



# CONVENTION ON BIOLOGICAL DIVERSITY

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CONFERENCE OF THE PARTIES TO THE  
CONVENTION ON BIOLOGICAL DIVERSITY  
Fifth meeting  
Nairobi, 15-26 May 2000  
Item 18.3 of the provisional agenda\*

## INCENTIVE MEASURES

### Compilation of information on incentive measures received from Parties, Governments, and relevant organizations

#### Note by the Executive Secretary

#### I. INTRODUCTION

1. At its fourth meeting, the Conference of the Parties to the Convention on Biological Diversity, in paragraph 1 (g) of its decision IV/10 A, encouraged Parties, Governments and relevant organizations to prepare case-studies on incentive measures and to make them available to the Executive Secretary. In paragraph 5 of the same decision, it requested the Executive Secretary:

"To compile the information received from Parties, Governments and relevant organizations and to facilitate the exchange of information through appropriate means, such as the clearing house mechanism, taking full advantage of existing and ongoing work of Parties and relevant organizations in this area".

2. The Conference of the Parties has also called upon Parties to provide case-studies on incentive measures at each of its last two meetings. At its third meeting, in 1996, the Conference of the Parties invited Parties to share experiences on incentive measures and to make relevant case-studies available to the Secretariat. At its fourth meeting, in 1998, the Conference of the Parties asked Parties to prepare case-studies, as far as possible using an indicative outline supplied by the Executive Secretary.

3. In addition, the identification and mitigation of "perverse incentives", i.e., government policies that promote the unsustainable use of biological diversity and its components, has also been given particular importance by the Conference of the Parties. At both the third and fourth meetings, the Conference of the Parties encouraged Parties to identify and remove perverse incentives. By paragraph 3 of its decision III/18, the Conference of the Parties encouraged Parties to review their existing legislation and economic policies, stressing the importance of taking appropriate action on incentives

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\* UNEP/CBD/COP/5/1.

that threaten biological diversity. This call was repeated at the fourth meeting, where the Conference of the Parties, in paragraph 1 (f) of its decision IV/10 A, encouraged Parties to identify perverse incentives and consider the removal or mitigation of their negative effects on biological diversity in order to encourage positive, rather than negative effects, on the conservation and sustainable use of biological diversity.

4. The work of the Conference of the Parties on incentive measures has been further supported by the production of case-studies and conceptual development by other organizations such as the Organisation for Economic Co-operation and Development (OECD) and IUCN-The World Conservation Union.

5. The present document presents the information and case-studies on incentive measures provided to the Secretariat by Parties, Governments, and other organizations. It complements the note by the Executive Secretary on analysis of the design and implementation of incentive measures (UNEP/COP/CBD/5/15), prepared for the fifth meeting of the Conference of the Parties, and presents a brief overview of information received from Parties, Governments, and other organizations, and concludes with an index and summaries to the 44 case-studies considered.

## II. OVERVIEW OF INFORMATION RECEIVED FROM PARTIES, GOVERNMENTS AND OTHER RELEVANT ORGANIZATIONS

### A. Overview of information received from Parties

6. Since the third meeting of the Conference of the Parties, twelve Parties have provided the Secretariat with nineteen case-studies on incentive measures: Australia (five cases), Austria, Ecuador, Jamaica, Netherlands (two cases), New Zealand, Pakistan (three cases), Republic of Korea, South Africa, Turkey, and Uganda.

7. Fourteen of these case-studies were reviewed in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/CBD/COP/4/18). That document discusses four case-studies in detail (Australia (case 3 in the present document), Pakistan (case 13), South Africa (case 16), Turkey (case 17)), and briefly summarizes all of the studies in an annex.

8. For the fifth meeting, four additional cases have been received by the Secretariat, three of which appear in the OECD studies noted below (Austria and the Netherlands (two studies)). The remaining case-study (New Zealand) is also summarized below.

### B. Overview of information received from other sources

#### 1. United Nations Environment Programme (UNEP)

9. UNEP has made available the following four case-studies on incentive measures for the conservation and sustainable use of biodiversity:

(a) Biodiversity conservation and cattle ranchers in the Brazilian Pantanal;

(b) Social, institutional and economic incentives for marine conservation in the Galapagos Islands;

(c) Incentives to farmers' creativity and experimentation for the conservation and efficient management of biodiversity in the center-mountain region of the state of Guerrero;

(d) Protecting indigenous Mixtec and Nahoan dye traditions in Mexico: the Plicopurpura pansa mollusk saga.

## 2. OECD

10. OECD made available 22 case-studies on incentive measures, in addition to a number of relevant publications. The OECD studies pertain to experience with incentive measures in OECD member countries. Summaries of these 22 case-studies appear, as appropriate, below. Full versions are available on the OECD website (<http://www.oecd.org>).

11. OECD publications most relevant to the consideration of incentive measures by the Conference of the Parties include the following:

(a) Handbook of Incentive Measures for Biodiversity: Design and Implementation (OECD, 1999);

(b) Saving Biological Diversity: Economic Incentives (OECD, 1996);

(c) OECD Conference Proceedings: Investing in Biological Diversity: the Cairns Conference (OECD, 1996);

(d) Improving the Environment through Reducing Subsidies: Part I: Summary and Policy Conclusions - Part II: Analysis and Overview of Studies (OECD, 1998).

