



NATURAL CAPITAL AND HUMAN WELL-BEING

Summary



National Commission for the Knowledge and Use of Biodiversity
Mexico

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Acronyms

CNA	Comisión Nacional del Agua	National Water Commission
CONABIO	Comisión Nacional para el Conocimiento y Uso de la Biodiversidad	National Commission for the Knowledge and Use of Biodiversity
CONAFOR	Comisión Nacional Forestal	National Forest Commission
CONANP	Comisión Nacional de Áreas Naturales Protegidas	National Commission of Protected Areas
PROFEPA	Procuraduría Federal de Protección al Ambiente	Federal Prosecutor's Office for the Protection of the Environment
SAGARPA	Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food
SEMARNAT	Secretaría del Medio Ambiente y Recursos Naturales	Ministry of Environment and Natural Resources

Preface



This document gathers an extract of the main ideas and considerations contained in an assessment study of the biodiversity in the marine and terrestrial ecosystems in Mexico, as well as of the environmental services rendered by such ecosystems to the Mexican population.

Such study, known as Second Country Study, is being developed under the coordination of the National Commission for the Knowledge and Use of Biodiversity and will be published in 2007 with the collaboration of more than 500 Mexican authors, experts in different disciplines and is now at the stage of being revised by the external reviewers.

The Second Country Study includes 60 chapters, organized in five volumes, covering: 1) the characterization of the ecosystems and the biodiversity they shelter; 2) their changes and trends registered in recent years, as well as the factors responsible for such changes; 3) the public policies, the ways the natural resources have been used and the norms established to meet the conservation and sustainable management needs of Mexico's biological diversity, and their degree of effectiveness throughout the last years; 4) the analysis of economic, demographic and public policy scenarios for the future and their possible consequences to the conservation and sustainable use of the country's ecosystems and 5) an analysis of the human and financial capacities as well as the enabling environments (or lack of them) that have determined the present status of biodiversity conservation and ecosystem management in the country.



Local market at Tlacolula, Oaxaca

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Mexico is one of most diverse countries of the world, both biologically and culturally. Relationships between biodiversity and cultures place our country in a unique position, which at the same time represent great development opportunities, complexity in the management of natural resources and an important responsibility towards the world.

1. Mexico is a privileged country because of its exceptional biological diversity distributed across its territory, expressed in various ecosystems and numerous species with a wide range of genetic variability.

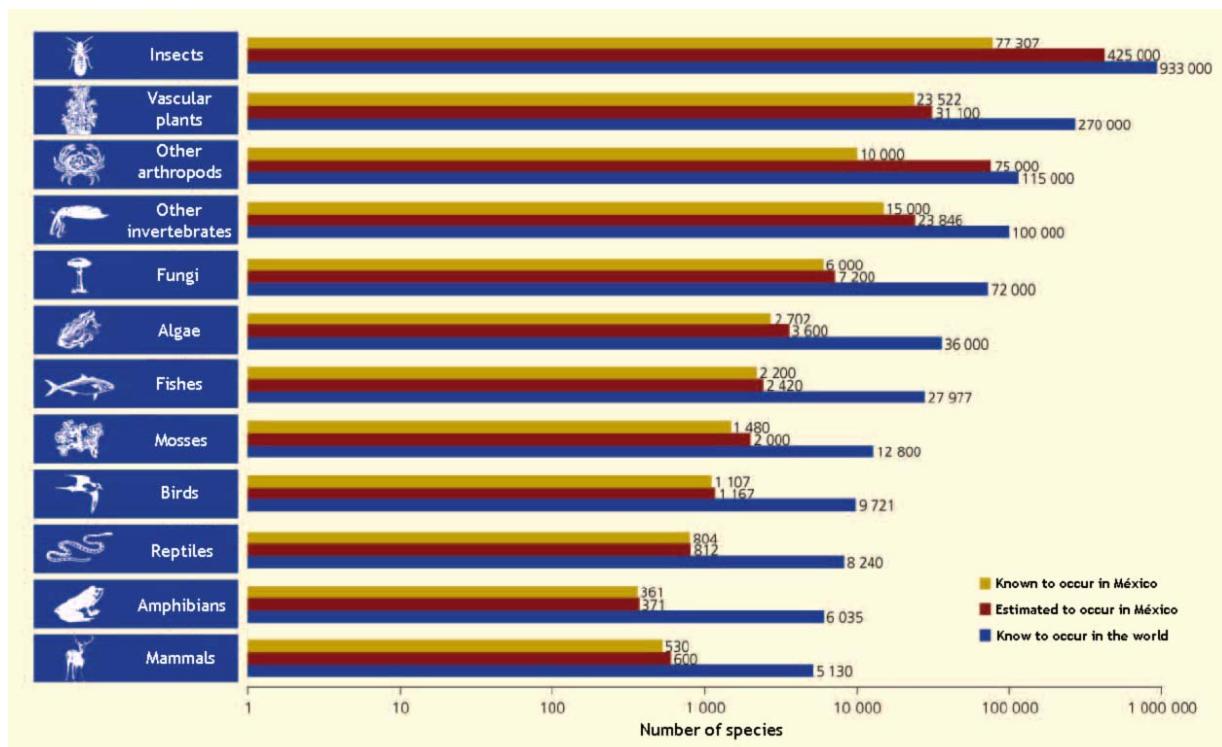


Figure 1. Species diversity of fungi, plants and animals in Mexico and in the world. ¹⁻¹⁶

2. Mexico's biological diversity is matched by a great cultural diversity. Intimate and important relationships exist between them.

