

# CONSERVATION FINANCE: Limitations and Opportunities

## Reflections on the Experiences of the last 15 Years

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### Introduction

Life on earth faces a crisis of historical and planetary proportions. Unsustainable consumption in many northern countries and crushing poverty in the tropics are destroying wild nature. Human impacts have increased the natural rate of species extinction by several thousand times, and have fragmented or eliminated natural environments that are essential for supporting complex biochemical and climate cycles. This mass extinction of species destroys a vast genetic storehouse that could otherwise have provided human beings with future resources. Less tangibly but no less importantly, the massive loss of biodiversity also inflicts a deep cultural, spiritual and moral wound on humanity.<sup>1</sup>

The primary response to the biodiversity crisis must be the establishment and effective management of protected areas,<sup>2</sup> and the creation of economic incentives for people to conserve biodiversity outside of protected areas. The total amount of money currently spent on protected areas around the world is estimated to be between US\$ 2 billion and \$3 billion/year.<sup>3</sup> However, the amount of money actually needed to adequately protect most of the world's threatened biodiversity has been estimated to be anywhere from two to three times the amount of current spending on protected areas (i.e., around \$5 billion/year), to as much as 20 times the amount of current spending (i.e., around US \$50 billion/year). The good news is that even this highest estimate is much less than the total global cost of providing other types of environmental goods and services such as controlling and cleaning up industrial pollution, or providing the world's poor with clean water and sanitation, or mitigating climate change, each of which may cost trillions of dollars. This is because biodiversity tends to be highly concentrated in a relatively small percentage (less than 10%) of the world's total area rather than evenly distributed around the globe.<sup>4</sup> The bad news is that even the relatively "low" cost of conserving a large

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<sup>1</sup> Conservation International, *Hotspots Revisited* (April 2004 draft), p.5.

<sup>2</sup> Bruner, A.G., Gullison, R.E., Rice, R.E., and Fonseca, G.A.B., "Effectiveness of Parks in Protecting Tropical Biodiversity. *Science* 291: 125-128 (2001).

<sup>3</sup> James, A.N., Green, M.J.B., and Paine, J.R., *A Global Review of Protected Area Budgets and Staffing*, World Conservation Monitoring Center, Cambridge, UK (1999).

<sup>4</sup> Conservation International's April 2004 draft report *Hotspots Revisited* estimates that **25 "global biodiversity hotspots" occupying only 1.4% of the Earth's land surface** collectively hold as endemics more than **44% of the world's plant species and 35% of terrestrial vertebrate species**. An additional 6.1% of the world's land surface---composed of just 5 "*high-biodiversity wilderness areas*": Amazonia, the Congo Basin, the island of New Guinea, North American deserts, and the Miombo-Mopane woodlands and savannahs of Southern Africa---collectively hold 17% of the world's endemic plants and 8% of endemic terrestrial vertebrates. Marine biodiversity is probably even more highly concentrated than terrestrial

proportion of the world's biodiversity is greater than most governments' and individuals' demonstrated "willingness to pay".

This may be because the *economic benefits of conserving biodiversity* are *often*:

- hard to trace and quantify;
- speculative and in the future (e.g., the often mentioned possibility of some day discovering a cure for AIDS or cancer based on plants from tropical rainforests);<sup>5</sup>
- based on costs which are hard to "internalize" and recover by charging consumers higher prices for end-products and services;
- more difficult to package and trade as a commodity (for example, it is possible to establish a market for trading identical universal units (e.g., tons) of carbon emissions, but it not possible to identify, measure and trade identical universal units of biodiversity across different ecosystems and different species);
- capable of being equally well provided by industrial-type monocultures (for example: replacing natural forests with endless rows of artificially planted identical pine trees might be able to provide some of the same "environmental services" such as watershed conservation and carbon sequestration); and
- outweighed by the non-economic values of biodiversity, including the aesthetic, spiritual, moral and cultural value of conserving various elements of biodiversity.

What all of this boils down to is that individuals, corporations and governments have generally demonstrated (in fact, as opposed to what they may say) a lower "willingness to pay" for conserving biodiversity than for many other types of environmental and social expenditures. By all accounts, **total global spending on biodiversity conservation** has been **declining ever since the Rio "Earth Summit" of 1992**, while other global issues have assumed higher political and budgetary priority, such as the fight against terrorism, the fight against AIDS, the fight to reduce global poverty, etc. For many of the same reasons that were just listed above, it is also much harder to attract private sector funding for biodiversity conservation.