(e) Subsidies and Environment: Exploring the Linkages (OECD, 1996).

## 3. IUCN

12. Four country case-studies are available in recent IUCN documents on incentive measures. In addition, IUCN has produced other information and analysis in four areas related to incentive measures: incentives, finance, assessment and valuation. IUCN has organized this information into "resource kits", issue papers, and issue pages, available on the internet. Each resource kit contains a core document, other relevant material, links to additional information, and recommended readings. A starting point for accessing this information on the World Wide Web is at <http://economics.iucn.org>.

13. More specifically, IUCN work on incentives is organized into the following sites on the internet:

(a) Resource kit: Incentives for community-based conservation (<http://economics.iucn.org/kits-02-00.htm>)

(b) Resource kit: The Ramsar Convention and incentive measures (<http://economics.iucn.org/kits-04-00.htm>)

(c) Issue paper: Business and biodiversity: a guide for the private sector (<http://economics.iucn.org/pdf/issues-04-01.pdf>)

(d) Issues page: Corporate environmental responsibility (<http://economics.iucn.org/issues-09-00.htm>)

(e) Issue paper: Market-based instruments for global environmental benefit and local sustainable development  
(<http://economics.iucn.org/pdf/issues-12-01.pdf>)

(f) Issues page: Economic briefs and recommendations for CBD COP4  
(<http://economics.iucn.org/issues-05-00.htm>)

14. IUCN work on finance is organized into the following website:  
Resource kit: Financing protected areas  
(<http://economics.iucn.org/fpa/contents.htm>)

15. IUCN work on assessment is organized into the following website:  
Resource kit: the Ramsar Convention and impact assessment  
(<http://economics.icun.org/kits-03-00.htm>)

16. IUCN work on valuation is organized into the following website:  
Resource kit: valuing protected areas (<http://economics.iucn.org/kits-01-00.htm>)

### III. INDEX OF CASE-STUDIES ON INCENTIVE MEASURES

17. Consistent with the note by the Executive Secretary on the subject prepared for the fifth meeting of the Conference of the Parties (UNEP/CBD/COP/5/15), incentive measures are classified here as follows: economic and legal instruments; social and institutional measures; and compliance mechanisms. Table 1 presents a taxonomy of the economic and legal instruments appearing in the case-studies. Table 1 also includes a list of perverse incentives that have been removed or reformed in the case-studies.

18. Case-studies that included public investments and supplementary regulations (particularly where property rights mechanisms were used) are listed in table 2.

19. Social and institutional measures comprise capacity-building, stakeholder participation, and information provision. These measures, as well as compliance mechanisms, are reported in virtually every case-study. The country- or site-specific nature of these measures prevents a simple taxonomy; as a result, social and compliance measures are not included in the tables.\*

Table 1. Incentive measures used in the case-studies

<u>Taxes and subsidies</u>	<u>Case Nos.</u>	<u>Property rights and markets</u>	<u>Case Nos.</u>	<u>Reform of perverse incentives</u>	<u>Case Nos.</u>
Landfill taxes	38	Land-use covenants or certification	1, 12, 16, 23	Agricultural subsidies	24, 38
Water pollution taxes	43	Market creation for organic produce	24, 28, 30, 38, 41, 44	Laws against "unproductive" use of forests	27
Water extraction levies/water pricing	11, 43	Eco-labelling of forest products	28	Subsidies for forest production	28
Park visitor fees	2, 30, 32	Strengthening land tenure	31	Development laws	31

\* For further reference, see the note by the Executive Director (UNEP/CBD/COP/5/15) and the OECD and IUCN publications mentioned above.

<u>Taxes and subsidies</u>	<u>Case Nos.</u>	<u>Property rights and markets</u>	<u>Case Nos.</u>	<u>Reform of perverse incentives</u>	<u>Case Nos.</u>
Agri-environmental payments	24,30,38	Tradable hunting permits/payments to communities	14, 33, 44	Subsidies for habitat conversion	9, 34, 39
Forest conservation payments	28	Tradable permits for tour operators	2	Fishing subsidies	40
Land set-aside payments	35	Forestry co-management	15, 37, 42		
Wetland conservation payments	39	Transferable fishing quotas	4, 40		
Income tax exemptions	11, 10, 26	Species propagation/market development	7, 17, 41, 43		
		Tourism-revenue sharing with communities	18, 44		

Table 2. Regulations and public investments in the case-studies

<u>Regulations</u>	<u>Case Nos.</u>	<u>Investments</u>	<u>Case Nos.</u>
Access restrictions	6, 9, 11, 30, 31, 32, 34	Contributions to environmental funds	8, 13, 18, 23, 32, 34, 38
Permits for use	11, 23	Compensation for loss of use	6, 27, 29
Zoning	31	Land purchase	2, 12, 23, 31, 34, 39
Regulations on wildlife takings	13, 33	Infrastructure provision	8, 13, 31, 32
Regulations on wetland use/draining	39		
Licensing of fishers	5		