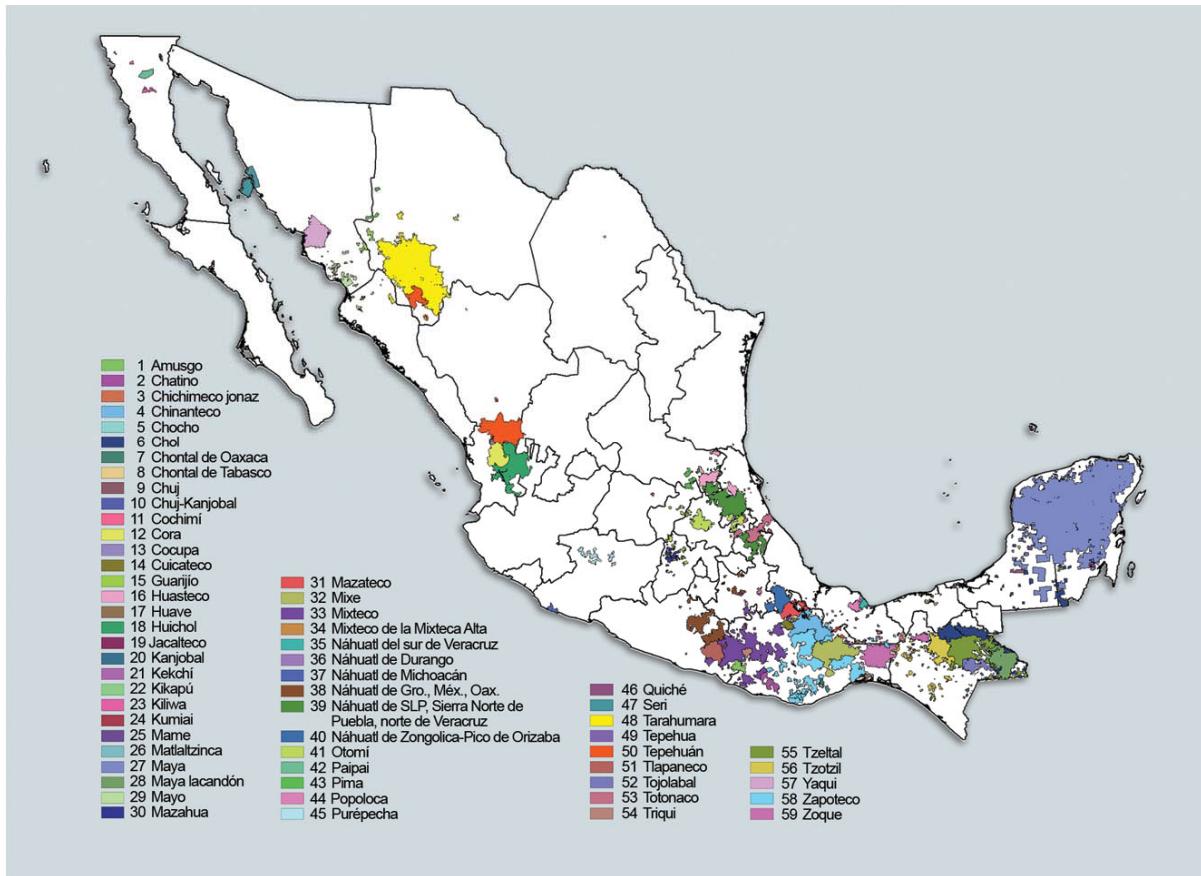


Figure 2. Distribution of languages and indigenous groups in Mexico. Regions with more than 40% of indigenous population are shown according to the predominant language.¹⁷

3. A large part of Mexico's biological diversity is exclusive of our country; this constitutes for the country a great responsibility at the regional and global level.

