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SIXTH NATIONAL REPORT OF MEXICO TO THE CONVENTION ON BIOLOGICAL DIVERSITY

SUMMARY FOR POLICY MAKERS

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SUMMARY FOR POLICY MAKERS

First edition, 2019

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INTRODUCTION

Biodiversity is the basis of ecological processes that give support to provide society with goods and services. Some examples are: food, wood, fibers and active ingredients for medicines; the collection of rainwater that supplies natural bodies of water (springs, rivers, lakes and wetlands) and artificial bodies of water; soil renewal and maintenance of their fertility; capture of carbon dioxide from the atmosphere to diminish the potential of global warming; the provision of habitat for pollinators, which are essential for plant fertilization; and, additionally, recreational, cultural and spiritual benefits.

However, in the last 2 centuries, particularly in the last 4 or 5 decades, human activities have modified ecological processes. In Mexico, it has been documented that the direct causes of biodiversity loss coincide with those identified in other countries: loss of habitats (due to land use change, deforestation, fragmentation or degradation), overexploitation and pollution of ecosystems, as well as the introduction of invasive species and climate change.

Due to its large variety of ecosystems, the high number of species, the enormous wealth of endemisms and genetic variability of wild and cultivated species, Mexico is part of the select group of *megadiverse* countries that occupy approximately 10% of the planet's surface, and together are home to approximately 70% of the world's biodiversity. This a is great privilege, but also represents a huge global responsibility to guarantee the conservation and sustainable use of ecosystems and their services, understood as key elements of development and human well-being.

Therefore, the Government of Mexico and various sectors and stakeholders of society make important and numerous efforts for the conservation and sustainable use of biodiversity, and thus contribute to the fulfillment of international commitments in this area. A clear example is the realization of the *United Nations Conference on Biodiversity* in Cancun 2016, whose main theme was "mainstreaming biodiversity for well-being". For the first time, ministers from different sectors attended the Conference. Also, representatives of other national authorities, private sector, indigenous peoples and local communities (IPLCs), and youth attended the Conference. All of them discussed the challenges and opportunities of mainstreaming biodiversity into the forestry, agricultural, fisheries and tourism sectors, through cross-sectoral visions and policies compatible with the conservation and sustainable use of biodiversity.

On the other hand, the Sixth National Report to the Convention on Biological Diversity (CDB) aims to present the main advances of Mexico, for

the 2014-2018 period, in relation to compliance with the Strategic Plan for Biological Diversity 2011-2020 and the Aichi Biodiversity Targets (ABT). The report was prepared with information from 33 agencies of the Federal Public Administration (APF) (mainly from the environmental, agricultural and fisheries sectors), as well as 75 case studies from 19 civil society organizations (NGOs), 11 government agencies and 13 state authorities (figure 1).

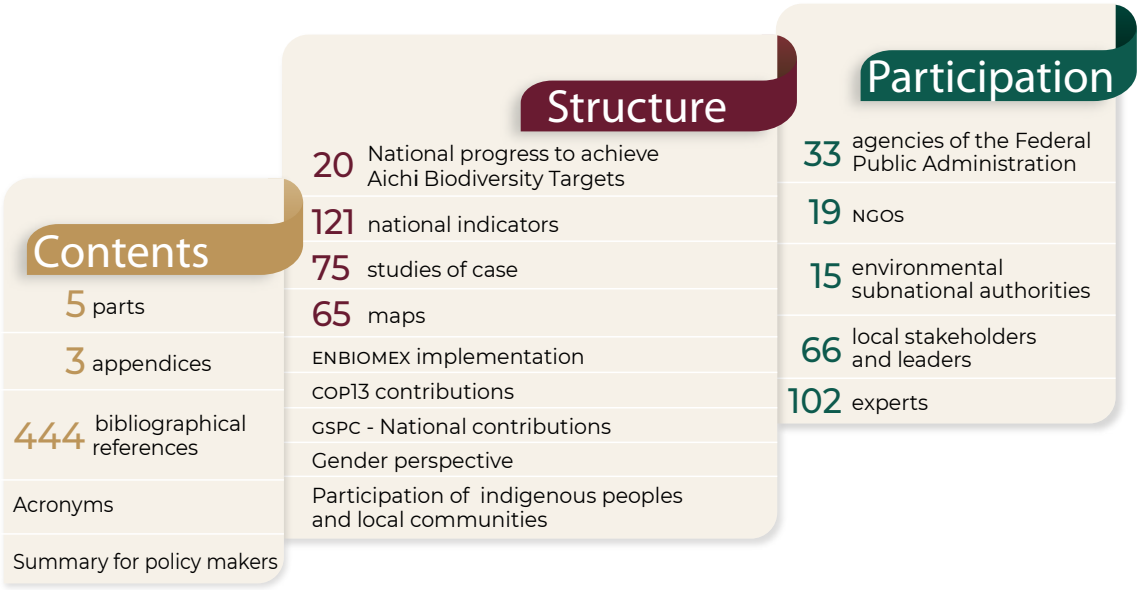

Figure 1. Synthesis of the contents for the Sixth National Report

This synthesis is presented to provide decision makers with information on the main findings of the Sixth National Report regarding the progress, challenges and opportunities of Mexico to comply with the 20 Aichi Biodiversity Targets. For this aim, this document consists of 3 sections:

1. Key messages of the Sixth National Report. Relevant information on each objective of the Strategic Plan for Biological Diversity 2011-2020, as well as relevant information on the achievements, challenges and recommendations to make progress in each ABT, including the trend of compliance with each of them.
2. Supporting information. Details from the full report to contextualize and support the key messages.
3. Facts of Sixth National Report:
   Relevant achievements
   Challenges

The trend in meeting the goals was determined from the inputs obtained by consulting experts from the agencies of the APF (from the environmental, agricultural and fisheries sectors), from NGOs and state authorities.

As part of this assessment process, experts quantitatively rated the fulfillment of each goal based on criteria such as: 1) available information; 2) existence of normative instruments; and 3) existence of instruments and

means of application. Based on the results obtained, a global rating or degree of compliance was established for each ABT (identified with green, yellow and red colors), and subsequently, a qualitative analysis was carried out to determine the trend of compliance of the ABT (positive, without change or negative; figure 2).

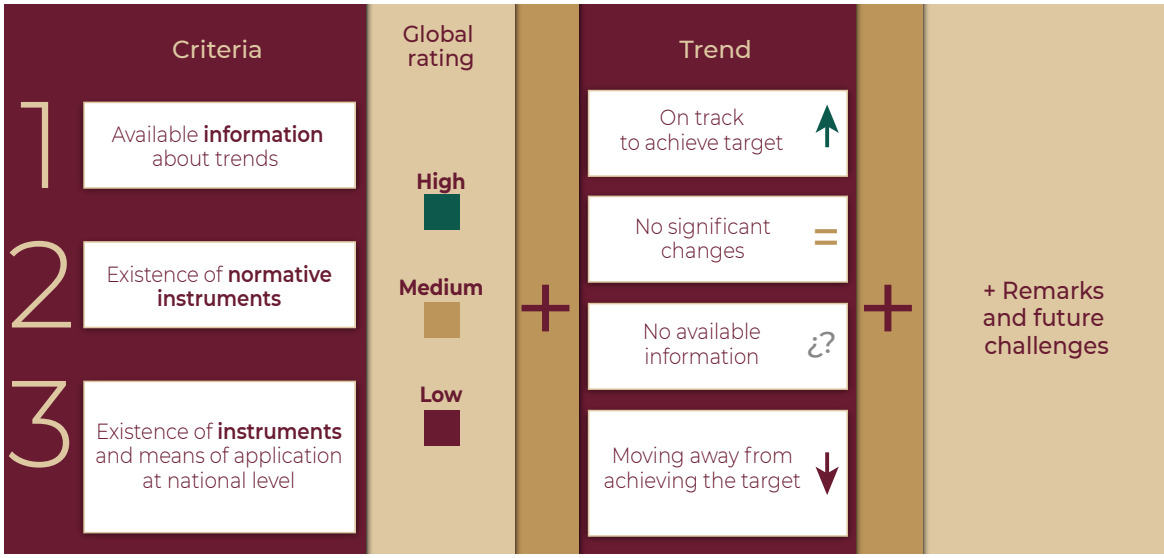

Figure 2. Methodology for the assessment and analysis of progress in compliance with the Aichi Biodiversity Targets.

01

KEY MESSAGES OF THE SIXTH NATIONAL REPORT

Photo by: César Edgardo Rodríguez Ortega
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Key Message A.
Address the underlying causes of biodiversity loss

Mexico has implemented actions to encourage the conservation, sustainable use and restoration of biodiversity and to promote that more Mexicans know and understand what biodiversity is, its values, its importance for human well-being and the urgent need to protect it. However, to address the underlying causes of biodiversity loss in the country, it is still necessary to promote greater public awareness, assessment and involvement of all relevant stakeholders; to internalize the costs of the negative effects of productive activities on ecosystems; and to include sustainability criteria in productive, extractive and consumption activities at the national level through crosscutting and intersectoral coordination.

A1. Awareness of biodiversity values ↑

Mexico carries out important actions regarding the dissemination of environmental culture, communication of science and public awareness. However, it is necessary to increase them and develop indicators that assess their effectiveness in behavioral changes towards an environmentally friendly culture.

Recommendations:

- Position environmental education from the formal institutional perspective.
- Develop national indicators to assess the progress in knowledge and assessment of the valuation that the Mexican population gives to biodiversity and ecosystem services.
- Systematically asses the effectiveness of the actions carried out by the various institutions, so that Mexican society knows and values biodiversity.

A2. Integration of biodiversity values ↑

Mexico has made progress in the development of national account systems and tools that integrate the valuation of biodiversity and ecosystem services. However, it is necessary to integrate these methodologies and tools into national and sectoral planning, as well as address other non-monetary values.

Recommendation:

- Adopt existing tools for biodiversity valuation and ecosystem accounting in federal budget planning, in such a way that sufficient resources are allocated to address environmental degradation and depletion.

A3. Incentives

Aquaculture ↓
Forestry ↓
Agriculture ↓

Even if Mexico has incentives to minimize or reduce the adverse impacts of the primary productive sectors on biodiversity, the incentives that impact it negatively prevail, particularly in agriculture, livestock, aquaculture and infrastructure.

Recommendation:

- Generate information on the operation and impact of incentives with negative impacts on biodiversity, in particular subsidies, as well as a legal framework that favors the application of those with positive impacts on it.

A4. Sustainable production and consumption

The unsustainable extraction of natural resources persists and continues to increase; in addition, non-sustainable value and consumption chains prevail. Therefore, it is necessary to strengthen the inclusion of sustainability criteria and biodiversity mainstreaming in productive chains, as well as legal and normative instruments that regulate large-scale productive activities.

Recommendations:

- Incorporate green economy approaches that encourage local consumption based on best practices and new approaches to development, in order to recognize the potential of biodiversity to increase and diversify productivity, and to generate new jobs, income and new forms of production and consumption.
- Strengthen the legal instruments and the control and surveillance actions for compliance with regulations that promote sustainable use and consumption.
- Include conservation and sustainable use of natural resources criteria in the legislation that regulates value chains, particularly in large-scale industry practices and activities.