It has actually proven quite **difficult for private investors to make money from biodiversity conservation**. Most so-called "green" businesses ventures and investment funds are not directly based on (or have a direct impact on) biodiversity conservation, but are called "green" because they generate less pollution and waste than other similar businesses. Most businesses that are directly linked to biodiversity conservation have either lost money and gone bankrupt,<sup>6</sup> or have had to be continually subsidized by grants

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biodiversity, with coral reefs estimated to hold as much as 50% of all marine species in an area that represents less than 2% of the world's oceans. Some extremely threatened areas can still be conserved at low cost, often by addressing poverty simultaneously with biodiversity conservation, whereas others (such as Mediterranean-type ecosystems) can be quite expensive to conserve.

<sup>5</sup> Stating that the economic benefits of biodiversity conservation are "often speculative and in the future" is not meant to deny or denigrate the reality of those benefits, but merely to point out that these benefits are often hard to measure and make tangible to most people, and can only rarely be captured in the form of short-term economic returns.

<sup>6</sup> This is true of companies once regularly cited as successful models, such as California-based "Shaman Pharmaceuticals" or the South African based "Conservation Corporation".

from foundations and governments.<sup>7</sup> By contrast, many investments in pollution control technology have ended up making money for the seller of the technology and/or saving money for the buyer. This is partly because businesses are usually *required* by government regulations to control or clean up the pollution that they create, based on rules and standards that apply to an entire industry. This means that no particular enterprise is disadvantaged vis-à-vis its competitors, and each one can pass on these extra costs to consumers without impairing its ability to continue making a profit. On the other hand, protected areas rarely generate profits. Hardly any protected areas in the world even generate enough revenues to cover their basic operating costs, which is why so few privately run protected areas exist.<sup>8</sup> Most attempts to generate revenues for protected areas by sustainably utilizing their biodiversity (whether through ecotourism or bioprospecting) have failed to cover a significant percentage of the basic operating costs of those protected areas.<sup>9</sup>

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<sup>7</sup> The reasons for this are complex and varied. For example, it is often said that tourism is the world's largest industry, and **ecotourism** is its fastest growing market segment, but this is largely because ecotourism starts from a very small base. The much larger category of "nature-based tourism" (which includes beach resorts and ski resorts) is just as likely to have negative impacts on biodiversity conservation as to have positive impacts. Experience over the last ten years has shown that in developing countries, by and large the only ecotourism facilities that are financially self-sustainable are very small-scale operations that cater either to the very high-end of the market (e.g., \$500/day lodges) or the very low end of the market (e.g. local people's homes that accommodate tourists for \$5/night), and whose "macroeconomic" impacts (because of the small scale of the business) rarely go beyond the nearest local village. The same is true for many other so-called eco-businesses such as butterfly farming, selling handicrafts, etc. According to some experts, the only type of "**green**" businesses that actually have significant money-making potential are those that cultivate or raise "organic" and "natural" chemical-free food. For example, the International Finance Corporation (IFC)'s Small and Medium Sized Enterprise Fund has used GEF funding to make loans enabling farmers to grow "organic" chemical-free apples in Argentina, but apple trees are neither an endemic nor a threatened species in Argentina. **Organic farming** may have the indirect effect of allowing populations of certain native species of insects and birds to increase, but so too would closing down any local heavy industries and replacing them with relatively non-polluting businesses such as software design companies and banks, but no one would therefore refer to those businesses as promoting biodiversity conservation.

<sup>8</sup> Most of the very few cases of profit-making **private protected areas** are either private "game reserves" and "safari parks" in South Africa (and formerly also in Zimbabwe) which are artificially "stocked" with the "Big Five" species of "charismatic mega-fauna" (lions, elephants, rhinos, leopards and water buffalo) in order to attract foreign tourists; or private hunting reserves in the U.S. and a few other places, which are supported by the "trophy fees" that hunters pay to kill "big game" animals. Most other private nature reserves are run at an economic loss by private conservation organizations, and require continual subsidies to keep operating.

