

ECONOMIC INCENTIVES AND LEGAL TOOLS FOR PRIVATE SECTOR CONSERVATION

IAN BOWLES,^{*} DAVID DOWNES,^{**} DANA CLARK,^{***} AND
MARIANNE GUÉRIN-MCMANUS^{****}

I. INTRODUCTION

Policymakers have long recognized the fundamental role of the private sector in economic development. At the same time, public concern about environmental issues like clean drinking water, over-consumption of natural resources, and worldwide loss of tropical forests has grown explosively and led policymakers to devote more attention to these issues. To reconcile these seemingly competing agendas, governments, the private sector, and the public at large are increasingly seeking ways to advance natural resource conservation and economic development as partners. This article explores the use of economic incentives and legal tools to achieve that goal.

A leading political opportunity to create economic incentives is currently at hand. Many nations are considering ways to implement the Convention on Biological Diversity, now ratified by over 160 countries.¹ Article 11 of the Convention requires countries to create economically and socially sound incentives for conservation.² It is hoped that this paper will give policymakers, private sector representatives, and the public at large new ideas about how to make economic incentives work for biodiversity conservation.

Events like the 1992 Earth Summit in Rio de Janeiro, the largest gathering of heads of state in history, testify to intensified concern about the impact of human activities on essential natural resources. Celebrations of Earth Day continue to grow in visibility and build awareness of environmental issues. Problems like the loss of global biodiversity have become more concrete to the average citizen. Investments in biodiversity conservation are increasingly recognized as investments in avoiding disease, maintaining global climatic systems,

* Vice President and Director of Policy Department, Conservation International.

** Senior Attorney with the Center for International Environmental Law.

*** Senior Attorney with the Center for International Environmental Law.

**** Director of Conservation Finance Program, Conservation International.

1. See Convention on Biological Diversity (last modified Nov. 19, 1997) <<http://www.biodiv.org/conv/ratification.pdf>>.

2. See *United Nations Conference on Environment and Development: Convention on Biological Diversity*, 31 I.L.M. 818, 827 (1992).

protecting agriculture, and reducing the political and social stresses caused by populations that lack natural resources and viable livelihoods. These considerations are of particular importance to developing countries rich in biological resources.

This growing awareness of the importance of biodiversity conservation indicates that ignoring these issues is no longer a rational economic choice for the private sector. Business must address the link between economic and environmental issues, not only because governments may force them to do so, but also because consumers demand it directly. Witness the shift in preferences toward “green” products. Consumers—whose force will grow as markets become increasingly global—are pushing businesses to contribute to environmental protection. In the face of these trends, blending conservation and development has become increasingly important.

In the early days of environmental protection, partnerships between business and environmental interests were usually forced. Governments and environmental activists viewed strict regulation as the only way to achieve environmental goals. In the conservation field, the aim was to place certain critical natural areas outside of the reach of development and carefully monitor resource uses like mining, logging, and agriculture. While these approaches remain a cornerstone of conservation policy, there is a growing movement toward using economic incentives to help accomplish environmental goals. The challenge is to craft such incentives to encourage the private sector to conserve resources while still achieving sustainable economic development.

Economic incentives as a method of encouraging private sector involvement are advantageous as they can accomplish major conservation actions at a lower cost than traditional approaches. Government expenditures for strict regulation of land use or the purchase and management of protected areas can be prohibitively high, particularly in developing countries. While tax incentives for conservation may reduce government revenues slightly in the short run, in the long run, the overall economy benefits from resulting resource conservation. For example, conservation incentives can promote sustainable economic activities such as ecologically sound tourism and recreation that might otherwise be foreclosed.

This paper presents an introduction to economic incentives for the conservation of biodiversity.³ It is intended for use by govern-

3. See *generally* CYRILLE DE KLEMM & CLARE SHINE, BIOLOGICAL DIVERSITY

ment and private sector representatives who wish to design and implement policies that encourage private sector participation in conservation activities. Part II outlines the legal mechanisms that allow private actors to support conservation. Part III reviews the types of tax policies that can reward landowners for using these conservation mechanisms. Part IV discusses several other economic instruments, such as user fees and performance bonds, and also notes opportunities to eliminate “perverse” incentives that encourage destruction of biodiversity. Part V includes a list of recommendations intended to distill some of the ideas presented.

II. LEGAL TOOLS FOR PRIVATE CONSERVATION

There are several important legal tools that private actors can use to accomplish conservation. The simplest and most obvious is a gift of land, money, or securities to a conservation organization or government agency. A second approach is the “conservation easement,” a tool for permanently conserving land by restricting most forms of new development while allowing landowners to use it for limited purposes consistent with conservation. A third tool is the conservation agreement, in which a landowner keeps full ownership of the land, but enters into a legal contract with a government agency or a conservation organization in which the owner commits to manage the land so as to ensure conservation. Finally, exchanges of public and private land can involve the private sector in conservation and allow efficient use of government resources. To increase the incentive for conservation, these legal tools are often combined with tax policies that encourage their use. As Part III explains, governments can design tax policies that reduce the tax burden on private actors who engage in environmental protection and biodiversity conservation.

A. *Donations*

Gifts of land to conservation organizations or government agencies that are committed to protecting the land in perpetuity are one obvious way for private parties to support conservation. Donations of money or securities to conservation organizations can also help promote conservation. To make this technique meaningful, the re-

CONSERVATION AND THE LAW: LEGAL MECHANISMS FOR CONSERVING SPECIES AND ECOSYSTEMS (1993); DANA CLARK & DAVID DOWNES, WHAT PRICE BIODIVERSITY?: ECONOMIC INCENTIVE AND BIODIVERSITY CONSERVATION IN THE UNITED STATES (1995).

recipient of a donation of land or money must clearly be capable of carrying out effective conservation activities. If the government encourages such donations through tax incentives, it should also create mechanisms to ensure that the tax benefits are available only for donations to qualified conservation organizations.

B. *Conservation Easements*

An "easement" is a property concept that originated in common law systems.⁴ If a piece of property is subject to an easement, the owner is not the only person who has rights to the property; limited aspects of the ownership rights are held by the owner of the easement.⁵ Creation of an easement is possible in most common law countries because property ownership is understood to consist of a bundle of rights, many of which are independent of one another. Because they are independent, these rights can be sold or granted individually, as through easements.⁶

Essentially, a conservation easement sets apart the right to engage in certain types of land use -- such as intensive development -- from the other ownership rights over a specific parcel of land.⁷ Activities covered by the easement may be exercised only by the holder of the easement. However, the property owner continues to own title to the land and can use it for limited purposes that do not interfere with the easement.⁸

Once created, easements "run with the land" and bind future owners of the primary interest in the land.⁹ In other words, if the owner transfers title to the land, future owners are also bound by the easement's limitation. This permanency is an important advantage of easements.

Conservation easements became practicable only when common law jurisdictions made changes in the historic concept of easements. Originally, easements by definition benefited one parcel of land, the "dominant tenement," by burdening another, the "servient tenement." An easement could exist only if there were both a dominant and servient tenement adjacent to one another.¹⁰ The classic type of

4. See DE KLEMM & SHINE, *supra* note 3, at 172.

5. See *id.*

6. See *id.*

7. See *id.*

8. See *id.*

9. See *id.*

10. See *id.*

easement is a "right of way," in which the owner of the dominant tenement has the right to traverse the adjacent servient tenement.¹¹ A significant change occurred when common law jurisdictions began to eliminate the requirement of a dominant tenement adjacent to the servient tenement.¹² As a result, conservation organizations and private landowners could advance conservation goals by designing easements that are not connected to any other parcel of land.

In most jurisdictions, a conservation easement is created when the landowner transfers some or all rights to develop the property to a government agency or qualified conservation non-governmental organization (NGO);¹³ the landowner can maintain certain uses but cannot legally take actions inconsistent with the terms of the conservation easement. The government agency or conservation organization, as owner of the easement, has the legal right to block incompatible uses of the land.¹⁴ For the conservation easement to be effective, the agency or organization must be committed to monitoring the use of the land and protecting the conservation purpose of the easement in perpetuity.

Conservation easements are used in many common law jurisdictions, including over thirty states in the United States¹⁵ as well as a growing number of provinces in Canada.¹⁶ For example, Minnesota has provided for the establishment of permanent easements protecting wetlands.¹⁷ Massachusetts authorizes the creation of conservation restrictions, including easements, that limit land use.¹⁸ Local governments are authorized by statute to acquire such easements.¹⁹ Legislation requires judicial enforcement of such conservation restrictions where they are held by a local authority and approved by the state

11. *See id.*

12. *See id.* at 172, 242; *see also* Daniel C. Stockford, *Property Tax Assessment of Conservation Easements*, 17 B.C. ENVTL. AFF. L. REV. 823, 824 (1990).