#### IV. SUMMARIES OF CASE-STUDIES

##### A. Case-studies received from Parties

###### Case 1. Australia: Land for wildlife, Victoria, Australia

20. Case-study 1 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 3).

###### Case 2. Australia: Wet Tropics World Heritage Area case-study

21. Case-study 2 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 10).

Case 3. Australia: Dhimurru Land Management Aboriginal Corporation

22. Case-study 3 was discussed in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, paras. 44-54).

Case 4. Australia: Individual transferable quotas in the South East Fishery

23. Case-study 4 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 13).

Case 5. Australia: Control of fishing effort in the Northern prawn fishery

24. Case-study 5 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 12).

Case 6. Austria: Economic incentive measures in the creation of the National Park Neusiedler See-Seewinkel

25. Case-study 6 examines the use of economic incentives for the establishment and running of the National Park Neusiedler See (Seewinkel). The park was opened in 1983 and was the first national park in Austria recognized under Category II by IUCN. A number of incentive measures were used to ensure the conservation of the Neusiedler See and the reed belt there (recognized as a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1977). These measures include the removal of government subsidies for the drainage of wetlands for agricultural cultivation, the provision of compensation to land-owners ceding their lands to the National Park, restricting the access of hunters to the area (with compensation for entitled hunters), the possible ceasing of the stocking of the lake with non-native fish species (again with potential compensation), and the banning of reed-burning while allowing the continued, sustainable harvesting of the reeds. Because of falling prices and growing intensification in agriculture, as well as increased tourism activities, the National Park is seen as a positive economic alternative to agriculture.

Case 7. Ecuador: The Taqua Initiative

26. Case-study 7 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 14).

Case 8. Jamaica: Alternative tourism in Jamaica

27. Case-study 8 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 11).

Case 9. Korea: Conservation of biodiversity in Mt. Chiri, with special attention to poaching bears

28. Case-study 9 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 8).

Case 10. Netherlands: Green investment funds: organic farming

29. Case-study 10 examines how the innovative tax exemption on investments in green funds in place in the Netherlands since January 1995 is utilized to support organic farming there. In general, it was found that the economic gains from organic farming in the Netherlands were low, while the risks were high. The special tax exemption on incomes from investments in approved green funds can help alleviate this and close the profitability gap between traditional and organic production. It allows investors in these projects to contract loans at reduced interest rates (usually about 2 per cent less than commercial rates), providing a financial advantage to organic farms over traditional ones. The funds have been heavily supported by the Dutch people. Other incentives that would also help were identified as the removal of various adverse subsidies to traditional agricultural practices, the raising of public awareness about organic farming, the development and use of a certified eco-labeling scheme for organic produce, and the imposition of the polluter-pays principle in agriculture.

Case 11. Netherlands: Green investment funds: PIM project.

30. Case-study 11 examines the Project Infiltration Maaswater (PIM) in the Netherlands to limit desiccation caused by the lowering of the water table through excessive groundwater abstraction. The PIM project is an initiative of a drinking-water supply company to change from using groundwater to purified and filtered surface water. However, groundwater abstraction is more economically viable than this treatment at current prices. In order to alleviate the environmental pressures caused by groundwater use, the Government of the Netherlands is using a number of measures to help close the profitability gap between these two alternatives in order to make the treatment of surface water a more viable option. First, the PIM project is being financially supported – partly through European Union funds and partly by the Dutch government through their classification of it as a green project so that investments in green funds that support it can be exempt from tax. Secondly, most provinces have introduced groundwater-abstraction levies, and the central government has also been taxing water abstraction since 1995. Thirdly, permits are now required for groundwater and only a limited number are available in most provinces. Finally, groundwater abstraction will be completely abolished or reduced in three locations.

Case 12. New Zealand: Incentive measures for the protection of natural heritage on private land

31. The Government of New Zealand has taken several steps to encourage and empower private landowners to voluntarily protect and manage indigenous biodiversity on their land. This has entailed six separate activities or initiatives:

(a) Providing information to landowners on indigenous biodiversity through expert extension services;

(b) Empowering legal protection by allowing landowners to permanently protect indigenous biodiversity through attaching conservation covenants to land titles;

(c) Financially supporting protection and management through co-funding of fencing, indigenous tree planting, and wetland creation and rehabilitation;

(d) Empowering community groups as landowners to purchase land for conservation purposes;

(e) Providing training and information on management techniques for conservation, restoration and best practice; and

(f) Removing perverse incentives, such as subsidies for land clearance, and adjustment of tax rates on land used for conservation, which provides less income.

32. The study concluded that while economic and legal incentives are important, the key to successful conservation on private land is improving the information and attitudes of owners.