4. Mexico's biodiversity is heterogeneously distributed across the continental territory as well as across the seas.

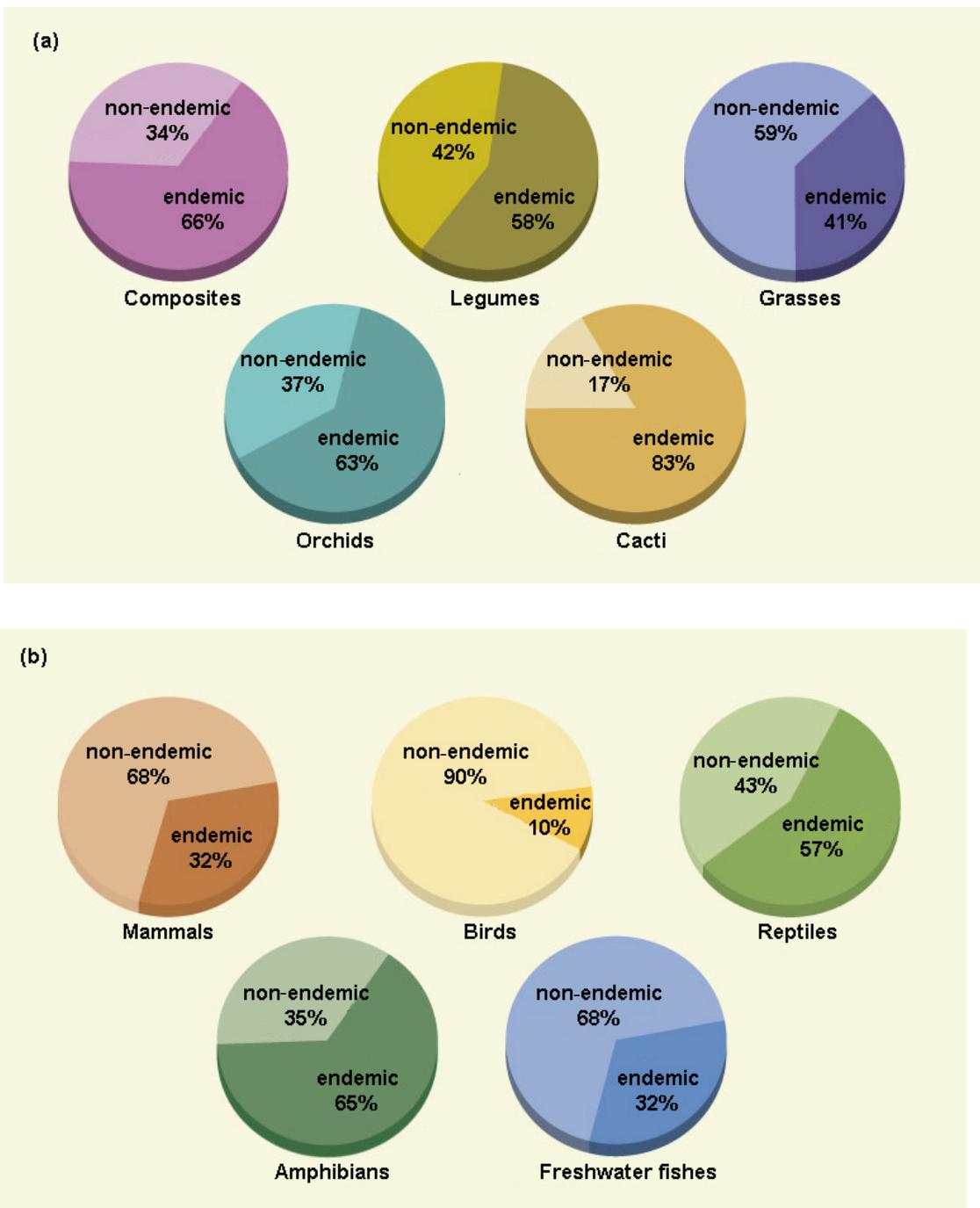


Figure 3. (a) Top five plant families with the greatest number of native flora species in Mexico and their endemism percentage. Legumes include Fabaceae and Mimosaceae⁴; (b) Proportion of endemic and non-endemic terrestrial vertebrate species in Mexico^{1-2, 6}.



Motozintla City, Chiapas, disjointed by the landslides of the Mazapa river in 2005

2

The biological heritage of Mexico has historically benefited the country's population; however, overexploitation of natural resources has led to the severe degradation of the environmental services on which humankind depend for their well-being.

5. Mexico's natural capital offers us important opportunities for the benefit of society.
6. Land use change, overexploitation and pollution of ecosystems to address social needs, as well as the introduction of invasive species and climate change are direct causes of the loss of our natural capital. This is also due to indirect factors such as population growth, inadequate public policies and inappropriate technological developments.

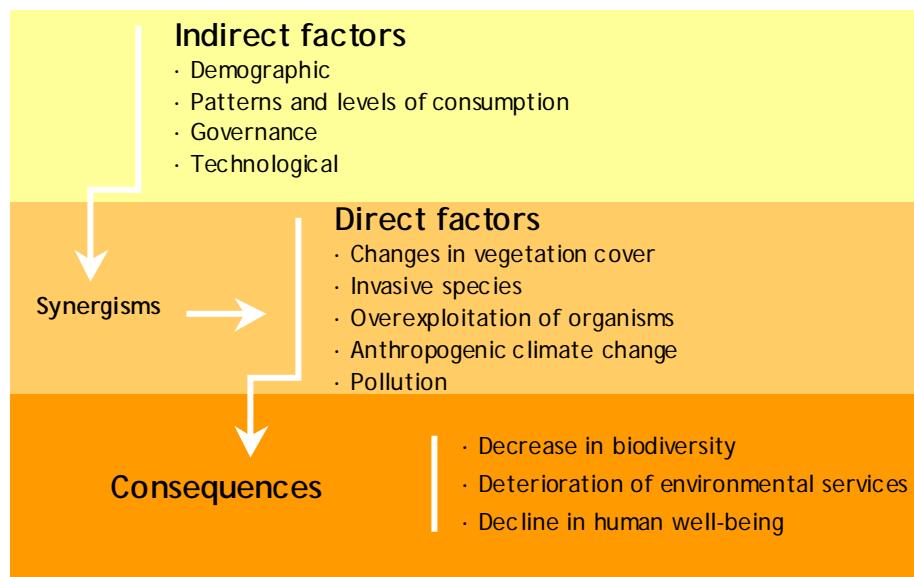


Figure 4. Direct and indirect drivers responsible for changes in biodiversity, ecosystems and its environmental services and the consequences for human well-being.¹⁸

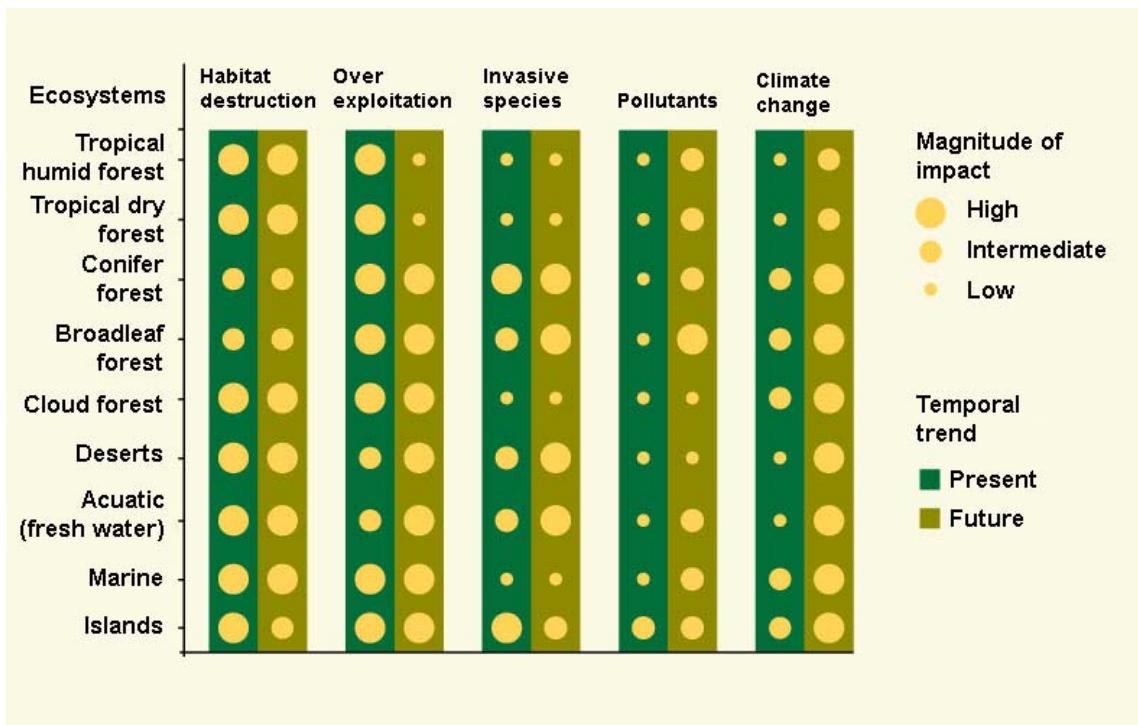


Figure 5. Impact of human activity on Mexico's biodiversity: magnitude of change and temporal trend.¹⁸