13. In theory, private individuals could purchase conservation easements as well, but they would not receive any favorable tax treatment for doing so because relevant tax policies limit the types of easement holders that can receive tax benefits. *See discussion infra* Part III of tax incentives for easement.

14. *See* DE KLEMM & SHINE, *supra* note 3, at 172.

15. *See* Stockford, *supra* note 12, at 824 (listing states with legislation authorizing conservation easements).

16. *See* DE KLEMM & SHINE, *supra* note 3, at 243-44 (summarizing recent survey of Canadian provinces).

17. *See* MINN. STAT. §§ 103F.515, 103F.516 (1997). Minnesota also provides that land subject to such an easement is exempt from property taxation. *See id.* § 272.02.

18. *See* MASS. GEN. LAWS ch. 184, § 31 (1996).

19. *See id.* ch. 40, § 8C.

government, and where they are held by a non-profit conservation organization and approved by the local and state authorities.²⁰

Conservation easements are valuable because they allow private citizens to take an active role in protecting their lands. Government funding is an important way to support and promote the use of easements. In the United States, for instance, the federal government facilitates conservation of wetlands through the Wetlands Reserve Program. The program is designed to “assist owners of eligible lands in restoring and protecting wetlands” by allowing the Department of Agriculture to purchase conservation easements.²¹ The owner must grant an easement of at least 30 years, a permanent easement, or an easement lasting the maximum amount of time allowed by state law.²² The owner must also agree to implement a wetland conservation plan.²³ Compensation is based on the difference in fair market value of the land before and after the easement is recorded.²⁴ There are also provisions for cost sharing and technical assistance.²⁵ Other states in the U.S. have similar programs to purchase easements on wetlands.²⁶

As with other property rights, conservation easements may be either donated or sold. The sale of a conservation easement is an attractive option from the owner’s perspective because, in addition to receiving the negotiated purchase price for the value of the easement, the owner continues to own and use the property for all purposes compatible with the easement. The restrictions contained in the easement often benefit the owner and reflect his or her desires for the long-term use of the land.²⁷

Purchasing conservation easements at their market price is less attractive from the perspective of conservation groups due to limited funding. To encourage donations of conservation easements, a number of jurisdictions specifically provide that a conservation easement qualifies as a charitable contribution, enabling a landowner to deduct its value from her taxable income.²⁸ Furthermore, tax laws in some jurisdictions provide that the transfer of a conservation easement re-

20. *See id.* ch. 184, § 32.

21. 16 U.S.C. § 3837, 3837a (1994).

22. *See id.* § 3837a(e).

23. *See id.* § 3837a(a).

24. *See id.* § 3837a(f).

25. *See id.* § 3837c.

26. *See, e.g.*, MINN. STAT. § 103F.515 subd. 3, 6 (1997).

27. *See DE KLEMM & SHINE, supra* note 3, at 172.

28. *See id.* at 245.

sults in a lower property tax valuation for the owner recognizing that limiting the use of the property reduces its fair market value.²⁹ Thus, properly designed tax policies can vastly increase the benefits to a donor granting conservation easements. (These policies are detailed further in Part III, below.)

Permanent conservation easements are currently not considered possible in many civil law jurisdictions. Civil law typically requires the existence of a dominant and servient tenement, with the holder of the dominant tenement retaining ownership of a partial property right such as an easement.³⁰ Further, civil law may require that dominant and servient tenements be contiguous.³¹ However, certain exceptions are being developed in a number of jurisdictions.³² Modifications in national legislation or creative use of existing concepts in civil law countries to accommodate conservation easements could be a bold step forward for conservation, with both private actors and the public being able to enjoy the benefits.

In Switzerland, the Civil Code provisions related to easements do not require that the dominant and the servient tenements be contiguous.³³ Additionally, the 1966 Swiss Act for the Conservation of Nature and Landscape (currently under revision) explicitly provides for voluntary agreements between a governmental agency (or a private association) and a landowner in order to create a conservation easement.³⁴ To date, conservation easements in Switzerland have been used primarily to protect agricultural lands.³⁵

In Germany, the Civil Code allows the establishment of a "limited servitude" ("Beschränkte Persönliche Dientbarkeit") on a piece of land, for the benefit of persons, organizations, or the State, in a way that can (1) relinquish the owner/user's rights to use the land or a portion of it, and (2) allow the easement's beneficiary to use the land within specific limitations.³⁶ A "Limited Personal Servitude" can have an economic or non-economic purpose. The only requirement

29. See Stockford, *supra* note 12, at 845.

30. See DE KLEMM & SHINE, *supra* note 3, at 244.

31. See *id.*

32. See *id.*

33. CC arts. 730.2, 731.1, 733, 738.1.

34. Interview with Mr. Roger Zusserey, Ministère de l'Environnement, des Forêts et du Paysage (May 8, 1995)

35. See *id.*

36. See DAVID D. GREGORY, *THE EASEMENT AS A CONSERVATION TECHNIQUE* app. II at 44-45 (1972).

of the German Civil Code is that the purpose of the agreement must be clearly defined.³⁷

However, German organizations wanting to acquire limited land-use rights to achieve conservation goals continue to face legal obstacles. One problem is that the personal servitude is inalienable and non-transferable, and expires when the assignee institution is dissolved.³⁸ This difficulty is complicated by laws which provide for the expiration of the personal servitude in case of a forced sale initiated by creditors whose claim was recorded prior to the servitude.³⁹ These obstacles can be addressed and overcome, but to date they have appeared to prevent the widespread use of conservation easements in Germany.

In Costa Rica, the notion of conservation easements was recognized when the Public Registry recently adopted a new code, the "GF3," specifically for conservation easements.⁴⁰ Under the new regulations, these easements are temporary or permanent land use limitations imposed by private landowners.⁴¹ While some of the landowners receive compensation by selling such easements, others create them to increase the value of their real estate or to promote conservation.⁴²

One example is the conservation easement recently created near the Monteverde Cloud Forest National Park in Costa Rica. This agreement between The Nature Conservancy and the Tropical Science Center protects 42 acres of land, including migratory habitat for the Quetzal, which uses this area as a stopping point, feeding on the Aguacatillo tree endemic to the area.⁴³ Another example is the Braulio Carrillo National Park, where a tract of land abutting the Park is covered by an easement.⁴⁴ Under the terms of the easement, a private company is allowed to operate a cable car for tourists providing an aerial view of the rain forest and adjacent park. While it provides revenue for the park, the easement serves an additional con-

37. *See id.* at 44.

38. *See id.*

39. *See id.*

40. *See* Lic. Augustin Atmetlla, *Manual de Instrumentos Juridicos Privados para la Proteccion de los Recursos Naturales II-2* (1995).

41. *See id.*

42. *See id.*

43. *See id.*

44. *See id.*

servation benefit by setting limits on foot traffic near the cable car in order to reduce the damaging ecological impact to the area.⁴⁵

Another legal tool in common law jurisdictions similar to the easement is the covenant. This special type of property contract is permanent and binds future owners, like an easement.⁴⁶ It is used most often between private parties such as real estate developers and home-buyers. In this situation, the agreement by which an owner transfers title (or transfers a lease to a tenant) can include a covenant that imposes conditions on the use of the land. These conditions also bind future owners of the land and can be used for conservation purposes.⁴⁷ Governments could encourage the creative use of covenants to protect greenspace or trees in suburban areas. Commentators have observed, however, that some civil law jurisdictions may not permit contracts that bind future owners.⁴⁸

C. *Conservation Agreements*

Another widely used mechanism for private conservation is the conservation agreement. In a conservation agreement, the owner makes a legal agreement to manage the property to accomplish a defined environmental or conservation goal, but does not transfer an ownership right.⁴⁹ It may be possible to design conservation agreements for immediate use in jurisdictions where conservation easements are not possible because laws have not yet been revised to permit their use. Conservation agreements are becoming increasingly important in a growing number of jurisdictions.⁵⁰

In a conservation agreement, the landowner agrees to manage his property according to specific terms, in exchange for payments from a government agency.⁵¹ For example, a farm owner might agree not to disturb native vegetation, or to adjust the harvest cycle to account for habitat needs of native animals or birds. In order to maxi-

45. *See id.*

46. *See* John L. Hollingshead, *Conservation Easements: A Flexible Tool for Land Preservation*, 3 ENVTL. LAW. 319, 330-31 (1997). Traditionally, covenants included in the instrument for land sales were "restrictive," limiting the activities of the purchaser; covenants included in leases, on the other hand, could impose positive obligations on the purchaser.

47. *See id.*

48. *See id.*

49. *See* CYRILLE DE KLEMM & CLARE SHINE, *THE CONSERVATION OF NATURAL HABITATS OUTSIDE PROTECTED AREAS: A COMPARATIVE LEGAL ANALYSIS OF THE UNITED KINGDOM, FRANCE, AND ITALY (PART II, FRANCE)* 245 (1993).

