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IMPLEMENTATION COMPLETION AND RESULTS REPORT

TF-015475

ON A

GRANT

IN THE AMOUNT OF US\$39.52 MILLION

TO THE

FONDO MEXICANO PARA LA CONSERVACIÓN DE LA NATURALEZA (FMCN), COMISION NACIONAL  
FORESTAL (CONAFOR), NACIONAL FINANCIERA, S.N.C

FOR THE

COASTAL WATERSHEDS CONSERVATION IN THE CONTEXT OF CLIMATE CHANGE PROJECT

December 10, 2019

Environment, Natural Resources and Blue Economy Global Practice  
Latin America and Caribbean Region

## CURRENCY EQUIVALENTS

(Exchange Rate Effective December 10, 2019)

Currency Unit = Mexican Peso

\$19.26 pesos= US\$1

FISCAL YEAR

July 1 - June 30

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## ABBREVIATIONS AND ACRONYMS

<b>AOP</b>	Annual Operating Plans
<b>BIOCOMUNI</b>	Community Biological Monitoring ( <i>Monitoreo Comunitario de la Biodiversidad</i> )
<b>CAD</b>	Watersheds that feed watering networks/districts ( <i>Cuenca Alimentadora del Distrito de Riego</i> )
<b>C6 Project</b>	Coastal Watersheds Conservation in the Context of Climate Change Project
<b>CBD</b>	Convention on Biological Diversity
<b>CONABIO</b>	National Commission for the Knowledge and Use of Biodiversity ( <i>Comisión Nacional para el Conocimiento y Uso de la Biodiversidad</i> )
<b>CONAFOR</b>	National Forestry Commission ( <i>Comisión Nacional Forestal</i> )
<b>CONAGUA</b>	The National Water Commission ( <i>Comisión Nacional del Agua</i> )
<b>CONANP</b>	National Commission of Protected Areas ( <i>Comisión Nacional de Áreas Naturales Protegidas</i> )
<b>CPS</b>	Country Partnership Strategy
<b>CSO</b>	Civil Society Organizations
<b>ESMF</b>	Environmental and Social Management Framework
<b>FAO</b>	Food and Agriculture Organization
<b>FAV</b>	Environmental Fund of Veracruz ( <i>Fondo Ambiental Veracruzano</i> )
<b>FCC</b>	Costal Watersheds Fund ( <i>Fondo para Cuencas Costeras</i> )
<b>FGM</b>	Fund for the Gulf of Mexico ( <i>Fondo para el Golfo de México</i> )
<b>FMCN</b>	Mexican Fund for the Conservation of Nature ( <i>Fondo Mexicano para la Conservación de la Naturaleza</i> )
<b>FM</b>	Financial Management
<b>FONNOR</b>	Northwestern Fund ( <i>Fondo para el Noroeste</i> )
<b>GCF</b>	Green Climate Fund
<b>GEF</b>	Global Environment Facility
<b>GEO</b>	Global Environmental Objective
<b>GWW</b>	Global Water Watch
<b>INECC</b>	National Institute of Ecology and Climate Change ( <i>Instituto Nacional de Ecología y Cambio Climático</i> )
<b>INEGI</b>	National Geographic and Statistics Institute ( <i>Instituto Nacional de Estadística y Geografía</i> )
<b>IPPF</b>	Indigenous Peoples Planning Framework
<b>IRR</b>	Investment Rate of Return
<b>IR</b>	Intermediate Results indicator
<b>IUCN</b>	International Union for Conservation of Nature
<b>IWAP</b>	Integrated Watershed Action Plan ( <i>Planes de Manejo Integrado de Cuencas - PAMICs</i> )
<b>JISOC</b>	Intermunicipal Council for the Western Sierra and Coast ( <i>Junta Intermunicipal de Medio Ambiente Sierra Occidental y Costa</i> )
<b>KfW</b>	German development bank
<b>METT</b>	Management Effectiveness Tracking Tool
<b>MiJO</b>	Project for integrated management of the jaguar habitat through community participation in Western Mexico ( <i>Manejo integrado del hábitat del jaguar a través</i>