Case 13. Pakistan: Maintaining biodiversity with rural community development

33. Case-study 13 was discussed in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, paras. 33-43).

Case 14. Pakistan: Sustainable resource use in Bar Valley

34. Case-study 14 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 6).

Case 15. Pakistan: Malakand/Dir social forestry project

35. Case-study 15 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 7).

Case 16. South Africa: The South African Natural Heritage Programme

36. Case-study 16 was discussed in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, paras. 17-32).

Case 17. Turkey: Incentive measures for indigenous propagation project of threatened Turkish bulbs

37. Case-study 17 was also discussed in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, paras. 8-16).

Case 18. Uganda: Development through conservation, Bwindi National Park, Uganda



38. Case-study 18 was summarized in the note by the Executive Secretary on the design and implementation of incentive measures prepared for the fourth meeting of the Conference of the Parties (UNEP/COP/CBD/4/18, annex I, entry No. 9) (see also <http://economics.iucn.org/pdf/96-03-15.pdf>)

B. Case-studies received from organizations

1. UNEP

Case 19. Brazil: Biodiversity conservation and cattle ranchers in the Brazilian Pantanal

39. At more than 138,000 square kilometres the Brazilian Pantanal is known as the largest freshwater wetland in the world. A number of steps have been taken to first understand and later create a programme of work to address the incentives facing ranchers and rancher behaviour. These planned and ongoing efforts include: an investigation of the costs of cattle production with and without cultivated pastures in the Pantanal; an analysis of existing census data to attempt to reveal the principal correlates with forest conversion pressures; a research and extension/outreach effort to increase the per-hectare returns (land profitability) of Pantanal cattle-ranching; an investigation of forest products with current or potential economic value by land type; an investigation of potential use and non-use values (including tourism) of Pantanal wildlife; and a planned economic-value map incorporating all of the above information in a user-friendly visual interface.

40. Formal biological diversity preservation efforts in the Pantanal are still in their infancy. Efforts to understand and guide natural-resource management in the Pantanal have benefited from a number of lessons including:

(a) That the lack of land/resource use and management data/information in the region is a primary constraint to exploring policy alternatives;

(b) That stakeholder involvement/knowledge in crafting policy solutions is important; and

(c) That incentive-based, private and voluntary programs are an attractive option in an environment lacking adequate institutions and traditions for the monitoring and enforcement of disincentive-based policies.

Case 20. Galapagos Islands: Social, institutional and economic incentives for marine conservation in the Galapagos Islands

41. The volcanic Galapagos Islands are surrounded by one of the world's most unique marine ecosystems. Over the past several years, the marine environment and the diverse species within it have come under increasing threat. World Wide Fund for Nature (WWF) has been working with local, national and international partners to introduce integrated measures intended to work as incentives for conservation and sustainable use of the marine resources around the archipelago. The social incentive measures have given rise to a participative process for the design of a management plan for the Galapagos Marine Reserve. The institutional incentives have contributed to the passage of the Galapagos Special Law, a national law that expands the marine reserve and affords greater protection for the marine resources of the Galapagos. It is too early to be conclusive about the effectiveness of the indirect economic

incentive measures introduced, but there is evidence that they have stimulated greater commitment to marine conservation on the part of local fishers.

Case 21. Mexico: Incentives to farmers' creativity and experimentation for the conservation and efficient management of biodiversity in the centre-mountain region of the State of Guerrero

42. The Program for Peasant Management of Natural Resources is based on a strategy that seeks to impel processes that promote consciousness, organization and action in peasant communities, parting from a peasant viewpoint of the natural and social surroundings. The objective is to carry out sustainable use and management practices of natural resources in the short, medium and long terms, in 14 communities in the centre-mountain region of Guerrero. This is being done through a close collaborative effort between a regional peasant organization, the SSS Sanzekan Tinemi, and a civil association, the Group for Environmental Studies. It includes actions at regional, community and family levels, oriented towards the reinforcement of people's capacities as much as towards the implementation of projects or technical-material actions in participatory ways.

43. The strengthening of local capacities includes activities such as: regional inter-community meetings to discuss different issues; diagnosis and participatory community land use planning processes; strengthening of communal and regional institutions and legislations; stimulating creativity and experimentation of peasant ideas, etc. Technical aspects include projects and vegetation management actions: ecological conservation areas; nurseries and reforestation that include native species for multiple uses and efficient firewood use; environmental studies for designing and implementing management plans for non-timber forest species of economic value, such as palm (Brahea dulcis) and agave; a series of actions directed at land-use planning and regulation of grazing lands, as well as several actions oriented to soil and water conservation. The actions of different institutions, governmental and non-governmental, of municipal, state and federal level, come together through the programme. Some offer financial support, others knowledge or social or political support.

Case 22. Mexico: Protecting indigenous Mixtec and Nahoan dye traditions in Mexico: the Plicopurpura pansa mollusk saga

44. Case-study 22 is an example of traditional ecological knowledge applied to an indicator species of the marine and coastal ecosystem of the Pacific, the Plicopurpura pansa mollusk, whose dye had been sustainably harvested by Mexican ethnic groups for a millenium and used to manufacture ceremonial clothing until the 1980s when a Japanese company and a governmental mega-resort development project endangered both the species and the associated culture. The 15-year ongoing project has applied institutional, social and economic incentives to insure the conservation of habitat and species, the recognition of Indian property and resource rights, and scientific research for reproduction in aquariums.

2. OECD

45. Of the 22 case-studies submitted by OECD, four were also submitted separately by the Governments concerned (Austria, Netherlands and the Republic of Korea) and have been covered in section A above as case-studies 6, 9, 10 and 11. The remaining 18 case-studies are summarized in paragraphs 46-63 below.