Key message B.
Reduce the direct pressure on biodiversity and promote sustainable use

The loss, fragmentation and degradation of habitats, pollution, overexploitation, invasive species and climate change, continue to be the main drivers of the accelerated loss of biodiversity in Mexico. Although there are advances in the development and implementation of systems that monitor the factors that threaten biodiversity, it is necessary to strengthen inter-institutional coordination with productive sectors (particularly agriculture and fisheries) and service sectors, for the generation of information and implementation of effective actions that prevent the loss and deterioration of ecosystems and their components.

B1. Loss of habitats

Terrestrial ecosystems ↓

Aquatic ecosystems ↓

The drivers of change and transformation of ecosystems continue to advance rapidly. Between 1976 and 2014, 11,905,011 ha of primary vegetation were lost, about 50% of the vegetation cover has been strongly impacted by agricultural activities, and it is estimated that 44% of the country's soils present some type of degradation. Therefore, it is necessary to assess the effectiveness of public policy instruments that prevent the loss of ecosystems and carry out actions to strengthen their application.

Recommendations:

- Update and standardize the concepts and methodologies to estimate the classification and loss of ecosystems, with adequate periodicity. For this, the levels of degradation and fragmentation of ecosystems must be considered, and not only from the perspective of vegetation cover.
- Implement mechanisms that ensure compliance with regulations regarding land use change and territorial planning.

B2. Sustainable fisheries ↓

The fisheries sector in Mexico went from being a formidable food promise, to being a sector with a growing need to conserve ecologically and economically key species. In this regard, the need to include criteria for conservation and sustainable use in the operating rules, programs and strategies of the sector, is highlighted.

Recommendation:

- Establish and strengthen efficient mechanisms for coordination, shared regulation and transfer of information between the fishing and environmental authorities.

B3. Areas under sustainable management

Agriculture =

Forestry ↑

Aquaculture =

Mexico has significant advances in the area of sustainable forestry. However, the reduction in the forest budget in recent years is a limitation to consolidate sustainable forest development policies. With regard to agriculture, there are challenges and opportunities, and the work related to the environmental sector must be strengthened. Regarding aquaculture, there is little information, so it is necessary to work on the national policy of aquaculture and sustainable fisheries.

Recommendations:

- Generate more complete and detailed information on the diversification of productive activities, particularly in: 1) agriculture in terrestrial ecosystems and aquaculture in epicontinental and marine ecosystems; 2) the criteria for granting subsidies and their impacts on ecosystems and biodiversity; and 3) the dimension of illegal activities.
- Redesign and implement the national aquaculture and sustainable fisheries policy to ensure the incorporation of criteria for conservation and sustainable use of biodiversity.

B4. Pollution

Soil ↓

Air ↓

Water ↓

Mexico has monitoring systems for water and air pollution, but it lacks consolidated information at the national level on the direct impact of different pollution processes on biodiversity and ecosystems. In this sense, it is necessary to develop baseline diagnoses for the establishment of public policies that avoid or mitigate the negative impacts of pollution on biodiversity.

Recommendations:

- Develop a consolidated baseline in terms of impacts on biodiversity due to pollution of water, air and soil.
- Develop an updated inventory of soils and the impacts of their pollution on biodiversity, as well as develop effective measures for the control and management of soil pollution based on the General Law for the Prevention and Comprehensive Management of Waste (LGPGIR) and its regulations.
- Advance in forceful measures to curb and mitigate emissions of pollutants such as carbon dioxide, black carbon, methane, nitrous oxide, and contaminants from the incineration of hazardous waste, among others.

B5. Invasive alien species ↑

Mexico has significant progress in prevention, control and eradication of invasive alien species based on the implementation of the *National Strategy on Invasive Species in Mexico*, particularly regarding capacity building and strengthening for public officials and NGOs, improvement of the legal framework, generation of scientific knowledge and monitoring through the information system on invasive species. However, it is necessary to strengthen and continue these efforts, as well as to improve the inter-institutional coordination mechanisms.

Recommendation:

- Strengthen the implementation instruments for the prevention, control and eradication of invasive species in productive sectors and activities, as well as advance generating knowledge on how climate change can aggravate this threat, and carry out actions to restore ecosystems affected by invasive species.

B6. Ecosystems vulnerable to climate change

Terrestrial and epicontinental aquatic ↓

Marine ↓

Even if there are advances in Mexico to monitor ecosystems vulnerable to climate change, it has not been possible to reduce anthropogenic pressures on them. In this sense, specific policies and actions that allow the integration of different instruments of protection, conservation and sustainable use in ecosystems vulnerable to climate change from a territorial perspective, are required.

Recommendation:

- Develop specific policies and actions that integrate instruments of protection, conservation and sustainable use in ecosystems vulnerable to climate change, specifically, a General Law of Comprehensive Management of Seas and Coasts that defines the competences of development, conservation and uses with a cross-sectoral approach, and develop indicators for the corresponding monitoring and evaluation.

Key message C.
To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Mexico has made considerable progress in generating knowledge to value its agrobiodiversity and native crops; in the protection of species at risk through various technical, institutional and regulatory efforts; as well as in the designation and management of natural protected areas to safeguard ecosystems with the participation of the various relevant stakeholders and sectors of society. However, the pressure factors and accelerated biodiversity loss still persist, so it is necessary to continue generating information; promote practices of conservation, and sustainable use and trade of species and ecosystems; as well as guarantee institutional strengthening for the proper management of the various conservation areas in the country.

C1. Protected areas

Terrestrial ↑

Marine ↑

Through participatory processes, Mexico has achieved the consolidation of actions of conservation of species and ecosystem through various protection schemes, mainly in the 182 federal natural protected areas (ANPS), the 368 state protected areas and areas voluntarily designated for conservation (ADVC). Currently, 22% of the marine surface of the country is under some protection category, while 13% of the total land area is dedicated to conservation. However, there are technical, management and management challenges, as well as financial and administrative challenges that must be addressed in order to guarantee the institutional strengthening and the necessary budget for its proper operation, inspection and surveillance.

Recommendation:

- Guarantee the effectiveness in the sustainable management of the territories under various conservation schemes, by allocating the necessary budget for their operation, monitoring, inspection and surveillance.

C2. Preventing extinctions ↑

Mexico has made progress in the development and implementation of the regulatory framework for the protection of endangered species, as well as in the capacity building and strengthening for control and surveillance. However, factors of loss of species and their habitats, such as overexploitation, invasion of exotic species and illegal trafficking, persist. Therefore, it is necessary to promote the legal, sustainable and traceable use of biodiversity linked to the promotion of green markets and value chains.

Recommendations:

- Allocate the necessary budget for the implementation of programs and actions for maintenance and restoration of priority species' habitats.
- Effectively apply the law and implement economic strategies for sustainable use of biodiversity, through the promotion of green markets and value chains with greater involvement of local communities.

C3. Agricultural biodiversity

Genetic diversity ↑

Biosafety ↓

Mexico is an important center of domestication and diversification of numerous crops, and has important institutions and advances to assess the loss or increase of native species and crops, as well as to increase knowledge about their characteristics and uses. Despite this, there are still information and monitoring gaps that need to be addressed, and it is necessary to develop and strengthen programs, strategies and subsidies that guarantee the conservation of genetic diversity and its wild varieties. In this sense, a national policy with financing focused on in situ and ex situ conservation actions is required. Regarding genetically modified organisms (GMOs), there is still a lack of monitoring systems to address their release in the centers of origin and there are information gaps on genetic flows, so a close relationship between the development and supply of GMOs and the analysis of potential risks, is necessary.

Recommendations:

- Resolve the information and monitoring gaps in the potential genetic erosion processes associated with the release of GMOs, as well as the lack of programs, strategies and subsidies to guarantee the conservation of genetic diversity and its wild varieties.
- Develop a monitoring system to address the release of GMOs in the centers of origin of relevant crops.

Key message D.
Enhance the benefits to all from biodiversity and ecosystem services

In Mexico, 48% of the area covered by vegetation has some level of degradation, and 64% of the municipalities have a non-sustainable natural capital despite having a high human development index. This shows that the traditional development model compromises, in the long term, the integrity of ecosystems and their services, as well as the well-being of people. Therefore, it is necessary to strengthen collaboration with relevant stakeholders at the regional, state and local level, in order to revalue biodiversity as a provider of essential service, promote ecological restoration and implement legal frameworks to guarantee the access to genetic resources and the fair and equitable sharing of the benefits that result from its use.

D1. Essential ecosystem services and gender equality ↑

Even if Mexico does not have a national inventory of ecosystem services, an analysis of the relation between the natural capital sustainability index (NCI) and the human development index (HDI) indicates that 64% of municipalities have unsustainable natural capital despite showing a high HDI; while, only 1.5% of the municipalities show a high NCI, which compromises the possibilities of future development of the country. Therefore, it is essential to increase the conservation and restoration efforts, especially in priority ecosystems that have already been identified. With regard to equity, there is progress in relation to overcoming gender gaps and the participation of women, IPLCs in activities for the conservation and restoration of ecosystems, as well as productive projects.

Recommendation:

- Develop the official diagnosis of ecosystem services at the national level, which allows to clearly identify the levels of ecological degradation and their relationship with human well-being.

D2. Restoration and resilience

Forest ecosystems ↑

Other ecosystems ¿?

Even if 50% of the territory has some degree of deterioration and 48% of the area covered by vegetation has some level of degradation, the restoration of terrestrial ecosystems in Mexico has had a considerable boom in the last 15 years with more than 1 million ha restored. Although the available information does not allow quantification of changes in ecosystem resilience, the benefits of different restoration processes for strengthening resilience are recognized, both at the ecosystem and social levels. Therefore, a national restoration policy with sufficient budget is required to promote actions at strategic sites to reverse the deterioration of ecosystems and offer benefits to communities.

Recommendations:

- Establish social agreements at the regional, state or local level that allow the revaluation of biodiversity and the Mexican countryside, based on the premise that environmental services are the most important interaction between rural and urban.
- Position restoration as a process to improve ecosystem services that also has the potential to improve the livelihoods of local communities.
- Give greater scope in scale and resources to restoration projects, in the context of major national and international commitments.

D3. Nagoya Protocol on ABS

Mexico established an inter-ministerial group for the implementation of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising from their Utilization (ABS), whose main mandate is to develop a legal instrument and a system of indicators. Likewise, 5 biocultural or community protocols have been developed in the country. However, it is essential to implement a specific legal instrument, a national strategy with budget allocated for its implementation, and the establishment of a system of indicators for monitoring and assessment of the application of the protocol in the country.

Recommendation:

- Adopt legislation and regulations for the implementation of the Nagoya Protocol, in order to achieve its application at the national and state levels in terms of quantity, quality and relevance of specialized information, strategies and programs.

Key message E.
Enhance implementation through participatory planning, knowledge management and capacity building

Mexico has one of the most complete and advanced biodiversity information systems for decision-making, an updated National Biodiversity Strategy (ENBIOMEX), as well as state biodiversity studies and strategies that provide basic diagnoses and guide development of comprehensive public policies on biodiversity. Even if these tools and instruments recognize the importance of traditional knowledge, as well as the need for participatory implementation, it is still necessary to develop mechanisms to integrate in an articulated way this local and indigenous knowledge to official programs. Likewise, the establishment of an intra-sectoral and cross-sectoral coordination mechanism is crucial, as well as ensuring the financial resources necessary for the implementation of ENBIOMEX to be effective and binding. Considering that the systematization of information on the use, thematic and destination of the financing dedicated to biodiversity has been scarce, it is necessary to consolidate a resource mobilization strategy that allows reorienting and mainstreaming macroeconomic decisions, through the prioritization and institutionalization of costs for environmental degradation in budget planning.