50. *See id.*

51. *See id.*

mize the effectiveness of such arrangements, governments usually make periodic payments rather than a lump sum payment. Such a system maintains the financial incentive for the landowner to continue compliance. Governments can also encourage owners to form and comply with conservation agreements by creating tax incentives, as discussed in Part III below.

Unlike easements, conservation agreements generally last only for a specified period of time, after which they must be renewed if the land is to remain protected. Also in contrast to easements, conservation agreements do not qualify as transfers of property for purposes of the charitable contribution deduction.⁵² Furthermore, they generally will not result in a lower property tax assessment, because they are not usually permanent. Nevertheless, governments could design income and property tax policies that treat owners favorably when they enter into conservation agreements.

While conservation agreements typically bind only the current landowner, a growing number of jurisdictions provide for conservation agreements that bind future as well as current owners. In the United Kingdom, for example, management agreements between the government and holders of National Nature Reserves and Sites of Special Scientific Interest are generally defined as "contracts in rem, which run with the land," enforceable against those who succeed the current owner.⁵³ Similarly, Australia⁵⁴ and Queensland⁵⁵ have passed legislation authorizing the government to form conservation agreements with landowners in certain areas restricting land use or requiring conservation actions. These agreements can also apply to the owners' successors in interest.⁵⁶

Conservation agreements have the drawback of usually requiring continued government expenditures and supervision. In addition, an owner with no intention of developing his land might sign an agreement merely restricting development to receive payments.⁵⁷ While landowners should be encouraged to promote conservation, governments can ensure that expenditures have an added impact by requir-

52. *See id.*

53. *See* CYRILLE DE KLEMM & CLARE SHINE, *THE CONSERVATION OF NATURAL HABITATS OUTSIDE PROTECTED AREAS: A COMPARATIVE LEGAL ANALYSIS OF THE UNITED KINGDOM, FRANCE, AND ITALY (PART I, UNITED KINGDOM)* 50 (1993).

54. *See* Endangered Species Protection Act, §§ 50-55, 4 Austl. Acts 194 (1992).

55. *See* Nature Conservation Act, § 41, 1 Queensl. Acts 20 (1992).

56. *See* Endangered Species Protection Act, 1992, pt. 4 (Austl.); Nature Conservation Act, 1992, pt. 4 (Queensl.).

57. *See* DE KLEMM & SHINE, *supra* note 53, at 31, 50.

ing an owner to take positive steps, in addition to merely avoiding destructive activity, to qualify for payments under a conservation agreement.

Many jurisdictions have programs to support conservation agreements. Switzerland, for example, allows government payments to farmers who maintain meadows and grasslands in their natural condition.⁵⁸ In order to receive the payments (considered compensation for ecological services performed in the public interest), the farmers must agree not to graze animals or drain, irrigate, or fertilize these areas.⁵⁹ Liechtenstein sponsors a similar program.⁶⁰

In the United States, the Conservation Reserve Program ("CRP"), enacted as part of the 1985 Farm Bill, is a voluntary program which encourages farmers of highly erodible crop lands to establish and maintain soil-conserving ground covers (such as trees or grasses) for a ten-year contract period⁶¹ in exchange for periodic government payments.⁶² The goals of the CRP program are: to reduce water and wind erosion and sedimentation; to improve water quality; to create better habitat for fish and wildlife through improved food and cover; to protect the nation's long-term capability to produce food and fiber; to curb production of surplus commodities; and to provide needed income support for farmers.⁶³

D. *Land Exchanges*

Land exchanges can also support conservation while minimizing government expenditures. Such exchanges between the government and private parties can conserve biologically valuable land through public ownership. In addition, conservation groups can use exchanges between private parties as tools to accomplish conservation.

In the United States, the Department of the Interior has the power to make land exchanges under the Federal Land Policy and Management Act ("FLPMA").⁶⁴ The Department can exchange

58. See DE KLEMM & SHINE, *supra* note 3, at 247 (citing ORDONNANCE INSTITUANT DES CONTRIBUTIONS A L'EXPLOITATION DU SOL DANS DES CONDITIONS DIFFICILES ET POUR DES PRESTATIONS DE CARACTERE ECOLOGIQUE, 20 Decembre 1989).

59. See *id.*

60. See *id.*

61. See 16 U.S.C. §§ 3831-32 (1994).

62. See *id.* §§ 3833-34.

63. See 7 C.F.R. § 704.1(b) (1997).

64. See 43 U.S.C. § 1701 (1994) (declaring that it is United States policy to transfer and acquire federal lands, through land exchange and other means, in order to serve the national interest, including protecting the quality of ecological, environmental, and scientific values).

publicly owned land for private land of comparable market value in order to serve the public welfare.⁶⁵ In this way, the government can acquire land of significant biological value owned by a private actor in exchange for publicly owned land of perhaps less biological value but of value to a private landholder. For example, in 1988 an American company transferred 100,000 acres of ecologically rich land in Florida to the government in exchange for 100 acres of commercially valuable real estate in downtown Phoenix, Arizona.⁶⁶

Carefully designed land exchanges provide governments with an efficient means of accomplishing public interest conservation goals, while allowing private actors to advance private economic goals. To be successful, a land exchange policy or program must include: (1) a procedure for ensuring that the land to be acquired is valuable for conservation; and (2) a procedure for ensuring that the government negotiates a reasonable bargain and does not accept too little in exchange for public lands. To be effective, these procedures must involve expert assessment, public participation, and judicial review of the agency decision-making process.

III. TAX INCENTIVES FOR CONSERVATION

Tax law is crucial to implementing the legal tools described above, because it provides important incentives to private actors to initiate conservation activities. This section discusses some specific tax policies that encourage private support of conservation.

A. *Income Tax Deduction*

To create support of non-governmental conservation organizations or initiatives, one of the single most important steps governments can take is to create a positive tax climate for conservation. In Germany, a taxpayer can deduct the value of a charitable donation from taxable income up to a ceiling amount.⁶⁷ To be eligible, the donation must be given to an environmental organization or to the

65. See *id.* § 1716 (establishing criteria and procedures for exchanges of public lands or lands within the National Forest System and private lands when such an exchange is in the public interest, considering a range of needs, including recreation and fish and wildlife).

66. See Bruce Babbitt, *The Endangered Species Act and Takings: A Call for Innovation Within the Terms of the Act*, 24 ENVTL. L. 355, 365 (1994) (citing Land Exchange Agreement between the United States of America and the Barron Collier Company, dated May 12, 1988, on file with Department of the Interior).

67. See Friedrich Von Zezschwitz, *Environmental Taxes in Germany*, in TAXATION FOR ENVIRONMENTAL PROTECTION: A MULTINATIONAL LEGAL STUDY 65, 91 (Sanford E. Gaines & Richard A. Westin eds., 1991).

states, districts, communities, or their agencies in order to promote protection of the environment, the landscape, or ancient monuments.⁶⁸ Similarly, the United States allows for a federal income tax deduction for qualified charitable contributions up to a maximum ceiling of 30 percent of the taxpayer's adjusted gross income.⁶⁹ These tax code provisions are a valuable incentive, encouraging millions of donors to donate funds to non-profit organizations, including conservation groups.⁷⁰

1. Contribution of Land

Donation of land can be a very important conservation tool. Tax policies of some countries encourage such donations by specifying that donations of land can qualify for the charitable contribution income tax deduction. In the United States, the tax code specifies that a person contributing qualified real property to a qualified organization exclusively for conservation purposes can deduct the value of the property interest from taxable income as a charitable contribution up to the ceiling amount.⁷¹ This provision has proven to be a significant incentive for conservation of biodiversity.

As a practical matter, in the United States a donor can often obtain more favorable tax treatment by directly donating real property rather than donating cash.⁷² For example, if a donor sells a piece of property, intending to donate the proceeds, normal income tax or capital gains tax apply to returns from the sale, thus diminishing both the funds available for the donation and the resulting value of the tax deduction.⁷³ However, if the donor contributes the property directly, the full value of the property is deductible (up to the ceiling amount) and capital gains taxes are avoided.⁷⁴ Furthermore, where the property has appreciated in value, the donor can deduct the appreciated value, rather than the original purchase price, and thereby qualify for a substantial deduction while avoiding capital gains taxes.⁷⁵ Under

68. *See id* at 91.

69. *See* 26 U.S.C. § 170 (1994). The amount of a contribution exceeding 30 percent of the adjusted gross income in a given year can, however, be carried over and deducted over the next five years. *See id*.

70. *See* Von Zezschwitz, *supra* note 67, at 91.

71. *See* 26 U.S.C. § 170.

72. *See id*.

73. *See id*.

74. *See id*.

75. *See id*.

U.S. law, charitable donations of both cash and certain types of property are tax deductible.