<sup>9</sup> For example, over the last 15 years there have been hundreds if not thousands of papers written, and scores of conferences held, on the economic potential of **bioprospecting** (i.e., generating revenues by selling to pharmaceutical companies the physical access rights and intellectual property rights to utilize a particular area's endemic species of plants in order to develop and market new medicines). However, apart from one \$2 million gift (rather than a payment for specific use rights) by the Merck pharmaceutical company to Costa Rica's Institute for Biodiversity ("INBIO") in 1992, there do not appear to have been any bioprospecting deals that have generated more than \$150,000 each during the last 15 years.

## The Relative Effectiveness of Different Conservation Financing Mechanisms

Some of the conservation finance mechanisms that have captured the most public attention---such as bio-prospecting, carbon sequestration, commercial debt-for-nature swaps, and partnerships with major international corporations---have not, in fact, generated large amounts of revenue,<sup>10</sup> whereas certain other less ‘sexy’ mechanisms have actually generated many hundreds of millions of dollars each year for biodiversity conservation and protected areas. These other financing mechanisms include: direct grants to support protected areas by national governments, international aid agencies, NGOs, and foundations; and earmarking a portion of the revenues from offshore oil leases, lotteries, and local real estate taxes.

Although many large **corporations** now widely advertise their concern for saving the world’s threatened biodiversity, there have been very few cases in which corporations have voluntarily donated more than \$1 million for protected areas or biodiversity conservation (and there appear to be no cases in which a corporation has ever given more than \$20 million). The total amount of corporate funding for biodiversity conservation is quite small not only in relation to the multibillion dollar annual profits of many large multinational companies, but also as a percentage (less than 3%) of the current total annual global spending on protected areas (\$2 billion to \$3 billion/year).

Over the years there have been a number of well-reasoned proposals for various types of new global taxes or fees that could be used to support biodiversity conservation and other forms of protecting the global environment, but none of these has ever gained even modest political support (i.e., beyond the members of environmental NGOs). For example, in the early 1990s Professor Richard **Tobin** of Yale University (a Nobel Prize winner in economics) proposed that a small excise **tax** (less than 1%) be levied on all cross border currency transactions, and earmarked for protection of the global environment and poverty alleviation. Despite a number of UN-funded studies and conferences on the Tobin Tax proposal, no government has ever tried to impose such a

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<sup>10</sup> *Bioprospecting* was discussed in the preceding footnote. Rules governing international payments for **carbon sequestration** have not yet been agreed upon, and it seems increasingly unlikely that the Kyoto Protocol will be ratified by the necessary number of countries. Furthermore, many conservation organizations such as WWF have expressed strong concerns that payments by developed countries to developing countries could actually lead to negative impacts on biodiversity conservation by providing economic incentives to replace old growth natural forests with fast growing pine and eucalyptus plantations, and could also reduce incentives for developed countries to reduce their carbon emissions from industry and transportation. **Commercial debt-for-nature swaps** have only generated a total of \$112 million for conservation over the last 15 years (according to figures compiled by WWF’s Center for Conservation Finance), with almost all of this occurring in the years between 1988 and 1994, following the Latin American debt crisis. In a commercial debt-for-nature swap, a conservation organization purchases hard currency debt owed by a developing government to international commercial banks at a substantial discount from the face value of the debt (because the international banks do not expect to be fully repaid); the conservation organization then reaches an agreement with the developing country government for cancellation of the debt in exchange for payment in local currency or bonds, which is used to implement agreed upon conservation activities. (The amount of funds that have been generated for biodiversity conservation through *bilateral debt-reduction agreements* has been considerably larger, and will be discussed in the last section of this paper.)

tax. Several years ago “Friends of the Earth” proposed a global tax on sales of fuel to international airliners<sup>11</sup> that would be earmarked for biodiversity conservation and could be justified as an example of the “polluter pays” principle (i.e., a way of paying for the harmful global environmental impacts caused by airline fuel emissions). Many other different forms of “**carbon taxes**” (i.e., taxes on a variety of different types of fuel based on their relative emissions of carbon dioxide) have been proposed and in a few cases have been enacted at the national level, but in most countries such proposals have not been able to achieve sufficient political support.<sup>12</sup> Even in countries that have implemented such taxes (such as the Netherlands, Denmark and Germany), none of the resulting revenue has been earmarked for biodiversity conservation.<sup>13</sup>

