirements, as occurred with the case of palm oil plantations in Indonesia that are funded by Chinese banks.

Furthermore, as environmental concerns like carbon sequestration, and the protection of fisheries become more prevalent around the globe, foreign investors and institutions providing assistance should be increasingly concerned with the receiving countries' governance structures. If, for instance, sequestering carbon in the tropics and spending millions of dollars is to be a reality in the coming years, investors should be cautious about how patterns of corruption will play a role.

6 Recommended Action Steps

We recommend four ways that Transparency International could expand its mission to include the environment. Our recommendations build upon existing TI tools and initiatives while calling for a few new initiatives.

Prioritize environmental initiatives that are preventative rather than reactive
The environment is both the cause of corruption as well as one of its victims. Because the environmental costs of corruption can take time to manifest themselves, the causality between corruption and environmental degradation is not always clear. Corruption can have immediate effects, like deforestation, as well as delayed effects, such as increased flooding, species extinction, the displacement of people to other environmentally sensitive areas, and even global warming. Furthermore, many decisions that are influenced by corruption can have long-term implications. This is particularly true of infrastructure projects with long life spans such as dams. Transparency International could address the short- and long-term implications of corruption in a certain economic sector or environmental project by having a two-fold approach: (1) identifying the environmental costs (2) planning preventive campaigns.

Action Steps
1. Prioritize industries starting with those most prone to corruption
2. Identify and quantify costs by working with environmental health & management experts and environmental economists
3. Plan case study-based preventive campaigns to meet emerging global challenges

Existing TI Tool(s)
- Suggest that environmental agencies and all bidders on an environmental project adopt the Integrity Pact (IP)

In order to generate support and prepare efficient and influential campaigns, it is essential that the environmental costs resulting from corruption be identified and quantified. This will aid in making the assertion that corruption causes real economic losses. If corrupt practices are avoided from the start, the money saved could help the overall development of a country. This could be done by bringing together experts from the environmental health and management field and environmental economists who “speak the language” of the industries. Furthermore, cases from comparable countries and sectors where the positive impacts of preventing corruption are evident need to be presented to reinforce the message.

Anti-corruption campaigns should work with governments and industries to prevent corruption from the outset. As new industries are being developed in countries, principles of good governance should be integrated into the initial planning. This is especially important for environmentally sensitive industries that are prone to corruption, such as the extractive industries. The near future will witness new industries such as alternative energy plants, and new initiatives being implemented such as carbon sequestration projects, and carbon trading schemes in order to cater for new global priorities and challenges. These emerging priorities will require “more serious and sophisticated governance structures” according to Dr. Mark Levy, Associate Director

for Science Applications at the Center for International Earth Science Information Network (CIESIN) at Columbia University.[177] He urges governments and organizations to learn from the lessons of national parks in developing countries, which were set up before countries had put in place the institutions to manage them. As a result in some countries, funds were siphoned from park management for personal gain due to corruption.

A good example of preventive action comes from the government of Sao Tome and Principe in West Africa, which is now closely working with an advisory board from the Earth Institute at Columbia University to ensure that the revenues from the newly found offshore oil is being managed properly and for the benefit of the local people.

Establish collaboration with conservation organizations

The biodiversity hotspots demonstrate the coincidence of interests between biodiversity and anti-corruption campaigns in different regions around the world. Transparency International could collaborate with conservation organizations to help both kinds of organizations fulfill their missions more efficiently and effectively. Conservationist organizations could focus on campaigning against the incentives that facilitate environmentally destructive corruption, whereas anti-corruption campaigners could recruit new support by showing how the environment is often a victim of corruption.

Action Steps

1. Identify conservation organizations partners in countries with high perceived levels of corruption
2. Align the missions of both organizations to convey a message of anti corruption and conservation
3. Identify and analyze stakeholders
4. Hold stakeholder simulation sessions to train members of both partners in new initiatives

Existing TI Tool(s)

- TI Anti-Corruption Handbook (ACH): National Integrity System in practice
- Corruption Perception Index

Such collaboration could complement the trend in conservation and ecosystem preservation toward participatory management of ecosystems. In such programs, major actors including local inhabitants at the individual and family group levels, government authorities at local and national levels, corporate representatives, and nongovernmental organizations are brought together collaboratively to manage the resource or region in a way that is sustainable and that represents all parties' best interests. Stakeholder teams rely on tools such as conceptual models that illustrate the impacts on the ecosystem and resource assessments that highlight the options and alternatives for sustainable actions. Incentives for the participation of stakeholders could come from the empowerment of otherwise underrepresented populations, the collective ownership members share, reduced conflict, and increased corporate responsibility. An example of such collaboration is the cooperation since 2002 between the Cameroonian government and World Resource Institute, a US-based nongovernmental organization, to create a satellite monitoring program to help track illegal logging.[178].

Expand TI's existing information network to include accessible information on issues of corruption and environmental degradation.

Access to information can help reduce opportunities for corruption by holding parties accountable for their actions. This technique can be applied to the environmental field to develop accountability for corporations and governments who are active in the environmental field. Informational resources such as the media and the internet can be applied within both the country where the hotspot lies and within developed countries whose actions affect that hotspot. Transparency International has a large presence on the worldwide web and could use its internet resources to display cases of environmental corruption for use within educational, civil-society, governmental, or grass roots campaign. Transparency International chapters in target countries could help publish this information and work with host governments to develop new systems of accountability in this sector. The chapters could also be used to develop accountability within corporations by developing partnerships and consumer campaigns.

Action Steps	**Existing TI Tool(s)**
1. Create an "Environmental Corruption and Costs" link on the TI website 2. Use the indices in this report to run more quantitative analysis and share data with local governments	➢ TI Anti-Corruption Handbook (ACH): National Integrity System in practice

Expand "education", TI's seventh global priority, to encompass the environment

Transparency International should expand its existing education focus to include issues surrounding environmental degradation. Publications such as Transparency International's *Teaching Integrity to Youth* could include lessons on the effects of corruption on pollution and preservation. Integrity-oriented lessons could be exemplified with case studies on environmental degradation caused by the various levels of corruption.

Action Steps	**Existing TI Tool(s)**
1. Meet with national ministry/department of education to see how much the curriculum integrates environmental issues 2. Collaborate with local schools to start after school activities that address the issue of corruption and environmental degradation 3. Work with an international children's education company to develop interactive games and books that helps covey the message	➢ Teaching Integrity to Youth, a Special Edition of the TI Corruption Fighters' Tool Kit is exclusively dedicated to youth anti-corruption education.

Educating children is a sustainable way to combat corruption and promote inter-generational awareness. Transparency International could work with governments to introduce these issues into national education curricula. Anti-corruption campaigns should emphasize that environmental costs of corruption are quantifiable as well as avoidable. Often the environment is a discounted or disregarded cost of poor governance and is even regarded as a necessary sacrifice

for economic progress. Quantifying environmental costs that are diffuse, secondary, or long-term consequences of corruption can be difficult, but the product can be used as a public-education tool to raise awareness of the costs of corruption and to generate more support for anti-corruption campaigns. Addressing environmental degradation through education campaigns opens opportunities for TI to collaborate with other UN NGOs implementing Millennium Development Goals number two and seven, which address both global education curriculum and environmental sustainability initiatives respectively.

7 Areas for further research

We recommend that Transparency International conduct further research into the following subjects as possible components of future campaigns.

Internet Publication of Environmental Disclosure Documents
Environmental impact statements or environmental impact assessments are procedural documents required by many governments to disclose the expected impacts of a proposed project on the environment. The systematic publication of such assessments can help prevent or mitigate the environmental impacts of dams and mining. In the United States the legislation governing the Environmental Impact Statement does not prohibit or penalize environmental degradation, but it mandates procedures for disclosing information so that other government agencies and the public are fully informed. This allows for greater transparency in environmentally sensitive actions as well as punitive damages when the document is used to prove a company's or country's informed negligence in a court case after damages occur. This latter tool is itself an incentive for environmental protection. The Aarhus Convention is an international convention that commits signatory countries to guarantee public participation in and information on environmental decision-making. The Convention is currently restricted to the European continent but it could provide a useful model for a rights-based approach to increasing the transparency of environmental decision-making.[179]

Corporate Self-Regulation and Self-Monitoring
The Global Compact is a United Nations initiative seeking to bring together private companies and UN agencies to support ten global environmental and social principles. It encourages all corporations to voluntarily participate in this network in order to promote corporate responsibility and citizenship. Interestingly, three of the ten principles deal with environmental issues and the last principle, which has been recently added to the list, addresses anti-corruption. The Global Compact utilizes a stakeholder model and depends on corporate accountability and transparency rather than regulation. The UN acts as the convener and facilitator rather than enforcer of the principles. Another example is the "Publish What You Pay" campaign, which was launched in 2002 by the Open Society Institute.[180] The campaign includes many nongovernmental organizations such as Human Rights Watch and Partnership Africa Canada. It is an effort to promote and encourage accountability and transparency and spread natural resource wealth in developing countries. The campaign has invited international extractive companies in the oil, gas and mining sectors to disclose all their financial transactions with local and international governments and other public institutions. The campaign helps local citizens to hold their governments responsible for these mismanaged funds. One of the major impediments facing this campaign is the threat to companies' competitive advantage if only some companies decide to disclose their payments.

Geospatial technologies
Geospatial technologies is a general term that captures all tools used for remote observation and analysis of phenomena on Earth and includes geographic information systems (GIS), 3-D modeling, visualizations, geospatial analysis, global positioning systems (GPS), remote sensing, and satellite imaging. These technologies vary in applications from the immediately accessible

Google Earth to the industry leader in information management, Environmental Systems Research Institute (ESRI).

Further research into geospatial technologies may reveal opportunities for Transparency International to document and evaluate patterns in corruption as they interact with the global priorities and, namely, the environment. For example, remote sensing tools have recently been successfully used in South America by conservation organizations to document actual forest clearings as compared to reported information by governments. GIS is increasingly utilized by social-oriented fields for comparative analysis of trends and patterns in the interaction between the natural and built environment and documented human parameters, which could extend to include the indicators used in the Corruption Perceptions Index.

8 Conclusion

Corruption in the environmental field is a pressing global issue. This report has highlighted some of the social and economic costs that arise from corruption in the environmental economic sectors, as well as the environmental costs of corruption more generally. Bribery and poor enforcement of laws are cross-cutting forms of corruption that undermine environmental wellbeing and, subsequently, the development of a country and the wellbeing of its people. The failure to enforce existing environmental regulations can lead to environmental degradation, undermine development, and promulgate poor health.

Within the *Non-renewable Resources* sector, the extractive industries appear to be particularly prone to corruption, especially when a country's governing institutions are weak. In the *Renewable Resources* sector, exemplified by such activities as the timber industry and the exploitation of wild animals, bribery in transporting, processing, or exporting goods arises from a lack of enforcement of laws and regulations.[181] This is partly an issue of international market demand for goods from this sector. It is also related to social norms and customs and to poverty. In a country with little income in other sectors, there are more incentives for governing institutions to grant concessions or ignore regulations for personal gain. In the *Infrastructure* sector, large projects are often considered as good for developing nations but their expected benefits are often negated by poor planning, corruption, and subsequent environmental and social problems. Large projects like dams are particularly prone to corruption during the selection of contractors, the allocation of water reserves, the compensation of displaced people, and the assessment of environmental effects.[182]

Environmental corruption also has secondary effects. Most generally, corruption hinders economic development, which can increase environmental stress if poverty causes people to resort to poaching or overuse of already stressed land. Displacement of people can occur when governments grant concessions to corporations to explore for new resources. Migrant workers in the mining and logging sectors can increase stresses on local ecosystems, for instance by hunting for food in unsustainable ways.