E1. National Biodiversity Strategies and Action Plans

↑

Mexico has its National Biodiversity Strategy (ENBIOMEX) and 2030 action plan, which, along with the state biodiversity studies and strategies and the establishment of state biodiversity commissions, are important integral tools to guide decision making, participatory planning and the execution of efficient actions of biological resources management at the national and state levels. It is essential to develop an intra-sectoral and cross-sectoral coordination mechanism for its implementation, ensuring its alignment with the National Development Plan (PND) and its sectoral plans, as well as the development of the required indicators.

Recommendations:

- Align ENBIOMEX to the National Development Plan and its sectoral plans in order to guarantee its effective implementation.
- Establish a mechanism or unit responsible for coordinating the national and state implementation of ENBIOMEX, as well as its anchoring in the corresponding laws and regulations.

E2. Traditional knowledge

¿?

Even if Mexico recognizes the rights, historical practices and traditional knowledge of IPLCs, as well as their importance in the conservation of the country's biodiversity, it is still necessary to articulate actions of conservation and sustainable use to integrate the knowledge, innovations and traditional practices of the IPLCs. Nor are there any policy guidelines to regulate the protection of traditional knowledge associated with the use of biodiversity.

Recommendations:

- Develop policy guidelines to regulate the protection of traditional knowledge associated to the use of biodiversity.
- Articulate conservation and sustainable management actions in the different landscapes and environments to maintain ecosystem services where traditional knowledge, innovations and practices of IPLCs are integrated.

E3. Biodiversity knowledge

↑

Mexico has one of the most complete and advanced information systems, to support decision-making regarding conservation and sustainable use of biodiversity. However, it is necessary to strengthen the assembly of this knowledge with the contributions of the social sciences in matters of governance and political, social and economic issues, in order to move towards a multidisciplinary scientific-technological approach, which allows the development of comprehensive solutions to the main national problems and needs. Also, the instruments of application of the regulations to guarantee advances in scientific knowledge need to be strengthened and followed up, so that it is accessible and understandable to all users.

Recommendation:

- Strengthen scientific-technological development aimed at solving environmental problems, through interdisciplinary work, in order to achieve a more efficient communication between the domain of science and public management to allow the transfer of available knowledge in the way demanded by public policy makers.

E4. Resource mobilization

↓

The trend of federal biodiversity expenditure has been toward decline. Between 2014 and 2015 there was a real reduction of 9% in federal biodiversity expenditure, which has been evidenced in the reduction, restructuring or elimination of programs and agencies of the environmental sector. It is crucial to position the financing of conservation and sustainable use of biodiversity as a strategic element to mainstream sustainability into macroeconomic decisions.

Recommendation:

- Position financing of conservation as a strategic element to develop alternatives to reorient the economy and incorporate the sustainability dimension in macroeconomic and budgetary decisions, in order to internalize the negative impacts of productive activities on ecosystems and the recovery of natural resources, and the replacement of non-renewable ones.

02

SUPPORTING INFORMATION

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Key Message A. Address the underlying causes of biodiversity loss

Aichi target	Meta Nacional ENBIOMEX strategic axis	Trend 5NR (2009-2013)	Trend 6NR (2014-2018)	Spatial data	Disaggregated data by gender	National indicators
	**Axis 1.** Knowledge **Axis 5.** Education, communication and environmental culture	↑	↑			
	**Axis 1.** Knowledge **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	=	↑			
	**Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	GT = DT Environmental sector ↓ Other sectors ↓	GT ↓ DT Aquaculture ↓ Agriculture ↓ Forestry ↓			
	**Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 5.** Education, communication and environmental culture **Axis 6.** Mainstreaming and governance	↑	↓			

GT: Global trend/DT: Disaggregated trend by topic

 No available information

 Inssuficient or non offcial Information

 Biased information

 Information is adequated

A1. Awareness of biodiversity values ↑

Mexico made significant progress in the dissemination of environmental science and culture, raising awareness of the value of biodiversity. Through awareness campaigns, contests, workshops and the use of information technologies, it has been possible to stimulate various publics of citizens (children, youth and adults) to be involved in the dissemination of a more sustainable culture and in the generation of additional knowledge, of quality, that can contribute to the advancement in the knowledge of the Mexican biodiversity.

Some of the main strategies and actions of environmental educational communication in the country are: websites *Fans del planeta* (Fans of the planet), *vecinos verdes* (green neighbors), *Niños y Niñas* (Boys and Girls); Ecological Merit Award; Tour cinema planet; National children's drawing contest *Vamos a pintar un árbol* (Let's paint a tree), *Entre azul y verde* (Between blue and green); National Forest and Natural Mosaic Photography Contests; and citizen science tools (*aVerAves, NaturaLista* and *Enciclovida*). However, it is still necessary to position formal environmental education from an institutional perspective and develop national indicators that assess the knowledge that the Mexican population has about biodiversity and ecosystem services, and if this knowledge leads to behavioral changes towards an environment-friendly culture.

A2. Integration of biodiversity values ↑

Mexico had relevant achievements in the development of the experimental accounts of ecosystems; the estimation of total costs for environmental depletion and degradation (TCEDD); the calculation of the green gross domestic product (GDP); the valuation of some ecosystem services in ANPs; and the development of sectoral biodiversity mainstreaming strategies (agricultural, fisheries, forestry and tourism). However, the data of the green GDP and the TCEDD, are not yet considered in the federal budget planning in terms of allocation of resources and addressing degradation and environmental depletion. Therefore, it is urgent to advance in the implementation and monitoring of the existing sectoral biodiversity mainstreaming strategies and the development of new ones for other productive sectors so that the national agenda promotes cross-sectoral policies with sustainability approaches.

A3. Incentives

Aquaculture ↓

Forestry ↓

Agriculture ↓

Regarding incentives and subsidies, it was identified that by 2015 20% of the total federal subsidy programs were allocated towards incentives with positive impacts for biodiversity; while 28% was destined to incentives with potentially negative impacts. In this context, there is a persistence of the factors that determine the impacts with negative impacts on biodiversity, such as negative incentives (especially subsidies in the agricultural, livestock, aquaculture and infrastructure sectors), lack of information on the operation and impact of these subsidies in biodiversity, and the few instruments to apply laws that favor the increase of positive subsidies.

A4. Sustainable production and consumption ↓

The national territory has undergone major transformations, particularly in recent decades, highlighting: 1) the growing urbanization, which reaches 80% of the population; 2) the expansion of territorial inequalities, in particular there is a lag in the south of the country; and 3) the profound ongoing transformation of rural Mexico. The value of production from the use of natural resources in Mexico grew 3% in the period 2012-2017. In this regard, the report shows the increasing trend of extraction of fossil fuels, minerals, building materials, biomass, fodder and crops.

Regarding the consumption of water resources, a study led by the Mexican Institute of Water Technology (IMTA), reports that the country's water footprint is equivalent to 2.3% of the global footprint and is the 8 in the world (197,425 hm3/year). Regarding national water consumption, 92% corresponds to the agriculture and livestock sectors, 3% to the industrial sector, and 5% to domestic use. Mexico is the second largest importer of water after Japan, and its external water footprint comes mainly from the United States, Canada, China and Brazil. In a few decades, Mexico went from being a country with high water availability, to one with low availability.

Multiple efforts have been made in Mexico to generate normative and regulatory instruments for production, such as the creation of the Agency of Security, Energy and Environment (ASEA), federal and private financing programs to stimulate technological innovation and sustainable production, and current legislation and regulations. In addition, there are various legal instruments that regulate the environmental impacts of productive activities, such as Article 41 of the Hydrocarbons Law, which establishes 5 safeguard zones to ban hydrocarbon exploration and extraction activities in: mangroves and Ramsar sites; Selva Lacandona region; Yucatan and Mexican Caribbean Platform; Gulf of California, Baja California Peninsula

and South Californian Pacific; coral reefs of the Gulf of Mexico and Mexican Caribbean.

Likewise, the Federal Attorney for Environmental Protection (PROFEPA) permanently works in the control and monitoring of compliance with regulations. However, the report shows that the unsustainable extraction of natural resources continues to increase and that large-scale industrial development and its legislation, as well as value and consumption chains, do not include, conclusively and bindingly, criteria for sustainability.

Key message B. Reduce the direct pressure on biodiversity and promote sustainable use

Aichi target	Meta Nacional ENBIOMEX strategic axis	Trend 5NR (2009-2013)	Trend 6NR (2014-2018)	Spatial data	Disaggregated data by gender	National indicators
5	**Axis 2.** Conservation and restoration **Axis 4.** Attention to pressure factors	GT ↓ DT Terrestrial ↓ Marine ↓	GT ↓ DT Terrestrial ↓ Marine ↓	●	○	●
6	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	↓	↓	○	○	●
7	**Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	GT = DT Aquaculture = Agriculture = Forestry ↑	GT = DT Aquaculture = Agriculture = Forestry ↑	○	●	●
8	**Axis 1.** Knowledge **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	GT ¿? DT Water ¿? Air ¿? Soil ¿?	GT ↓ DT Water ↓ Air ↓ Soil ↓	●	●	●
9	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	↓	↑	○	○	●
10	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	¿?	GT ↓ DT Terrestrial ecosystem ↓ Marine ecosystem ↓	●	○	●

GT: Global trend/DT: Disaggregated trend by topic

○ No available information ● Inssuficient or non offcial Information ● Biased information ● Information is adequated

B1. Loss of habitats

Terrestrial ecosystems ↓

Aquatic ecosystems ↓

2014 data from the National Institute of Statistic and Geography (INEGI) show that between 1976 and 2014, 11,905,011 ha of primary vegetation were lost, of which 6.3 million correspond to forests, 3.9 million to scrubland, 821 thousand to forests and 775 thousand to mangroves. It is estimated that around 50% of the country's vegetation cover has been strongly impacted by agricultural activities. According to inegi, between 2011 and 2014 the most significant increase in land area for agricultural use occurred, mainly, in the Yucatan Peninsula, the eastern part of Tamaulipas and northern Chiapas. Veracruz, Tlaxcala, Mexico City and Tabasco are the states with the lowest percentage of natural vegetation surface; while, the highest percentage of natural vegetation surface is in Baja California Sur, Coahuila and Quintana Roo. The highest annual rates of vegetation change are recorded in the states of Yucatán, Chihuahua, Coahuila, Aguascalientes and Hidalgo.

Between 1976 and 2014, the increase in the condition of secondary vegetation in the total area of forests, scrubland and grasslands was identified. It is estimated that 44% of the country's soils have some degradation process, associated with agricultural and livestock activities, and to a lesser extent, deforestation, vegetation removal and urbanization.

Regarding the degradation of aquatic ecosystems, of the 653 aquifers for consumptive uses, 205 are in a deficit condition, 105 are overexploited and 32 have presence of saline soils and brackish water. In 40 years, the number of exploited aquifers increased from 32 in 1975 to 105 in 2015. Overexploited aquifers are concentrated in the Lerma-Santiago-Pacific hydrological regions, North Central Basins, Rio Bravo, Baja California Peninsula and Northwest, since 58% of the groundwater for all consumptive uses in the country is extracted from these aquifers. These data do not indicate the degree of pollution or impact on aquatic biodiversity, for which there are no assessments, and if these factors were considered, the health of these ecosystems could be more serious.

Even if the update of the national wetland inventory reports that there have been no significant changes in the surface of these ecosystems, epicontinental wetlands are exposed to deterioration due to the increase in settlements and infrastructure in the upper and middle parts of the hydrographic basins. In the case of coastal wetlands, degradation processes associated with land-use change and alteration of coastal dynamics persist.