	<i>de la participación comunitaria en el Occidente de México)</i>
<b>MTR</b>	Mid-Term Review
<b>NAFIN</b>	Nacional Financiera S.N.C.
<b>NPV</b>	Net Present Value
<b>PA</b>	Protected Area
<b>PAD</b>	Project Appraisal Document
<b>PCU</b>	Project Coordination Unit
<b>PDO</b>	Project Development Objective
<b>PES</b>	Payment for Ecosystem Services
<b>PF</b>	Process Framework
<b>SAR-MOD</b>	High Resolution System for Monitoring Diversity ( <i>Sistema de Alta Resolución para el Monitoreo de la Diversidad</i> )
<b>RCU</b>	Regional Coordination Units
<b>SDG</b>	Sustainable Development Goals
<b>RedFAM</b>	Mexican Environmental Funds Network ( <i>Red de Fondos Ambientales de México</i> )
<b>SIMEC</b>	Information, Monitoring, and Evaluation System for Conservation ( <i>Sistema de Información, Monitoreo y Evaluación para la Conservación</i> )
<b>SISEP</b>	Information and Tracking/Monitoring System ( <i>Sistema de Información y Seguimiento de Proyecto</i> )
<b>SNMB</b>	National System of Biodiversity Monitoring ( <i>Sistema Nacional de Monitoreo de Biodiversidad</i> )
<b>TPC</b>	Technical Project Committee
<b>TTL</b>	Task Team Leader
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change

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**DATA SHEET****BASIC INFORMATION****Product Information**

Project ID	Project Name
P131709	Coastal Watersheds Conservation in the Context of Climate Change Project
Country	Financing Instrument
Mexico	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	Partial Assessment (B)

**Organizations**

Borrower	Implementing Agency
Fondo Mexicano para la Conservación de la Naturaleza (FMCN), Comisión Nacional Forestal (CONAFOR), Nacional Financiera, S.N.C	Comisión Nacional de Áreas Naturales Protegidas (CONANP), Instituto Nacional de Ecología y Cambio Climático (INECC)

**Project Development Objective (PDO)**

## Original PDO

The project global environmental objective (GEO) is the same as the project development objective (PDO): To promote integrated environmental management of selected coastal watersheds as a means to conserve biodiversity, contribute to climate change mitigation, and enhance sustainable land use.



## FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
<b>World Bank Financing</b>			
TF-15475	39,518,000	39,518,000	39,518,000
<b>Total</b>	<b>39,518,000</b>	<b>39,518,000</b>	<b>39,518,000</b>
<b>Non-World Bank Financing</b>			
Borrower/Recipient	228,279,000	228,279,000	228,279,000
<b>Total</b>	<b>228,279,000</b>	<b>228,279,000</b>	<b>228,279,000</b>
<b>Total Project Cost</b>	<b>267,797,000</b>	<b>267,797,000</b>	<b>267,797,000</b>

## KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
21-Nov-2013	11-Mar-2014	23-Jan-2017	30-Jun-2019	28-Jun-2019

## RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
19-Jun-2018	32.31	Change in Results Framework Reallocation between Disbursement Categories

## KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Substantial

## RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	17-Mar-2014	Satisfactory	Satisfactory	0
02	12-Jul-2014	Satisfactory	Satisfactory	7.80



03	16-Nov-2014	Satisfactory	Satisfactory	7.87
04	27-May-2015	Satisfactory	Satisfactory	17.89
05	24-Dec-2015	Satisfactory	Satisfactory	19.21
06	24-Jun-2016	Satisfactory	Satisfactory	20.56
07	23-Dec-2016	Satisfactory	Satisfactory	21.83
08	01-May-2017	Satisfactory	Satisfactory	23.25
09	30-Oct-2017	Satisfactory	Satisfactory	31.43
10	27-Apr-2018	Satisfactory	Satisfactory	31.74
11	06-Nov-2018	Satisfactory	Satisfactory	32.31
12	26-Jun-2019	Satisfactory	Satisfactory	39.52

## SECTORS AND THEMES

### Sectors

Major Sector/Sector (%)

**Agriculture, Fishing and Forestry 100**

Irrigation and Drainage 26

Public Administration - Agriculture, Fishing & Forestry 13

Forestry 26

Other Agriculture, Fishing and Forestry 35

### Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3) (%)

**Social Development and Protection 0**

Social Inclusion 1

Participation and Civic Engagement 1

**Environment and Natural Resource Management 0**

Climate change 24

Mitigation 24

Renewable Natural Resources Asset Management 75

Biodiversity 75



**ADM STAFF**

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## I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