Furthermore, the hopes voiced by many people after the end of the Cold War that there would be a major “**peace dividend**” consisting of government revenues that could be re-programmed from expenditures for national security to expenditures for social and environmental programs have been dashed by the sharply rising levels of armed conflict in many parts of the world.<sup>14</sup>

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<sup>11</sup> Unlike all other types of fuel, aviation fuel is globally exempted from taxes as a result of the 1944 Chicago Convention on International Civil Aviation.

<sup>12</sup> For example, in the mid-1990s most people in the U.S. (which is responsible for a quarter of all global carbon emissions) rejected a proposal for an extremely modest 5 cent per gallon increase in gasoline taxes even though gasoline prices were then at historic lows, economic growth was at historic highs, popular consciousness of global environmental issues in the wake of the Rio Earth Summit was higher than ever before or since, and the proposal was strongly supported by then U.S.-President Clinton at the height of his popularity. During the past several years, even voters in European countries with the strongest “green” political movements, such as Germany, have rolled back a number of previously enacted carbon taxes and other environmental regulations.

<sup>13</sup> Furthermore, 90% of carbon tax revenues represent taxes on automobile fuel, and have apparently had little effect on continually rising levels of automobile fuel consumption. See the 2002 EU report on “**Environmental Taxes**”, which can be found at: [www.europa.eu.int/comm/dgs/eurostat/index\\_en.htm](http://www.europa.eu.int/comm/dgs/eurostat/index_en.htm)

<sup>14</sup> Although one can point to many cases in which **violent conflict** is associated with **environmental crises** or natural resource shortages (such as Haiti, Liberia, Sudan or Ethiopia), one can also point to many examples in which this is not the case: for example, countries such as Bangladesh where an environmental crisis situation over the last 30 years has not led to any major external or internal violent conflicts; or places like the Taiwan straits, where the threat of major military conflict has risen rapidly despite the fact that both sides are among the world’s most rapidly growing economies and have experienced major decreases in their human birthrates; or the states of the former Soviet Union, where conflicts, social breakdown and economic decline are not due to any rapid exhaustion of natural resources or increase in human populations, but to other social and political factors.

## Conservation Financing Mechanisms that Raise the most Revenues

Unfortunately, there appears to be **no single panacea** for financing global biodiversity conservation, or for increasing the amount of such funding by several orders of magnitude (at least within the short- to medium-term political horizon).<sup>15</sup> In a recent 70-page publication, I have described over 30 different conservation finance mechanisms.<sup>16</sup> Some of these have been successfully used to generate many hundreds of millions of dollars for funding protected areas and for providing economic incentives for biodiversity conservation outside of protected areas. Certain other mechanisms have been used to generate sums of money that may be very significant on a local scale (in terms of funding a particular protected area or providing incentives to some of the local communities surrounding a particular protected area), but not in global or absolute terms. Still other conservation finance mechanisms could potentially generate large sums of money or provide a major incentive for large numbers of people to change their behavior, but so far have not been able to attract wide political support and have only been adopted in a few places.

The conservation finance mechanisms that have been able to generate the largest amounts of financing for protected areas and biodiversity conservation include some rather obvious and expected **“traditional” funding sources**, such as:

- national **government budget** allocations for protected areas;
- grants by **international donor agencies** such as GEF, USAID, DGIS, GTZ, etc., including grants for conservation trust funds;
- grants from **private foundations** in the U.S. that were established by wealthy individuals or families, such as the MacArthur, Rockefeller Brothers, Packard, Moore, Turner, and Goldman Foundations;
- grants by large **international NGOs** such as WWF, IUCN, Conservation International, The Nature Conservancy, Wildlife Conservation Society, Birdlife International, Flora and Fauna International, etc.; and
- visitor **entry fees**.