Today the planet faces twin social and ecological crises of poverty and environmental destruction. The two are intimately intertwined in feedback cycles with the potential to reinforce each other or halt the other's progression. Across Sub Saharan Africa, global warming and the destabilization of climate patterns interrupt the seasons of rain and harvest African cultures have come to depend on over millennia. In South American urban centers, industrial pollution causes respiratory diseases that afflict the young and elderly. In South Asia, habitat destruction disintegrates subsistence livelihoods that support families and communities. Environmental degradation and poverty promote corruption, the effects of which are felt throughout local and national government structures where guards protecting endangered species on threatened public lands accept bribes from hunters or gatherers of those species; where underfunded environmental protection ministries share staff with resource exploitation regulators; and where judiciary branches existing to enforce the law are staffed with friends and relatives of those who break the law.

While corruption and environmental degradation occur at all levels of wealth, class, and development, and throughout all regions of the planet, the lowest ranking countries in the Corruption Perceptions Index positively correlate with poverty. An overlay of Conservation International's Biodiversity Hotspots over the Index illustrates that these regions also positively correlate to regions of extreme environmental degradation in the most sensitive habitats for flora and fauna. The world's resources in conservation and humanitarian efforts share the poorest countries as a focus. For these regions, sustainable development is needed for environmental protection and poverty eradication, and fighting corruption may be among the best tools to achieve both victories.

In the research represented in this report, three sectors were identified as those most threatening to the environment across biodiversity hotspots: renewable resources, non-renewable resources, and infrastructure development. The examination of the impacts of these sectors illustrated similar trends that suggest tools through which Transparency International chapter offices can engage key stakeholders. Finally, the analysis provided policy recommendations for immediate action in the efforts to ensure environmental protection through addressing corruption.

Much work remains to be accomplished on this topic, yet the research encompassed by this report provides evidence that the relationship between environmental degradation and corruption is strong. This strength offers an opportunity to address the planet's urgent social and ecological crises on this front.

The efforts of Transparency International to fight corruption are more critical than ever. This report demonstrates that among the many victims of corruption, such as transparency and stability in governance, poverty, health, and well-being, the environment stands out as a unifying theme. For this reason, the linkages between corruption and the environment merit the full focus of Transparency International. The authors recommend this topic as a subject for a future Global Corruption Report.

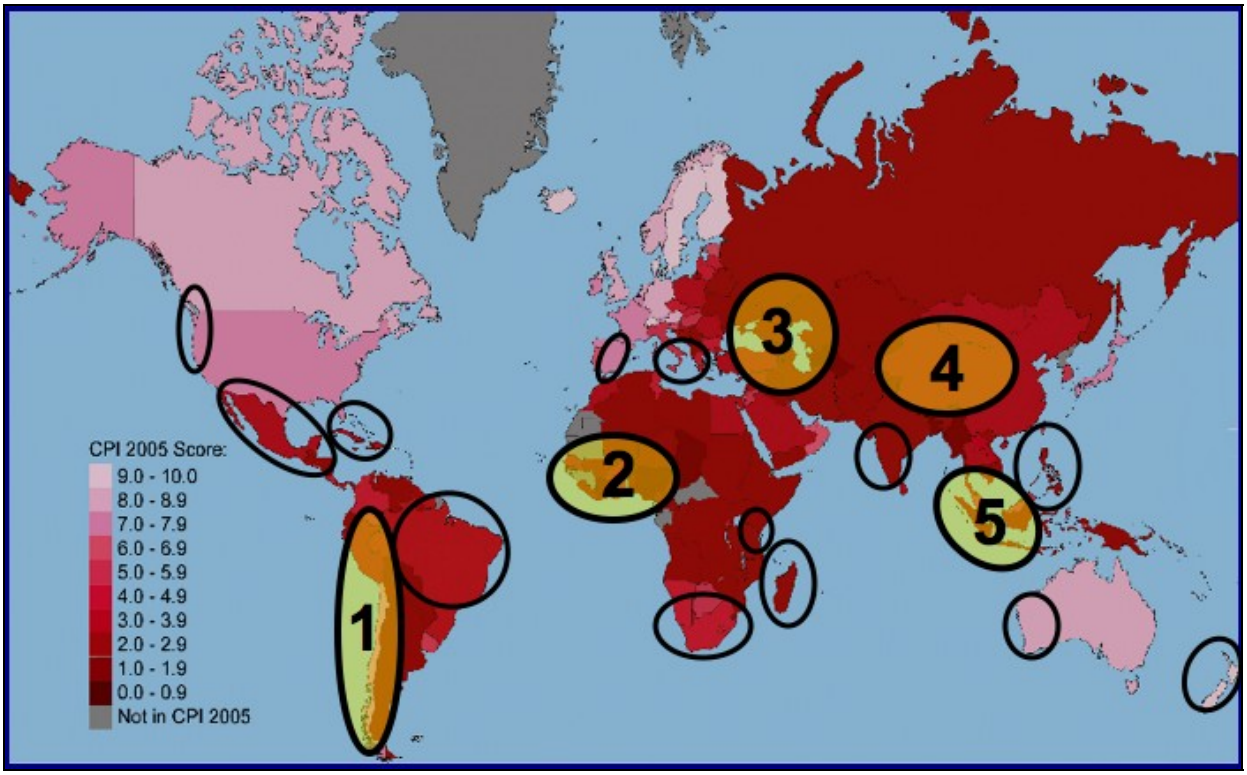
List of Appendices

Appendix 1: Corruption Perception Index and the Biodiversity Hotspots

The world map below includes the 18 "hottest" biodiversity hotspots, where the five analyzed in this report are highlighted and numbered as follows:

1. Tropical Andes
2. Guinean Forests of West Africa
3. Caucasus
4. Mountains of Southwest China
5. Sundaland

The hotspots overlay Transparency International's Corruption Perception Index (CPI) for 2005, where low scores (darker colors) correlate with higher perceived corruption.



Source: Transparency International, Conservation International

Appendix 2: Indices Relevant to Corruption and the Environment

This appendix includes a host of quantitative measures relevant to the five hotspots analyzed in this report. They serve to provide a snapshot of the many socioeconomic and political indicators of a country's governance, and the resulting level of environmental governance in each of the countries considered. While numerous studies have explored the correlation between environmental degradation and many of these factors, including corruption, further research could explore these linkages in more depth.

This appendix includes nine series of indicators, with multiple indices making up each series. Where available, indices are provided for each of the countries making up the five hotspots, along with unweighted total and hotspot averages. They are organized as follows:

1 – Corruption Indicators
- Corruption Perception Index (CPI) ranking, 2001-2005

2 – Environmental Wellbeing Indicators
- Environmental Performance Index (EPI) ranking, 2006
- Ecological Footprint, 2002
- Electricity Consumption per capita, 1980 and 2002
- Population with Sustainable Access to Improved Sanitation, 1990 and 2002
- Population with Sustainable Access to Improved Water Source, 1990 and 2002
- Ratification of Convention on Biological Diversity

3 – Environmental Sustainability Index (ESI) Components, 2005
ESI ranking, 2005
- Component 1: Environmental Systems
- Component 2: Reducing Environmental Stress
- Component 3: Reducing Human Vulnerability
- Component 4: Social and Institutional Capacity
- Component 5: Global Stewardship

4 – Human Development Indicators
- Human Development Index (HDI) ranking, 1998 and 2003
- Life Expectancy, 1970-1975 and 2000-2005
- Adult Literacy, 1990 and 2003
- Public Expenditure on Education, 1990 and 2002

5 – Equality Indicators
- GINI Index, 2003
- Ratio of Richest 10% to Poorest 10%, 2003
- GDP per capita rank minus HDI rank, 2003
- Seats in Parliament held by Women, 2005
- 1979 Convention on the Elimination of all Forms of Discrimination Against Women

6 – World Bank Governance Indicators, 2004
- Voice and Accountability
- Political Stability
- Government Effectiveness
- Regulatory Quality
- Rule of Law
- Control of Corruption

7 – Economic Freedom Indicators
- Economic Freedom ranking, 2006
- Net FDI Inflows, 1990 and 2003
- Imports of Goods and Services, 1990 and 2003
- Exports of Goods and Services, 1990 and 2003
- Total Debt Service, 1990 and 2003

8 – Economic Development Indicators
- GDP per capita, 2002, 2004, and 2006
- ODA received per capita, 2003
- ODA received as percentage of GDP, 1990 and 2003
- Population living below US$1 per day, 1990-2003

9 – Political and Civil Rights Indicators
- Political Rights score, 2006
- Civil Liberties score, 2006
- Overall Freedom rating, 2006
- Press Freedom rating, 2005
- Press Freedom ranking, 2005
- Press Freedom status, 2005
- Press Freedom ranking (Reporters Sans Frontieres), 2005
- Ratification of 1966 International Covenant on Civil and Political Rights
- Ratification of Freedom of Association and Collective Bargaining

Country Rankings - Corruption Indicators						
Hotspot	*Country*	*CPI Ranking 2005 (out of 158)*	*CPI Ranking 2004 (out of 145)*	*CPI Ranking 2003 (out of 133)*	*CPI Ranking 2002 (out of 102)*	*CPI Ranking 2001 (out of 91)*
Caucasus	**Armenia**	88	82	78		
	Azerbaijan	137	140	124	95	84
	Georgia	130	133	124	85	
	Iran	88	87	78		
	Russia	126	90	86	71	79
	Turkey	65	77	77	64	54
	Hotspot Average	*105.7*	*101.5*	*94.5*	*78.8*	*72.3*
Guinean Forests of West Africa	**Benin**	88	77			
	Cameroon	137	129	124	89	84
	Cote d'Ivoire	152	133	118	71	77
	Equatorial Guinea	152				
	Ghana	65	64	70	50	59
	Guinea					
	Liberia	137				
	Nigeria	152	144	132	101	90
	Sao Tome/Principe					
	Sierra Leone	126	114	113		
	Togo					
	Hotspot Average	*126.1*	*110.2*	*111.4*	*77.8*	*77.5*
Mountains of Southwest China	**China**	78	71	66	59	57
	Myanmar	155	142	129		
	Hotspot Average	*116.5*	*106.5*	*97.5*	*59.0*	*57.0*
Sundaland	**Brunei**					
	Indonesia	137	133	122	96	88
	Malaysia	39	39	37	33	36
	Singapore	5	5	5	5	4
	Thailand	59	64	70	64	61
	Hotspot Average	*60.0*	*60.3*	*58.5*	*49.5*	*47.3*
Tropical Andes	**Argentina**	97	108	92	70	57
	Bolivia	117	122	106	89	84
	Chile	21	20	20	17	18
	Colombia	55	60	59	57	50
	Ecuador	117	112	113	89	79
	Peru	65	67	59	45	44
	Venezuela	130	114	100	81	69
	Hotspot Average	*86.0*	*86.1*	*78.4*	*64.0*	*57.3*
	Average - All Countries	***100.7***	***93.1***	***87.6***	***66.6***	***61.8***

Source:
Column 1: Transparency International. 2005. Corruption Perceptions Index (CPI) 2005.
Column 2: Transparency International. 2004. Corruption Perceptions Index (CPI) 2004.
Column 3: Transparency International. 2003. Corruption Perceptions Index (CPI) 2003.
Column 4: Transparency International. 2002. Corruption Perceptions Index (CPI) 2002.
Column 5: Transparency International. 2001. Corruption Perceptions Index (CPI) 2001.