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Case 23. Australia: A revolving fund for biodiversity conservation in Australia

46. Case-study 23 examines the role played by the Revolving Fund for Nature, administered by the Trust for Nature (Victoria), in the protection of lands of conservation significance, particularly those with remnant or heritage vegetation. The Revolving Fund purchases lands with conservation significance, places a covenant on them specifying the allowable and prohibited activities that can be undertaken on them, thus ensuring the future maintenance of the identified conservation values, and resells the lands to a sympathetic private owner whose use of the lands will be bound by the covenant. The regained capital is then used to finance the purchase of further lands, which again have a covenant placed on them before resale to sympathetic purchasers and the process is repeated again. The success of the Fund relies largely on its ability to recapture all or most of the original capital purchase cost for the lands, and to pass on responsibility for land management to owners who are committed to a conservation ethic. The Fund is unique in that the Trust for Nature was formed through government legislation and is provided with some public funding but also attracts funds from non-government sources.

Case 24. Austria: The Austrian program on environmentally sound and sustainable agriculture: experiences and consequences of sustainable use of biodiversity in Austrian agriculture

47. Case-study 24 examines a programme for encouraging the environmentally sound and sustainable management of agriculture in Austria, primarily through the use of agri-environmental subsidies under the European Union regulation 2078/92. The Austrian agricultural subsidy programmes were restructured and re-oriented in the late 1980s and early 1990s, with particular emphasis placed on agro-ecological aspects of funding and the integration of environment-related direct payments into the funding system. The incentives used include soil protection charges and taxes, the Law on Water Rights (for example, binding livestock to the region), regulations specifying maximum limits for livestock numbers, and the funding of organic farming, crop rotation, and land set-aside schemes. In order to ensure the benefits from these measures were maintained once Austria joined the European Union, an integral horizontal approach for the Austrian agri-environmental programme was developed under European Union regulation 2078/92. The programme utilizes a range of subsidies to encourage less environmentally harmful agricultural practices, while taking into consideration socio-economic factors as well.

Case 25. Canada: Revealing the economic value of biodiversity: a new incentive measure to conserve and protect it

48. Case-study 25 revisits the benefit-cost analysis of a project to develop a reservoir on the Canadian prairies to provide water for agricultural production, tourism and municipal needs in order to add to the original monetized private goods estimates the public-goods benefits and costs of the effects on biodiversity. The Environmental Valuation Reference Inventory was used to find valuation studies conducted in similar situations from which estimates of the values of the effects in this project could be drawn ("benefits transfer"). In the original study, both the economic costs and benefits of the project were valued to be 76.5 million Canadian dollars. The original study also identified some non-quantifiable environmental benefits and costs from the project, which an assessment panel concluded would tend to result in an overall net benefit, thus improving the relative economic effects

of the project. As a result, the reservoir was constructed. Once the benefits-transfer exercise was conducted, and drawing on studies that utilized contingent valuation and travel-cost methods for determining the environmental values, it was found that the revised benefit-cost analysis for the project would result in a net loss of approximately 10 million Canadian dollars.

Case 26. Canada: Using the Income Tax Act of Canada to promote biodiversity and sensitive-lands conservation

49. Case-study 26 examines recent and proposed changes to the Canadian Income Tax Act to promote biodiversity and conservation of ecologically sensitive lands. These were the result of the recommendations of a 1994 Task Force on Economic Instruments and Disincentives to Sound Environmental Practices, which deliberated on the incentives and disincentives in the taxation system with regard to conservation of biodiversity. The main recommendations, which were approved in 1996, were to amend the Act to exempt from capital gains tax all donations of ecologically sensitive lands made in perpetuity to all levels of government and charities, thus equalizing treatment of donations to municipalities and charities with those that are made to the Crown. This amendment allows the use of voluntary, non-regulatory stewardship measures by landowners for biodiversity conservation, encouraged by direct and indirect financial incentives. One of the main conclusions of the 1995 national consultations on the new tax provisions was that there is a need for greater public access to the relevant information.

Case 27. Denmark: Economic incentives for the transformation of privately cultivated forest areas into strict (untouched) forest reserves

50. Case-study 27 examines economic incentives for transforming privately cultivated forests into strict forest reserves, in accordance with the political goal to double the forested area of Denmark (to 22 per cent) over a 100-year period. Because it was believed to be important to include both public and private lands, the 1994 Danish National Strategy for Natural Forests mandated the increase in forest reserves on public lands, provides grants for reforestation, and offers economic compensation for the voluntary conversion of private forests to strict reserves. Indirect compensation is also given to State-owned forests. The Strategy also includes plans for research programmes, conservation of local genetic resources, and the dissemination of information to foresters, forest users and the general public. An adverse incentive in the form of a regulation that made it illegal to leave major productive forest areas unproductive was also reformed in 1989 to allow exceptions.

Case 28. Finland: The Act of the financing of sustainable forestry and the development of forest certification

51. Case-study 28 discusses the design of a national forest certification scheme in Finland and the effects on sustainable forestry practices there. The Finnish regulatory framework for forestry management has been entirely reformed in recent years, from encouraging intensification (through for example, subsidies to production and exports) to encouraging environmentally sustainable production. These changes were brought about under the 1994 Environmental Programme for Forestry and the new Forest Act and special Financing of Sustainable Forestry Act in 1997. In addition to removing some of the adverse subsidies, the Financing of Sustainable Forestry Act also provides for the discretionary payment of environmental subsidies to landowners where necessary. A broad-based group formed in 1996 designed a

voluntary forest certification scheme (to be operational from 1998) that was compatible with international schemes but reflected the particular circumstances found in Finland.