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<sup>15</sup> In fact, the trends may even be going in the opposite direction, as a larger and larger share of the government budget and the GDP of developed countries is allocated for taking care of their aging populations. In the U.S., 80% of the Federal Government’s total expenditures are currently for non-discretionary “entitlement” programs such as Medicare and Social Security, and this percentage will only rise. The same is even more true in the case of European countries and Japan. The only ways out of this conundrum appear to be to cut the size of such entitlement programs and/or to significantly raise taxes (both of which are probably politically impossible in the short-term, but inevitable in the long term); or else to achieve a rate of economic productivity growth (through advances in future technologies) that this would more than offset the rising costs of social welfare expenditures in developed countries and of poverty alleviation in developing countries. However, most of the past technologically based “quantum leaps” in economic productivity in the course of human history have also led to quantum increases in natural resource consumption and loss of biodiversity.

<sup>16</sup> Spergel, B. and Moyer, M., *Financing Marine Conservation: A Menu of Options* (World Wildlife Fund, Washington, DC, 2004), available on line at: [www.worldwildlife.org/conservationfinance](http://www.worldwildlife.org/conservationfinance), under “Publications”. Some of the same mechanisms are also described in an earlier publication: Spergel, B., *Raising Revenues for Protected Areas*, World Wildlife Fund, Washington DC (2001), and is also available on line at: [www.worldwildlife.org/conservationfinance](http://www.worldwildlife.org/conservationfinance)

Each of these five categories of traditional funding sources collectively provides hundreds of millions of dollars each year for biodiversity conservation and protected areas. However, the amount of money provided by the first two categories (i.e., national governments and international aid agencies) has gradually but steadily declined over the last ten years. The amount of money provided by the second two categories (i.e., foundations and international NGOs), after rising significantly during the 1990s, fell during the past few years due to declines in global stock markets which substantially reduced the value of these foundations' endowments, and also reduced the size and number of donations received by international conservation NGOs.

The last category (*protected area visitor entry fees*) is the traditional funding mechanism whose revenues could be most significantly increased (perhaps doubled or tripled), simply by periodically raising entry fees to keep pace with inflation, or by introducing dual pricing systems that charge much higher fees to foreign visitors than to locals. Many protected area systems charge entry fees that were set decades ago and/or are much less than surveys have shown that visitors (especially foreign visitors) would be willing to pay.<sup>17</sup> Many protected area systems also do a poor job of actually collecting entry fees because they have no economic incentives to do so. In many countries, revenues from entry fees simply go into the national treasury, and are not necessarily allocated to pay for staff salaries and other operating costs of the protected areas where the fees are collected. Channeling a portion of the revenues from entry fees and other types of visitor fees<sup>18</sup> and “user fees” back into the protected areas where they are collected can greatly improve management efficiency and conservation effectiveness.<sup>19</sup>

The “**non-traditional**” **conservation finance mechanisms** that have raised the largest amounts for biodiversity conservation and protected areas include:

- bilateral debt reduction agreements;
- lottery revenues;
- property tax surcharges for open space conservation;
- fees from offshore oil and gas leases; and

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<sup>17</sup> To give an example of how much visitors may be willing to pay, Ecuador's Galapagos National Park charges foreign visitors a \$100 per person entry fee, and yet the number of foreign visitors continues to rise each year. In 1989, Botswana raised its national park entry fees for foreigners by 900% to around \$30/day. This led to such a dramatic increase in total revenues that it effectively eliminated the subsidy being provided by the national government. Surveys showed that a majority of international visitors approved of the new fees. Unfortunately, however, only a fraction of the increased revenues has been invested back into maintaining Botswana's protected areas.

<sup>18</sup> There are a number of **other tourism-related fees** that have been successfully used in a few places to generate significant amounts of revenue for conservation on a local scale, but not in absolute terms or on a global scale. These include **dive fees** (e.g., in Bonaire and Palau); **airport fees** specifically allocated for protected areas and conservation (e.g., in Belize and the Cook Islands); **hotel tax surcharges** (in Majorca and in the Turks and Caicos islands); **cruise ship passenger fees** (in Alaska and Belize); and **recreational fishing license fees** and **trophy hunting fees** (in the U.S., South Africa, Namibia and several other African countries). These kinds of taxes and fees are *often strongly resisted by the local tourism industry*, which often fears that they will drive away visitors, despite evidence to the contrary based on “willingness to pay” surveys and the experiences of other countries.