Country Rankings - Environmental Wellbeing Indicators

Hotspot	*Country*	*EPI Ranking 2006 (out of 133)*	*Ecological Footprint 2002 (global hectares per capita)*[a]	*Ecological Footprint Reserve / Deficit 2002 (global hectares per capita)*[b]	*Electricity Consumption per capita 1980 (kilowatt-hours)*	*Electricity Consumption per capita 2002 (kilowatt-hours)*	*Population with Sustainable Access to Improved Sanitation 1990 (%)*	*Population with Sustainable Access to Improved Sanitation 2002 (%)*	*Population with Sustainable Access to an Improved Water Source 1990 (%)*	*Population with Sustainable Access to an Improved Water Source 2002 (%)*	*Ratification of Convention on Biological Diversity (Y/N)*[c]
Caucasus	**Armenia**	69	1.0	-0.4		1554		84%		92%	Y
	Azerbaijan	95	1.5	-0.3		2579		55%	66%	77%	Y
	Georgia	77	0.7	0.5		1508		83%		76%	Y
	Iran	53	2.3	-1.5	570	2075	83%	84%	91%	93%	Y
	Russia	32	4.4	2.6		6062	87%	87%	94%	96%	Y
	Turkey	49	2.0	-0.5	559	1904	84%	83%	81%	93%	Y
	Hotspot Average	*62.5*	*2.0*	*0.1*	*564.5*	*2613.7*	*84.7%*	*79.3%*	*83.0%*	*87.8%*	
Guinean Forests of West Africa	**Benin**	84	1.0		37	92	11%	32%	60%	68%	Y
	Cameroon	100	0.8	0.6	168	207	21%	48%	50%	63%	Y
	Cote d'Ivoire	86	0.7	1.2	220	197	31%	40%	69%	84%	Y
	Equatorial Guinea				83	54		53%		44%	Y
	Ghana	72	1.0	0.3	450	416	43%	58%	54%	79%	Y
	Guinea	113	0.9	1.8	85	95	17%	13%	42%	51%	Y
	Liberia	109	0.6	2.6	474	164	38%	26%	56%	62%	Y
	Nigeria	123	1.2	-0.2	108	148	39%	38%	49%	60%	Y
	Sao Tome/Principe				96	115		24%		79%	Y
	Sierra Leone	111	0.8	0.3	62	54		39%		57%	Y
	Togo	103	0.9	-0.1	74	120	37%	34%	49%	51%	Y
	Hotspot Average	*100.1*	*0.9*	*0.8*	*168.8*	*151.1*	*29.6%*	*36.8%*	*53.6%*	*63.5%*	
Mountains of Southwest China	**China**	94	1.6	-0.8	307	1484	23%	44%	70%	77%	Y
	Myanmar	88	0.9	0.4	44	135	21%	73%	48%	80%	Y
	Hotspot Average	*91.0*	*1.3*	*-0.2*	*175.5*	*809.5*	*22.0%*	*58.5%*	*59.0%*	*78.5%*	
Sundaland	**Brunei**				2430	7961					N
	Indonesia	79	1.0	-0.1	94	463	46%	52%	71%	78%	Y
	Malaysia	9	2.4	0.9	740	3234	96%			95%	Y
	Singapore				2836	7961					Y
	Thailand	61	1.4	-0.4	340	1860	80%	99%	81%	85%	Y
	Hotspot Average	*49.7*	*1.6*	*0.1*	*1288.0*	*4295.8*	*74.0%*	*75.5%*	*76.0%*	*86.0%*	
Tropical Andes	**Argentina**	30	2.2	4.5	1413	2383	82%		94%		Y
	Bolivia	71	2.0	13.4	292	485	33%	45%	72%	85%	Y
	Chile	26	2.2	3.2	1054	2918	85%	92%	90%	95%	Y
	Colombia	17	1.2	2.4	726	1019	82%	86%	92%	92%	Y
	Ecuador	40	1.4	0.9	423	943	56%	72%	69%	86%	Y
	Peru	65	0.9	3.3	579	907	52%	62%	74%	81%	Y
	Venezuela	44	2.3	0.1	2379	3484		68%		83%	Y
	Hotspot Average	*41.9*	*1.7*	*4.0*	*980.9*	*1734.1*	*65.0%*	*70.8%*	*81.8%*	*87.0%*	
Average - All Countries		***70.4***	***1.5***	***1.3***	***616.4***	***1696.2***	***52.1%***	***58.3%***	***69.2%***	***77.2%***	

notes:
a. This indicator assesses the country's demand on nature. The world average is 2.2 global hectares per capita.
b. Based on the biocapacity of a country, this indicator assesses how much ecological reserve (deficit) a country has. The world's average for biocapacity is 1.8 global hectares per person, making the global ecological reserve equal to 0.4 global hectares per person (2.2-1.8).
c. 'Y' indicates a signature of the convention. 'N' indicates that the country is not a signatory.

source:
Column 1: Yale Center for Environmental Law and Policy, Center for International Earth Science Information Network (CIESIN). 2006. Pilot 2006 Environmental Performance Index (EPI).
Column 2: Global Footprint Network. 2005. 2005 National Footprint Accounts.
Column 3: Global Footprint Network. 2005. 2005 National Footprint Accounts.
Column 4: UN (United Nations). 2005. Correspondence on energy consumption. Department of Economic and Social Affairs, Statistics Division, New York. March. From Human Development Report 2005.
Column 5: UN (United Nations). 2005. Correspondence on energy consumption. Department of Economic and Social Affairs, Statistics Division, New York. March. From Human Development Report 2005.
Column 6: UN (United Nations). 2005. Millenium Indicators Database. Department of Economic and Social Affairs, Statistics Division, New York. [http://millenniumindicators.un.org]. Accessed March 2005; based on a joint effort by the United Nations Children's Fund (UNICEF) and the World Health Organization. From Human Development Report 2005.
Column 7: UN (United Nations). 2005. Millenium Indicators Database. Department of Economic and Social Affairs, Statistics Division, New York. [http://millenniumindicators.un.org]. Accessed March 2005; based on a joint effort by the United Nations Children's Fund (UNICEF) and the World Health Organization. From Human Development Report 2005.
Column 8: UN (United Nations). 2005. Millenium Indicators Database. Department of Economic and Social Affairs, Statistics Division, New York. [http://millenniumindicators.un.org]. Accessed March 2005; based on a joint effort by the United Nations Children's Fund (UNICEF) and the World Health Organization. From Human Development Report 2005.
Column 9: UN (United Nations). 2005. Millenium Indicators Database. Department of Economic and Social Affairs, Statistics Division, New York. [http://millenniumindicators.un.org]. Accessed March 2005; based on a joint effort by the United Nations Children's Fund (UNICEF) and the World Health Organization. From Human Development Report 2005.
Column 10: UN (United Nations). 2005. "Multilateral Treaties Deposited with the Secretary-General" [http://untreaty.un.org]. Accessed April 2005. From Human Development Report 2005.

Country Rankings - 2005 Environmental Sustainability Index							
Hotspot	*Country*	*ESI Ranking 2005 (out of 146)[a]*	*Component 1: Environmental Systems[b]*	*Component 2: Reducing Environmental Stresses[c]*	*Component 3: Reducing Human Vulnerability[d]*	*Component 4: Social and Institutional Capacity[e]*	*Component 5: Global Stewardship[f]*
Caucasus	**Armenia**	44	51	14	83	106	52
	Azerbaijan	99	64	30	99	134	87
	Georgia	56	102	4	73	83	81
	Iran	132	128	33	69	127	137
	Russia	33	13	19	38	96	126
	Turkey	91	116	80	41	51	128
	Hotspot Average	*75.8*	*79.0*	*30.0*	*67.2*	*99.5*	*101.8*
Guinean Forests of West Africa	**Benin**	86	101	91	88	91	24
	Cameroon	50	36	54	93	71	75
	Cote d'Ivoire	88	93	63	85	123	37
	Equatorial Guinea						
	Ghana	49	97	66	76	50	25
	Guinea	81	73	68	113	115	12
	Liberia	121	32	78	131	144	54
	Nigeria	98	126	42	100	121	34
	Sao Tome/Principe						
	Sierra Leone	120	47	46	132	139	63
	Togo	111	95	74	104	122	46
	Hotspot Average	*89.3*	*77.8*	*64.7*	*102.4*	*108.4*	*41.1*
Mountains of Southwest China	**China**	133	134	118	77	88	119
	Myanmar	46	63	13	84	103	53
	Hotspot Average	*89.5*	*98.5*	*65.5*	*80.5*	*95.5*	*86.0*
Sundaland	**Brunei**						
	Indonesia	75	129	27	72	81	57
	Malaysia	38	48	114	46	44	56
	Singapore						
	Thailand	73	114	88	81	43	41
	Hotspot Average	*62.0*	*97.0*	*76.3*	*66.3*	*56.0*	*51.3*
Tropical Andes	**Argentina**	9	24	58	43	32	58
	Bolivia	20	7	23	89	74	76
	Chile	42	52	113	62	34	64
	Colombia	23	20	69	70	38	79
	Ecuador	51	29	53	92	60	94
	Peru	16	27	61	66	41	22
	Venezuela	82	21	56	94	110	123
	Hotspot Average	*34.7*	*25.7*	*61.9*	*73.7*	*55.6*	*73.7*
	Average - All Countries	***69.1***	***68.2***	***57.6***	***81.5***	***86.0***	***67.5***

notes:
a. Rankings are based on the total ESI score, which represents an average of thescore of the five components in columns 2-6.
b. 'Environmental Systems' is made up of 17 variables and 5 indicators (air quality, biodiversity, land, water quality, water quantity).
c. 'Reducing Environmental Stresses' is made up of 21 variables and 6 indicators (reducing air pollution, reducing ecosystem stresses, reducing population growth, reducing waste and consumption pressures, reducing water stress, natural resource management).
d. 'Reducing Human Vulnerability' is made up of 7 variables and 3 indicators (environmental health, basic human sustenance, reducing environment-related natural disasters).
e. 'Social and Institutional Capacity' is made up of 25 variables and 4 indicators (environmental governance, eco-efficiency, private sector responsiveness, science and technology).
f. 'Global Stewardship' is made up of 7 variables and 3 indicators (participation in international collaborative efforts, greenhouse gas emissions, reducing transboundary environmental pressures).

source:
Columns 1-6: Yale Center for Environmental Law and Policy, Center for International Earth Science Information Network (CIESIN). 2005. 2005 Environmental Sustainability Index (ESI).