Case 29. France: A cost-benefit analysis of biodiversity conservation programmes in the Garonne Valley

52. For this case-study, a cost-benefit analysis was conducted of a hypothetical plan for biodiversity conservation in the Garonne Valley in France, where the wetlands adjacent to the Garonne river are under pressure from agriculture through erosion and irrigation. Partly, this is a result of a property rights problem, as the State is responsible for the river itself and the "regularly flooded areas" around it but, because of the movements of the river bed, these regularly flooded areas are not always easy to determine, and the State responsibility for them is rarely enforced. Contingent-valuation studies were used to elicit values from farmers of their willingness to accept (WTA) compensation for cessation of activities on the river banks which were harmful to biodiversity, and the willingness-to-pay (WTP) values of local residents for these measures. It was found that the WTP value over five years would cover a compensation programme of twenty five years. However, while this finding indicates that the estimated benefits of conservation largely exceed the costs, problems with the implementation of incentives were identified. In particular, there was much mistrust between the local residents, farmers and the public authorities.

Case 30. Germany: UNESCO Biosphere Reserves Schorfheide-Chorin and Rhön

53. Case-study 30 examines two German biosphere reserves that are designed to conserve genetic diversity while being sustainably used in an economically viable manner. Visitor fees are charged in the Rhön Reserve and a conservation or exploitation levy has also been proposed. One quarter of the 40 000 Deutchmarks generated in visitor fees in 1997 were used for advertising and information-awareness campaigns, including supporting the marketing of lamb meat from regenerating stocks in the Reserve. This has now been a success and the scheme is economically viable. In addition, plants in the Reserve are also being tested for medicinal and spice markets. The Schorfheide-Chorin Reserve pays a premium per bee-hive to keep apiculture going there and emphasized the necessity of supporting the marketing of products from the Reserves, perhaps through a national campaign and common logo. The importance of a concrete legal framework for the conservation and sustainable use of plant genetic resources and the need to adapt the Commercial Seeds Act were also discussed.

Case 31. Greece: Incentives for the conservation of the nesting grounds of the sea turtle, *Caretta caretta*, in Laganas Bay, Zakynthos, Greece

54. Case-study 32 describes the range of incentives developed between 1980 and 1997 for the conservation of the nesting grounds of the endangered sea turtle *Caretta caretta* in Laganas Bay, Zakynthos, Greece. The incentives used included regulations and access restrictions (the creation of a nature reserve and a planned national marine park, as well as restrictions on beach activities, building, fishing, marine traffic and airport operations), the grant-aided purchase of some of the land by WWF with support from the European Union, information and awareness campaigns (including the employment of local wardens for safe-guarding the turtle nests and providing information), and the provision of physical infrastructure (cages) for the protection of the nests.

In addition, adverse incentives were identified, such as a provision in the 1982 Development Law that encourages the almost unconditional development of new hotels; the lack of verification and enforcement for the payment of the tax on tourism; and uncertainties and disputes regarding property rights that arose as a result of the loss of all ownership records in the 1953 earthquake.

Case 32. Japan: The case of Oze area: case-study on the Japanese experience concerning economic aspects of conserving biodiversity

55. Case-study 32 describes the conservation measures in use in the Oze National Park in Japan, primarily a marshland area with some lakes and ponds. The park is run as a not-for-profit concern and is partly owned by a private company (60 per cent) and partly by the national government (40 per cent). Tourism activities exert the main pressures on biodiversity in the park. There are restrictions on the use of some areas (and boardwalks are provided to protect sensitive, heavily used areas), on lodge sizes and capacity, and on traffic volumes during peak season. There are also various voluntary measures, such as an optional fee for toilet use, a voluntary restriction on shampoo use, a "trash-carry-home" campaign and a suggested no-bathe day. In 1995 a trust fund was established under the Oze Conservation Foundation with 1.4 billion yen per annum (half from public and half from private sources) for the purposes of undertaking educational and institution-building work, as well as for making management decisions for the park. Conservation efforts have benefited from the high national profile of Oze National Park, including through its representation in a popular cultural song and a national figure who fought for its conservation.

Case 33. Mexico: Economic incentives for the protection of wildlife in Mexico: the case of *Ovis canadensis* (big-horned sheep)

56. Case-study 33 examines economic incentive measures for the protection of the wild big-horned sheep *Ovis canadensis*, which lives in the mountainous arid and semi-arid areas in the north west of Mexico. There are two principal types of threat to the sheep: general degradation of its habitat and the ecosystem it lives in through, for example, urban development or agricultural expansion; and the more specific, often illegal, activities of individuals which affect it, such as hunting, collection of wild flowers, introduction of exotic species, etc. To a permanent end to the process of degradation, a solution is needed that provides new economic opportunities for the local people whose current activities lead to these pressures. It was found that the imposition of regulations alone, without proper monitoring and local-community participation, are insufficient. One proposed solution is to give marketable permits for hunting the sheep to the local community, who can then sell these on the international market. This will provide a source of income for the local population and give them an incentive to ensure hunting is kept at a sustainable level in order to maximize these incomes over time.