2. Contribution of Conservation Easement

Another tax policy that increases the incentives for donors to support conservation is one that allows donations of conservation easements to qualify as charitable contributions that are deductible from taxable income. Federal law in the United States provides that, in general, a property donor must convey his entire interest in a property to qualify for the charitable contribution deduction.⁷⁶ However, an exception exists for a qualified conservation interest that is deductible as a charitable contribution, even though it is only a partial interest in real estate.⁷⁷ A qualified conservation interest is defined as an interest in real estate given in perpetuity for the purposes of land preservation, public education or recreation, protection of a natural habitat, preservation of open space, or pursuant to government conservation policy.⁷⁸ Thus, the donation of a conservation easement is deductible as a charitable gift as long as the easement is solely for conservation purposes and is given to a qualified conservation organization or public agency.⁷⁹ Conservation easements can also reduce property taxes, as discussed in Part III.C below.

B. *Tax Deductions for Certain Types of Land Use*

Another possible tax measure encouraging conservation of resources is to allow deductions from taxable income of expenses that landowners incur in taking specified measures for conservation. In the United States, farmers may deduct the costs of soil and water conservation measures from their taxable income.⁸⁰ To qualify, such expenses must be incurred in the process of carrying out a soil conservation plan approved either by the U.S. Soil Conservation Service or a comparable state agency, and must not involve the dredging or filling of wetlands.⁸¹ The deduction is limited annually to 25 percent of the taxpayer's gross income from farming; any expenses above this limit can be carried over to succeeding tax years without time limita-

76. *See id.*

77. *See id.*

78. *See id.*

79. *See id.*

80. *See* 26 U.S.C. § 175(a) (1994).

81. *See id.* § 175(c)(3).

tion.⁸² In another example, Italy's Protected Areas Act provides that non-commercial organizations may deduct from taxable income any expenses incurred in maintaining and protecting property that is within a natural area designated for protection under other conservation laws.⁸³

C. Tax Exemptions

A variation on the idea of a tax deduction is the tax exemption. In addition to making donations or certain expenditures deductible from taxable income, governments can encourage conservation by exempting certain activities or property devoted to certain purposes from taxation.⁸⁴ Examples include income and sales tax exemptions on qualified non-profit organizations and property and estate tax exemptions, discussed below.

1. Property Tax Exemptions and Reductions

Some governments have tax policies that reduce or eliminate property taxes on land of ecological significance if the owner agrees to manage the land for conservation purposes.⁸⁵ In addition, governments can provide property tax incentives for transfers of conservation easements by recognizing the transfer of a conservation easement as a reduction in the value of the property for tax assessment purposes. (This incentive supplements the incentive provided by the income tax deduction described in Part III.A.2 above.)

a. Tax Exemptions

Tax exemptions have been instituted in some U.S. states and in the Canadian province of Ontario.⁸⁶ In Minnesota, undisturbed wetlands and ungrazed native prairie are exempt from state property taxes.⁸⁷ However, to qualify as a wetland and receive such an exemption, the land must be "usable for farming but restricted to uses en-

82. See *id.* § 175(b).

83. See CYRILLE DE KLEMM & CLARE SHINE, THE CONSERVATION OF NATURAL HABITATS OUTSIDE PROTECTED AREAS: A COMPARATIVE LEGAL ANALYSIS OF THE UNITED KINGDOM, FRANCE, AND ITALY (PART III, ITALY) 54 (1993).

84. Preferential tax treatment of socially desirable activity is the ideal policy. In practice, however, preferential tax treatment is often accorded to activities benefiting politically powerful interests that sometimes have large social and environmental costs. See *infra* Part III.H.

85. See DE KLEMM & SHINE, *supra* note 3, at 241; see also Stockford, *supra* note 12, at 844-45.

86. See *id.*

87. See MINN. STAT. ANN. § 272.02(10), (11) (West Supp. 1998).

compassing wildlife or water conservation purposes,” and it must be “preserved in its natural condition.”⁸⁸ The Commissioner of the Department of Natural Resources must certify that a property qualifies as native prairie before the tax authority will grant a native prairie exemption.⁸⁹

Brazil provides a property tax exemption to encourage the creation of reserves on private lands.⁹⁰ By Decree No. 98,914 of January 1990, the President gave the power to regulate protected reserves to the Brazilian Institute of Environment and Renewable Resources (IBAMA), a government agency.⁹¹ Under the authority granted by the decree, IBAMA has the power to declare private lands as special natural patrimony reserves, where they are identified as having biological or scenic value.⁹² Hunting, fishing, capturing animals, burning, and deforestation are banned within the protected reserves.⁹³ In addition, Article 3^o(e) of Law 4771, the Brazilian Forestry Code, defines lands that may be protected, including lands of scientific, historic or exceptional aesthetic value. Private lands so designated are exempt from federal tax.⁹⁴ However, poor enforcement of use restrictions is a serious problem.

In Guatemala, businesses or individuals may designate a portion of their property as a private natural reserve.⁹⁵ Property owners who do so are exempt from property taxes on the portion of land so designated.⁹⁶ In order to qualify for the exemption, the owner must manage the reserve according to the established requirements, and the reserves must be recognized by the government.⁹⁷ However, this law has had little practical impact as tax collection has not been strict. Thus, there is no significant difference in actual tax treatment of protected areas and unprotected areas, providing little incentive to take

88. *Id.* § 272.02(10).

89. *See id.* § 272.02(11).

90. *See* Programa de Reserva Particular do Patrimônio Natural (RPPN) Decreto No. 98.914 de 31 de Janeiro de 1990, Art. 1^o.

91. *See id.*

92. *See id.*

93. *See id.* at Art. 5^o.

94. Colentânea da Legislação Federal de Meio Ambiente, Brasília: Instituto Brasileiro do Meio Ambiente e dos Recursos Natruais Renováveis 1992, Lei. 4,771 de 15 de Setembro de 1965, Art. 3^o (e), 18 § 2^o.

95. *See* Decreto 4/89, Ley de Areas Protegidas, Art. 31 (published by CONAP: Consejo Nacional de Areas Protegidas). In practice, the regulatory agency, CONAP, reportedly visits the site before approving the designation

96. *See id.*

97. *See id.*

advantage of the exemption. Efforts to strengthen tax enforcement might therefore result in both fiscal and conservation benefits.

b. Tax Reductions

A number of jurisdictions in the United States have recognized that land has reduced market value when subject to an easement restricting development and have therefore provided lower taxes on land burdened by a conservation easement. As a result, property taxes (usually assessed and collected by a local government rather than the federal government) may diminish commensurately; indeed, many jurisdictions have explicitly provided for this in legislation.⁹⁸ Thus, in addition to obtaining a federal income tax deduction, property owners can significantly decrease their property and estate taxes while retaining ownership of their property by granting conservation easements during their lifetime. The federal income tax deduction and estate tax reduction also apply if an easement is donated through a decedent's will.⁹⁹

2. Exemption from Estate Taxes

In many countries, the government imposes a tax on the transfer of wealth from a decedent to his or her heirs or assigns. This estate tax is generally assessed based on the fair market value of property in the estate.¹⁰⁰ In many cases, the tax burden imposed by taxing land at the fair market value forces heirs to sell the land to pay the taxes, particularly if the family is rich in land, but poor in cash.¹⁰¹ In part, this is because fair market value is often defined as the value of the land converted to the highest and best use (i.e. the most intensive development). A number of governments are modifying this policy to discourage the subdivision and development of biologically valuable lands, and to protect family landholdings.

The United Kingdom, for example, provides an exemption from estate tax for land the government determines is "of outstanding scenic or historic or scientific interest."¹⁰² This land is exempt from es-

98. See Stockford, *supra* note 12, at 830-31. Because of the complexity involved in property valuation, however, it may be difficult to predict precisely the tax benefits of a given easement. See *id.*

99. See *id.*

100. See, e.g., 26 U.S.C. § 2031(a) (1994).

101. In countries like the United States that allow conservation easements, an owner may reduce the tax burden on heirs by transferring a conservation easement during their lifetime. After the owner's death, the estate's value will be lower, reflecting the lower value of the land.

102. Inheritance Tax Act of 1984, § 26.

tate taxation if transferred to a non-profit organization that is “an appropriate one to be responsible for the preservation of its character.”¹⁰³ The government may also require the formation of a contract that establishes rules for use of the land as a condition of claiming the exemption.¹⁰⁴

In another example from the United Kingdom, the value of standing timber on property within the estate is exempt as long as it is not cut and sold.¹⁰⁵ This reduces the fiscal incentive for heirs to cut and sell timber to pay inheritance taxes. Such a policy, if applied in a country with old-growth forests, could act as an incentive to conserve biodiversity.