Country Rankings - Human Development Indicators									
Hotspot	*Country*	*HDI Ranking 1998 (out of 174)[a]*	*HDI Ranking 2003 (out of 177)[b]*	*Life Expectancy 1970-1975 (years)[c]*	*Life Expectancy 2000-2005 (years)[d]*	*Adult Literacy 1990 (% ages 15 and up)[e]*	*Adult Literacy 2003 (% ages 15 and up)[f]*	*Public Expenditure on Education 1990 (% of GDP)[g]*	*Public Expenditure on Education 2000-2002 (% of GDP)[h]*
Caucasus	**Armenia**	93	83	70.8	71.4	97.5	99.4	7.0	3.2
	Azerbaijan	90	101	65.6	66.9		98.8		2.2
	Georgia	70	100	68.2	70.5			7.7	3.2
	Iran	97	99	55.2	70.2	63.2	77.0	4.1	4.9
	Russia	62	62	69.7	65.4	99.2	99.4	3.5	3.8
	Turkey	85	94	57.0	68.6	77.9	88.3	2.2	3.7
	Hotspot Average	*82.8*	*89.8*	*64.4*	*68.8*	*84.5*	*92.6*	*4.9*	*3.5*
Guinean Forests of West Africa	**Benin**	157	162	47.0	53.8	26.4	33.6		3.3
	Cameroon	134	148	45.7	45.8	57.9	67.9	3.2	3.8
	Cote d'Ivoire	154	163	49.8	46.0	38.5	48.1		4.6
	Equatorial Guinea	131	121	40.5	43.5	73.3	84.2		0.6
	Ghana	129	138	49.9	56.7	58.5	54.1	3.2	
	Guinea	162	156	53.6	53.6				1.8
	Liberia			42.5	42.5	39.2	55.9		
	Nigeria	151	158	43.3	43.3	48.7	66.8	0.9	
	Sao Tome/Principe	132	126	62.9	62.9				
	Sierra Leone	174	176	40.6	40.6		29.6		3.9
	Togo	145	143	54.2	54.2	44.2	53.0	5.5	2.6
	Hotspot Average	*146.9*	*149.1*	*48.2*	*49.4*	*48.3*	*54.8*	*3.2*	*2.9*
Mountains of Southwest China	**China**	99	85	71.5	71.5	78.3	90.9	2.3	
	Myanmar	125	129	60.1	60.1	80.7	89.7		
	Hotspot Average	*112.0*	*107.0*	*65.8*	*65.8*	*79.5*	*90.3*	*2.3*	
Sundaland	**Brunei**	32	33	76.3	76.3	85.5	92.7	3.9	9.1
	Indonesia	109	110	66.5	66.5	79.5	87.9	1.0	1.2
	Malaysia	61	61	73.0	73.0	80.7	88.7	5.1	8.1
	Singapore	24	25	78.6	78.6	88.8	92.5	3.1	
	Thailand	76	73	61.0	69.7	92.4	92.6	3.5	5.2
	Hotspot Average	*60.4*	*60.4*	*71.1*	*72.8*	*85.4*	*90.9*	*3.3*	*5.9*
Tropical Andes	**Argentina**	35	34	67.1	74.3	95.7	97.2		4.0
	Bolivia	114	113	46.7	63.9	78.1	86.5	2.3	6.3
	Chile	38	37	63.4	77.9	94.0	95.7	2.5	4.2
	Colombia	68	69	61.6	72.2	88.4	94.2	2.4	5.2
	Ecuador	91	82	58.8	74.2	87.6	91.0	4.3	1.0
	Peru	80	79	55.5	69.8	85.5	87.7	2.8	3.0
	Venezuela	65	75	65.7	72.8	88.9	93.0	3.0	
	Hotspot Average	*70.1*	*69.9*	*59.8*	*72.2*	*88.3*	*92.2*	*2.9*	*4.0*
	Average - All Countries	***99.4***	***101.2***	***58.8***	***63.1***	***74.2***	***79.9***	***3.5***	***3.9***

notes:
a. The HDI rank is detemined using HDI values to the fifth decimal point.
b. Calculated on the basis of data in columns 6-8 of table 1 in the 2005 Human Development Report; the HDI rank is detemined using HDI values to the fifth decimal point.
c. Data refer to estimates for the period specified.
d. Data refer to estimates for the period specified.
e. Data refer to estimates produced by UNESCO Division of Statistics based on data prior to 1990; Due to differences in methodology and timeliness of underlying data, comparisons across countries and over time should be made with caution. For more details, see http://www.uis.unesco.org/ev.php?ID=4930_201&ID2=DO_TOPIC.
f. Data refer to national literacy estimates from censuses or surveys conducted between 2000 and 2004, unless otherwise noted. Due to differences in methodology and timeliness of underlying data, comparisons across countries and over time should be made with caution. For more details, see http://www.uis.unesco.org/ev.php?ID=4930_201&ID2=DO_TOPIC.
g. Data refer to the most recent year available during the period specified.
h. Data refer to the most recent year available during the period specified.

source:
Column 1: UNDP (United Nations Development Programme). 2000. Human Development Report 2000: Human Rights and Human Development.
Column 2: UNDP (United Nations Development Programme). 2005. Human Development Report 2005, International cooperation at a crossroads: Aid, trade and security in an unequal world.
Column 3: UN (United Nations). 2005. World Population Prospects 1950-2050: The 2004 Revision. Database. Department of Economic and Social Affairs, Population Division. New York.
Column 4: UN (United Nations). 2005. World Population Prospects 1950-2050: The 2004 Revision. Database. Department of Economic and Social Affairs, Population Division. New York.
Column 5: UNESCO Institute for Statistics (United Nations Educational, Scientific and Cultural Organization). 2003. Correspondence on adult and yourth literacy rates. April. Montreal.
Column 6: UNESCO Institute for Statistics (United Nations Educational, Scientific and Cultural Organization). 2005. Correspondence on adult and yourth literacy rates. April. Montreal.
Column 7: UNESCO Institute for Statistics. 2005. Correspondence on education expenditure. February. Montreal.
Column 8: UNESCO Institute for Statistics. 2005. Correspondence on education expenditure. February. Montreal.

Country Rankings - Equality Indicators

Hotspot	*Country*	*GINI Index 2003 (100 is perfect inequality)*[a]	*Ratio of Richest 10% to Poorest 10% 2003*[b]	*GDP per capita rank minus HDI rank 2003*[c]	*Seats in Parliament Held by Women (% of total)*[d]	*1979 Convention on the Elimination of all Forms of Discrimination Against Women*[e]
Caucasus	**Armenia**	37.9	11.5	28	5.3%	Y
	Azerbaijan	36.5	9.7	12	10.4%	Y
	Georgia	36.9	12.0	21	9.4%	Y
	Iran	43.0	17.2	-29	4.1%	*N*
	Russia	31.0	7.1	-3	8.0%	Y
	Turkey	40.0	13.3	-18	4.4%	Y
	Hotspot Average	*37.6*	*11.8*	*1.8*	*6.9%*	
Guinean Forests of West Africa	**Benin**			-5	7.2%	Y
	Cameroon	44.6	15.7	-19	8.9%	Y
	Cote d'Ivoire	44.6	16.6	-14	8.5%	Y
	Equatorial Guinea			-93	18.0%	Y
	Ghana	40.8	14.1	-11	10.9%	Y
	Guinea	40.3	12.3	-26	19.3%	Y
	Liberia				5.3%	Y
	Nigeria	50.6	24.9	2	5.8%	Y
	Sao Tome/Principe			27	9.1%	Y
	Sierra Leone	62.9	87.2	1	14.5%	Y
	Togo			3	6.2%	Y
	Hotspot Average	*47.3*	*28.5*	*-13.5*	*10.3%*	
Mountains of Southwest China	**China**	44.7	18.4	11	20.2%	Y
	Myanmar			34		Y
	Hotspot Average	*44.7*	*18.4*	*22.5*	*20.2%*	
Sundaland	**Brunei**			-4		*N*
	Indonesia	34.3	7.8	5	11.3%	Y
	Malaysia	49.2	22.1	-3	13.1%	Y
	Singapore	42.5	17.7	-4	16.0%	Y
	Thailand	43.2	13.4	-7	8.1%	Y
	Hotspot Average	*42.3*	*15.3*	*-2.6*	*12.1%*	
Tropical Andes	**Argentina**	52.2	39.1	12	33.6%	Y
	Bolivia	44.7	24.6	9	17.8%	Y
	Chile	57.1	40.6	17	10.1%	Y
	Colombia	57.6	57.8	8	10.8%	Y
	Ecuador	43.7	44.9	30	16.0%	Y
	Peru	49.8	49.9	14	18.3%	Y
	Venezuela	49.1	62.9	22	9.7%	Y
	Hotspot Average	*50.6*	*45.7*	*16.0*	*16.6%*	
Average - All Countries		***44.9***	***26.7***	***0.7***	***11.7%***	

notes:
a. A value of 0 represents perfect equality, and a value of 100 perfect inequality.
b. Data show the ratio of the income or consumption share of the richest group to that of the poorest.
Calculated on the basis of data in columns 2 and 5 of Table 15 of Human Development Report 2005.
c. A positive figure indicates that the HDI rank is higher than the GDP per capita (PPP US$) rank, a negative the opposite.
Calculated on the basis of data in columns 1 and 5 of Table 1 in the 2005 Human Development Report).
d. Data are as of 1 March 2005. Where there are lower and upper houses, data refer to the weighted average of women's shares of seats in both houses.
e. 'Y' indicates a signature of the convention. 'N' indicates that the country is not a signatory.

source:
Column 1: World Bank. 2005. Correspondence on income distribution data. Washington, D.C. April. From Human Development Report 2005.
Column 2: UNDP (United Nations Development Programme). 2005. Human Development Report 2005, International cooperation at a crossroads: Aid, trade and security in an unequal world.
Column 3: UNDP (United Nations Development Programme). 2005. Human Development Report 2005, International cooperation at a crossroads: Aid, trade and security in an unequal world.
Column 4: Calculated on the basis of data on parliamentary seats from IPU. 2005. Parline Database [http://www.ipu.org] and correspondence on Women in National Parliaments. May 2005. From Human Development Report 2005.
Column 5: UN (United Nations). 2005. "Multilateral Treaties Deposited with the Secretary-General." [http://untreaty.un.org]. Accessed May 2005. From Human Development Report 2005.

Country Rankings - Governance Indicators (World Bank)							
Hotspot	*Country*	*Voice & Accountability 2004 (% rank)[a]*	*Political Stability 2004 (% rank)[b]*	*Government Effectiveness 2004 (% rank)[c]*	*Regulatory Quality 2004 (% rank)[d]*	*Rule of Law 2004 (% rank)[e]*	*Control of Corruption 2004 (% rank)[f]*
Caucasus	**Armenia**	29.6%	34.0%	41.8%	53.7%	36.2%	37.4%
	Azerbaijan	23.3%	6.8%	22.1%	27.6%	22.7%	10.8%
	Georgia	39.3%	11.2%	23.6%	23.6%	21.7%	16.3%
	Iran	10.7%	19.9%	28.8%	7.9%	23.2%	35.0%
	Russia	25.7%	21.8%	48.1%	30.5%	29.5%	29.1%
	Turkey	41.7%	30.6%	57.2%	48.8%	54.6%	50.7%
	Hotspot Average	*28.4%*	*20.7%*	*36.9%*	*32.0%*	*31.3%*	*29.9%*
Guinean Forests of West Africa	**Benin**	55.3%	35.4%	39.4%	31.0%	40.6%	46.3%
	Cameroon	14.6%	21.4%	29.3%	22.7%	16.4%	25.1%
	Cote d'Ivoire	9.7%	1.0%	7.2%	19.7%	6.3%	11.8%
	Equatorial Guinea	4.4%	36.9%	4.8%	20.7%	14.5%	0.0%
	Ghana	57.8%	46.1%	51.4%	41.4%	49.3%	51.7%
	Guinea	16.5%	19.9%	16.8%	17.2%	13.5%	24.1%
	Liberia	12.6%	1.9%	1.0%	3.4%	1.4%	21.2%
	Nigeria	30.1%	4.9%	14.4%	9.4%	4.8%	8.9%
	Sao Tome/Principe	64.6%	50.5%	18.3%	34.0%	37.2%	32.0%
	Sierra Leone	33.5%	30.1%	6.3%	16.3%	12.6%	19.7%
	Togo	13.1%	32.5%	6.7%	21.2%	15.9%	15.3%
	Hotspot Average	*28.4%*	*25.5%*	*17.8%*	*21.5%*	*19.3%*	*23.3%*
Mountains of Southwest China	**China**	7.3%	46.6%	60.1%	35.0%	40.6%	39.9%
	Myanmar	0.0%	12.1%	2.9%	0.5%	2.9%	1.0%
	Hotspot Average	*3.7%*	*29.4%*	*31.5%*	*17.8%*	*21.8%*	*20.5%*
Sundaland	**Brunei**	17.5%	85.4%	74.0%	84.2%	65.2%	63.1%
	Indonesia	35.9%	9.2%	40.9%	36.9%	20.8%	17.7%
	Malaysia	37.4%	58.7%	81.3%	64.5%	64.7%	64.5%
	Singapore	43.2%	96.6%	99.5%	99.0%	95.7%	99.5%
	Thailand	52.4%	41.7%	65.4%	51.2%	51.7%	49.3%
	Hotspot Average	*37.3%*	*58.3%*	*72.2%*	*67.2%*	*59.6%*	*58.8%*
Tropical Andes	**Argentina**	62.1%	38.3%	42.3%	20.2%	28.5%	42.9%
	Bolivia	47.1%	28.6%	29.8%	53.7%	37.2%	25.1%
	Chile	83.0%	76.7%	87.0%	94.1%	85.5%	88.7%
	Colombia	34.5%	5.8%	51.0%	47.8%	29.5%	52.2%
	Ecuador	40.8%	23.3%	20.2%	25.1%	28.5%	26.6%
	Peru	44.7%	27.2%	32.2%	57.1%	31.9%	44.8%
	Venezuela	35.4%	13.6%	15.9%	9.9%	12.6%	14.3%
	Hotspot Average	*49.7%*	*30.5%*	*39.8%*	*44.0%*	*36.2%*	*42.1%*
	Average - All Countries	***33.0%***	***31.2%***	***36.1%***	***35.8%***	***32.1%***	***34.4%***