B2. Sustainable fisheries

Although only a few decades ago the fisheries sector in Mexico had great potential to meet the population's nutritional needs, now it requires urgent actions for the conservation and sustainable management of species of ecological and economic importance. In this regard, the need to include sustainability criteria in the operating rules, programs and strategies of this sector should be stressed.

The 2016 National Fishing Charter presented 35 fisheries records, for which it considered the following criteria: the conditions of the fishery, the status of the stocks and the normative instruments that regulate their use with respect to the 2012 National Fishing Charter, such as the Mexican Official Standards (NOM), the fishing management plan, the type of access, the minimum size, the bans and closed seasons, and the quota, among others.

These records include the main marine species of commercial importance (23 from the Pacific and 12 from the Gulf of Mexico and the Caribbean Sea). It is worth noting that 17 of these records have normative instruments (NOM), 13 have a management plan declaration, 16 define the type of access and 14 establish their closed season. Regarding the state of the fisheries, 7 are in deterioration, 29 are being exploited to the maximum sustainable level, 1 is reported as overexploited, 4 have potential development based on available biomass, 1 is in population recovery and 1 is certified as sustainable.

It should be noted that there are substantive differences between the 2012 and 2016 *National Fishing Charters*, so it is not possible to compare them or establish change trends for Mexico's fisheries. This analysis highlights the existence of gaps and inconsistencies, so it is necessary to strengthen the coordination mechanisms and transfer of information, including the management of shared regulation species (eg CITES species, NOM-059-SEMARNT and priority species), between the fishing authority [Ministry of Agriculture and Rural Development (SADER, formerly SAGARPA), National Commission of Aquaculture and Fisheries (CONAPESCA) and National Fisheries Institute (INAPESCA)] and the environmental authority [Ministry of Environment and Natural Resources (SEMARNAT), National Commission for the Knowledge and Use of Biodiversity (CONABIO), National Commission of Natural Protected Areas (CONANP) and PROFEPA].

B3. Areas under sustainable management

Agriculture =
Forestry ↑
Aquaculture =

Mexico has the Sustainable Rural Development Law, which seeks the integral improvement of the social welfare of the population and of economic activities, ensuring the permanent conservation of natural resources, biodiversity and environmental services outside urban centers. However, there are still many challenges and opportunities to mainstream biodiversity into agricultural, aquaculture and forestry production initiatives.

In agricultural matters, the results and lessons learned from the initiatives Sustainable modernization of traditional agriculture (MASAGRO), the Program to Support Small Producers - Coffee Component (PROCAFÉ) and the project "Sustainable Productive Systems and Biodiversity" (SPSB), are a benchmark for the design of sustainable production strategies at medium and large scale. In addition, Mexico has the *Strategy for Biodiversity Mainstreaming in the Agricultural Sector* that draws the strategic lines and actions for sectoral initiatives (production, innovation and subsidies, among others) to be relevant and consistent with the conservation and sustainable use of natural resources. However, it is necessary to strengthen the links with the environmental sector and advance in consolidating strategies for biodiversity mainstreaming in the sector.

Regarding aquaculture, there is very little information available on the criteria for granting subsidies and their impacts on ecosystems and biodiversity, on the size of illegal activities and on their diversification into epicontinental and marine ecosystems. The report identified that to enhance sustainable aquaculture production it is essential to promote the restructuring of the national aquaculture and sustainable fisheries policy so that, with adequate inter-institutional articulation, it promotes the use of native species and the development of a system of indicators on the impacts of these productive activities in ecosystems and biodiversity.

As for forestry it is estimated that in Mexico there are 15 million hectares with timber potential, but, between 1993 and 2015, only 7.4 million hectares were used and an average of 6.7 million cubic meters of wood per year was produced (mainly conifer), which suggests that the production capacity of the country's coniferous forests has not been exceeded. However, the distribution of wood production in the country is heterogeneous and, therefore, in certain regions its use may have reached its limits.

Mexico occupies the first place in the world in community management of certified forests in temperate and tropical areas. With data from 2016, it is estimated that the certified area was 1.98 million hectares (15% of the timber forest area), with a certified production of 2.6 million cubic meters of wood (47% of the country's timber production). The progress made in the standardization of the certification of sustainable management, in forest germplasm uses, in the increase in volume of forest use, and in certification processes, are highlighted. However, it is necessary to emphasize that forest budget reductions represent a huge limitation to boost sustainable forest development.

B4. Pollution

Soil

Air

Water

Progress has been made in Mexico in terms of establishing monitoring systems that provide updated information on water and air pollution. However, consolidated information at the national level on the direct impact of different pollution processes on biodiversity and ecosystems is not yet available.

With regard to soil pollution, there is no updated and relevant information on the processes of soil pollution at the national level, nor an updated inventory of soils or the impacts of their pollution on biodiversity. Regarding the generation of urban solid waste, the 2015 data indicate that there was an increase of 61% compared to 2003 (10.24 million more tons generated in that period).

It is also necessary to ensure that the General Law for the Prevention and Comprehensive Management of Waste (LGPGIR) and its Regulations include effective measures for the control and management of soil pollution. It should be noted that, the increase in the intensity of agricultural activities is also reflected in the internal demand for fertilizers and, therefore, in the processes of soil pollution and degradation. In 1996, the apparent consumption of chemical products was 3.6 million tons of fertilizers, while in 2014 the figure amounted to 4.5 million tons. The average capacity for treatment, reuse, recycling, storage, collection and incineration of hazardous waste, between 2004 and 2017, was 981,923 t/year (56% of the estimated generation of hazardous waste in the country).

Regarding air pollution, there are 34 Air Quality Monitoring Systems (SMCA) with 241 monitoring stations distributed in 17 states which measure pollutant concentrations as a reference to address possible impacts on human health and of the ecosystems. According to the National Inventory of Emissions of Greenhouse Gases and Compounds, the gases with the highest amount of emissions in the country are carbon dioxide and methane, while the data of the Sixth National Communication to the United Nations Framework Convention on Climate Change indicate that, between 1990 and 2015, there was a 54% increase in carbon dioxide emissions (from 445 $MtCO_2e$ in 1990 to 683 $MtCO_2e$ in 2015).

Regarding water pollution, the National Water Quality Monitoring Network in Mexico (4,940 sites distributed in the country: 2,685 are from the surface network and 2,255 from the underground water bodies, coastal bodies and discharge), provides very incipient but relevant information on the impacts of water pollution on biodiversity. Based on the biochemical oxygen demand (BOD) to measure water pollution by organic matter, it can be seen that, of the sites monitored in 2015, 55.9% of the water showed excellent quality, 20.6% acceptable, 15% good, 6% contaminated and 2.5% heavily contaminated.

According to data from the National System of Environmental Information and Natural Resources (SNIARN), between 1998 and 2015, a total volume of 4,355 m^3/s of municipal wastewater and 3,386 m^3/s of wastewater of industrial origin was generated. Specifically, 2015 data indicate that the installed capacity for the treatment of the municipal wastewater generated is only 43%. The states that generated the highest volume of wastewater discharge in 2015 were: State of Mexico, Mexico City, Jalisco and Veracruz; while, those of smaller volume were: Tlaxcala, Baja California Sur, Nayarit and Campeche. Regarding wastewater treatment, the states with the highest volume of treated wastewater in 2015 were: Nuevo León, Jalisco, Chihuahua and the State of Mexico; and among the ones with the lowest volume were Campeche, Yucatán and Hidalgo.

As for natural phenomena that can cause damage to aquatic ecosystems, red tides stand out. According to the National Atlas of Risks 2017, non-toxic but harmful red tide events occur mainly on the coasts of Campeche, Yucatán, Colima and Jalisco, precisely coinciding in sites categorized as of extreme importance for biodiversity conservation. In the case of toxic red tide events categorized as very dangerous, they occur mainly on the coasts of Nayarit and Guerrero.

In summary, even if there are significant advances in the development of pollution monitoring and control systems (mainly of water), particularly in urban areas, a consolidated baseline is still needed to assess the impacts of pollution on biodiversity.

B5. Invasive alien species

Mexico has made significant progress through the execution of the project financed by the Global Environment Facility (GEF) "Increase national capacities for the management of invasive alien species (IAS) through the implementation of the *National Strategy of IAS*". The main actions are the control of invasive species on islands, the generation of knowledge, capacity building and strengthening for public servants and NGOs, and the consolidation of regulations. The legal framework and regulations of the forestry and phytosanitary sector were strengthened, and the production of scientific knowledge and monitoring of invasive species were reinforced. The information system on invasive species has 2 018 species registered.

According to 2013 data, it was identified that the groups that increased their number of exotic species are: algae (55), plants (23), arthropods (43), mollusks (27), fish (112), reptiles (25), birds (6), mammals (3) and porifers (1). Although the most significant achievement in the 2014-2018 period was the regulatory consolidation of the forestry and phytosanitary sector, it is still necessary to address the lags in the regulation of ornamental plants and fish, and of wild pets.

Also, considering that the dynamics of invasive species have a magnitude difficult to establish and control, it is necessary to strengthen and replicate the actions implemented, as well as improve inter-institutional coordination mechanisms to prevent, detect and reduce the risk of introduction, establishment and dispersion of invasive species. It should be noted that the national list of invasive species only corresponds to terrestrial species and does not include forest and aquatic species, because they are regulated in different laws and are of competence of another sector.

B6. Ecosystems vulnerable to climate change

Terrestrial and epicontinental aquatic ↓

Marine ↓

Even though Mexico implemented relevant actions between 2014 and 2018, the anthropogenic pressures on ecosystems vulnerable to climate change have not been reduced. The implementation of ecosystem-based adaptation (EbA) actions with national and regional scale, developed within the framework of international cooperation projects, stands out among the advances in this subject. The results and contributions of these EbA actions, together with the information of the National Atlas of Vulnerability to Climate Change, have been relevant to understand the trends of ecosystems such as the mesophilic forest, mangroves and wetlands, as well as the change in the potential distribution of NOM-059-SEMARNAT-2010 species.

At the institutional level, the Ministry of Tourism (SECTUR), the Ministry of Agrarian, Territorial and Urban Development (SEDATU) and the Ministry of Health (SALUD) have initiatives for planning and generating studies and diagnoses on climate change; while SEMARNAT, SADER, the Ministry of the Navy (SEMAR) and the Ministry of the Interior (SEGOB) have initiatives of a wider range regarding adaptation, planning, study and diagnostic generation actions, and actions implemented in the territory and in support of the population. In addition, Mexico published the *National Strategy for Reducing Emissions from Deforestation and Forest Degradation 2017-2030* (ENAREDD+), which among its main advances includes: 1) identification of the reference level of forest emissions; 2) a national system of social and environmental safeguards; 3) a protocol and system for estimating greenhouse gas emissions/absorptions; and 4) the report of the National Inventory of Greenhouse Gas Emissions.

In the field of ANPs, Mexico has the *Climate Change Strategy from the ANPs*, and within the framework of the GEF project "Strengthening the management capacity and the resilience of ANPs to protect biodiversity threatened by climate change", a national map with 4,500 climatic gradient corridors was developed to connect fragments of natural vegetation with less human impact or deterioration. Likewise, CONANP has published 54 management plans with climate change criteria based on the ecosystem-based approach and 19 Climate Change Adaptation Programs (PACC).