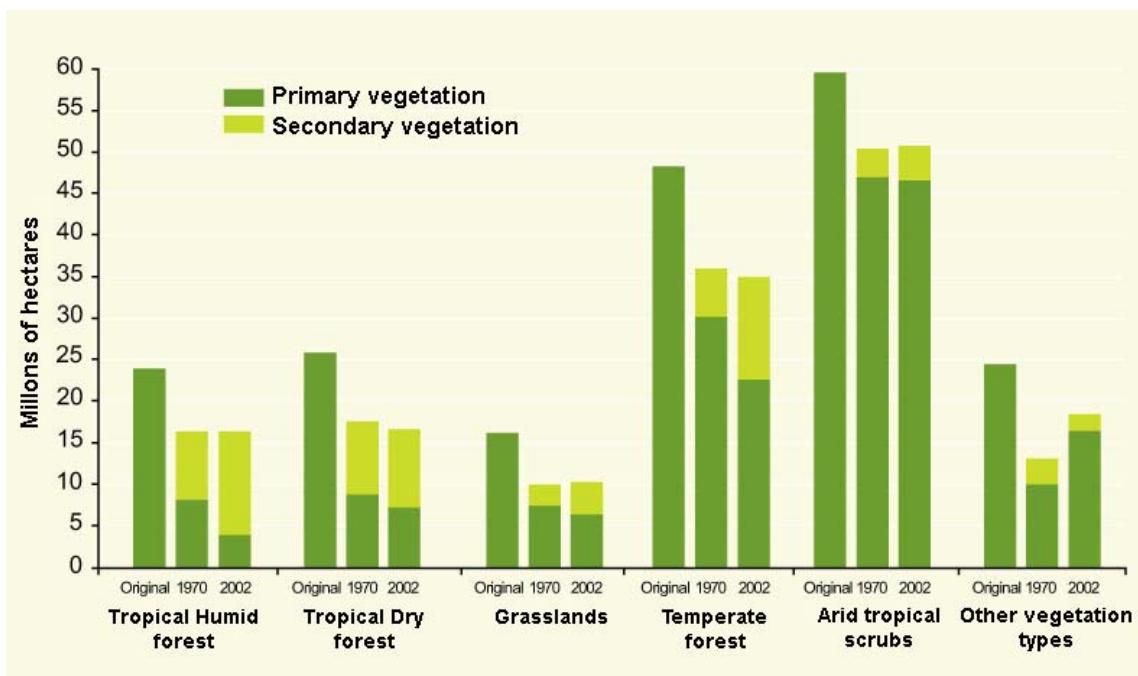


Figure 6. Conservation status of the main Mexican ecosystems, which compares the original potential vegetation coverage with that remaining, in the 1970's and in 2002.¹⁹

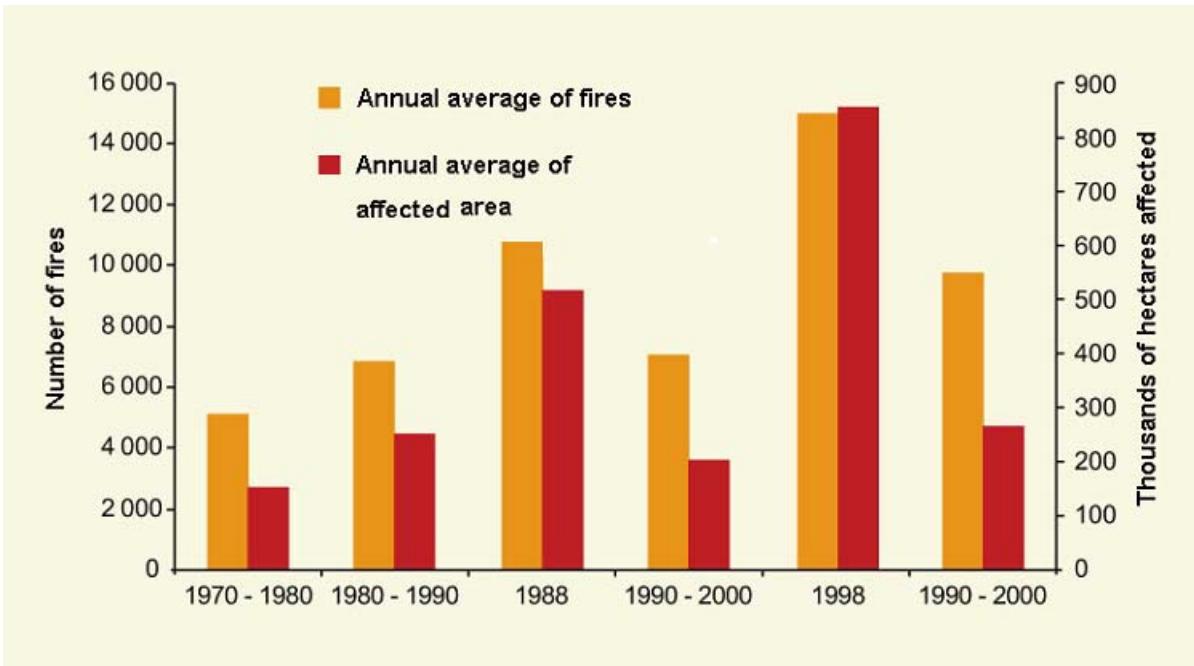


Figure 7. Number of wildfires and affected area.²⁰



Tropical forest at Los Chimalapas, Oaxaca, devastated by fires in 1998



Inefficient forest exploitation in La Chinantla, Oaxaca

3

Mexico's natural capital offers a great potential for development and benefit generation for the entire population. Nevertheless, historical natural resource exploitation policies have not favoured the conservation and sustainable use of biodiversity, nor human well-being.

7. The lack of mainstreaming of environmental issues in the public policies limits our approach to sustainability, as the fostering of policies for productive activities frequently runs against environmental policies.