notes:

a. Measures political, civil and human rights. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).
b. Measures the likelihood of violent threats to, or changes in, government, including terrorism. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).
c. Measures the competence of the bureaucracy and the quality of public service delivery. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).
d. Measures the incidence of market-unfriendly policies. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).
e. Measures the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).
f. Measures the exercise of public power for private gain, including both petty and grand corruption and state capture. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error).

source:

Columns 1-6: Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi (2005). "Governance Matters IV: Governance Indicators for 1996-2004". Draft, May 2005. <http://info.worldbank.org/governance/kkz2004/year_report.asp>

Country Rankings - Economic Freedom Indicators

Hotspot	*Country*	*Economic Freedom Ranking 2006 (out of 157)*[a]	*Net FDI Inflows 1990 (% of GDP)*[b]	*Net FDI Inflows 2003 (% of GDP)*[c]	*Imports of Goods and Services 1990 (% of GDP)*	*Imports of Goods and Services 2003 (% of GDP)*	*Exports of Goods and Services 1990 (% of GDP)*	*Exports of Goods and Services 2003 (% of GDP)*	*Total Debt Service 1990 (% of GDP)*	*Total Debt Service 2003 (% of GDP)*
Caucasus	**Armenia**	27	0.0%	4.3%	46.0%	50.0%	35.0%	32.0%		3.4%
	Azerbaijan	123	0.0%	46.0%	39.0%	67.0%	44.0%	43.0%		3.4%
	Georgia	68	0.0%	8.5%	46.0%	46.0%	40.0%	32.0%		4.5%
	Iran	156	-0.3%	0.1%	24.0%	23.0%	22.0%	25.0%	0.5%	1.2%
	Russia	122	0.0%	1.8%	18.0%	21.0%	18.0%	32.0%		4.4%
	Turkey	85	0.5%	0.6%	18.0%	31.0%	13.0%	28.0%	4.9%	11.7%
	Hotspot Average	*96.8*	*0.0%*	*10.2%*	*31.8%*	*39.7%*	*28.7%*	*32.0%*	*2.7%*	*4.8%*
Guinean Forests of West Africa	**Benin**	117	3.4%	1.5%	26.0%	27.0%	14.0%	14.0%	2.1%	1.7%
	Cameroon	119	-1.0%	1.7%	17.0%	25.0%	20.0%	26.0%	4.6%	3.6%
	Cote d'Ivoire	88	0.4%	1.3%	27.0%	34.0%	32.0%	47.0%	11.7%	4.2%
	Equatorial Guinea	136	8.4%	49.1%	70.0%		32.0%		3.9%	0.3%
	Ghana	105	0.3%	1.8%	26.0%	52.0%	17.0%	40.0%	6.2%	6.3%
	Guinea	127	0.6%	2.2%	31.0%	25.0%	31.0%	22.0%	6.0%	3.6%
	Liberia		0.0%	0.0%					0.8%	
	Nigeria	146	2.1%	2.1%	29.0%	41.0%	43.0%	50.0%	11.7%	2.8%
	Sao Tome/Principe		0.0%	16.8%	72.0%	83.0%	14.0%	38.0%	4.9%	11.1%
	Sierra Leone	137	5.0%	0.4%	24.0%	49.0%	22.0%	22.0%	3.3%	3.2%
	Togo	134	1.1%	1.1%	45.0%	47.0%	33.0%	34.0%	5.3%	0.9%
	Hotspot Average	*123.2*	*1.8%*	*7.1%*	*36.7%*	*42.6%*	*25.8%*	*32.6%*	*5.5%*	*3.8%*
Mountains of Southwest China	**China**	111	1.0%	3.8%	14.0%	32.0%	18.0%	34.0%	2.0%	2.6%
	Myanmar	155			5.0%		3.0%			
	Hotspot Average	*133.0*	*1.0%*	*3.8%*	*9.5%*	*32.0%*	*10.5%*	*34.0%*	*2.0%*	*2.6%*
Sundaland	**Brunei**									
	Indonesia	134	1.0%	-0.3%	24.0%	26.0%	25.0%	31.0%	8.7%	8.9%
	Malaysia	68	5.3%	2.4%	72.0%	93.0%	75.0%	114.0%	9.8%	9.1%
	Singapore	2	15.1%	12.5%						
	Thailand	71	2.9%	1.4%	42.0%	59.0%	34.0%	66.0%	6.2%	10.5%
	Hotspot Average	*68.8*	*6.1%*	*4.0%*	*46.0%*	*59.3%*	*44.7%*	*70.3%*	*8.2%*	*9.5%*
Tropical Andes	**Argentina**	107	1.3%	0.8%	5.0%	14.0%	10.0%	25.0%	4.4%	10.8%
	Bolivia	67	0.6%	2.1%	24.0%	25.0%	23.0%	24.0%	7.9%	5.4%
	Chile	14	2.2%	4.1%	31.0%	33.0%	35.0%	36.0%	9.1%	11.7%
	Colombia	91	1.2%	2.2%	15.0%	22.0%	21.0%	21.0%	9.7%	10.7%
	Ecuador	107	1.2%	5.7%	32.0%	29.0%	33.0%	24.0%	10.5%	8.9%
	Peru	63	0.2%	2.3%	14.0%	18.0%	16.0%	18.0%	1.8%	4.2%
	Venezuela	152	0.9%	3.0%	20.0%	15.0%	39.0%	31.0%	10.3%	10.4%
	Hotspot Average	*85.9*	*1.1%*	*2.9%*	*20.1%*	*22.3%*	*25.3%*	*25.6%*	*7.7%*	*8.9%*
	Average - All Countries	***101.1***	***1.8%***	***6.2%***	***30.6%***	***38.0%***	***27.2%***	***35.0%***	***6.1%***	***5.9%***

notes:
a. Each country was scored on a scale of 1-5, where 1-1.99 is considered 'free' (rankings 1-20), 2-2.99 is 'mostly free' (rankings 21-72), 3-3.99 is 'mostly unfree' (rankings 73-145), and 4-4.99 is 'unfree' (rankings 146-157). To measure of economic freedom, 50 independent economic variables are studied and grouped into 10 broad categories (trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and FDI, banking and finance, wages and prices, property rights, regulation, informal market activity).
b. A negative value indicates that the capital flowing out of the country exceeds that flowing in.
c. A negative value indicates that the capital flowing out of the country exceeds that flowing in.

source:
Column 1: Heritage Foundation. 2006. Index of Economic Freedom. <http://www.heritage.org/research/features/index/countries.cfm>
Column 2: World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC.; aggregates calculated for the Human Development Report Office by the World Bank. From Human Development Report 2005.
Column 3: World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC.; aggregates calculated for the Human Development Report Office by the World Bank. From Human Development Report 2005.
Columns 4-7: World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC, based on data from United Nations Conference on Trade and Development and the International Monetary Fund; aggregates calculated for the Human Development Report Office by the World Bank. From Human Development Report 2005.
Column 8: Calculated based on the basis of data on GDP and total debt service from the World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC. From Human Development Report 2005.
Column 9: Calculated based on the basis of data on GDP and total debt service from the World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC. From Human Development Report 2005.

Country Rankings - Economic Development Indicators								
Hotspot	*Country*	*GDP per capita, current prices 2002 (US$)*	*GDP per capita, current prices 2004 (US$)*	*GDP per capita, current prices 2006 (US$)*	*ODA received (net disbursements) per capita 2003 ($US)[a]*	*ODA received (net disbursements) 1990 (% of GDP)[b]*	*ODA received (net disbursements) 2003 (% of GDP)[c]*	*Population Living Below US$1 a day 1990-2003 (%)[d]*
Caucasus	**Armenia**	$740	$1,093	$1,355	$81.00		8.8%	
	Azerbaijan	$760	$1,024	$1,664	$36.00		4.2%	
	Georgia	$651	$866	$986	$42.90		5.5%	
	Iran	$1,774	$2,473	$3,091	$2.00	0.1%	0.1%	2.0%
	Russia	$2,392	$4,093	$6,143	$8.80		0.3%	
	Turkey	$2,774	$4,251	$5,041	$2.40	0.8%	0.1%	2.0%
	Hotspot Average	*$1,515*	*$2,300*	*$3,047*	*$28.85*	*0.5%*	*3.2%*	*2.0%*
Guinean Forests of West Africa	**Benin**	$406	$565	$682	$43.70	14.5%	8.5%	
	Cameroon	$601	$831	$913	$55.00	4.0%	7.1%	17.1%
	Cote d'Ivoire	$670	$852	$897	$15.00	6.4%	1.8%	10.8%
	Equatorial Guinea	$1,754	$4,120	$4,127	$43.10	46.0%	0.7%	
	Ghana	$318	$434	$542	$44.40	9.6%	11.9%	
	Guinea	$367	$407	$386	$30.00	10.4%	6.5%	44.8%
	Liberia				$31.70	29.7%	24.2%	
	Nigeria	$341	$500	$645	$2.30	0.9%	0.5%	70.2%
	Sao Tome/Principe	$348	$402	$447	$239.90	95.0%	63.3%	
	Sierra Leone	$185	$201	$220	$55.70	9.4%	37.5%	57.0%
	Togo	$284	$375	$433	$9.20	16.0%	2.5%	
	Hotspot Average	*$527*	*$869*	*$929*	*$51.82*	*22.0%*	*15.0%*	*40.0%*
Mountains of Southwest China	**China**	$989	$1,269	$1,554	$1.00	0.6%	0.1%	16.6%
	Myanmar	$167	$167	$154	$2.60			
	Hotspot Average	*$578*	*$718*	*$854*	*$1.80*	*0.6%*	*0.1%*	*16.6%*
Sundaland	**Brunei**	$12,930	$15,612	$15,208	$1.30			
	Indonesia	$930	$1,165	$1,369	$8.10	1.5%	0.8%	7.5%
	Malaysia	$3,880	$4,625	$5,239	$4.40	1.1%	0.1%	2.0%
	Singapore	$21,163	$24,740	$28,034	$1.70			
	Thailand	$1,994	$2,521	$2,931	-$15.60	0.9%	-0.7%	2.0%
	Hotspot Average	*$8,179*	*$9,733*	*$10,556*	*-$0.02*	*1.2%*	*0.1%*	*3.8%*
Tropical Andes	**Argentina**	$2,675	$3,912	$4,708	$2.90	0.1%	0.1%	3.3%
	Bolivia	$1,029	$1,125	$1,178	$103.50	11.2%	11.8%	14.4%
	Chile	$4,315	$5,856	$6,574	$4.80	0.3%	0.1%	2.0%
	Colombia	$1,860	$2,099	$2,312	$18.10	0.2%	1.0%	8.2%
	Ecuador	$1,807	$2,145	$2,354	$13.50	1.6%	0.6%	17.7%
	Peru	$2,018	$2,349	$2,597	$18.40	1.5%	0.8%	18.1%
	Venezuela	$3,729	$4,148	$4,994	$3.20	0.2%	0.1%	15.0%
	Hotspot Average	*$2,490*	*$3,091*	*$3,531*	*$23.49*	*2.2%*	*2.1%*	*11.2%*
	Average - All Countries	***$2,462***	***$3,141***	***$3,559***	***$29.39***	***10.9%***	***7.1%***	***17.3%***