In the United States, estate taxes may be reduced if a will provides for the donation of an easement to a conservation organization.¹⁰⁶ After the owner’s death, the easement is transferred according to the terms of the will.¹⁰⁷ The value of the estate is reduced accordingly, thus reducing estate taxes.¹⁰⁸ Owners can also accomplish the same reduction in total estate value by transferring the easement before death. Recent reforms in the tax law create additional incentives. An example is allowing an exclusion of 40% of the value of land subject to a conservation easement from the value of an estate for federal tax purposes even when the heirs of the decedent-owner authorize the exclusion.¹⁰⁹

IV. OTHER INSTRUMENTS

The preceding discussion focused on government policies specifically designed to create incentives for private actors to conserve biodiversity. There are also a broad array of less direct options to encourage the conservation and sustainable use of resources. In this section, we present a subset of these additional options which are most directly related to biodiversity conservation.

A. *Tax Allocation*

The allocation of tax revenues collected at the state or national level can be designed to encourage conservation. While this method

103. *Id.*

104. *See id.*

105. *See id.* at §§ 125, 126.

106. *See* 26 U.S.C. § 2031(a) (1994).

107. *See id.*

108. *See id.*

109. *See id.* § 2031(c).

is not directly a private sector incentive, such allocation regimes can help ameliorate the loss to the local property tax base which often results from the establishment of conservation easements or other tax incentives for conservation (since such measures reduce the assessed value of the affected real property). Tax allocation arrangements can help to encourage municipalities to undertake conservation measures, by helping to compensate for loss of revenue.

Two Brazilian states, São Paulo and Parana, have passed laws that allocate a proportionally larger share of state tax revenues to municipalities with protected areas.¹¹⁰ A small fraction -- 5 percent in Parana and 0.5 percent in São Paulo -- of the state value-added tax imposed on most goods and services, is reserved for municipalities that protect environmentally significant areas.¹¹¹ The environmentally adjusted allocation compensates localities for removing areas from economic activity, thus creating an incentive to protect existing reserves and to create new ones. In Parana, \$19 million is expected to be distributed this year among 150 municipalities, and in São Paulo \$1 million will be split 115 ways.¹¹² The difference is most influential on towns with small budgets. For example, in São Paulo, the town of Barra do Jurvo increased revenues from the state value added tax by 522 percent after the protected areas-based tax allocation scheme was put in place.¹¹³

To maximize the effectiveness of tax revenue distribution as a conservation tool, guidelines must be narrowly drawn so that the number of beneficiaries is limited and the payments sufficiently large to reward local governments at least in part for foregoing short-term economic development and to compensate for the costs associated with land management. Another option to enhance the effectiveness of such programs is to increase the percentage allocated to qualifying municipalities once the programs have been shown to achieve the desired goals.

B. *User Fees To Support Conservation*

The exploitation of natural resources often results in environmental costs in the form of damages to natural resources and loss of

110. See Estado do Sao Paulo, Lei Estadual No. 8,510, 29 de Dezembro de 1993, Art. 1º (VI) e Anexo; Estado do Parana, Lei Complementar No. 059/91, Decreto 974/91.

111. See *id.*

112. See Marcus Fernandez, "Imposto Verde" *Sextuplica Renda de Cidades*, FOLHA DE SAO PAULO, June 19, 1994.

113. See *id.*

biodiversity.¹¹⁴ These costs are often not reflected in the market prices for the resource.¹¹⁵ Because these damages are external to the market, the direct user has a financial incentive to avoid incurring the cost of environmental protection by passing the environmental costs on to others. While individuals profit, society as a whole suffers. An important method for correcting such market failures is to impose user taxes or fees on the use of natural resources. This is particularly important if the resources are taken from publicly owned lands. Ideally, the fees imposed should reflect the social and environmental costs occasioned by the resource use.¹¹⁶ By capturing true costs, user fees can promote efficient resource use.¹¹⁷

However, user fees should not be the primary source of revenue for an administering resource agency as the agency may have an economic incentive to promote overuse rather than conservation. Instead, user fees should be allocated directly to conservation uses specified by law, such as the purchase of land or easements for conservation, or conservation trust funds that are independent of the fee-charging agency.

User fees can be used in a variety of ways to assure that resource users internalize externality costs. Timber, oil and mining, and recreational user fees are examples of such fees.

1. Timber

Timber extraction is one of the most dramatic causes of biodiversity loss.¹¹⁸ One method for capturing at least some of the many costs of timber extraction is a user fee. User fees should be carefully designed and strictly enforced to ensure that they promote conservation and do not support unsustainable practices. For example, if the government places user fees in a fund for reforestation, it must take great care to ensure that the fund does not have the unintended effect of encouraging an actor to extract timber from natural areas in order to get access to reforestation funds. Furthermore, governments must ensure that the funds generated by such user fees are utilized for the purpose intended, and that negotiation, performance, and payment are transparent to public scrutiny.

114. See, e.g., ROBERT REPETTO, ET AL., GREEN FEES: HOW A TAX SHIFT CAN WORK FOR THE ENVIRONMENT AND THE ECONOMY (1992).

115. See *id.*

116. See FREDERICK R. ANDERSON, ET AL., ENVIRONMENTAL IMPROVEMENT THROUGH ECONOMIC INCENTIVES 7 (1977).

117. See, e.g., REPETTO ET AL., *supra* note 114.

118. See DIRK BRYANT ET AL., THE LAST FRONTIER FORESTS 5-6, 12 (1997).

Indonesia's experience with a reforestation fund provides a clear example of the difficulties associated with such initiatives. In Indonesia, the government controls and manages the nation's forests.¹¹⁹ It grants applicants concessions in the form of legal rights to exploit particular forest territories and resources.¹²⁰ Concessionaires are required to regenerate or replant the forests in their concession area, and contribute to the Reforestation Fund the equivalent of US\$10.00 (as of 1990) per cubic meter log produced.¹²¹ The reforestation fund is managed by the Ministry of Forestry and is designed to be used to establish industrial forests and finance replanting activities.¹²²

Several difficulties have arisen. First, establishment of industrial forests is not a step toward the promotion of biodiversity conservation, and can even reduce biodiversity where industrial forests displace natural forests. Similarly, reforestation of previously degraded land is at best neutral from a biodiversity conservation perspective if the land is reforested with a monoculture plantation; to restore at least some biodiversity, the land should be reforested with native species. The Indonesian program has also been criticized by some observers because a uniform flat tax encourages high-grading and wastage, and it fails to capture greater revenues from tree species with higher commercial value.¹²³ A final challenge for resource extraction fees is to insure that the funds are used exclusively for restoration purposes. In the case of Indonesia, a portion of the fund was reportedly used to bolster the aviation industry.¹²⁴ Hence, timber user fees and forest funds must be carefully designed and closely monitored if they are to be effective incentives for conservation.

2. Oil and Mining

Oil and mineral exploration, development, and transportation impose heavy environmental costs, including destruction of biodiversity, habitat, and wildlife. The United States imposes taxes on oil and coal companies designed to capture some of the externalities associ-

119. See INDONESIA FORUM FOR THE ENVIRONMENT (WALHI), SUSTAINABILITY AND ECONOMIC RENT IN THE INDONESIA FORESTRY SECTOR 31-32 (1991).

120. See *id.*

121. See *id.*

122. See *id.* at 32.

123. See *id.* Perhaps a better option for maximizing revenue and promoting efficiency might be an area utilization fee.

124. See Margot Cohen, *Culture of Awareness*, FAR EASTERN ECON. REV., Nov. 17, 1994 at 44.

ated with energy resource development.¹²⁵ An excise tax of a few cents per barrel on domestic and imported crude oil and imported petroleum products is paid into the Oil Spill Liability Trust fund.¹²⁶ The tax is part of a liability scheme requiring those who conduct this activity that threatens the environment, including wildlife, to pay a fee into a trust fund. Money in the trust fund is then paid out to compensate cleanup costs and damage to natural resources.¹²⁷

Surface coal mining has a devastating impact on biodiversity, ecosystems, and local communities.¹²⁸ In the United States, the Surface Mining Control and Reclamation Act imposes a tax on coal of \$0.35 per surface ton and \$0.15 per subsurface ton, which mining companies pay into the Abandoned Mine Reclamation Fund.¹²⁹ The fund is intended to finance reclamation of mines, and is paid out only if no solvent party responsible for an abandoned mine can be located.¹³⁰ As with the Indonesian reforestation fund, a major challenge has been to maintain adequate enforcement.¹³¹ In addition, funds in the coal mine restoration fund have been redirected for unrelated purposes, similar to the Indonesian reforestation fund.¹³²

3. Recreation

Recreation, though not as destructive as extractive resource development, has environmental consequences. Imposing fees for recreational resource use is another method of generating economic revenues to support conservation. Such fees often include park admissions fees, backcountry permit fees, and fishing and hunting licensing fees. User fees should reflect the costs of administering recreation programs, maintaining trails and facilities, and enforcing hunting and fishing regulations. The imposition of user fees on recreation, particularly on public lands, has led to concern about imposing too high a cost for access, thereby excluding poorer persons.