In terms of generating data on marine-coastal ecosystems vulnerable to climate change, Mexico's Information and Analysis System of Marine Ecosystem (SIMAR) is a significant advance as it produces satellite information in real time. Through SIMAR early warning systems are generated, allowing better management of these ecosystems in the face of phenomena such as coral bleaching, algae blooms, the presence of sargassum, the health of coastal ecosystems, and the temperature and color of the sea.

The report identified that, in the environmental sector, there are proper application instruments to protect marine ecosystems, but other sectors fail to fulfil ecological management plans and regulations. Therefore, it is necessary to strengthen the existing normative and regulatory framework; design and implement the General Law of Comprehensive Management of Seas and Coasts to define the competences of development, conservation, and uses with a cross-sectoral approach; as well as unifying the means of application of programs, strategies and incentives to reduce pressures.

Key message C. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Aichi target	Meta Nacional ENBIOMEX strategic axis	Trend 5NR (2009-2013)	Trend 6NR (2014-2018)	Spatial data	Disaggregated data by gender	National indicators
11	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	↑	GT ↑ DT Terrestrial ↑ Marine ↑			
12	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	↓	↑			
13	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	↓	GT ↑ DT Genetic diversity ↑ Biosafety ↓			

GT: Global trend/DT: Disaggregated trend by topic

No available information | Inssuficient or non offcial Information | Biased information | Information is adequated

C1. Protected areas

Terrestrial ↑

Marine ↑

Mexico has 182 federal ANPs covering 90,839,521 ha; of which 21,380,773 ha (23%) correspond to the continental surface (terrestrial and aquatic), and 69,458,748 ha (77%) to the marine surface. Also, in the country there are 368 state (subnational) ANPs that cover an area of 3,986,381.14 ha.

If the ADVC and the fishing shelters are considered within the calculation of the protected area within the national territory, the area destined to conservation amounts to 91,260,306 ha. Of this area, 25,915,245 ha correspond to the land area and inland waters (13% of the total continental surface of the country), and 69,458,748 ha correspond to the sea surface (22% of the sea surface of the country).

In terms of connectivity, work has been carried out on the delimitation of 18 complexes with 52 contiguous ANPs (more than 2 ANPs with direct connectivity) that together cover an area of 56,413,387 ha. The largest complex in Mexico is Revillagigedo- Pacífico Profundo, which covers 62% of the total area of federal ANP complexes; while the Mexican Caribbean complex is the one with the greatest number of protected areas involved (8).

On the other hand, there is also the delimitation of 29 ANP conglomerates (involving one or more federal ANPs that make direct contact with state, municipal or private protected areas, including those in neighboring countries) with an area of 8,141,167 ha. The Revillagigedo-Pacífico Profundo conglomerate is the largest (51% of the total), and the conglomerates with the most ANPs involved are Calakmul-Selva Maya and Centro 2, with 41 and 24 ANPs, respectively.

In addition, there are other protection measures such as the 142 Ramsar sites and the 13 presidential decrees of the Program of National Water Reserves (PNRA), which protect about 47% of Mexico's surface water, as well as the 76 Alliance for Zero Extinction (AZE) sites and the 222 Key Biodiversity Areas (KBA) that protect terrestrial ecosystems.

Between 2014 and 2018, progress is reported in the assessment of ecosystem representativeness and management effectiveness. Since 2018, i-effectiveness, a permanent system for the evaluation of the effectiveness of the management of the federal ANPs of Mexico, is being implemented. Currently it has the assessment cards of 111 areas of the 126 established as a national goal for 2019. Also, the online system is in design phase so that in 2019 the assessment of the effectiveness of protected areas can be captured.

Currently, Mexico has the participation of several relevant stakeholders in different scales of action and decision, such as 100 advisory councils that support the management of 110 decreed areas, through the participation of 1,600 citizens from various social sectors (70% non-governmental sector and 30% government sector). In addition, there is a solid base of quality information, experience and certainty about the criteria that should regulate the establishment and operation of ANPs.

Therefore, ANPs constitute the most consolidated environmental policy instrument in the country for the conservation of the ecosystems and the environmental services they provide to society. However, there are still challenges such as the need to focus the actions of effectiveness in the management of ANPs, the increase in the necessary budget for the operation and strengthening of inspection and surveillance, as well as for the participation of local communities in activities of conservation and sustainable use of biodiversity in ANPs.

C2. Preventing extinctions

In Mexico, the loss of 127 species has been documented, of which 56 were endemic. The groups that report the highest number of extinctions are fish (38), amphibians (29) and plants (26). Currently, there are a total of 43 species whose extinction has not been confirmed.

The official list of species at risk in Mexico is established by the Official Mexican Standard NOM-059-SEMARNAT-2010 on the "Environmental protection - native species of Mexico of wild flora and fauna - risk categories and specifications for inclusion, exclusion or change - list of species at risk". It includes 2,606 species of fauna and flora in 2 risk categories (threatened and endangered) and a precautionary category (subject to special protection).

Another reference is the list of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for Mexico, which has a total of 2,067 species: 139 in Appendix I (endangered, its trade is only allowed under exceptional circumstances); 1 901 in Appendix II (not necessarily in danger, but its trade must be regulated to avoid utilization incompatible with its survival); and 27 in Appendix III (protected in some country Party, who requests support from CITES to control its trade, although each Party may adopt unilateral amendments). Compared to 2013 data, it was identified that, up to 2018, Appendix II is the one with the highest number of species (222 species: 28 animals and 194 plants) and there were no changes in species from Appendix I to Appendix II, nor vice versa.

As part of the public policy instruments, in 2014 the list of priority species for conservation was published, including 372 species of plants and animals, whose biological or charisma attributes can promote the conservation of other species with which they coexist, as well as their habitats. Through the Program for the Conservation of Species at Risk (PROCER), a total of 51 Action Programs for Species Conservation (PACE)

have been developed, serving 257 priority species, with fish and reptiles being the most representative taxonomic groups. Through PROCER, 60 endemic species are protected, of which 147 species are under some risk category in NOM-059-SEMARNAT-2010 and 53 are on the Red List of species of the International Union for the Conservation of Nature (IUCN).

Among the successful cases supported by these programs, there are the projects of population recovery of the Mexican gray wolf (*Canis lupus baileyi*), bison (*Bison bison*), Sonoran pronghorn (*Antilocapra americana sonoriensis*), bighorn sheep (*Ovis canadensis*), red macaw (*Ara macao*) and California condor (*Gymnogyps californianus*). Although there are significant advances in terms of technical, institutional and regulatory efforts to protect at-risk species, the factors that threaten them (the disappearance of their habitats, overexploitation, invasion of exotic species and illegal traffic, among others) persist, which demands the commitment of the national planning and development agenda for its comprehensive attention in the medium and long term.

C3. Agricultural biodiversity

Genetic diversity ↑

Biosafety ↓

In the Mexican territory there is a wide distribution of native crops such as maize, cotton, pumpkins, beans, peppers and potatoes; being those of maize and beans the ones of greater range of distribution of collections. Mexico has worked through the National System of Fitogenetic Resources for Food and Agriculture (SINAREFI) to prepare inventories of diversity and variability of crops and species in order to assess their loss or gain and increase knowledge about morphological and agronomic characteristics, as well as about uses of native crops.

For *in situ* conservation actions, 44 diagnoses of crops have been developed, 20 new species have been identified, and more than 25 community germplasm banks have been established. Regarding *ex situ* conservation actions, a network of 6 conservation centers, which currently protect more than 60 thousand accessions of approximately 1,300 species, was integrated. In the in vitro work collections there are 9,407 accessions, and more than 233 varieties of common use of 24 native crops have been registered.

In addition, the orthodox seed germplasm bank of the National Center for Genetic Resources (CNRG) of INIFAP, protects 2,484 accessions of wild relatives of socio-economically important crops and plants, which represents 10% of the total protected agricultural species (24,289) and 9.6% of the total of the entire inventory of said bank (25,876). However, it is still necessary to resolve the monitoring and information gaps of the processes of genetic erosion, as well as generate programs, strategies and subsidies that guarantee the conservation of genetic diversity and its wild varieties.

Regarding biosecurity, in 2013 it was identified that one of the main threats to genetic diversity in Mexico is the release of GMOs, since after 2011 there was a significant increase. For the 2014-2018 period, the Federal Commission for the Protection against Sanitary Risks (COFEPRIS) issued 54 authorizations for the commercialization and import of GMOs (1,113 accumulated records of GMO authorizations since 2010), being maize (*Zea mays*), cotton (*Gossypium hirsutum and G. barbadense*) and soy (*Glycine max*) the crops with more authorizations.

As for release permits, for the same period, 33 were issued for experimental stage, 32 for pilot program and 6 for commercial stage; and the

crops with the highest number of cumulative release permits are, again, cotton, maize and soy. Based on these data, the report highlights that requests and authorizations for GMOs release decreased with respect to the data submitted in 2013. However, there is a need for effective monitoring mechanisms that provide full security with respect to the release GMOs in the centers of origin of crops such as maize and cotton, as well as information systems on genetic flows.

Key message D. Enhance the benefits to all from biodiversity and ecosystem services

Aichi target	Meta Nacional ENBIOMEX strategic axis	Trend 5NR (2009-2013)	Trend 6NR (2014-2018)	Spatial data	Disaggregated data by gender	National indicators
14	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 4.** Attention to pressure factors **Axis 6.** Mainstreaming and governance	¿?	↑			
15	**Axis 1.** Knowledge **Axis 2.** Conservation and restoration **Axis 4.** Attention to pressure factors	¿?	GT ↑ DT Forest ecosystem ↑ Other ecosystem ¿?			
16	**Axis 2.** Conservation and restoration **Axis 6.** Mainstreaming and governance	↑	↑			

GT: Global trend/DT: Disaggregated trend by topic

No available information · Inssuficient or non offcial Information · Biased information · Information is adequated

D1. Essential ecosystem services and gender equality

↑

In Mexico, the official diagnosis of ecosystem services at the national level has not been carried out, which is why the work was based on the premise that ecosystems in good state of conservation provide services related to human well-being. In this sense, an exercise was carried out to identify the spatial trends between the ecosystem quality indicator and the HDI at the municipal level.

The sustainability level of natural capital or NCI was defined in 4 categories: irreplaceable, sustainable, at risk and not sustainable. Also, to illustrate the differences in welfare obtained from this exercise for the HDI [developed by the United Nations Development Program (UNDP) in 2014], the municipalities were grouped according to the level of human development in: very high, high, medium and low.

The results of this exercise showed that 80% of the municipalities are in conditions of unsustainable natural capital (1,592, equivalent to 64.7%) or at risk (381, equivalent to 15%), and of this total, 1,003 municipalities have high and very high HDI conditions, which represents a strong contrast between the deterioration of their ecosystems and their socioeconomic development. On the contrary, it was identified that only 38 municipalities in the country (1.5%) have irreplaceable natural capital, and of these, only 17 municipalities have a high and very high HDI. It is necessary to clarify that, although a direct correlation between these 2 variables was not found, the preliminary analysis of this exercise shows that the dynamics of Mexico's development processes lead to the ecosystems (which support goods and services for society) to be at the maximum saturation point of ecological degradation.

On the other hand, there is progress in the diagnosis of the services provided by tropical forests, tropical dry forests, watersheds and forests of the Valley of Mexico, and mangroves, as well as the functional services of ecosystems at the regional and local levels. In this sense, in order to guide the conservation and restoration actions of the country, maps of priority attention sites (SAP) have been prepared for the conservation of terrestrial, epicontinental and marine biodiversity.