notes:
a-c. ODA receipts are total net ODA flows from DAC countries as well as Czech Republic, Hungary, Iceland, Israel, Korea, Kuwait, Poland, Saudi Arabia, Slovak Republic, Turkey, United Arab Emirates, other small donors, including Estonia, Latvia and Lithuania, and concessional lending from multilateral organisations.
d. A figure of 2.0% indicates that LESS than 2.0% of the population lives on less than US$1 per day. Data refer to the most recent year available during the period specified.

source:
Column 1: International Monetary Fund. 2005. World Economic Outlook database, April 2005. <http://www.imf.org/external/pubs/ft/weo/2005/01/data/dbcselm.cfm?G=2001>
Column 2: International Monetary Fund. 2005. World Economic Outlook database, April 2005. <http://www.imf.org/external/pubs/ft/weo/2005/01/data/dbcselm.cfm?G=2001>
Column 3: International Monetary Fund. 2005. World Economic Outlook database, April 2005. <http://www.imf.org/external/pubs/ft/weo/2005/01/data/dbcselm.cfm?G=2001>
Column 4: OECD (Organisation for Economic Co-operation and Development), Development Assistance Committee. 2005. DAC Online. Database. Paris. From Human Development Report 2005.
Column 5: OECD (Organisation for Economic Co-operation and Development), Development Assistance Committee. 2005. DAC Online. Database. Paris. From Human Development Report 2005.
Column 6: OECD (Organisation for Economic Co-operation and Development), Development Assistance Committee. 2005. DAC Online. Database. Paris. From Human Development Report 2005.
Column 7: World Bank. 2005. World Development Indicators 2005. CD-ROM. Washington, DC. From Human Development Report 2005.

Country Rankings - Political and Civil Rights Indicators

Hotspot	*Country*	*Political Rights Score 2006 (1 is best, 7 is worst)*[a]	*Civil Liberties Score 2006 (1 is best, 7 is worst)*[b]	*Overall Freedom Rating 2006*[c]	*Press Freedom Rating 2005 (1 is best, 100 is worst)*[d]	*Press Freedom Ranking 2005 (out of 194)*	*Press Freedom Status 2005*[e]	*RSF Press Freedom Rank 2005 (out of 167)*[f]	*Ratification of 1966 Int'l Covenant on Civil and Political Rights (Y/N)*	*Ratification of Freedom of Association and Collective Bargaining (Y/N)*[g]
Caucasus	**Armenia**	5	4	Partly Free	64	134	Not Free	102	Y	*N*
	Azerbaijan	6	5	Not Free	72	158	Not Free	141	Y	Y
	Georgia	3	3	Partly Free	56	116	Partly Free	99	Y	Y
	Iran	6	6	Not Free	80	173	Not Free	164	Y	*N*
	Russia	6	5	Not Free	68	145	Not Free	138	Y	Y
	Turkey	3	3	Partly Free	48	105	Partly Free	98	Y	Y
	Hotspot Average	*4.8*	*4.3*		*64.7*	*138.5*		*123.7*		
Guinean Forests of West Africa	**Benin**	2	2	Free	30	71	Free	25	Y	Y
	Cameroon	6	6	Not Free	68	145	Not Free	83	Y	Y
	Cote d'Ivoire	6	6	Not Free	69	152	Not Free	144	Y	Y
	Equatorial Guinea	7	6	Not Free	88	187	Not Free	133	Y	Y
	Ghana	1	2	Free	26	58	Free	66	Y	Y
	Guinea	6	5	Not Free	73	163	Not Free	102	Y	Y
	Liberia	4	4	Partly Free	73	163	Not Free	83	Y	Y
	Nigeria	4	4	Partly Free	52	112	Partly Free	123	Y	Y
	Sao Tome/Principe	2	2	Free	28	61	Free		Y	Y
	Sierra Leone	4	3	Partly Free	59	123	Partly Free	126	Y	Y
	Togo	6	5	Not Free	73	163	Not Free	95	Y	Y
	Hotspot Average	*4.4*	*4.1*		*58.1*	*127.1*		*98.0*		
Mountains of Southwest China	**China**	7	6	Not Free	82	177	Not Free	159	Y	*N*
	Myanmar	7	7	Not Free	96	191	Not Free	163	*N*	Y
	Hotspot Average	*7.0*	*6.5*		*89.0*	*184.0*		*161.0*		
Sundaland	**Brunei**	6	5	Not Free	75	169	Not Free		*N*	*N*
	Indonesia	2	3	Free	58	119	Partly Free	102	Y	Y
	Malaysia	4	4	Partly Free	69	152	Not Free	113	*N*	*N*
	Singapore	5	4	Partly Free	66	139	Not Free	140	*N*	*N*
	Thailand	3	3	Partly Free	42	95	Partly Free	107	Y	*N*
	Hotspot Average	*4.0*	*3.8*		*62.0*	*134.8*		*115.5*		
Tropical Andes	**Argentina**	2	2	Free	41	92	Partly Free	59	Y	Y
	Bolivia	3	3	Partly Free	35	77	Partly Free	45	Y	Y
	Chile	1	1	Free	24	54	Free	50	Y	Y
	Colombia	3	3	Partly Free	63	131	Not Free	128	Y	Y
	Ecuador	3	3	Partly Free	41	92	Partly Free	87	Y	Y
	Peru	2	3	Free	40	87	Partly Free	116	Y	Y
	Venezuela	4	4	Partly Free	72	158	Not Free	90	Y	Y
	Hotspot Average	*2.6*	*2.7*		*45.1*	*98.7*		*82.1*		
Average - All Countries		***4.2***	***3.9***		***59.1***	***127.8***		***106.2***		

notes:
a. 1 represents the most free and 7 represents the least free rating. The ratings reflect global events from 1 December 2004 through 30 December 2005.
b. 1 represents the most free and 7 represents the least free rating. The ratings reflect global events from 1 December 2004 through 30 December 2005.
c. The freedom ratings reflect an overall judgment based on survey results. Countries can be rated either 'Free', 'Partly Free', or 'Not Free.'
d. Actual ratings (scores) for 2005 ranged from 9 to 97.
e. Press freedom status reflect an overall judgment based on survey results. Countries can be rated either 'Free', 'Partly Free', or 'Not Free.'
f. Rankings are based on country scores which ranged from 0.5 to 109.0 for 2005. The index is based solely on events between 1 September 2004 and 1 September 2005.
g. Freedom of Association and Protection of the Right to Organize Convention (1948).

source:
Column 1: Freedom House. 2006. Freedom in the World 2006: Selected data from Freedom House's Annual Global Survey of Political Rights and Civil Liberties. <http://freedomhouse.org/template.cfm?page=15&year=2005>
Column 2: Freedom House. 2006. Freedom in the World 2006: Selected data from Freedom House's Annual Global Survey of Political Rights and Civil Liberties. <http://freedomhouse.org/template.cfm?page=15&year=2005>
Column 3: Freedom House. 2006. Freedom in the World 2006: Selected data from Freedom House's Annual Global Survey of Political Rights and Civil Liberties. <http://freedomhouse.org/template.cfm?page=15&year=2005>
Column 4: Freedom House. 2005. Table of Global Press Freedom Rankings 2005. <http://freedomhouse.org/template.cfm?page=204&year=2005>
Column 5: Freedom House. 2005. Table of Global Press Freedom Rankings 2005. <http://freedomhouse.org/template.cfm?page=204&year=2005>
Column 6: Freedom House. 2005. Table of Global Press Freedom Rankings 2005. <http://freedomhouse.org/template.cfm?page=204&year=2005>
Column 7: Reporters Without Borders (Reporters Sans Frontieres). 2005. Worldwide Press Freedom Index 2005. <http://www.rsf.org/rubrique.php3?id_rubrique=554>
Column 8: UN (United Nations). 2005. "Multilateral Treaties Deposited with the Secretary-General." [http://untreaty.un.org]. Accessed May 2005. From Human Development Report 2005.
Column 9: ILO. 2005. Database on International Labour Standards (ILOLEX). [http://www.ilo.org/ilolex/english/docs/declworld.htm]. Accessed May 2005. From Human Development Report 2005.

Appendix 3: Methodology for hotspot selection

Global Distribution

The methodology primarily sought a broad distribution of hotspots. As a criterion, distribution was considered both in geographic terms and in social, biological, and economic measures. Geographically, the five chosen hotspots span four continents throughout the globe and an impressive range of biome types, species biodiversity range, and latitudinal sectors. Economically, the methodology tried to include areas with wide ranges in indices of development, trade, and stability, such as the United Nations Human Development Index.

Corruption and Environmentally Oriented Investment Histories

The methodology included considerations of previous or current investments or analysis conducted by international financial institutions. The World Bank [183] and the Millennium Challenge Corporation, [184] for example, both have funding goals that include sustainable development initiatives alongside anti-corruption measures.

Transboundary Biodiversity Hotspots

The 34 biodiversity hotspots include regions that span national borders as well as regions that exist within one country. Given Transparency International's global focus, the methodology generally favored transboundary hotspots over those that lie within one country.

Transparency International Offices Within Biodiversity Hotspots

The presence of Transparency International regional offices was included among the criteria used to select hotspots. There are 22 Transparency International offices located within the five biodiversity hotspots chosen for case studies. The local Transparency International office will be a direct beneficiary of the project analysis on pertinent local and global issues of interest.

Indices

Two indices were consulted: First, Transparency International Corruption Perceptions Index was used to determine how various countries within the world's hotspots were ranked. A diversity of rankings from high to low index scores made for a more complete study. The range of topics covered under Transparency International's index provides a diverse array of modes of comparison between industries and countries. The range of rankings ensures that case studies represent a range from less to more corrupt countries, so that the conclusions are more broadly applicable.

The second index utilized was the Environmental Sustainability Index (ESI) created from information assembled at Columbia University's Center for International Earth Science Information Network (CIESIN) and the Yale Center for Environmental Law and Policy. The ESI collects information from 76 different variables that are scored by 21 indicators to produce rankings in five areas: environmental systems, environmental stresses, human vulnerability, social and institutional capacity, and global stewardship. A broad index measuring indicators of governance and environmental health

Industrial Presence

Research of various environmental and governmental indicators supports the claim that the relationship between healthy ecosystems and their good governance is positive[185]. However, industries based in the extraction and use of natural resources is a critical criterion in the analysis of global hotspots. These industries can cause wide scale environmental degradation if not managed properly and are important areas of focus when studying the affects of governance on the environment. As permits, concessions, regulations and monitoring for these industries are often controlled by government agencies, the quality of governance will have a direct effect upon the sustainable or destructive use of a country's natural resources. These industries are also especially useful for analysis across socio-political boarders since they represent a significant portion of many national economies.