Table 1. Federal agricultural and environmental expenditure, 2005²¹

	Millions US dollars
Environmental expenditure (Under ministries)	58.39
Forestry expenditure (CONAFOR)	180.57
Expenditure on conservation (CONANP)	49.41
Expenditure for vigilance (PROFEPA)	70.07
Expenditure on water management (CNA)	1 671.77
Others	166.19
Environmental expenditure (SEMARNAT)	2 196.94
Agricultural expenditure (SAGARPA)	4 347.13

8. For many years, distorted public policies as well as distorted subsidies, have damaged biodiversity and well-being of owners of the natural capital.
9. Lack of ecological criteria in the food production systems cause severe impacts on biodiversity, water, soil, public health, and has contributed to expulsion of rural population. It has been shown that these productive practices are not sustainable from the social, economic or ecological point of view.

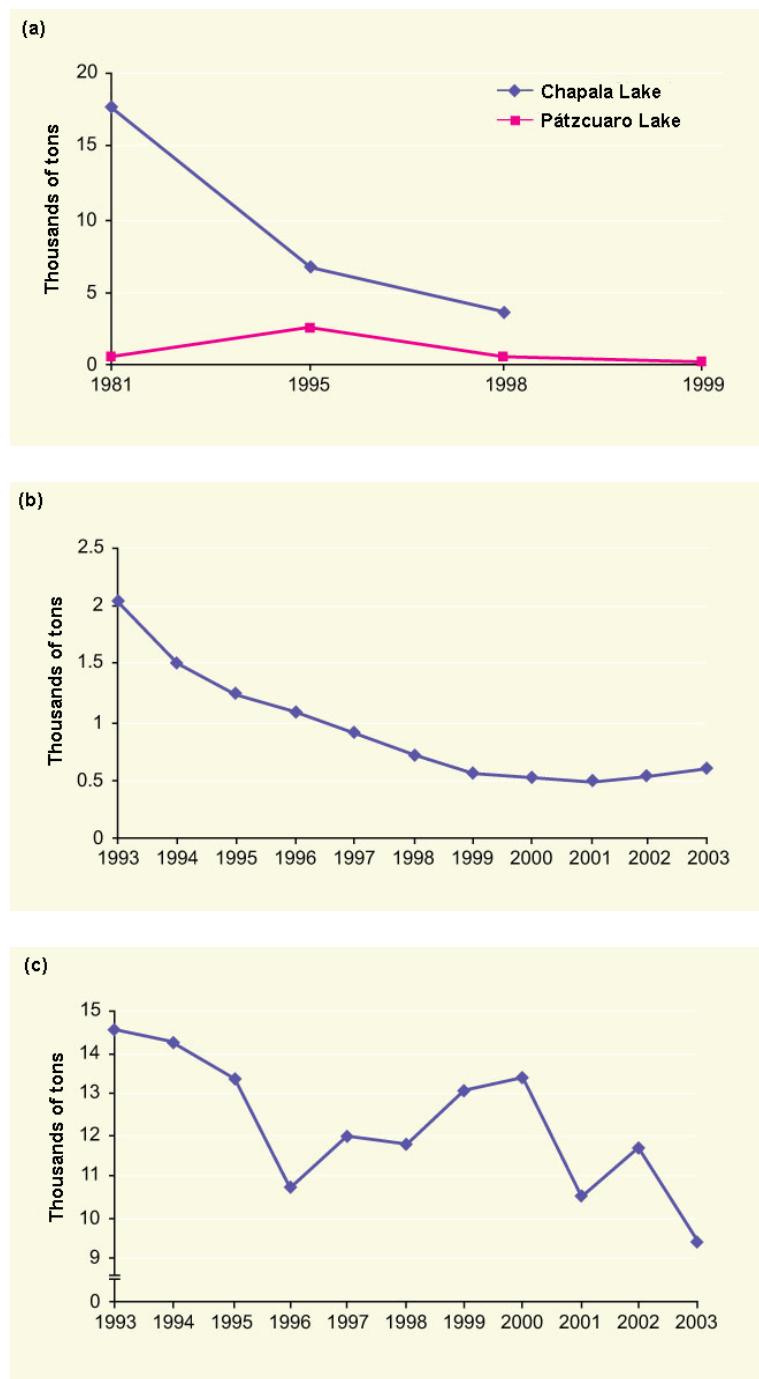


Figure 8. (a) Depletion of the main continental fisheries²²; (b) Depletion of the abalone fishery²³; (c) Depletion of the grouper fishery²³.

10. Modern farming activities, in many cases, increased food production but caused important environmental degradation, which has affected economically the most vulnerable social groups.
11. Concessions given for decades to third parties for the exploitation of terrestrial biodiversity rather than to the legal owners and holders of the land (communities, ejidos, or individuals), have not favoured biodiversity conservation or human well-being.
12. Traditional knowledge on the use of biodiversity is vast among indigenous communities; however, the lack of economic valuation of useful species and the absence of diversified markets limit the economic development of rural and indigenous communities and ejidos based on their natural resources.
13. Consumption patterns, especially among the urban population, have created an increasing demand of goods which production systems are not sustainable.



Wood floors factory owned and managed by rural communities

4

In the last decade, public policies on biodiversity conservation and use, based on ecological criteria, have allowed for the improvement of resource conservation favouring human well-being; however, it is still necessary to reinforce and promote them more actively.