The analysis of the national cartography of SAP for biodiversity conservation indicates that temperate forests, sub-humid forests and xerophilous scrublands are the ecosystems that require conservation measures with extreme priority. At the state level, it was identified that San Luis Potosí, Jalisco, Nayarit, Guerrero, Oaxaca, Chiapas, Campeche and Quintana Roo have a greater surface area of ecosystems with an extreme conservation priority. Regarding epicontinental aquatic priority sites, the map indicates that the highest proportion of surface area with priority sites is located in the states of Jalisco, Michoacán, Oaxaca, Nayarit and Veracruz; while, Aguascalientes, Tlaxcala and Yucatan have a lower surface proportion of epicontinental aquatic priority sites.

Specifically, the map of marine sites for biodiversity conservation indicates that 76% of the surface of sites of extreme importance for conservation (9.8 million hectares) is within federal ANPs, especially those of the Pacific, Yucatan Peninsula and Upper Gulf of California. On the contrary, marine sites of very important and important priority are not under any category of protection.

In terms of conservation actions and equity, there are nature-based development initiatives that represent opportunities to increase social welfare, such as CONANP's sustainable productive projects, and the program of Payment for Environmental Services (PES) of the National Forestry Commission (CONAFOR).

Regarding social inclusion and gender perspective in the conservation and sustainable use of biodiversity, there are important advances. There is information on the participation of women, IPLCs in conservation activities, restoration of ecosystems and productive projects. However, greater involvement is required by IPLCs, who are the holders of natural resources.

Through the National Program for Equal Opportunities and Non-Discrimination Against Women (PROIGUALDAD), the environmental sector included a gender perspective in the operating rules of its support programs, especially those of CONANP and CONAFOR. In particular, it was identified that the Conservation Program for Sustainable Development (PROCODES) of CONANP and the Program for Sustainable Forest Development of CONAFOR, have operating rules that have guaranteed the participation of women, men and indigenous population in the various development and conservation activities in the locations where they are implemented.

D2. Restoration and resilience

Forest ecosystems ↑

Other ecosystems ¿?

The information available to date does not allow quantifying the increase or decrease of ecosystem resilience. However, based on the empirical experience in the field, it can be established that the main benefits of restoration actions translate into the improvement of environmental services, the increase in biodiversity, and the economic benefit of local communities.

In this sense, recent studies identified that the restoration of terrestrial ecosystems in Mexico has had a considerable boom in the last 15 years. The majority of the projects started from 1997 and add up to a total area of 1,556,839 ha (less than 1% of the country's surface). In addition, 50% of the territory has some degree of deterioration and 48% of the area covered by vegetation has some level of degradation.

According to the national land degradation baseline, 54% of the national territory has different levels of degradation, with the category of severe degradation being the one with the highest representation in the

country (27% of the area), followed by light degradation (20%). At the state level, the main points of extreme degradation are located in Veracruz, Tabasco, Tamaulipas and Nuevo León; states like Yucatán, Campeche and Quintana Roo show important surfaces with slight degradation; while, in the north of the country, Coahuila and Chihuahua stand out for having a significant proportion of their territory without degradation. It can be concluded that the main causes of land degradation in Mexico are deforestation and land use change.

In 2017, Mexico published the national map of priority sites for restoration, of which 61% are located in areas with degraded natural vegetation and the remaining 49% are located in areas with land use. As a result of this prioritization, it was determined that of the area designated as a priority for restoration (28,837,600 ha), 32% is classified with extreme priority, 33% with high priority and 33% with medium priority. Mainly, the sites of extreme priority correspond to the sub-humid forests and the temperate and tropical forests of the south and the center of the country. Most restoration experiences have developed in temperate forests, tropical forests, wetlands, mangroves and riparian ecosystems of the Sierra Madre Oriental, the coast of the Gulf of Mexico and the Northeast Coastal Plain. It should be highlighted that lags were identified in the restoration of marine ecosystems.

Through its Program for Environmental Compensation and its restoration programs (operated according to operating rules), CONAFOR has implemented various restoration initiatives that, between 2013 and 2018, benefited 1,005,325 ha throughout the country. These programs are implemented through subsidies for local communities to carry out restoration actions, which, in addition to positioning restoration as a process that improves ecosystem services, has the potential to ameliorate the living conditions of local communities.

Through the restoration programs, 76% of this area was rehabilitated, mainly in Chiapas (59,583 ha), the State of Mexico (52,991 ha) and Michoacán (50,635 ha). The remaining 24% was restored through the Program for Environmental Compensation, with Sonora (45,155 ha), Quintana Roo (21,380 ha) and Guerrero (19,920 ha) being the states with the greatest restored surface. In addition, in that same period CONAFOR implemented restoration actions in mangrove ecosystems in 9,997 hectares.

For its part, CONANP has contributed through PROCODES in the restoration of 109,342 ha in 2016, 181,127 ha in 2017, and 262,437 ha in 2018. This restoration has taken place mainly in the Sierra Madre Oriental, the coast from the Gulf of Mexico and the Northeast Coastal Plain.

Despite the development of a clear restoration regime, it is necessary to generate economic incentives that make it viable, foster synergies between the laws, define sanctions in case of failure to comply with obligations acquired under support programs or regulations, in order to ensure the continuity and prevalence of projects beyond official support.

D3. Protocolo de Nagoya

An inter-ministerial group was established in Mexico for the implementation of the Nagoya Protocol on ABS. This group includes 22 federal government agencies, and its main mandate is to develop a specific legal instrument for the implementation of the Nagoya Protocol as an administrative measure, as well as a system of indicators for monitoring compliance with commitments derived from the protocol membership.

As part of the progress with respect to the legal instrument, the technical-legal development of a regulation was finalized. Its legal provenance and the verification of possible regulatory and economic impacts on the population and the government are currently being revised. Because the instrument is still in the process of legal ruling, in due course the consultation, within the framework of the programs established by the National Institute of Indigenous Peoples (INPI), should be carried out to guarantee the rights of indigenous peoples. Through the project "Creation of national capacities for the implementation of the Nagoya Protocol in Mexico" (GIZ-CONABIO-Governance of biodiversity), implemented by CONABIO with financial support from the German government, the exchange and training on the ABS regime was promoted.

Likewise, within the framework of the GEF project "Strengthening of National Capacities for the Implementation of the Nagoya Protocol", progress has been made in establishing the guidelines and contents of biocultural or community protocols. Currently, there are 5 protocols completed and 2 under development. Of those completed, 4 are published and have a unique identifier (UID) in CBD's Clearing House Mechanism (CHM).

Based on the above, it is considered that there are advances through projects, dialogues, training courses and work for the development of methodologies and tools for the implementation of the Protocol. However, there are important challenges regarding the application of the protocol at national and state level in terms of quantity, quality and relevance of specialized information, strategies and programs that allow the implementation of legislation and regulations.

Key message E. Enhance implementation through participatory planning, knowledge management and capacity building

Aichi target	Meta Nacional ENBIOMEX strategic axis	Trend 5NR (2009-2013)	Trend 6NR (2014-2018)	Spatial data	Disaggregated data by gender	National indicators
17	**Axis 1.** Knowledge **Axis 3.** Sustainable use and management **Axis 5.** Education, communication and environmental culture **Axis 6.** Mainstreaming and governance	↑	↑	○	●	●
18	**Axis 1.** Knowledge **Axis 6.** Mainstreaming and governance	¿?	¿?	●	●	○
19	**Axis 1.** Knowledge	↑	↑	○	●	●
20	**Axis 2.** Conservation and restoration **Axis 3.** Sustainable use and management **Axis 6.** Mainstreaming and governance	↑	↓	○	○	●

○ No available information
● Inssuficient or non offcial Information
● Biased information
● Information is adequated

E1. National Biodiversity Strategies and Action Plans

↑

The *ENBIOMEX, and its 2016-2030* action plan were published in 2016. ENBIOMEX is a guiding instrument for territorial planning and development to guarantee the conservation, valuing, restoration and sustainable management of biodiversity and ecosystems. Its action plan identifies the stakeholdes responsible for each action for its implementation, presenting them from the federal, local and regional perspective according to their assignments, competencies and field of action. More than 350 people from 130 institutions participated in its elaboration: 24 from institutions of the academic sector; 42 from NGOs; 15 from government agencies; 42 from federal public administration; 2 from international cooperation agencies; 1 from the House of Representatives; and 10 from ejidos and local communities.

Through the GEF project "Support to Eligible Parties for the Revision of NBSAPs and Development of the Fifth National Report to the CBD (Phase III) - Strengthening of capacities for the implementation of the National Strategy on biodiversity of Mexico (ENBIOMEX) and action plan 2016-2030", progress was made in the socialization and dissemination of ENBIOMEX, in the assessment of the financing needs for its implementation, and in the preliminary identification of indicators for the strategy monitoring system and platform, among other things. At the same time, the project seeks to trigger agreements between the various relevant stakeholders to ensure its implementation in the medium and long term, which requires an inter-ministerial institution or body to coordinate the implementation actions and the legal support to provide a binding character to its fulfilment, so that its monitoring and evaluation is guaranteed in compliance with the internationals commitments acquired by Mexico.

In the subnational context, to date 18 studies and 11 state biodiversity strategies have been published. In addition, 5 state biodiversity commissions (COESBIO) have been decreed, of which only Morelos, Quintana Roo and Tamaulipas operate with personnel, facilities and budgetary resources.

As a result of the analysis of the Sixth National Report, it was identified that the most relevant challenges are oriented to the implementation of ENBIOMEX in the context of the current PND and the federal and state environment sectoral programs. Therefore, it is essential to achieve that key stakeholders in various sectors take ownership of it; promote synergies for technical and financial support; develop implementation mechanisms through laws and regulations; and the appointment of the institution or body responsible for coordinating its national and subnational implementation, taking into account relevant aspects such as biodiversity mainstreaming into sectoral and cross-sectoral development plans, poverty reduction and climate change.

E2. Traditional knowledge

¿?

Mexico has more than 8 million indigenous people, Afro-descendants and rural farmers, who live in 28 million hectares (15% of the national territory), of which more than 75% correspond to forests and rainforests with high biodiversity. In Mexico there is a legal tradition that recognizes the rights of IPLCs, particularly in Article 2 of the Constitution, as well as its statutes and regulations as legally binding instruments. These agreements, norms and procedures that internally regulate social, economic, political and cultural life, also regulate their interactions with the territory and biodiversity through their traditional knowledge and practices.

When assessing the conditions and characteristics of ecosystems in the southeast and north of Mexico with respect to the location of indigenous peoples, it can be seen that ecosystems with high ecological integrity coincide with indigenous territories. However, in some areas of Veracruz, Tabasco and Oaxaca there are ecosystems with low ecological integrity that are also located in indigenous territories. The most representative indigenous territories in the biosphere reserves and natural resource protection areas are: Maya, Tepehuán, Huichol and Maya Lacandón.

The report presents an updated diagnosis at the national level on the relationship between the IPLCs and biodiversity in terms of the distribution of their territories with respect to the ANPs and the areas eligible for PES, in addition to showing data on the participation of the IPLCs in forestry or conservation, restoration and development projects promoted by CONANP and CONAFOR. However, no policy guidelines were identified for the generation of information to allow regulating the protection of traditional knowledge associated with the use of natural resources.