125. At the same time, however, the U.S. encourages exploration and development of oil, gas, and certain minerals, through preferential tax treatment of certain producers' revenues. See CLARK & DOWNES, *supra* note 3, at 27-28.

126. See 26 U.S.C. § 4611(c)(2) (1994).

127. See *id.* §§ 4611, 9509.

128. See CLARK & DOWNES, *supra* note 3, at 20.

129. See Richard A. Westin, *Understanding Environmental Taxes*, 46 TAX LAW. 327, 353-54 (1993).

130. See *id.* See also Keith Schneider, *Scars of Mining Endure as Repair Fund Dries Up*, N.Y. TIMES, Dec. 4, 1993 at A9; Ted Williams, *Strip-Mine Shell Game*, AUDUBON, Nov. 1992 at 48.

131. See, e.g., Schneider, *supra* note 130; Williams, *supra* note 130.

132. See Schneider, *supra* note 130.

This equity concern may limit the extent to which costs can be recovered solely through recreational user fees.

One example demonstrating how the demand for nature tourism and outdoor recreation might be used to promote conservation goals through user fees comes from Australia, where the government charges user fees, leases food outlets, and charges concession fees for buildings and marinas associated with protected areas. Reportedly, companies and private individuals have in turn formed an ecotourism association, members of which are required to put back a certain percentage of revenue into conservation projects.¹³³

C. *Controlling Access to Shared Resources*

Common property resources are described as resources owned collectively by the entire community (whether local, national, or global).¹³⁴ If they are unregulated, common property resources may be exploited to the point of exhaustion.¹³⁵ Individuals reap the entire benefit when harvesting a common pool resource, but the costs are shared by the entire community. Thus, an individual has no incentive to exercise restraint and conserve the resource, as anything left in the commons may be taken by someone else. If private individuals act to maximize their self interest, a valuable resource will be overexploited; this is commonly referred to as the tragedy of the commons.¹³⁶ A contemporary example is the North Atlantic fishery of Georges Bank off Cape Cod; once tremendously productive, it is now impoverished due to over-fishing.¹³⁷

Through regulation, the tragedy of the commons can be averted. The "tragedy" occurs when there is no social method of management. A number of traditional cultures have managed common property through community management arrangements, without privatizing it and without an environmental or social "tragedy."¹³⁸ In a number of countries in the Western Hemisphere, indigenous cultures are sustainably managing property that is held in common.¹³⁹ In these situa-

133. See Libby Lester, *Back to Nature, Again*, SUNDAY AGE, Sept. 12, 1993, at Agenda § 9.

134. See generally Garrett Hardin, *The Tragedy of the Commons*, in VALUING THE EARTH: ECONOMICS, ECOLOGY, ETHICS 127-142 (Herman E. Daly & Kenneth N. Townsend eds., 1993).

135. See *id.*

136. See *id.*

137. See WORLD RESOURCES INSTITUTE, WORLD RESOURCES 1994-95 187-190 (1994).

138. See *Whose Common Future? Reclaiming the Commons*, THE ECOLOGIST 5-6 (1993).

139. See *id.* at 6-15.

tions, governments can promote conservation best by helping these cultures demarcate their lands and enforce the borders against incursions by outsiders who do not follow the communities' rules of common property management.

In other cases, it may be useful to assign private property rights in a resource previously held as common property. Assigning property rights to a limited number of holders, and excluding others from using the resource, may be beneficial in eliminating overexploitation, fostering private stewardship, and encouraging sustainable use of traditional common property resources.¹⁴⁰

For example, Iceland uses a combination of regulations and market incentives to protect eiders, a species of sea bird.¹⁴¹ Eiders are a traditional source of eggs and feathers. In the past, they were treated as a common property resource, and could be hunted freely. Subject to unchecked exploitation, however, eider populations dwindled.¹⁴² To remedy the situation, the government issued regulations which protected the birds, in part by creating a private property right.¹⁴³ The regulations impose an absolute ban on killing eiders and protect public nesting sites, but allow property owners the right to collect eggs from nesting sites on private land.¹⁴⁴ Property owners, as the sole legal source of eider eggs, thus have an economic incentive to protect nests from poachers and predators. The government enforces the private property right by imposing substantial penalties on poachers.¹⁴⁵

Privatization alone is rarely a solution. To be effective, privatization should be combined with regulation of the level of use and effective enforcement mechanisms. In fisheries, for instance, some countries are experimenting with individual transferable quotas (ITQs), in which a limited number of fishers obtain permits to fish certain percentages of the total allowable catch (TAC).¹⁴⁶ However, it is generally agreed that ITQs have no inherent conservation benefits; rather, they reduce the overcapitalization of the industry, which in turn can reduce the political pressure to exceed sustainable

140. See Jon H. Goldstein, *The Prospects for Using Market Incentives to Conserve Biological Diversity*, 21 ENVTL. L. 985, 993 (1991).

141. See *id.*

142. See *id.*

143. See *id.*

144. See *id.*

145. See *id.*

146. See CLARK & DOWNES, *supra* note 3, at 30.

yields.¹⁴⁷ For conservation, ITQ systems depend on setting a scientifically valid TAC, and on strict government monitoring and enforcement of each ITQ.¹⁴⁸

Colombia's management of watershed areas is an additional example of controlling access to shared resources.¹⁴⁹ In 1954, the central government and the departments that share jurisdiction over the fertile 400,000 hectare Cauca Valley created the Corporation Autonoma del Valle del Cuaca (CVC), with a primary mandate of planning and execution of major development projects through integrated management of the region's natural resources.¹⁵⁰ In the early 1980s, the CVC began using Watershed User Associations, designed to bring together water users in the lowlands and communities living in the highlands. The CVC created a fund with revenues generated from user fees based on water use. The fund compensates upstream users (primarily subsistence farmers) for protection of the watershed with pooled resources from downstream cattle ranchers and other water users.¹⁵¹

D. *Tradeable Development Permits*

The state of New Jersey in the United States developed an innovative zoning and credit program to protect a biologically unique area known as the Pine Barrens. The New Jersey Pinelands Commission, created through a combination of federal and state legislation, was granted the authority to develop a comprehensive management plan for the Pine Barrens and to establish the Pinelands Development Credit System.¹⁵² Pursuant to the Management Plan, various zones of use were established in the region that effectively established three general categories of land: (1) preservation areas that are the most ecologically sensitive; (2) buffer zones where some economic activity with relatively benign environmental impacts is permitted; and (3) growth areas.¹⁵³

147. *See id.*

148. *See id.*

149. *See* LAURA TLAIYE & DAN BILLER, SUCCESSFUL ENVIRONMENTAL INSTITUTIONS: LESSONS FROM COLOMBIA AND CURITIBA, BRAZIL 8-17(1994).

150. *See id.*

151. *See id.*

152. *See generally* NEW JERSEY: THE PINELANDS COMM'N, THE PINELANDS DEVELOPMENT CREDIT PROGRAM: TRANSFERRING RIGHTS IN NEW JERSEY'S PINELANDS (1996).

153. *See id.*

The credit program operates as follows: landowners in the more restricted conservation zones can earn conservation credits by placing restrictive covenants precluding development on their property.¹⁵⁴ Land owners in the commercial growth zone can increase the density of development on their property by purchasing conservation credits from others. Rather than conflicting, development and conservation stimulate and support each other.¹⁵⁵ The state also established a bank that can guarantee loans using credits as collateral.¹⁵⁶ From 1982 until 1992, 10,000 acres of the Pine Barrens were protected through the credit program, while at the same time over 180 high density development projects moved forward.¹⁵⁷

E. *Performance Bonds*

Where a proposed activity requiring government regulatory approval has uncertain environmental consequences, the government could require the person proposing to carry out the activity to post an environmental performance bond. In essence, a performance bond is a sum of money that must be deposited with a government agency before a permit can be obtained. The bond is set at an amount that reflects the best estimate of the largest potential future environmental damages. The bond is returned if the developer can demonstrate that the anticipated damages did not (and will not) occur.¹⁵⁸ Conversely, if damages do occur, the funds are used to restore the site, and any remaining balance is returned. Thus the bond, if it accurately reflects the true costs of reclamation, acts as a guarantee against failure to cure environmental damage. A performance bond system "combines the 'polluter pays' principle with the 'precautionary' principle, providing for internalization of costs where harm is possible but damages are uncertain."¹⁵⁹

Environmental performance bonds would be most successful for projects on public lands, for projects carried out under government

154. *See id.*

155. *See id.* at 9.

156. *See* Jon H. Goldstein & H. Theodore Heintz, Jr., *Incentives for Private Conservation of Species and Habitat: An Economic Perspective*, in *BUILDING ECONOMIC INCENTIVES INTO THE ENDANGERED SPECIES ACT* 51, 57 (Wendy E. Hudson ed. 1994).

157. *See id.* at 57.