14. The main strategy to promote ecosystem conservation has been the establishment of a protected areas network.

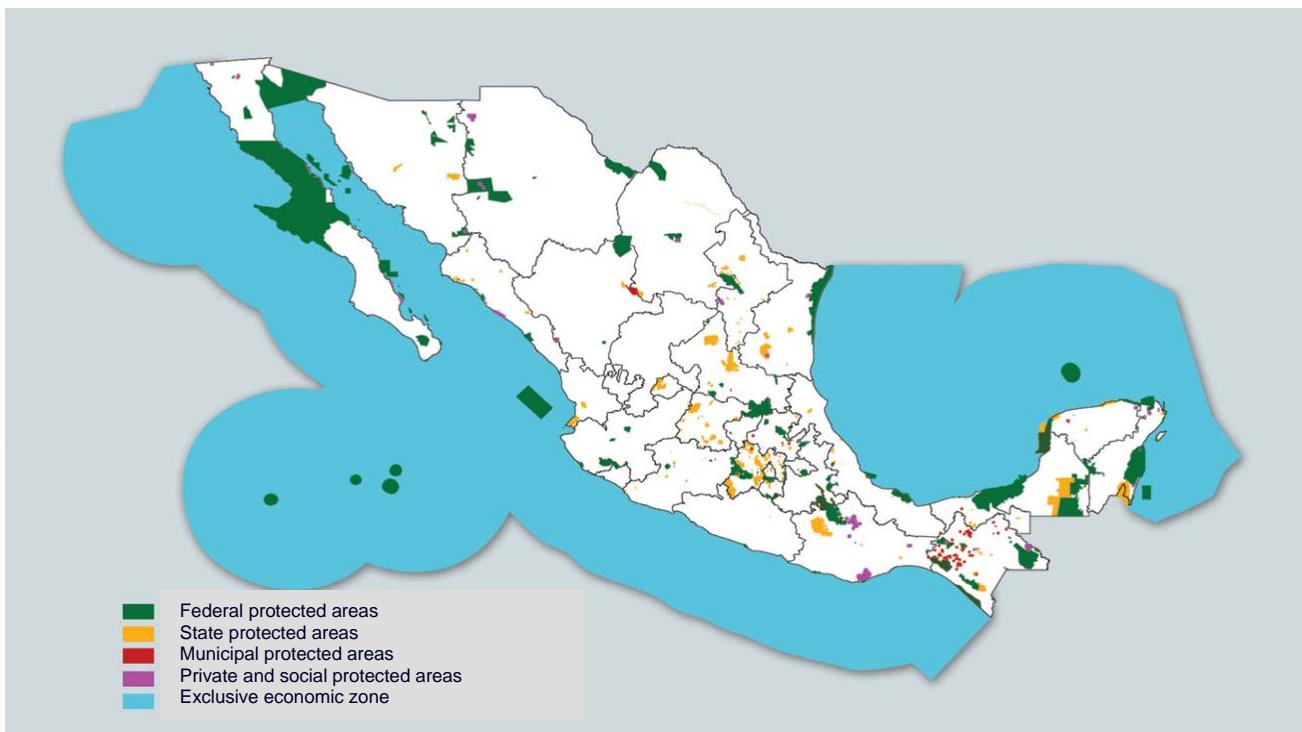


Figure 9. Federal, state, municipal, private and social protected areas.²⁴

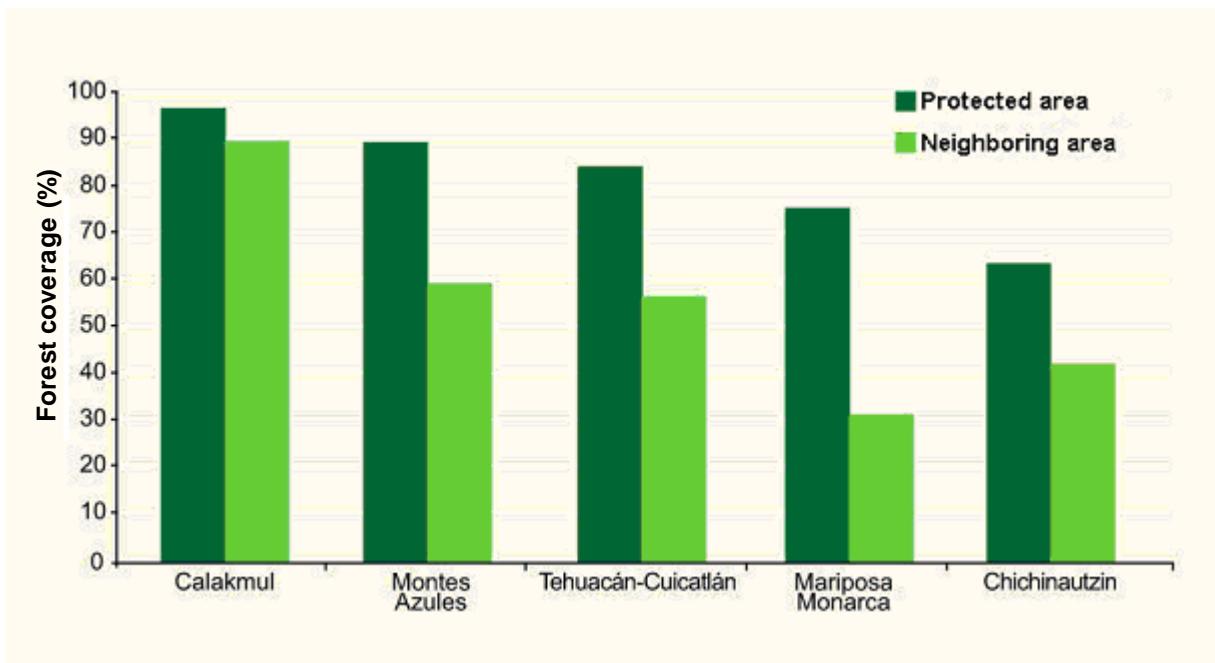


Figure 10. Protection outcomes in five protected areas.²⁵

15. The establishment of specific programs for the protection and recovery of priority species[▽] has been the main conservation strategy for species and populations at risk of extinction.
16. It is essential to safeguard native domesticated varieties and their wild relatives as they represent a valuable capital for future alternatives of economic development.
17. Sustainable management of terrestrial ecosystems and species of high commercial value, when undertaken directly by the land owners, has proved to be, under certain circumstances, a contributing factor in the improvement of local, regional and national economies, human well-being and biodiversity conservation.
18. The traditional use of biodiversity by some indigenous and peasant communities has been improved and strengthened with the support of modern technologies to improve their economic conditions.

[▽] Priority species have been selected considering different criteria, such as risk of extinction, biological, cultural or economic importance, charisma or umbrella species for the protection of landscapes or other species.