Case 34. New Zealand: Conservation of the Pae O Te Ranqi area

57. Case-study 34 examines the joint purchase in 1993 of forested lands in the Pae O Te Ranqi area by the New Zealand Government's heritage fund and two local authorities for conversion into a reserve. Previously, the lands had been privately owned by a Maori tribe and large areas had been logged and converted to sheep- and cattle-farming and horticultural uses. These activities were encouraged up to 1984 by direct subsidies for land clearance and agricultural market-price support, as well as tax disincentives and support to road infrastructure. However, in recent years the property was no

longer economically viable as a farm and there was an intention to subdivide it into small blocks to sell for development purposes. In order to prevent this, and under pressure from local interest groups, the land was purchased for conversion into a reserve instead. Stakeholders were involved in the process, and the plans were supported by the Maori tribe that previously owned the lands. In 1990, a Forest Heritage Fund was created to support the voluntary undertaking of sustainable forestry practices on private lands with compensation offered to those no longer allowed to log.

Case 35. Norway: Valuation of benefits connected to conservation or improvement of environmental quality in local watercourses in Norway

58. For this case-study, a valuation was conducted of the benefits associated with undertaking programmes to ensure the conservation or improvement of environmental quality in two Norwegian waterways. The benefits were estimated using contingent-valuation studies informed by expert panels, and they included the benefits from improved water quality, recreation and biodiversity. The main pressures on the waterways are high nutrient levels, which stem from municipal waste water and agriculture, with some large discharges of nitrogen from industrial point sources. Development and land clearance on the banks of the rivers were also identified as the source of pressure on the water quality. Compensation is currently offered to landowners or farmers for creating a new field or river margin, and 41 per cent of farmland is now set-aside. However, this arrangement has not been as effective as hoped because it does not target erosion-prone lands. Restrictions on development and the provision of better sewage treatment facilities were also recommended. The study emphasised, in particular, the need to develop holistic programmes for managing the waterways and the importance of public education and participation of local residents in these programmes.

Case 36. Poland: Case-study on the Polish experiences relating to the implementation of economic incentive measures to promote the conservation and sustainable use of biodiversity in the Biebrza Valley, with special attention to the Biebrza National Park

59. Case-study 36 examines measures to protect a peatland swamp in Poland, part of which falls within the Biebrza National Park. The lack of tourism opportunities means that there are no incentives for the local population to conserve biodiversity in the area. Similarly, because of low government financial resources in the region, there is little opportunity for financial support to promote environmentally friendly activities. The lack of an appropriate legal and regulatory framework for reclaiming or protecting the peatlands was identified. One of the main difficulties identified in the study is that the river catchment extends beyond the boundaries of the park, so activities undertaken outside the park have strong effects on the river quality and flow. These activities include water extraction for irrigation purposes and the destruction of forests around the park, the latter of which have increased in recent years with the removal of a requirement to hold a permit to undertake these activities. The most promising solutions suggested in the study include the use of debt-for-nature eco-funds to support conservation activities and the development of ecotourism activities in the region to generate a self-financing conservation programme.

Case 37. Turkey: The development of appropriate methods for community forestry in Turkey

60. Case-study 37 examines practical methods for developing community forestry programmes in 20 forest villages in Turkey. This approach was found to be necessary because the Government was unable to sufficiently enforce and monitor restrictions on illegal poaching, tree-felling and agricultural activities that had resulted in infertile, eroded soils and steep landscapes. Essentially, conflicts arose between the Government's plans to protect the forest areas and the needs of the local villagers to earn sufficient income from the forest to survive. It was therefore decided that the institutional structure needed to be reformed to allow for co-management of the forest by the villagers and the Government and participatory rural appraisals of the developments. Practical training sessions have been provided for villagers to help develop methods for sustainably using the forests while still generating sufficient income for the villages. These have been largely successful, and the next stage will be to expand the education programme to look at the upstream and downstream effects of different activities.

Case 38. United Kingdom: Heathland management in the United Kingdom

61. Case-study 38 describes existing and potential incentive measures for the management of lowland heathlands in Dorset, in the south of England. Under the United Kingdom Biodiversity Action Plan, all existing lowland heathland is to be maintained, and a further 6 000 hectares is to be established by the year 2005. In the past, agricultural subsidies encouraged conversion from heathland, but today they are used to encourage the re-creation of the heathlands. Under the European Union Agri-Environmental Regulation, there are payments to private land managers to conserve heathlands. In addition, three projects on the Dorset heathlands have been supported through environmental funds established through landfill tax credits. The study also suggested the possible use of a quarrying tax and/or a greenfield development levy to counter urban sprawl and raise funds for brownfield redevelopment. There are also possible new markets that can be realized through sustainable use of the heathlands, such as the production of organic, extensively reared meat or the generation of renewable energy through the burning of the by-products of heathland management (e.g. gorse). Under the Dorset heathland project of the Royal Society for the Protection of Birds (RSPB), a non-governmental organization, practical conservation measures are undertaken (largely based on voluntary field staff), and other groups or individuals are trained in the sustainable management of the heathlands.