In the case of biodiversity hotspots, extractive industries can have magnified deleterious effects as these biomes are not only fragile, but of importance on global scale in mitigating climate change and housing most of the world's endemic and endangered species. The economic conditions for many countries located within hotspots are mediocre at best. The temptation to maximize short-term profits through natural resource exploitation may thus be greater for both governments and their employees involved in these industries. Poor salaries for both public managers and boarder guards can lead to a systemic abuse of power resulting in heightened degradation of the environment. As many forms of corruption deprive local communities from the economic and environmental benefits of a country's natural resources, poor governance can affect livelihoods in developing nations more directly than in more prosperous parts of the globe.

Appendix 4: Additional Case Studies in the Renewable Resources Sector

Deforestation in Myanmar

The demand for timber in China is causing severe deforestation in Myanmar. Environmental watchdog organization Global Witness published two reports, in 2003 and 2005, which documented the illegal timber trade between China and Myanmar. The reports state that deforestation in Myanmar is occurring at a rate of seven percent per year and is worst on the country's northern and eastern borders, where an estimated 1 million tons of logs were brought into Yunnan province on trucks that crossed the Chinese-Myanmar border at the rate of one every seven minutes. Despite China's 1998 national logging ban—and the previous logging ban in Yunnan Province since 1996—the number of logging companies based in the Chinese border town of Pian Ma increased from four in 1984 to over 100 in 1995. The timber industry along the China-Burma border has largely been sustained by logging in Myanmar's Kachin State.

According to Burmese law, the cross-border timber trade is almost entirely illegal. Chinese customs data indicate that between 800,000 and 1,000,000 cubic meters of timber crossed this border annually, almost all of which was exported illegally. The importation of this timber is also illegal according to Chinese customs and quarantine laws. The illegal nature of the logging operations run by Chinese companies in Myanmar and official Chinese support for the trade is having an adverse impact on China's standing in the international community.[186]

Logging activity stopped for four months following publication of Global Witness' report, but in January 2006, the *Sydney Morning Herald* reported that the Chinese logging trucks were back on the road.[187] Initially, both the Chinese and Myanmarese governments denied the illegal trade, but increasingly the Myanmar government has shown more willingness to address the problem. The loss of revenue represented by the unregulated trade is troubling to the military junta in Myanmar. Under illegal trade the money is funneled directly to regional military commanders and semi-autonomous indigenous "ceasefire" groups for concessions.[188] While welcoming the increased transparency in the Myanmar government, Global Witness further speculates that the junta's motive might be that the illegal trade depresses the price of teak.[189]

China and Asia Pulp & Paper

In August 2002 the government of the Chinese province of Yunnan, in which the Mountains of Southwest China hotspot is partially located, signed a memorandum of understanding with Asia Pulp & Paper (APP), one of the world's largest paper and pulp producers. The MOU concerned a proposed project to plant eucalyptus trees for the manufacture of pulp over 1.8 million hectares in the regions of Wenshan, Lincang and Simao.

According to Greenpeace China and other observers, there were several problems with this project. Even before the project received approval by the central government, APP began felling trees without any permits and planting non-native eucalyptus trees. There are environmental problems associated with eucalyptus plantations, including high water consumption and damage to local biodiversity. Moreover, more than 733,000 hectares of the areas to be planted were forests, even though APP and the provincial government asserted that most of the project would take place on barren lands.[190]

In 2003 the State Forestry Administration (SFA), China's forestry sector watchdog, released two separate reports stating that APP had felled trees without any permits. This was in violation of several articles of China's Forest Law and Article 15 of the Regulation for the Implementation of the law. In 2004 Greenpeace China conducted a survey in remote rural areas of Yunnan indicating that illegal logging was occurring and that farmers were being relocated from their land at undervalued prices. Farmers stated that their farmland has been requisitioned at a price as low as 9.7 US cents per mu (0.06 hectare) per year, which, according to Greenpeace, is lower than the price for desert land in North China's Inner Mongolia (1 yuan per mu per year).[191]

The scandal was widely publicized in China. The SFA described APP's proposed project as problematic on China's state-owned China Central Television (CCTV) in February 2005 and said that it would take legal actions against APP once its investigation was completed. In May 2005, APP said that it would "operate legally according to Chinese regulations and policies".[192]

Azerbaijan and Caviar Poaching

The Caspian Sea is bordered by five countries: Azerbaijan, the Islamic Republic of Iran, Kazakhstan, Turkmenistan, and the Russian Federation. Therefore, the threat posed by the illegal poaching of the sturgeon is not only one of regulation within Azerbaijan, from which a case study will be presented, but also of cooperation among the countries surrounding this region.

The last two decades have seen a great decline of sturgeon populations in the Caspian Sea region. The split of the Soviet Union and subsequent formulation of post Soviet states have increased both the opportunities and the advantages of poaching this threatened species. The dissolution of the Soviet Union was a turning point in the management of sturgeon fisheries. In recent years there has been a major increase in the illegal harvest and trade, flooding the international market with caviar.[193]

The *New York Times* described the extent to which established laws are being blatantly disregarded and even manipulated to increase the wealth of public officials. In the town of Nadaran, in Azerbaijan, caviar is poached by fisherman in full view of authorities. According to one fisherman there are hundreds of boats fishing for sturgeon and all they have to do is pay the officials $500. On November 9, 2005 the Azeri government issued new regulations for the domestic sturgeon market. The law requires monthly reports about the trade, as well as better labels proving that sturgeon products have been legally caught. It also created guidelines for seizing illegal sturgeon products.[194]

But, historically, regulations have had little effect on Caspian poaching. "There is political rhetoric, but in reality it doesn't seem there is any interest in restrictions," said Dr. Phaedra Doukakis, another of the study's authors. "There has been blatant violation of every rule." In Azerbaijan's neighboring country, Russia, patrols go out to see to find boats fishing for sturgeon but not to enforce the laws against poaching, but to collect fines. This is a major problem in the Caucasus as a whole and is faced by at least three of the countries including Azerbaijan, Russia, and Iran.[195]

Legal and illegal trade in black caviar remains a lucrative business. The fisherman sells the meat and the caviar, the latter worth $300 to $500 a kilogram (2.2 pounds) on the local black market, which increases to 10 times that when it reaches the markets of Europe and the United States. Although the fish's plight is well documented, and international and domestic regulations protect the surviving stock on paper, the region's manifest lawlessness and graft undermine rules to the point of uselessness. It is estimated that 80 percent of the remaining sturgeon population in the Caspian Sea is male and the corrupt practices of the fisherman and officials in the region continue to exacerbate the problem.[196]

The current environmental laws in place which could serve to protect the population of sturgeon in the republic include The Law on Environmental Protection (1999), The Act on Fish Facilities, which requires fisheries to ensure protection of habitats, conditions of breeding and migration of fishes as well as The Act on Water which requires that fishing companies which use water to take measures on fish protection as well as provide observance of a minimally allowed level of water expenditure appropriated to ecological and fish protection norms on water facilities.[197]

Indonesian Logging and Palm Oil

In 2001, tensions between the Kayu Lapis Industry logging company and the local community of Waisor escalated due to intensive efforts to curb illegal logging. The clash was caused because of the fact that the local Police Mobile Brigade (Brimob) was being bribed by the logging company, and thus interfered on behalf of the company against the community.[198]

Additionally, 2005 was the worst year on record for forest fires in Indonesia, most of which were due to illegal logging.[199] Although there are a number of reasons why fires occur, such as clearance for palm oil factories, tenure disputes between farmers/industries, and clearance for crops such as rubber and oil exploration, most of the fires were due to illegal logging. The uses are unregulated and in the case of the larger corporations, bribes are being paid to maintain that lack of regulation and there are approximately 10 companies currently indicted by local NGOs in Indonesia for setting illegal fires.

Economically, Indonesia has seen a huge growth, of 118 percent in the past eight years, mainly in exports of timber and palm oil.[200] The land used for these palm oil industries is being carved out of natural forests. Indonesia recently signed an $8 billion deal with a Chinese bank to build the largest palm oil factory in the world which is to be located across several protected areas. Additionally, the European Union is the second largest financer of palm oil plantations.[201] Palm oil plantations have been linked to corruption in the granting of land to companies through favoritism or bribery, as well as through turning a blind eye towards the deforestation and environmental pollution associated with the industry. Additionally, the relatively new democracy of Indonesia is still riddled with corruption from the government’s decades long dictatorship by General Suharto. In an attempt to further economic growth and competitiveness, Indonesia is entertaining corrupt financiers such as Chinese banks.

Indonesian Orangutan Poaching

A secondary factor to illegal logging or palm oil exploration is the displacement of the endangered orangutan. This makes it easy for poachers to take advantage of the trade. The tsunami has driven locals to extremes and they have found that the illegal poaching trade can

deliver a profit.[202] As orangutans are forced into agricultural areas due to deforestation, they are killed as pests by the locals, despite legislation protecting the animals. Baby orangutans, orangutan skulls, and orangutan meat may all be sold for local profit.[203]

Malaysian Logging - Improvement

In 2001, the Sabah Forestry Department employed several new enforcement officers to help fight corruption and greed within the forestry sector. The recruits included former police prosecutors. The Forestry Department reorganization included a director of enforcement and more on the ground inspections. The reorganization also required that district forest officers are held accountable for corruption in their individual districts. This revamping of the department came on the heels of the Forest Amendment Enactment Bill of 2001, which allows authorities to arrest any person suspected of participating in illegal logging and any one found near an area where illegal logging was being carried out.[204] Additionally, the Malaysian Timber Certification Council began a certification scheme in 2001 to certify that timber exports come from forests that are managed in a sustainable way. Over 80 percent of importers in Europe and the US insist on such certification. The certification program is working closely with the Forest Stewardship Council (FSC) to ensure that Malaysian forests comply with FSC standards.[205]

Armenian Logging

Under the Soviet regime timber production was a large sector of the Armenian economy. However, as local forests were protected from commercial logging by various laws, up to 95 percent of timber processed in Armenia was harvested either in other parts of the Soviet Union or abroad.[206] Under Soviet management, trees were regularly replanted, sustaining the relatively small 5 percent of Armenian forests being harvested.[207] However, since the collapse of the USSR in 1991, the Armenia government has not demonstrated similar care in its forest management practices as tree replanting has all but stopped. It was at this time that major imports of timber ceased entering Armenia, while production of wood continued; now supplied by domestic sources.