### A. CONTEXT AT APPRAISAL

#### Context

1. Mexico ranked fifth in 2013 among the world's 15 mega-biodiverse countries, representing 10-12 percent of global biodiversity. For example, the country's ecosystems<sup>1</sup> host between 50 and 60 percent of the world's known species of plants, as well as iconic animal species of cultural and environmental significance<sup>2</sup> such as the jaguar (*Panthera onca*) and the scarlet macaw (*Ara macao macao*). But Mexico's rich biodiversity is under threat from land-use conversion including expanding urban development and by encroaching agricultural fields leading to deforestation and biodiversity loss. The National Geographic and Statistics Institute (*INEGI*) of Mexico has estimated that 35 percent of the country's forests have vanished over past two decades, contributing to the endangerment of 2,606 species.<sup>3</sup>
2. The Gulf of Mexico and the Gulf of California regions have suffered serious environmental degradation due to unsustainable land use practices. Practices carried out as part of cattle ranching, slash-and-burn agriculture, sugar cane cultivation, rapid coastal development, and other human activities have been the key drivers of biodiversity loss and soil erosion. In the two regions, unsustainable land use practices and land use conversion undermined aquatic ecosystems as well, with increased runoffs and wastewater contaminating watershed systems. In 2013, the National Water Commission (*CONAGUA*) considered 38 percent of Mexico's rivers to be highly polluted.
3. Compounding these challenges for Mexico are severe changes in climatic patterns, notably strong and increasingly unpredictable storms and winds. Scientists believe the country will feel the biggest impact in coastal areas, where mountain ranges run parallel to the sea, and deep canyons and ravines connect the mountains with the ocean. Mitigation and adaptation to these altered climatic patterns require enhanced intersectoral collaboration for integrated resilience strategies. These are indispensable for the preservation of vital ecosystem services including potable water, soil stability, ecosystem integrity, and prosperous livelihoods—green growth—derived from healthy natural capital including biodiversity.
4. An integrated sustainable management of interdependent ecosystems (the “landscape approach”) helps build resilience to climate change while restraining ecosystem degradation stemming from unsustainable land use practices and land-use conversion. In 2013, Mexico adopted this approach for the management of watershed ecosystems, viewing it as the key tool connecting ecological asset between mountain forest areas and the coasts, where downstream communities were experiencing rapid economic growth yet becoming increasingly vulnerable to natural disasters due to mounting degradation upstream. The Coastal Watersheds Conservation in the Context of Climate Change Project (the “C6 Project”) was therefore proposed to tackle these issues at the landscape level, bringing together the array of governmental, private, and community stakeholders. In summary, the C6 Project set out with

<sup>1</sup> These consist of temperate and tropical forests, freshwater streams/rivers/lakes/tributaries, and expansive coastal/marine ecosystems along Mexico's Pacific and Caribbean coasts.

<sup>2</sup> Some species, such as the jaguar, are designated as keystone species that influence the abundance and diversity of the ecological system around them.

<sup>3</sup> Species are rated to face different threats levels by the International Union for Conservation of Nature (IUCN). *Norma Oficial Mexicana 059, SEMARNAT, 2013:*

[http://www.profepa.gob.mx/innovaportal/file/435/1/NOM\\_059\\_SEMARNAT\\_2010.pdf](http://www.profepa.gob.mx/innovaportal/file/435/1/NOM_059_SEMARNAT_2010.pdf)