Case 39. United States: United States experiences with incentive measures to promote the conservation of wetlands

62. Case-study 39 describes the incentive measures used in the United States to conserve wetlands. For many years, various support measures were in place which contributed to the destruction of wetlands in the United States, including direct subsidies for wetland drainage, market-price support for agricultural products, tax incentives for purchasing wetland draining machinery, and other government assistance for draining wetlands or agricultural expansion and production. While most of these measures have been removed, they contributed to the conversion of nearly half the wetlands in the United States to other uses since 1780. In addition to the removal of these adverse subsidies, positive incentive measures have also been developed for the conservation of wetlands. These include the purchase by government bodies



of wetlands for protection purposes or agricultural lands for the restoration of wetlands, and the establishment of subsidies for conservation activities.

Case 40. OECD: Individual transferable quotas as an incentive measure for the conservation and the sustainable use of marine biodiversity

63. Case-study 40 discusses the use of individual transferable quotas (ITQs) for the conservation and sustainable use of marine biodiversity. When total allowable catches (TACs) are established for commercial fisheries, the rights to fish can be allocated through ITQs, which allow the holder to fish a certain proportion of total allowable catch. These quotas essentially define property rights over the resources, allowing the maximization of privately appropriable resource rents. The study emphasized that other complementary measures may be required as well to achieve the desired conservation aims, including regulations specifying minimum mesh size, conditions pertaining to gear and vessels, or limits on the number of days at sea; the reduction of subsidies to production, infrastructure and vessels, and the removal of barriers to trade; vessel buy-back programmes; incentives to conserve and sustainably use the surrounding ecosystem and particularly non-commercial species; and, as a last resort, moratoriums on over-fished fisheries. In addition, it was found that ITQs work best in small, isolated fisheries where there is some social cohesion and where education and re-training programmes are offered if necessary. It is essential to gain the cooperation and active participation of the involved fishers.

3. IUCN

Case 41. Kenya: Livelihood and market incentives for sustainable land use in natural woodland areas of Kibwezi, Kenya

64. Kibwezi Division lies in the arid and semi-arid agro-ecological zone of south-eastern Kenya. Although most of the 15,000 households in the Division depend on mixed smallholder farming, Kibwezi is an agriculturally marginal area. A range of economic incentives were identified as tools for natural woodlands conservation and rural livelihood development in Kibwezi, including:

(a) Using fiscal instruments to add value to existing activities, promote multiple use and improve harvesting;

(b) Increasing household value added through improving prices and markets;

(c) Using financial instruments to encourage investment in improved harvesting, processing and entry into new product uses and markets (see also the summary and discussion available at <http://economics.iucn.org/pdf/kits-02-01.pdf>).

Case 42. Kenya: Financial and policy instruments for the conservation of Mount Kenya forest

65. Mount Kenya forest is one of the largest, most ecologically significant and commercially valuable indigenous forests in Kenya. Three major tools have been used to introduce positive incentives for conservation and to overcome the perverse incentives that encourage forest degradation and loss. These include:

(a) Property rights and policy change;

/...

- (b) Development of alternative products and markets;
- (c) Provision of finance and funding.

66. All these measures have substantially improved community-level economic incentives for forest conservation. However, the case of Mount Kenya forest also illustrates the limitations of community incentives. Many of the economic forces driving forest degradation and loss do not arise at the local level, and are not directly related to the forest sector. Perhaps the single most important perverse incentive encouraging local forest degradation and loss is policy in the land and agriculture sectors based on extending and intensifying arable production and which still promulgates subsidies and interventions aimed at achieving these goals. (See also the summary and discussion available at <http://economics.iucn.org/pdf/kits-02-01.pdf>.)

Case 43. Uganda: Incentives for urban wetlands conservation in Nakivubo, Uganda

67. Nakivubo is one of the largest wetlands in Kampala, covering almost 6 square kilometres. Economic incentives can be used to persuade urban planners and developers to take environmental concerns into account - and thus to safeguard sources of income, food and services for local communities. Three major sets of economic incentives are in the process of being set in place in order to safeguard Nakivubo's integrity:

- (a) Financing wetlands management;
- (b) Sustainable resource utilization;
- (c) Internalizing development costs.

(See also the summary and discussion available at <http://economics.iucn.org/pdf/kits-02-01.pdf>.)

Case 44. United Republic of Tanzania: Market arrangements between local communities and the private sector in the north-west Serengeti, United Republic of Tanzania

68. The Serengeti ecosystem forms one of the most important wildlife areas in eastern Africa, both in terms of conservation and tourism. A series of effective community economic incentives for wildlife conservation have resulted from the development of a new range of markets for wildlife products and services, largely driven by private-sector demand and the dependence of commercial tour-operators on community compliance in wildlife conservation. These include:

- (a) Revenue-sharing by tourist hunters;
- (b) Local sourcing of products;
- (c) Community wildlife-cropping;
- (d) Land-leases and joint tourism enterprises.

69. Together these arrangements have substantially increased the economic and livelihood gains accruing from wildlife to communities. (See also the

summary and discussion available at <http://economics.iucn.org/pdf/kits-02-01.pdf>).

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