158. Barbara & David Webber, *Promoting Economic Incentives for Environmental protection in the Surface Mining Control and Reclamation Act of 1977: An Analysis of the Design and Implementation of Reclamation Performance Bonds*, 25 *NAT. RESOURCES J.* 389 (1985).

159. CLARK & DOWNES, *supra* note 3, at 58 (citing Robert Costanza and Laura Cornwell, *The 4P Approach to Dealing With Scientific Uncertainty*, *ENV'T*, Nov. 1992, at 12).

contracts or grants, or for activities that pose obvious environmental threats. Categories of activities with clear potential for negative impacts on biodiversity include road-building, timber-cutting, and oil-shipping. Performance bonds have been used in the United States for coal-mining reclamation.¹⁶⁰

F. *Eco-Labeling*

Regulated eco-labeling provides another positive incentive for conservation. A successful program would establish a uniform, widely accepted, and comprehensive scheme for regulating labeling claims. Eco-labeling informs consumers about environmentally sound products and production processes, empowering them to act on their preferences for “green” products. Eco-labeling constitutes an advertising bonus for qualified products, and can also be a powerful educational tool. To make eco-labeling effective, however, consumers must be able to rely on the accuracy of labeling claims. In industries affecting biodiversity, the government could set standards for labels certifying, for example, that agricultural goods or forest products were produced sustainably. Consumers and purchasers could then express their preferences in the market for such products, thereby increasing market incentives for conservation.¹⁶¹

G. *“Biodiversity Prospecting” and Other Benefit-Sharing Mechanisms*

“Biodiversity prospecting” initiatives, involving sampling species from biodiversity-rich habitats in search of new drugs and other products, have been widely reported by the media.¹⁶² Properly carried out, these initiatives could serve as economic incentives to protect, rather than destroy, biodiversity.¹⁶³ They also have the potential to bring revenues and technological capacity to developing countries.¹⁶⁴ Finally, they could provide a mechanism for avoiding per-

160. *See id.*

161. Such labeling schemes, whether voluntary or mandatory, could raise issues under the free trade rules of the World Trade Organization to the extent that they covered imported products. *See generally* GARY COOK ET AL., *APPLYING TRADE RULES TO TIMBER ECO-LABELING: A REVIEW OF TIMBER ECOLABELING AND WTO AGREEMENT ON TECHNICAL BARRIERS TO TRADE* (1997).

162. *See* Walter V. Reid et al., *A New Lease On Life*, in *BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT* 6-7 (Walter V. Reid et al. eds. 1993).

163. *See id.*

164. *See* Calestous Juma, *Policy Options for Scientific and Technological Capacity-Building*,

ceived inequities of the past in which scientists and corporations took the knowledge and handiwork of traditional farmers and indigenous peoples without professional acknowledgment or financial compensation.

Interested groups and policy-makers should develop guidelines to ensure that biodiversity prospecting initiatives achieve their maximum potential economic and social benefits. For example, bio-prospecting regulation and initiatives must address the role and rights of indigenous communities. For generations, many indigenous and traditional farming cultures have effectively identified, modified, and sustainably used resources in biodiversity-rich ecosystems, while avoiding the massive losses to biodiversity characteristic of industrial economies.¹⁶⁵ In addition, the sophisticated and detailed knowledge of the uses of local flora and fauna, characteristic of many traditional cultures, has proven useful in providing prospecting leads for the development of commercial products such as pharmaceuticals.¹⁶⁶ Consequently, there is a growing awareness, in some respects affirmed by law in the Convention on Biological Diversity, that these communities should share in the benefits of the use of biodiversity found in their territories.¹⁶⁷ As governments implement the Convention's provisions, they should ensure that these benefit-sharing principles, as well as other relevant principles found in the Convention, are incorporated into national legislation that sets guidelines for biodiversity prospecting agreements.¹⁶⁸

Such biodiversity prospecting guidelines should take into account the experience that is developing in a number of countries that

in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 210-11 (Walter V. Reid et al. eds. 1993).

165. See Madhav Gadgil & Fikret Berkes, *Traditional Resource Management Systems*, 18 RESOURCE MGMT. & OPTIMIZATION 127 (1991); Margery L. Oldfield & Janis B. Alcorn, *Conservation of Traditional Agroecosystems*, *in* BIODIVERSITY: CULTURE, CONSERVATION AND ECODEVELOPMENT 37 (Margery L. Oldfield & Janis B. Alcorn eds. 1991); see generally GARY NABHAN, *ENSURING SEEDS: NATIVE AMERICAN AGRICULTURE AND WILD PLANT DEVELOPMENT* (1989).

166. See Reid et al., *supra* note 162, at 15; Mark Plotkin, *The Outlook for New Agricultural and Industrial Products from the Tropics*, *in* BIODIVERSITY 106 (E.O. Wilson ed. 1988).

167. See David Downes, *Global Trade, Local Ecologies, the Global Economy and the Biodiversity Convention*, *in* BIODIVERSITY AND THE LAW: CHALLENGES AND OPPORTUNITIES 210 (William J. Snape ed. 1996); David Downes & Chris Wold, *Biodiversity Prospecting: Rules of the Game*, 44 BIOSCI. 381 (1994).

168. See Downes, *supra* note 167, at 210; Downes & Wold, *supra* note 167; see also Francesca Grifo & David Downes, *Agreements for Pharmaceutical Research on Biodiversity: a Checklist of Issues and Principles*, *in* VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLES AND INTELLECTUAL PROPERTY RIGHTS 295 (Steven Brush & Doreen Stabinsky eds. 1996).

are exploring various approaches to bioprospecting. Perhaps the best known example involves the Instituto Nacional de Biodiversidad (INBio) in Costa Rica, a government-chartered non-profit institution that is inventorying the nation's biodiversity and developing a comprehensive database of research results.¹⁶⁹ INBio's innovative methods for generating revenues from biodiversity through bioprospecting have gained a great deal of international attention. Bioprospecting agreements that INBio has negotiated with Merck, a U.S.-based pharmaceutical company, provide for payments of over \$1 million dollars for access to samples of biodiversity collected by INBio. Merck has agreed to pay a percentage of profits on any pharmaceuticals developed from samples provided.

A number of bioprospecting agreements have been negotiated and partially funded pursuant to the International Cooperative Biodiversity Group program, managed by the United States National Institutes of Health, the National Science Foundation, and the Agency for International Development. For example, an agreement among a number of institutions in the United States and Suriname, including Conservation International, provides for collection of samples in the Suriname rain forests.¹⁷⁰ Under the agreement, Bristol Myers Squibb, a United States pharmaceutical company, will pay to the Suriname institutions royalties equal to an agreed-upon percentage of the profits from any drug based on a sample from Suriname provided under the agreement.¹⁷¹ The agreement provides for both random and "ethnobotanically-guided" sampling, the latter referring to those samples collected based on traditional knowledge of indigenous or local Maroon communities.¹⁷² If a drug is developed with the help of traditional knowledge and not through random sampling, then a higher percentage (in this case 50 percent) of those royalties which flow back to Suriname are allocated to a locally-controlled Forest Peoples Fund established to promote conservation and development projects in indigenous or local Maroon communities.¹⁷³

169. See Reid, *supra* note 162, at 1-5.

170. See generally Marianne Guérin-McManus et al., *Bioprospecting in Practice: A Case Study of the Suriname ICBG Project and Benefits Sharing under the Convention on Biological Diversity* (1998) (case study submitted to the Convention on Biological Diversity, Fourth Meeting of the Conference of the Parties, May, 1998, Bratislava, Slovakia, on file at Conservation International, Washington, D.C.).

171. See *id.*

172. See *id.*

173. See *id.*

H. *Elimination of Perverse Incentives*

Perverse incentives are those incentives that stimulate an economic activity that results in a socially undesirable outcome, such as biodiversity loss.¹⁷⁴ Furthermore, they often result in government subsidization of a damaging activity. Thus, the government has to pay twice: once for the incentive and later to clean up the resulting damage. Elimination of such perverse incentives provides both economic and environmental benefits to society. However, the main obstacle to the elimination of perverse incentives is that the social and economic benefits of doing so are broad-based and diffuse, whereas the loss is concentrated on a few private actors who often have considerable political influence. Thus, elimination of perverse incentives will require educating a wide range of stakeholders on the benefits of conservation as well as the fiscal drawbacks of perverse incentives.