To address the issues associated with rampant logging, in 1994 the Armenian government drafted its Forest Code. This strategy for forest management maintains the State's control over forested lands, but creates conditions by which the government can make portions available for fee-based harvesting.[208] Critics claim that the policies included within the Forest Code of 1994 fail to address the main economic drivers of illegal logging. Specifically, taxes and customs fees for importing wood are prohibitively high, while wood exports have no such fees.[209] In fact, while the Code has been in place for over 10 years most of its specific bylaws regarding implementation have yet to be adopted.[210]

Enforcement of legislation is a primary issue in Armenia. Corruption is an acknowledged problem in the country—Transparency International ranks Armenia at 88th in its 2005 Corruption Perception Index.[211] The primary methods for identifying illegal logging and catching offenders in Armenia, according to the UN, include patrols by staff, surveying the number of trucks carrying timber, and observing the practices of sawmills.[212] Armenian forest staff reported that an average timber volume of nearly 4000 m^3/year (9388 trees) was illegally harvested between 1998-2002.[213] However, only a small percentage of this is thought to the work of poor villagers attempting to gather firewood. Rather, it has been charged that businessmen are paying bribes to

government staff and officials in return for not prosecuting illegal logging. It has even been reported that these illegal operations have built new roads to facilitate logging in more remote regions.[214]

Evidence of this corruption is difficult to find. However, a UNECEF report on illegal logging in Armenia presents several interesting facts that may point in this direction. Between 1998 and 2002, 55 percent of the total number of illegal logging cases registered by government officials was settled out of court, and 26 percent were settled with the judicial system.[215] However, based on the penalty and fine schedule for illegal logging activities, only 27 percent of the fines for out-of-court settlements were collected and submitted to the government.[216] While the UN reports this discrepancy as "discretion used in implementing the collection of … fines", further investigation would be helpful in ruling out corruption.[217] Similarly, as 55 percent of all cases were settled outside of court, and 26 percent of all cases went to court, 19 percent of cases to fell outside of the system. The UN report assumes there was "not enough evidence to proceed" with these cases.[218]

Appendix 5: Additional Case Studies in the Non-Renewable Resources Sector

United States

Corruption not only occurs in developing nations around the world, but also extends its grasp to developed countries, including the United States.

Oil has long been a driving force in domestic and international policy in the US and oil has been implicated in contributing to the US invasion of Iraq.[219] Furthermore, documents uncovered by CNN have since revealed that the US knew about, and condoned embargo-breaking oil sales by Saddam Hussein's Iraqi regime before the invasion, choosing not to intervene for the sake of alliances with Iraq's neighbors, Turkey and Jordon, ensuring oil interests in the Middle East.[220]

The US government and corporate involvement in the Middle East's extractive industries continues to subvert transparency. In 2003 and 2004, the government was implicated in suppressing information from UN auditors on the business practices of Halliburton in Iraq. According to news reports, documents demonstrated that Halliburton charged, at times, more than 335 times the price of services or goods rendered.[221]

The Foreign Corrupt Practices Act was passed in 1977 specifically to ban the practice of US companies bribing foreign officials. The Act followed an SEC investigation, which revealed that more than 400 US companies had been involved in such illicit transactions. The Act specifically outlaws payments to foreign officials for the purpose of obtaining or keeping business, and oil companies can be pinpointed as one of the main contributors to the necessity of this Act, due their entrenched practice of paying bribes to oil rich country leaders in return for rights to extract oil reserves within their borders.[222]

Appendix 6: Additional Case Studies in the Infrastructure Sector

Chile's Bio-Bio Dam

When several national corruption scandals became public in 2003, the Chilean government responded with legislative initiatives designed "to prevent political patronage in high-level civil service jobs, increase government workers' salaries to reduce their susceptibility to bribes, create public funding for political campaigns, and require private campaign contributors names to be listed publicly".[223] However, a brief examination of the circumstances surrounding the construction of the Ralco Bio-Bio Dam points to the fact that ridding governmental processes of corruption can be a difficult and lengthy process.

Located in central Chile just north of Concepcion, the Bio-Bio river valley is the traditional home of several indigenous communities as well as many rare plant and animal species. This setting is also the location for several hydroelectric dams to be built by the largest foreign company in Chile, Endesa. This Spanish electricity and natural gas company has touted these projects as important development opportunities for the country, as they provide the electricity needed to spur economic growth in the region. Indigenous people living in the area have argued in vain for years that the $600 million project, affecting 3,600 hectares of temperate rainforest along 68 kilometers of the sacred river valley, will displace their communities and destroy locally workable lands and habitat.[224] The International River Network estimates that the 570 Megawatt dam will displace 600 people, 400 of whom consider the valley their sacred ancestral home.[225] The dam also impacts nearly 1,400 hectares of denuded reservoir banks, making them even more vulnerable to erosion and landslides.[226]

The Chilean Supreme Court refused to hear the case brought against the state and Endesa by potentially affected Bio-Bio valley denizens. Robert Celedon, a lawyer representing the indigenous families who refused to leave the area said, "The courts and government have decided not to respect indigenous right".[227] Chile's 1993 Indigenous Law states that indigenous lands may not be sold, but instead must be traded for land of equivalent value. The law further delineates that all land owners must consent to such transactions. However, Endesa and government officials claim that the Indigenous Law is superseded by Chile's 1982 Electricity Law, which allows the government to appropriate private property, including indigenous lands, in order to provide the public electricity.[228] Celedon's suit claimed that a 1997 ruling by Chile's environmental agency, Conama, only permitted plans for the dam to proceed under the condition that indigenous families be relocated according to indigenous law. Stating that the lawsuit should have been filed in 2000 when Endesa initially won the electricity concession, the Chile high court has been criticized for skirting the issue on an administrative procedure.[229]

An array of people dissatisfied with the governance of Chile has cited drug trafficking as a root cause of broken indigenous and environmental laws. It has been claimed that the World Bank pulled out of financing the Bio-Bio dam projects because of these issues.[230] Many in Chile have criticized Endesa's behavior with local politicians. A local businessman and former resident of the Bio-Bio valley, Hernan Echaurren, has drawn a link between contributions Endesa has made to Chilean politicians and a favorable environment within certain spheres of influence in the government.[231] Yet, the relationship between Endesa and the Chilean government is not new.

The former president of Chile, Eduardo Frei (1994-2000), was a partner in a consulting firm that helped construct Endesa's first dam on the Bio-Bio River. As president, Frei has been accused twice of getting the Ralco dam approved by removing the heads of Chile's agency for indigenous development after both men had determined the project threatened the culture of local peoples.

A senior member of the Frei administration, Jorge Rosenblut, was similarly accused of inappropriately influencing the Ralco project. In 1996, after 20 government organizations on the environment agency's committee rejected the project, Rosenblut ordered the environmental agency to move forward with the Endesa project. Critics point to Rosenblut's appointment to president of Chilectra, the power distribution firm and subsidiary of Enersis, Endesa's parent company, as proof positive that the relationship between the electricity and gas firm and government officials had become inappropriate. Former Chilean President, Patricio Aylwin has criticized Endesa's use of power and money in both Spain and Chile, stating, "The pressure that they have placed, through the use of political, economic and media influence, both on the President Frei and President Lagos administrations for the completion of Ralco, has been enormous".[232]

China's Three Gorges Dam

Three Gorges is a concrete gravity dam 175 meters high, with an electric generating capacity of 18,200 MW at a cost of $30 to $50 billion.[233] Along with its exorbitant cost, Three Gorges is controversial because of the ecological damage it has already begun to cause and the 1 to 1.2 million people it will eventually displace—the four largest displacements on record have occurred in China.[234] When first proposed in 1919 by revolutionary leader Sun Yat-sen, the dam was pitched as the solution to the country's energy needs.[235] More recently however, the project is usually touted as necessary flood control, a claim with considerable traction given that hundreds of thousands have died from floods within China, including one as recent as 1998.[236,237]

The recent history of infrastructure development within China points to the fact that dam construction is not a victimless pursuit for either the river basin communities or the environment. In fact, by far the world's most catastrophic series of dam bursts occurred in 1975 in the Chinese province of Henan, leaving approximately 230,000 dead in their wake.[238] Despite warnings from hydrologists concerning the structural soundness of the dams, economic planners as well as local and national governmental officials forged ahead, leading to the catastrophe. The Chinese government has come under significant criticism for covering up this disaster and the large loss of life for over 20 years. To place this in context, the other 200 dams that were breached or overtopped worldwide in the 20th century resulted in an estimated 13,500 casualties.[239]

Significant criticism of the project from outside of the Chinese government has also surfaced over time. While some of this commentary has originated from within China, in most cases the central government has hushed the criticism. For example, journalist Dai Qing was jailed for 10 months in 1989-90 after criticizing the project for being "the most environmentally and socially destructive project in the world".[240] By reducing the flow of the river, Dai and many others believe wastewater runoff from communities around the dam and the accumulation of toxic materials and other industrial pollutants from upstream could leach into the reservoir, creating a serious health hazard.[241] Other concerns include the pollution resulting from inundated towns and serious threats to archaeological sites. These critiques of the Three Gorges coincide with an

overarching concern with China's Western Development Program for infrastructure in general, which calls for more widely distributed roads, telephone services, and electricity in every underdeveloped village of Western China. While this goal is laudable from a short-term humanitarian perspective, infrastructure projects falling under this umbrella program generally fail to include environmental impact assessments or other plans to mitigate environmental degradation.[242]

Three Gorges has also been criticized on grounds of poor planning and management, as the project has lacked a clear separation among the roles of owner, engineer, and contractor.[243] These conflicts of interest resulting from the largely unchecked state-run project, along with a number of high profile accidents during the dam's construction, have led to charges of nepotism and inefficiency.[244] In fact, current Premier of the China, Zhu Rongji, took over the project in 1998 after publicly criticizing the dam's suspect infrastructure and corrupt contractors for years of misappropriation.[245] Despite the controversies, however, Three Gorges is well into the construction phase. Unfortunately, the flora and fauna native to the area will be decimated, some of which are already endangered. Independent accounts of the project also make it clear that corruption permeating the local authorities, and tolerated by the central government, have helped drive this unnecessary loss.

Appendix 7: List of interviews

Below is the list of interviews conducted by the team to gather supporting evidence and better insight into the issue of corruption and environmental degradation.

Nalin Kishor, World Bank – Forests Team
Interviewed on 17 February 2006
World Bank, Washington DC

Sefton Darby, World Bank – Extractive industries: oil, gas, mining, contact point for Extractive Industries Transparency Initiative
Interviewed on February 17, 2006
World Bank, Washington DC

Peter Veit, World Resources International – governance program
Interviewed on 17 February 2006
World Resources International, DC

Donal O'Neill, Shell International Exploration & Production – retired Director of External Affairs & Social Performance
Interviewed on February 22, 2006
Columbia University

Mark Levy, Columbia University – Director for Science Applications at the Center for International Earth Science Information Network. Dr. Levy contributed to the TI Global corruption report in 2001 and briefly touched upon issues of corruption in the environmental field.
Interviewed on March 20, 2006
Columbia University

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[2] United Nations Food and Agriculture Organization *Global Forest Resources Assessment 2005: Progress Towards Sustainable Forest Management.* 2005. 27 April 2006. <ftp://ftp.fao.org/docrep/fao/008/A0400E/A0400E00.pdf>.
[3] Brundtland, G. H., et al. (1987). *Our Common Future: Report of the World Commission on Environment and Development*. Oxford: Oxford University Press.
[4] G. H. Brundtland et al., *Our Common Future: Report of the World Commission on Environment and Development.* (Oxford: Oxford University Press, 1987).
[5] For instance, the Forestry Integrity Network, an initiative on improved forestry governance that is hosted by Transparency International. http://ww1.transparency.org/fin/; Transparency International' 2005 Global Corruption Report, which looked at corruption in construction and reconstruction.
[6] The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). "What is Good Governance?" 27 April 2006. <http://www.unescap.org/huset/gg/governance.htm>.
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[10] Organisation for Economic Co-operation and Development (OECD), 1997
[11]Organisation for Economic Co-operation and Development (OECD), 1997
[12] United Nations Environmental Program (UNEP). *Sustainable Management and Use of Natural Resources*. Published 2001. http://www.unep.org/newdraft/unep/sub1.htm. Accessed April, 06.
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