<sup>19</sup> Countries such as Nepal, South Africa, Ecuador and the U.S. now have systems in which a large portion of visitor entry fees (at least in some of the most popular national parks) is retained by the particular park where the fees are collected and used for that particular park's operations.

- pollution fines and judicial damage awards.
- Each of these mechanisms will now be discussed.

**Bilateral debt reduction agreements** involve cancellation of debt owed by one government to another, in exchange for the debtor government's commitment to allocate a specific portion (usually between 10% to 75%) of the cancelled debt for agreed upon environmental programs. Almost one billion has been generated this way, but more than half of this total amount was from 1991 debt reduction agreements between Poland and several of its bilateral creditors (the U.S., France and Switzerland) that obligated the Polish government to spend \$571 million (equivalent to 10% of the cancelled debt) over an 18-year period, mostly for reducing industrial pollution (however, around 5% of the \$571 million is used for biodiversity conservation and protected areas). The U.S. government's *Enterprise for the Americas Initiative* ("EAI") of the early 1990s generated a total of \$177 million in local currencies for environmental protection and child survival projects seven Latin American countries. However, none of this money could be used to cover the basic operating costs of protected areas, since all of the money had to go to NGOs rather than government agencies. Similar restrictions apply to funds made available under the U.S. Government's *Tropical Forest Conservation Act*, which in the past 5 years has generated almost \$100 million (payable over 28 years) to fund projects by local NGOs in six countries to conserve tropical rainforests. In addition to these two U.S. Government programs, several European governments (including Germany and Switzerland) have also provided funds for biodiversity conservation and protected areas in developing countries through the mechanism of bilateral debt reduction agreements.

There are several **impediments to the wider use of bilateral debt reduction** for biodiversity conservation. First, many sub-Saharan African countries have already had 100% of their bilateral debts unconditionally canceled by the U.S. and Western European governments. Most of the remaining foreign debt of these African countries is owed to multilateral financial institutions (primarily the World Bank and IMF), which have a policy of never canceling debt but just rescheduling it instead. Second, a number of debtor and creditor countries prefer to use the funds generated by debt reduction agreements for other social purposes such as poverty alleviation and education. Third, governments or NGOs in some developing countries (such as Brazil or Sri Lanka) are suspicious that such agreements may infringe their country's future sovereign rights to do whatever it wants with its forests and other biodiversity resources. Fourth, some creditor governments feel that certain large debtors countries such as Russia should not be offered the opportunity to use this mechanism because a country like Russia has enough resources to eventually repay its bilateral debts.

**Lotteries** are used in many countries as a way of raising money for socially beneficial purposes, including nature conservation. Lottery sales worldwide are more than \$130 billion/year, representing a huge potential source of funding. For example, the Dutch Postcode Lottery has donated the equivalent of over \$1 billion to charitable organizations since 1989, including almost \$150 million to WWF Netherlands for biodiversity conservation projects around the world. Many U.S. states sponsor lotteries that allocate a specific percentage of their profits for biodiversity conservation and

protected areas. For example, the State of Oregon allocates 15% of lottery net revenues for state parks and the restoration and protection of wild salmon habitat, which amounted to \$100 million from 2001 to 2003. The major **limitations** to the wider use of this mechanism for financing conservation are that other worthy social causes usually also compete for a share of the same revenue, and the fact that lotteries are illegal in some countries and are considered immoral by many people.

**Local property tax surcharges** can be used as a way of raising funds specifically for the preservation of open spaces and natural areas that are threatened by development. Residents in many local communities have voted to impose a special additional tax on all real estate sales, or an additional surcharge on their annual property taxes, that is earmarked for the purchase of privately owned land (or future development rights) by local governments in order to maintain the land as parks or open spaces. The US states of Florida and New Jersey have each raised more than \$1 billion this way, and France also uses this mechanism. **Conservation easements** are a kind of mirror image of this mechanism: local landowners may receive a tax deduction or pay lower taxes, in exchange for legally agreeing to permanently restrict further development of their land and to conserve it in a natural state (although certain existing uses of the land may be allowed to continue). Conservation easements legally bind not only the landowner but “run with the land” and also legally bind all of his heirs or future buyers of the property. Conservation easements were first developed in the U.S. and Canada around 40 years ago and have recently been introduced in certain Latin American countries. The main **limitations** of property tax surcharges and conservation easements as a conservation finance mechanism is that they may only work well in relatively affluent communities that can afford to bear the burden of extra taxes, or can afford to offer tax breaks as an economic incentive for conservation. Furthermore, the land that is maintained as open space may not necessarily have a high biodiversity value.