A number of countries have begun to eliminate such perverse incentives in response to growing criticism. For instance, in 1992, Brazil eliminated a long-standing tax break that encouraged the conversion of forested areas in Amazonia to pasture for cattle,¹⁷⁵ while in France, tax provisions granting a 20-year land tax exemption to farmers who drained wetlands have been repealed.¹⁷⁶

In the United States, the previous availability of inexpensive federal flood insurance subsidized the development of ecologically rich coastal barrier islands and associated wetlands. The Coastal Barrier Resources Act of 1982 eliminated this perverse incentive by making developments on barrier islands ineligible for federal flood insurance, thus transferring the economic risks associated with building in a flood zone from the government to the private property owner.¹⁷⁷ The Act further prohibits the use of federal funds for any development activity on barrier islands. Thus, federal money is no longer available for road building, water treatment plants or disaster

174. See Jim McKinney, Mark Shaffer & Jeff Olson, *Economic Incentives to Preserve Endangered Species Habitat and Biodiversity on Private Lands*, in BUILDING ECONOMIC INCENTIVES INTO THE ENDANGERED SPECIES ACT 1, 11 (Wendy E. Hudson ed. 1994).

175. See Dennis J. Mahar, *Deforestation in Brazil's Amazon Region: Magnitude, Rate and Causes*, in ENVIRONMENTAL MANAGEMENT AND ECONOMIC DEVELOPMENT 94-98 (1994) (available from World Bank).

176. See DE KLEMM & SHINE, *supra* note 3, at 241.

177. See Coastal Barrier Resources Act, Pub. L. 97-348, § 11, 96 Stat. 1659 (1992) (amending National Flood Insurance Act of 1968, § 1321, codified at 42 U.S.C. § 4028); see also Elise Jones, *The Coastal Barrier Resources Act: A Common Cents Approach to Coastal Protection*, 21 *Envtl L.* 1015, 1028 (1991).

relief.¹⁷⁸ In addition to discouraging the destruction of barrier beaches, the Act saves the federal government substantial amounts of money.¹⁷⁹ The United States made further efforts against perverse incentives in its farm policy by denying all federal subsidies, including price supports, disaster relief, and crop insurance to farmers who cultivate drained wetlands or highly erodible croplands.¹⁸⁰ The United States also revised tax laws in 1986 to ensure that farmers did not deduct expenses incurred in farming wetlands as business expenses.¹⁸¹

In many countries, however, misguided policies continue to create perverse incentives that reduce government revenues, waste taxpayers' dollars, and inflict tremendous environmental costs, including major harm to wildlife, wildlands, and biodiversity.¹⁸² Reforming these incentives will produce major environmental and social benefits.¹⁸³ Analyzing destructive policies, educating the public on the impacts of these policies, and mobilizing the political will for change should all be high priorities for supporters of conservation.

V. RECOMMENDATIONS

The following recommendations are intended to summarize some of the key ideas contained in this article. For each of these recommended reforms, effective enforcement is critical. Governments must be willing to effectively evaluate proposed private conservation actions, monitor compliance, and prosecute violations. Provisions for citizen involvement in monitoring and enforcement can also help to ease the burden on regulatory agencies and increase public participation in conservation efforts. In addition, the public, especially non-governmental conservation organizations, must have access to information about the policies and their application and the right to bring legal actions to enforce conservation commitments.

A. *Legal Mechanisms for Land Conservation*

Develop legal mechanisms that allow landowners to ensure conservation on their lands for the long term. Combine these measures with the tax incentives discussed below.

178. See Jones, *supra* note 177, at 1032-34.

179. See Jones, *supra* note 177, at 1030; CLARK & DOWNES, *supra* note 3, at 37.

180. See CLARK & DOWNES, *supra* note 3, at 37.

181. See 26 U.S.C. § 175 (1994).

182. See McKinney, Shaffer & Olson, *supra* note 174.

183. *Id.*

1. Conservation Easements

Consider passing legislation that allows the use of conservation easements, specifying that landowners may sell or donate a part of their ownership rights (such as the right to carry out certain types of development), while retaining other ownership rights (such as the right to reside on or visit the property). Legislation on conservation easements should include the following elements: (1) the recipient need not be the owner of an adjacent parcel of land; (2) the recipient must be a qualified conservation organization or government agency (with the commitment and ability to conserve the land indefinitely into the future); (3) the easement must “run with the land,” (i.e. if the owner sells the land, the land is still subject to the easement and the new owner is automatically bound by it); (4) the easement should be judicially enforceable at the request of the easement holder as well as by the appropriate government agency and the public.

2. Conservation Agreements

Establish guidelines for conservation agreements in which landowners contract with a government agency or conservation organization to manage their land so as to conserve wildlife, biodiversity or natural habitat, or lands of cultural or aesthetic significance. These guidelines should allow flexibility in individual arrangements, but should set minimum standards of qualification.

3. Land Exchanges

Develop a policy for promoting exchanges of public and private lands with the goal of efficiently protecting biologically valuable lands for the public interest. The policy should include procedures for: (1) scientific and economic assessment of lands proposed for exchange; (2) full disclosure of information on proposed and completed exchanges; and (3) judicial review of transactions.

4. Public Participation and Judicial Review

Establish procedures for involving the public and appropriate government agencies, such as conservation agencies and the attorney general, in monitoring and enforcement of conservation easements, agreements, and land exchanges. There should be provisions for judicial review and enforcement, including citizen’s enforcement suits.

B. *Tax Incentives for Private Conservation Action*

Develop a tax structure that encourages charitable giving for conservation, especially donations of land for conservation. The fol-

lowing are examples of tax incentives for conservation:

1. **Income Tax Deduction for Donations of Cash and Property**

Allow a donor to deduct all or part of the value of a charitable contribution of cash, or land, or other property to a qualified conservation organization from the donor's taxable income.

2. **Income Tax Deduction for Easement Donations**

Provide specifically that the deduction for charitable contributions (see above) applies to donations of conservation easements to qualified conservation organizations.

3. **Estate Tax Exemption for Land Conservation**

If land or a conservation easement is transferred from the estate to a qualified conservation organization or appropriate government agency, the value of the interest transferred should be deducted from the value of the estate for purposes of tax assessment. There must also be procedures for ensuring that the land involved is important for conservation purposes.

4. **Property Tax Adjustments for Conservation Easements and Agreements**

When a landowner donates a conservation easement, or enters into a conservation agreement, ensure that the landowner's property is taxed at a rate according to its current market value (its value subject to the easement or the agreement), rather than its potential development value. Landowners could also receive additional property tax reductions established by regulation for transferring easements or forming conservation agreements (as defined by law).

C. Tax Incentives for Sustainable Use

Explore development of a tax structure that provides incentives for sustainable use of natural resources, and for resource use that conserves biodiversity, including crop genetic diversity. For example, the government could allow tax deductions for farmers using socially beneficial techniques such as: (1) methods that preserve riparian edges, wildlife habitat, or wetlands; (2) traditional or "heirloom" varieties of crops; or (3) low-impact farming methods that minimize pesticide use or otherwise reduce damage to natural resources.

D. *Protection of Common Resources*

Ensure regulation of common property resources to avoid over-exploitation and create incentives for conservation. One way to do this is to provide legal recognition and protection of traditional common property resource management systems that are sustainable. The establishment of secure land title systems is also important. In other cases, the creation of limited private property rights, combined with other measures, may be part of the conservation solution.

E. *Environmental Performance Bonds*

Require that proponents of environmentally damaging enterprises, such as mining, timber harvesting, and road building, post performance or assurance bonds. In order to be effective, bonds must be set at a level which accurately reflects all anticipated environmental damages that could result. Government agencies must monitor and enforce compliance effectively. The bonds must be held long enough to ensure the proponents have complied with their obligations. Of course, if proponents follow environmental guidelines and minimize harm to biodiversity or wildlife, they should recoup the full value of the bonds at the end of the specified period. Environmental performance bonds are a practical application of the "precautionary principle," which states that those who propose an activity that risks environmental harm have the burden of ensuring that the harm is avoided or remedied.¹⁸⁴

F. *User Fees on Resource Consumption*

Collect taxes or user fees on all consumptive or damaging resource uses, including recreation, to capture the environmental costs associated with resource degradation. Fees collected should be earmarked for conservation purposes, such as the purchase of conservation easements or the establishment of conservation trusts. However, the administering agency should not rely on such fees alone for its expenses, because this could create an incentive for the agency to encourage more intensive resource use rather than conservation in order to increase its income. In addition, governments could also con-

¹⁸⁴ See Elli Louka, *Cutting the Gordian Knot: Why International Environmental Law is Not Only About the Protection of the Environment*, 10 TEMP. INT'L & COMP. L.J. 79, 82 (1996).

sider transaction fees on certain activities such as real estate sales to generate additional funds for conservation.

G. Eliminate Subsidies for Destructive Activities

Eliminate subsidies or preferential tax provisions encouraging destructive activities that harm wildlife, biodiversity, or wildlands. Examples of types of subsidies that could be eliminated include: (1) below-market or less than full cost pricing of public natural resources such as minerals or timber; (2) below-market rate loans or direct payments to farmers for expanding production of crops on acreage that displaces natural habitat; (3) favorable tax treatment for unsustainable extraction of natural resources; and (4) grants or below-market rate loans to support construction that destroys biodiversity.