Table 2. Benefits generated by the exploitation of wildlife²⁶
 Thousands US dollars

Intensive plant and animal facilities (nurseries, zoos, etc.)	8 349.4
Regulated hunting activities	437 222.3
Legal live plant and animal exports	628.4
Whale watching and swimming with whale sharks ecotourism	2 424
Income to the federation (taxes)	269.3
Total	448 893.3

19. An integrated vision of natural resources management is necessary to reduce the depletion of fisheries.
20. It is vital to re-evaluate the cost and benefits of farming activities in the light of other, more sustainable, food production systems, contrasting these with the ecological costs of "orthodox" production systems.
21. Ecotourism constitutes an opportunity to reconcile conservation of well preserved ecosystems and the economic and social needs of the people who inhabit them.
22. There would be a significant potential for increasing employment in the rural areas if an attractive market value is given to biodiversity and new markets of sustainable products are consolidated.
23. There is a fundamental interdependency between urban areas and environmental services provided by the ecosystems, not only for those adjacent to the cities but even for the remote ones.
24. Restoration of degraded ecosystems is a seriously pending task in the country and has been limited to reforestation and recovery of some priority species.



Wood processing industrial plant managed by rural communities at San Juan Nuevo Parangaricutiro, Michoacan

5

Regulatory instruments, already in place, have enabled to improve the conservation and use of biodiversity and to articulate them with economic and social policies, but these are still incipient and must be reinforced.

25. Land ecological planning is a good tool to reconcile the goals of biodiversity conservation with human well-being. However, it requires a more precise legal framework than the one existing, as well as political will to enhance its great potential.

26. Economic environmental instruments have been recently developed as part of an integrated biodiversity valuation and conservation policy.

Tabla 3. Beneficiaries of CONAFOR's environmental service payments derived from the conservation of biodiversity.²⁷

State	Municipality	Type of ownership	Surface (ha)	Total amount in US dollars to be paid in 5 years
Coahuila	Cuatrociénegas	Partnership	2 721	225 000
Chiapas	Ocosingo	Ejido	3 368	225 000
Durango	San Dimas	Ejido	4 424	225 000
Jalisco	Techaluta de Montenegro	Ejido	134	61 500
Jalisco	Sayula	Ejido	143	135 000
Oaxaca	San Pedro Yaneri	Community	1 750	168 100
Veracruz	Catemaco	Ejido	110	128 000
			12 650	1 167 600

27. The payment for environmental services is a tool which is increasingly being used at the global scale. In Mexico, there are successful and encouraging examples that should proliferate.



Frontier between forests and urban areas, at the south of Mexico City

28. The normative framework, linked to the several aspects of biodiversity use, was reformed during the last decade and changed from a historical sector-based and production-driven vision to one of conservation and sustainable use.

29. Despite the improvements in the legal framework, law enforcement is limited due to the lack of sufficient human and financial resources to enforce the law on the part of the PROFEPA.

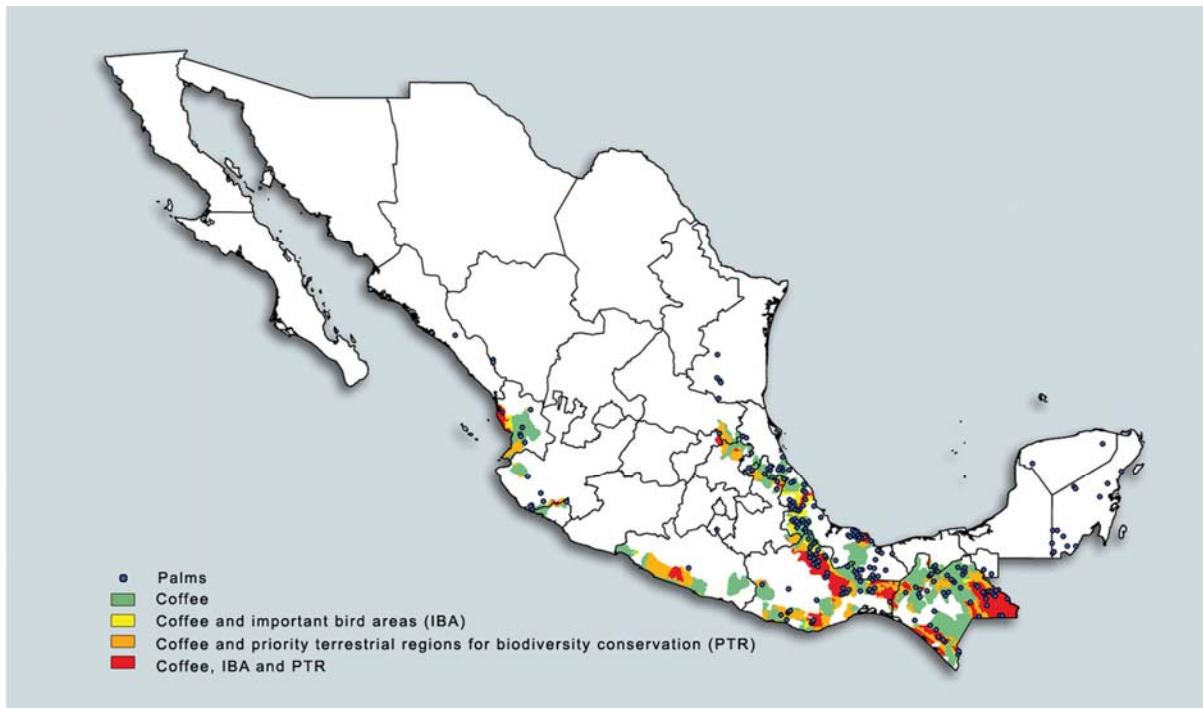
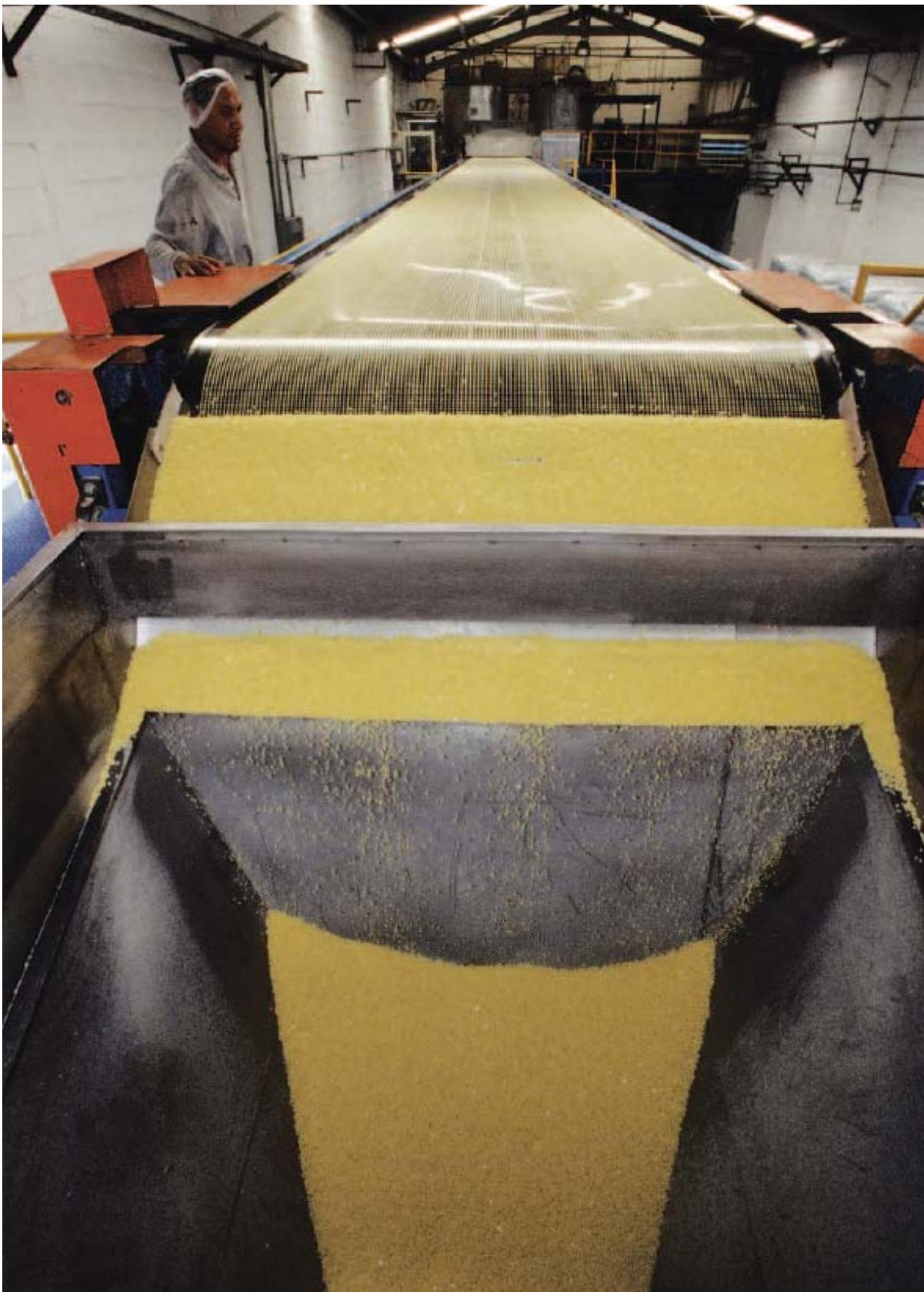