**Fees from offshore oil and gas leases** have been earmarked to provide more than **\$9 billion** over the last 40 years to U.S. national and state parks through the mechanism of the “**U.S. Land and Water Conservation Fund**”. However, no other country besides the U.S. appears to use this mechanism for funding protected areas, although **Brazil** passed a law several years ago requiring that all oil and gas pipelines passing through a protected area must pay **one percent of pipeline construction costs** (as well as 1% of annual maintenance and repair costs) to that particular protected area. This type of law has the potential to generate large amounts of money for protected areas in the case of very large (multibillion dollar) pipeline projects, but must be weighed against the environmental damage caused by such pipelines. There have also been several cases around the world in which international oil companies were required by international lending agencies to “donate” a particular amount of money for protected areas near the pipelines as a condition of obtaining the loans or loan guarantees from these agencies, but the amounts have generally been relatively small.<sup>20</sup>

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<sup>20</sup> For example, as a condition for receiving World Bank loan guarantees, Exxon Corporation was required to contribute \$3 million to a trust fund for three protected areas through which the new \$4.5 billion Chad-Cameroon pipeline is being constructed.

## Pollution fines and judicial damage awards

U.S. courts have sometimes required industrial polluters, in addition to paying the costs of pollution clean up and paying fines, to also finance long-term efforts to conserve the rivers, lakes or shorelines that they polluted. Polluting companies have been ordered to pay tens of millions of dollars to establish conservation trust funds (managed by local conservation NGOs and government agencies) for areas such as New York's Hudson River and Virginia's James River. After the catastrophic Alaska oil spill caused by Exxon Corporation's oil tanker *Valdez*, Exxon was ordered to pay more than \$4 billion, much of which was used to pay for restoring damaged ecosystems and compensating local fishermen for their economic losses. However, approximately \$1 billion was used to establish a permanent trust fund that, among other things, has been used for buying pristine forest areas that would otherwise have been sold to logging companies by landowners (including Native Alaskan tribal corporations) who had no other significant source of cash income, and turning these forests into protected areas for conserving endangered species such as the Kodiak bear. Although no one would wish for catastrophic oil spills to happen, in cases where they do occur the Exxon *Valdez* example from Alaska shows how this can become a mechanism for financing long-term biodiversity conservation and protected areas. However, this type of mechanism cannot be applied in many civil law countries whose laws require that all pollution fines must go into the national Treasury and cannot be earmarked for particular purposes; or whose laws forbid the award of "punitive damages" over and above the amount of money that is actually required to clean up the pollution damage and compensate people for direct economic losses. Nevertheless, it may be possible in some countries to change the laws to allow for this kind of mechanism, particularly if there is great public indignation immediately after a major pollution incident, although industry representatives can be expected to lobby strongly against such legal changes.<sup>21</sup>

Finally, there appears to be one potentially major source of revenue for biodiversity conservation and protected areas that has hardly been tapped so far. This would be to **redirect** part of the hundreds of billions of dollars spent each year by governments in developed countries to provide **agricultural and fishing subsidies**, which often have very environmentally damaging effects, and instead to use part of this money to pay for biodiversity conservation. Unfortunately, however rational such proposals can be demonstrated to be by economists and environmentalists, they can be expected to generate great political resistance by the lobbies representing farmers and fishermen.

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<sup>21</sup> The **pollution charges** levied in many Eastern European countries to raise hundreds of millions of dollars each year are a different but related type of environmental financing mechanism. Based on the quantities of particular pollutants that are emitted by particular factories or vehicles, they essentially constitute a license to continue polluting by paying a fee. The fee may or may not be high enough to act as an incentive for polluters to change their behavior or install pollution control devices. The revenues raised by such fees is typically earmarked by government agencies for environmental investments to improve air and water quality, but occasionally are also used to pay for biodiversity conservation and protected areas (and could certainly be used this way to a greater extent in the future).