In this sense, the great challenge is to identify, through the competent official institutions, the subjects of public law in order to establish an information system of the IPLCs which, with updated information, allows to promote conservation and sustainable use of the enormous potential of wild biodiversity, agrobiodiversity and genetic resources of the country. Also, promote sustainable management in the different landscapes to maintain ecosystem services, where the knowledge, innovations and traditional practices of the IPLCs are integrated.

E3. Biodiversity knowledge

For more than 20 years, Mexico has worked on the construction and strengthening of various platforms for information collection, systematization and analysis. This has allowed the development and consolidation of capacities to generate knowledge about our biodiversity, which, compared to other countries of similar biological wealth and scientific development, is particularly favorable.

The updated information baselines of the National Information System on Biodiversity (SNIB), SIMAR, the National Information System on Biosafety, the Agri-Food and Fisheries Information Service, the Invasive Species Information System, and the SNIARN are a valuable source of knowledge that constitute the fundamental basis for the best decisions making regarding the use of natural resources at different levels of government. Likewise, they help citizens to be better informed through this knowledge, and to assess the options and consequences of the different actions taken by both the government and other social actors.

Among the main challenges identified are: 1) the strengthening of basic and applied research to cover knowledge gaps; 2) transmission of knowledge to society to achieve greater involvement in conservation; 3) public, accessible and understandable interdisciplinary knowledge to achieve its impact on decision making; and 4) participation and commitment of the different government bodies for the effective implementation of sustainable policies. In addition, to solve complex problems that historically have not been resolved, it is necessary to promote scientific-technological development and interdisciplinary and cross-sectoral work aimed at solving environmental problems, as well as achieving the interface between science and public management through availability of knowledge in the way demanded by public policy managers.

E4. Resource mobilization

In 2017, UNDP's Biodiversity Finance Initiative (BIOFIN) published an analysis that indicates that, until 2013, the federal public spending in favor of biodiversity in Mexico showed a growing trend from 6.6 billion pesos in 2006 (0.04% of GDP), to 20.3 billion of pesos in 2013 (0.12% of GDP). However, between 2014 and 2015, a real decrease of 9% was identified, going to 18.3 billion pesos (0.10% of GDP). This trend has been evidenced in the reduction, restructuring or elimination of programs and agencies of the environmental sector in the last 9 years. Additionally, the systematization of information on the use, thematic and destination of financial resources dedicated to conservation has been scarce and, therefore, makes it difficult to evaluate its effectiveness.

However, in 2013, 0.45% of the total federal expenditure was allocated to biodiversity; while in 2015 it fell to 0.38%. This reflects that such expenditure in other sectors had a slight increase, although the participation of the head of the sector in the total expenditure of the APF on biodiversity was reduced. This diversification is reflected in the increase in biodiversity expenditure in SADER, which went from 14% in 2006, to 21.5% in 2015, as well as in the fact that SEDATU, Petróleos Mexicanos (PEMEX), the Ministry of Communications and Transportation (SCT) and the Ministry of National Defense (SEDENA) in 2015 began reporting biodiversity expenditures.

The country's challenges are emerging towards the positioning of conservation financing as a strategic element to develop alternatives that allow reorienting the economy. Undoubtedly, the sustainability dimension must be incorporated into macroeconomic and budgetary decisions

to internalize the negative impacts that productive activities have on ecosystems, and for the recovery of natural resources and the replacement of non-renewable ones. Likewise, it is necessary to start accounting for biodiversity expenditure in government bodies whose mandate is productive, to carry out the prioritization and institutionalization of total environmental degradation costs so that they are integrated into cross-sectoral planning and federal budget planning.

03

FACTS OF THE SIXTH NATIONAL REPORT[1]

1 The figures presented in this section can be found in the full report. In order to facilitate their location, at the end of each fact, the Aichi Biodiversity Target to which it refers is indicated in square brackets

Photo by: Miguel Ángel Sicilia Manzo
Image Bank of CONABIO

Relevant achievements:

1. The certified forest area in 2016 was 1.98 million hectares (15% of the timber forest area) with a certified production of 2.6 million cubic meters of wood (47% of the country's timber production). [*ABT 4*]
2. In Mexico there are 13,211 management units for wildlife conservation (UMA) with an area of 38.87 million hectares (19.78% of the national territory). [*ABT 4*].
3. Mexico is the fourth world producer of organic food with 2.3 million producers and 169 thousand hectares in operation [*ABT 4*].
4. There are 16 certification bodies approved by the Ministry of Agriculture to certify organic products, as well as 3 entities for the participatory certification of organic products from family production and organized small producers [*ABT 4*].
5. In Mexico there are 28 Mexican Official Standards (NOM) and 29 Mexican Standards (NMX) on sustainable production and consumption; 60 NOM on pollution prevention and control; 9 NOM on environmental impact; 15 NOM on water utilization and use; 29 NOM on protection of resources (fishing, fauna and flora); 100 NMX on pollution prevention and control; and 1 NMX on sustainable production (forestry and biosecurity). [*ABT 4*].
6. Article 41 of the Law on Hydrocarbons establishes 5 safeguard zones to prohibit hydrocarbon exploration and extraction activities in: mangroves and Ramsar sites; Selva Lacandona region; Yucatan and Mexican Caribbean Platform; Gulf of California, Baja California Peninsula and South Californian Pacific; coral reefs of the Gulf of Mexico and Mexican Caribbean. [*ABT 4*].
7. The highest percentage of natural vegetation surface is in Baja California Sur, Coahuila and Quintana Roo. [*ABT 5*].
8. Trends in Mexico's main fisheries for sardines and shrimp have remained stable. The tuna and scale fisheries showed an important recovery: in 2014 their yields were 130% and 147% respectively. [*ABT 6*].
9. Pacific fisheries are those with the highest national productivity (66% of the national catch: 1.4 million tons in 2014 and 1.8 million tons in 2017); The Gulf of Mexico and the Caribbean Sea fisheries represent 18% of the total national catch (308,379 t and 371,671 t in 2015 and 2016, respectively). In 2014 aquaculture came to represent 18% of the national total catch. [*ABT 6*].
10. There are 4,940 water quality monitoring sites in the country: 2,685 are from the surface network and 2,255 from groundwater bodies, coastal and discharge bodies. [*ABT 8*].
11. There is an Invasive Species Information System that has 2,018 registered species; of which there are 517 invasive species evaluated. [*ABT 9*]
12. CONANP has developed a total of 54 management plans with climate change criteria based on the ecosystem approach and has published 19 PACC. [*ABT 10*].
13. The carbon stock in mangroves amounts to 330 million tons of carbon, and that of seagrass to 42 million tons of carbon. [*ABT 10*].
14. 29 states have climate change state programs. [*ABT 10*].
15. Mexico has 182 federal ANPs covering 90,839,521 ha; of which 21,380,773 ha (23%) correspond to the continental surface (terrestrial and aquatic), and 69,458,748 ha (77%) to the marine surface. [*ABT 11*].
16. The management categories with the highest number of declared areas are national parks (67) and biosphere reserves (44). [*ABT 11*]

17. The category of biosphere reserves is the one that covers the largest area of protection in the country with 62,952,750 ha. [*ABT 11*]
18. There are 368 state ANPs covering an area of 3,986,381.14 ha. [*ABT 11*]
19. Mexico has worked on the delimitation of 18 complexes of 52 ANPs that have an area of 56,413,387 ha. [*ABT 11*]
20. The conservation area in Mexico includes federal ANPs, ADVC and fishing shelters, which together cover an area of 91,260,306 ha, of which 25,915,245 ha correspond to 13% of the land and continental water surface, and 69,458,748 ha to 22% of the marine surface of the country. [*ABT 11*]
21. There are 142 Ramsar sites and 13 presidential decrees of the PNRA, which protect about 47% of the country's surface water. [*ABT 11*]
22. The states with the highest number of state ANPs are: State of Mexico (64), Hidalgo (42) and Michoacán (38). [*ABT 11*]
23. There are 76 AZE sites and 222 KBA sites. [*ABT 11*]
24. NOM-059-SEMARNAT 2010 includes 2,606 species of fauna and flora in 2 risk categories (threatened and endangered) and a precautionary (subject to special protection). [*ABT 12*]
25. The CITES list for Mexico establishes a total of 2,067 species: 139 in Appendix I (endangered); 1,901 in Appendix II (not necessarily in danger, but whose international trade must be regulated so as not to be in danger); and 27 in Appendix III (species that a Party requests from other Parties its support to protect and whose trade is allowed, but is regulated in the country in question). [*ABT 12*]
26. Through PROCER, a total of 51 PACE have been prepared that serve 257 of the 372 priority species included in the list published in 2014 (60 endemic, 147 under some category of risk in NOM-059 and 53 in Red List of IUCN). [*ABT 12*]
27. Regarding in situ conservation of native crops, Mexico has carried out 44 diagnoses of the crops under attention, has identified 20 new species, and has established more than 25 community germplasm banks. [*ABT 13*]
28. In the field of *ex situ* conservation of native crops, a network of 6 Conservation Centers was integrated in the country, where more than 60 thousand accessions of approximately 1,300 species are currently protected; 9,407 accessions are available in the *in vitro* work collections and more than 233 varieties of 24 native crops have been registered; 26 varieties of 8 native crops have also been generated. [*ABT 13*]
29. The orthodox seed germplasm bank of the CNRG-INIFAP, protects 2 484 accessions of wild relatives of socioeconomically important crops and plants, which represents 10% of the total protected agricultural species (24,289) and 9.6% of the total of all of inventory [*ABT 13*]
30. 76% of the surface of marine sites of extreme importance for conservation (9.8 million hectares) is within the federal ANPs. [*ABT 14*]
31. Between 2014 and 2018, the CONAFOR PES program, which supported an average of 750 projects and the conservation of 500 thousand hectares, was strengthened. [*ABT 14*]
32. Between 2013 and 2018, through CONAFOR's programs of restoration and environmental compensation, 1,005,325 ha have been restored throughout the country. [*ABT 15*]
33. CONANP, through PROCODES, contributed to the restoration of 109,342 ha in 2016; of 181,127 ha in 2017; and of 26,437 ha in 2018. [*ABT 15*]
34. In the elaboration of ENBIOMEX, more than 350 people from 130 ins-

titutions participated: 24 from the academic sector, 42 from NGOs, 15 from state governments, 42 from APF, 2 from international cooperation agencies, 1 from the House of Representatives, and 10 of ejidos and local communities. [*ABT 17*]

35. At the state level, Mexico has 18 state biodiversity studies, 11 state biodiversity strategies, and 5 state biodiversity commissions have been decreed (only 3 -Morelos, Quintana Roo and Tamaulipas- operate with personnel, facilities and budget). [*ABT 17*]
36. In Mexico there are 8 million indigenous people, Afro-descendants and rural farmers, who inhabit 28 million hectares (15% of the national territory). [*ABT 18*]
37. Of the 28 million hectares of indigenous territories, 31% are located in the areas eligible for PES. [*ABT 18*]
38. Of the 28,837,600 hectares that require restoration in the Mexican territory, 20% are located within indigenous territories, especially in territories: Maya, Tzeltal, Mixteco, Chol, Tzotzil and Náhuatl. [*ABT 18*]
39. Of the 64 million hectares identified as priority conservation sites, 16% (10.5 million hectares) are located in indigenous territories, mainly in Maya, Tepehuán, Zapoteco, Zoque and Maya Lacandón territories. [*ABT 18*]

Challenges:

1. In 2006, the TCEDD corresponded to 8.4% of GDP; however, the budget allocated for environmental protection was 0.6% of GDP. In 2013, the TCEDD corresponded to 5.7% of GDP but the budget allocated to environmental protection was 0.9% of GDP. [*ABT 2*]
2. In 2015, 20% of the total federal programs were allocated to subsidies with positive impacts on biodiversity; while, 28% went to subsidies with negative impacts on biodiversity (mainly in the agricultural, livestock, aquaculture and infrastructure sectors). [*ABT 3*]
3. Mexico occupies the 8th place in the water footprint (2.3% of the total global consumption). [*ABT 4*]
4. Of the national water consumption: 92% corresponds to the agricultural sector, 3% to the industrial sector, and 5% to domestic use. [*ABT 4*]
5. Mexico is the second largest importer of water after Japan, and its external water footprint comes mainly from the United States, Canada, China and Brazil. [*ABT 4*]
6. Between 1976 and 2014, 11,905,011 ha of primary vegetation were lost: 6.3 million rainforests, 3.9 million scrublands, 821 thousand forests and 775 thousand mangroves. [*ABT 5*]
7. Nearly 28% of the national territory is destined to agriculture (21 million hectares), livestock (109.9 million) and urban settlements. [*ABT 5*]
8. Only 3 crops (maize, beans and sorghum) cover more than 60% of the country's cultivated area. [*ABT 5*]
9. Around 50% of the country's vegetation cover has been strongly impacted by agricultural activities. [*ABT 5*]
10. Veracruz, Tlaxcala, Mexico City and Tabasco are the states with the lowest percentage of natural vegetation surface. [*ABT 5*]
11. The highest annual rates of vegetation change are recorded in the states of Yucatán, Chihuahua, Coahuila, Aguascalientes and Hidalgo. [*ABT 5*]
12. Between 1976 and 2014, an increase in the condition of secondary vegetation in the total area of forests, scrublands and grasslands was identified. [*ABT 5*]
13. It is estimated that 44% of soils show degradation, of which: 77% of the degraded area is associated with agricultural activities; 16% to deforestation; and 6% to urbanization, overexploitation and industrial activities. [*ABT 5*]
14. The most widespread types of soil degradation in the country are: chemical degradation (17% of the national territory), water erosion (11%), wind erosion (9.5%) and physical degradation (5.7%). [*ABT 5*]
15. Of the 653 aquifers for consumptive uses, 205 are in deficit condition, 105 are overexploited and 32 have presence of saline serums and brackish water. [*ABT 5*]
16. According to the data of the 2016 National Fishing Charter, of the 35 fishery records of marine species of commercial importance presented: 17 have regulatory instruments (NOM); 13 have a management plan declaration; 16 define the type of access; and 14 establish their closed time. [*ABT 6*]
17. Of the 35 fisheries records of commercially important marine species published in the 2016 National Fishing Charter: 7 are in deterioration; 29 are being exploited to the maximum sustainable level; 1 is reported as overexploited; 4 have potential development based on available biomass; 1 is in population recovery; and 1 is certified as sustainable. [*ABT 6*]

18. Tuna fisheries have a decreasing population trend, especially in 2015 and 2016. [*ABT 6*]
19. In Mexico there are 101,828 production units with agricultural activity: 72.6% have less than 5 ha and are made up of rural populations in varying degrees of marginalization. [*ABT 7*]
20. In 2015, the installed capacity for the treatment of the 4,355 m3/s of municipal wastewater generated was only 43%. [*ABT 8*]
21. In 2015 there was an increase of 61% compared to 2003 in the volume of urban solid waste (10.24 million more tons generated in that period). [*ABT 8*]
22. Mexico is migrating to a lower predominance of organic waste: in the 1950s they represented between 65% and 70% of total waste, while in 2012 they represented 52%. [*ABT 8*]
23. Between 1990 and 2015 there was a 54% increase in carbon dioxide emissions. [*ABT 8*]
24. Pollutant emissions by sector: energy industry generates 91% of carbon dioxide emissions and 92% of black carbon emissions; the agricultural sector generates 57% of methane emissions and 85% of nitrous oxide emissions; Industrial processes generate 100% of the emissions of hydrofluorocarbons, perfluorocarbons and sulfur hexafluorides. [*ABT 8*]
25. It is estimated that the pollution generated by the incineration of hazardous waste, between 2004 and 2017, amounts to 981,923 t/year, which represents a proportion of 56% of the estimated generation of hazardous waste in the country. [*ABT 8*]
26. Between 1998 and 2015, a total volume of 4,355 m3/s of municipal wastewater and 3,386 m3/s of wastewater of industrial origin was generated. [*ABT 8*]
27. Wastewater discharges are concentrated in rivers or streams (2,461 sites), soils and ravines (972 sites), canals and drains (594 sites) and the smallest in the sea (8 sites). [*ABT 8*]
28. Compared to 2013 data, the groups that increased their number of exotic species are: algae (55), plants (23), arthropods (43), mollusks (27), fish (112), reptiles (25), birds (6), mammals (3) and porifers (1). [*ABT 9*]
29. Mexico has documented the loss of 127 species, of which 56 were endemic. The groups that report the highest number of extinctions are fish (38), amphibians (29) and plants (26). Currently, there are a total of 43 species whose extinction has not been confirmed. [*ABT 12*]
30. Between 2014 and 2018, COFREPIS issued 54 authorizations for the commercialization and importation of GMO, reaching a cumulative total of 1,133 GMO authorizations registered since 2010. [*ABT 13*]
31. About 64% of the country's municipalities (1 592) have unsustainable NCI and a very high HDI; while, only 38 municipalities (1.5%) have a sustainable NCI that has an irreplaceable ecological-evolutionary legacy. [*ABT 14*]
32. Temperate forests, sub-humid forests and xerophilous scrublands are ecosystems that require conservation measures with extreme priority. [*ABT 14*]
33. At the state level, it was identified that San Luis Potosí, Jalisco, Nayarit, Guerrero, Oaxaca, Chiapas, Campeche and Quintana Roo have a greater surface area of ecosystems with an extreme conservation priority. [*ABT 14*]

34. Although 45% of the country (88,166,160 ha) is without degradation, 54% of the national territory (107,758,640 ha) has different levels of land degradation. The degradation category with the highest representation is severe degradation in 27% of the country (52,899,700 ha), followed by slight degradation in 20% (39,184,960 ha), moderate degradation in 4% (7,836,990 ha), extreme degradation in 3% (5,877,750 ha), and degradation in water bodies in 1% (1,959,250). [*ABT 15*]
35. It is estimated that 28,837,600 hectares require restoration: 32% of that area is classified with extreme priority; 33% with high priority; and 33% with medium priority. [*ABT 15*]
36. The federal expenditure on biodiversity in 2006 was 6.6 billion pesos (0.04% of GDP); 2013 increased to 20.3 billion pesos (0.12% of GDP); and between 2014 and 2015 it decreased to 18.3 billion pesos (0.10% of GDP), which indicates a real decrease of 9%. [*ABT 20*]

Acronyms

ABS	Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising from their Utilization Acuerdo de acceso y distribución de beneficios
ADVC	Areas Voluntarily Designated for Conservation Áreas destinadas voluntariamente a la conservación
ANP	Natural Protected Area Área natural protegida
APF	Federal Public Administration Administración pública federal
AZE	Alliance for Zero Extinction Alianza para la extinción cero
BIOFIN	Biodiversity Finance Initiative Iniciativa de finanzas de la biodiversidad
CBD	Convention on Biological Diversity Convenio sobre la Diversidad Biológica
CHM	Clearing House Mechanism Centro de Intercambio de Información
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora Convención sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres
CNRG	National Center for Genetic Resources Centro Nacional de Recursos Genéticos
COESBIO	State Biodiversity Commission Comisión Estatal de Biodiversidad
COFEPRIS	Federal Commission for the Protection against Sanitary Risks Comisión Federal para la Protección contra Riesgos Sanitarios
CONABIO	National Commission for the Knowledge and Use of Biodiversity Comisión Nacional para el Conocimiento y Uso de la Biodiversidad
CONAFOR	National Forestry Commission Comisión Nacional Forestal
CONANP	National Commission of Natural Protected Areas Comisión Nacional de Áreas Naturales Protegidas
CONAPESCA	National Commission of Aquaculture and Fisheries Comisión Nacional de Acuacultura y Pesca
ENAREDD+	National Strategy for Reducing Emissions from Deforestation and Forest Degradation 2017-2030 Estrategia nacional para la reducción de emisiones por deforestación y degradación de los bosques
ENBIOMEX	National Biodiversity Strategy of Mexico and 2030 Action Plan Estrategia nacional sobre biodiversidad de México y plan de acción 2030
GDP	Gross Domestic Product
GEF	Global Environment Facility Fondo para el Medio Ambiente Mundial
GMO	Genetically Modified Organisms
HDI	Human Development Index
IAS	Invasive Alien Species
INEGI	National Institute of Statistic and Geography Instituto Nacional de Estadística y Geografía

IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Areas Áreas clave para la biodiversidad
MASAGRO	Sustainable Modernization of Traditional Agriculture Program Programa de modernización sustentable de la agricultura tradicional
NCI	Natural Capital Sustainability Index
NMX	Mexican Standards Normas mexicanas
NOM	Mexican Official Standards Norma oficial mexicana
PACC	Climate Change Adaptation Programs Programas de adaptación al cambio climático
PACE	Action Programs for Species Conservation Programa de acción para la conservación de especies
PND	National Development Plan Plan Nacional de Desarrollo
PNRA	Program of National Water Reserves Programa nacional de reservas de agua
PROCER	Program for the Conservation of Species at Risk Programa de Recuperación y Repoblación de Especies en Riesgo
PROCODES	Conservation Program for Sustainable Development Programa de conservación para el desarrollo sostenible
PROFEPA	Federal Attorney for Environmental Protection Procuraduría Federal de Protección al Ambiente
PROIGUALDAD	National Program for Equal Opportunities and Non-Discrimination Against Women Programa nacional para la Igualdad de oportunidades y no discriminación contra las mujeres
SADER	Ministry of Agriculture and Rural Development Secretaría de Agricultura y Desarrollo Rural
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
SAP	Priority Attention Sites for the Conservation of Biodiversity Sitios de atención prioritaria para la conservación de la biodiversidad
SEDATU	Ministry of Agrarian, Territorial and Urban Development Secretaría de Desarrollo Agrario, Territorial y Urbano
SEMARNAT	Ministry of Environment and Natural Resources Secretaría de Medio Ambiente y Recursos Naturales
SIMAR	Information and Analysis System of Marine Ecosystem of Mexico Sistema de información y análisis de ecosistemas marinos de México
SINAREFI	National System of Fitogenetic Resources for Food and Agriculture Sistema nacional de recursos fitogenéticos para la alimentación y la agricultura
SNIARN	National System of Environmental Information and Natural Resources Sistema Nacional de Información Ambiental y de Recursos Naturales
SNIB	National Information System on Biodiversity Sistema nacional de información sobre biodiversidad
TCEDD	Total Costs for Environmental Depletion and Degradation
UNDP	Program to Support Small Producers - Coffee Component Programa de Apoyo a Pequeños Productores componente café

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In memory of Alejandra Barrios Pérez

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GOBIERNO DE MÉXICO

MEDIO AMBIENTE
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

CONABIO
COMISIÓN NACIONAL PARA EL CONOCIMIENTO Y USO DE LA BIODIVERSIDAD

PNUD
Al servicio de las personas y las naciones