Figure 11. Coffee and palm plantations in priority areas for biodiversity conservation.²⁸



Wax from candelilla (*Euphorbia antysiphilitica*) purified and processed for industrial applications in a community owned processing plant

6

Mexico has institutional, human and basic financial capacities to achieve conservation, sustainable use and the restoration of its natural heritage, but it is necessary to expand and strengthen them so they can better contribute to the sustainable development of the country.

30. Governmental institutions responsible for the conservation and use of biodiversity are recent and were conceived during a time of budgetary restrictions and reductions in personnel. It is necessary to strengthen their human and financial capacities.

31. To manage biodiversity, there is not only the need for government intervention, but collective action with society is needed to achieve its conservation and sustainable use.

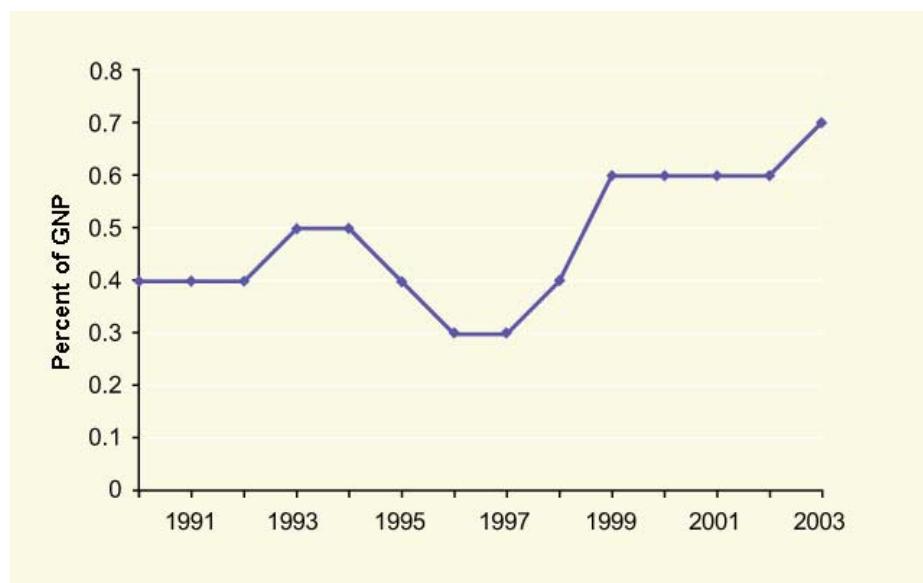


Figure 12. Proportion of environmental protection expenditures in relation to Mexico's Gross National Product (GNP).²⁹

32. Mexico has achieved an outstanding progress in capacity building of human resources to know, understand and use its natural capital in a sustainable manner. However, because of the country's megadiversity and cultural heterogeneity, human and financial resources to support them must be increased and strengthened.
33. Mexico is internationally recognized by its efforts and innovative approaches towards the knowledge, conservation and use of biodiversity. However, it is essential to reflect its international commitments in the national development policies so they can strengthen the conservation and sustainable use of biodiversity.
34. It is of utter importance to develop a State-supported culture that deals with our natural capital, taking into account the value of its social, biological and economic dimensions.



Dawn at the Lacandon Forest

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