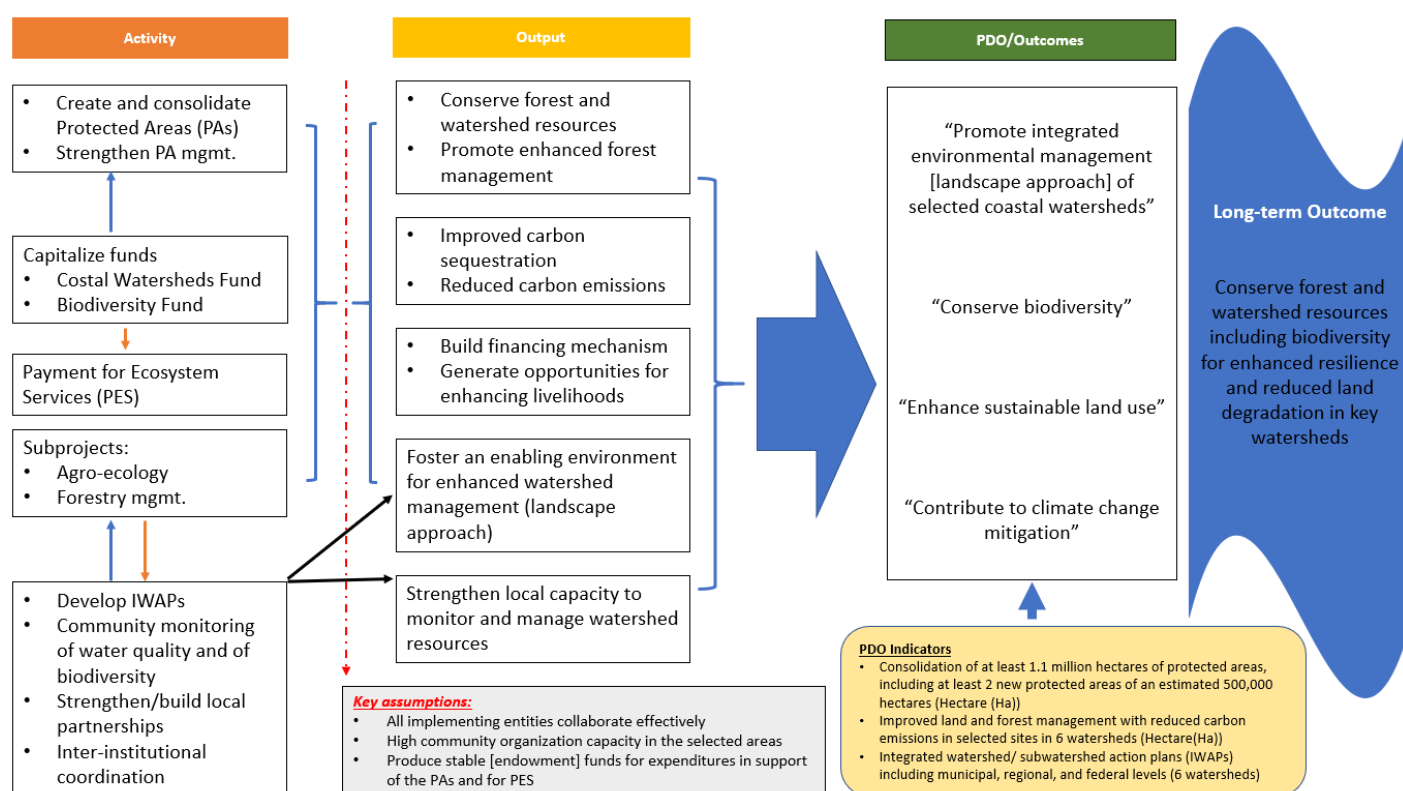


Global Environment Facility (GEF) grant finance of US\$39.52 million to bolster the conservation of high-priority protected areas (PAs); Payment for Ecosystem Services (PES) to further support conservation; help communities and individual landowners implement biodiversity and forest-friendly practices; and monitor environmental health in a participatory way so as to inform the development and adoption of Integrated Watershed Action Plans (IWAPs).

### Theory of Change (Results Chain)

5. The Project's theory of change (results chain) is illustrated in Figure 1 below. As a results chain was not included in the Project Appraisal Document (PAD), it has been inferred from documents available at the appraisal stage of the Project.

Figure 1: Theory of Change: Coastal Watersheds Conservation in the Context of Climate Change (C6) Project.



6. **Statement of the Problem:** The environmental integrity of the watersheds is threatened by loss and degradation of natural habitats due to land-use conversion and unsustainable land-use practices. Key drivers include unsustainable practices for some crops (sugar and coffee, for example); urban growth; extensive cattle ranching, illegal logging, and limited economic opportunities, which lead local inhabitants to engage in environmentally harmful practices. The degradation of watershed ecosystems creates negative externalities at multiple levels, including carbon emissions, loss of biodiversity, and soil erosion. Ultimately, these changes reduce the productivity of ecosystems, hindering the livelihoods of communities within the watersheds, and in many cases encouraging out-migration and increasing vulnerability to poverty.



7. **Approach:** The C6 Project aimed to address these issues through a landscape approach to environmental management across selected watersheds in the Gulf of Mexico and the Gulf of California. The approach allowed activities and institutions across project components to be interconnected, and contribute together to the achievement of project outcomes.

### Project Development Objectives (PDOs)

8. The Project's Global Environmental Objective (GEO) was the same as the Project Development Objective (PDO) stated in the PAD and in the legal agreement:<sup>4</sup> To promote integrated environmental management of selected coastal watersheds as a means to conserve biodiversity, contribute to climate change mitigation, and enhance sustainable land use.

### Key Expected Outcomes and Outcome Indicators

9. The key expected outcome was to conserve forest and watershed resources including biodiversity for enhanced resilience and reduced land degradation. The creation of new protected areas and the strengthening of management of existing ones, including through securing endowment finance, was expected to contribute to the following outcomes: (a) promotion of integrated environmental management (the landscape approach) of selected coastal watersheds; (b) conservation of biodiversity; (c) enhancement of sustainable land use; and (d) mitigation of climate change.

10. The following key performance indicators were originally designed to track progress towards achieving these key outcomes:

- **PDO Indicator 1:** Consolidation of at least 1.1 million ha of protected areas, including at least two new protected areas of an estimated 500,000 ha (*End Target:* 1,100,000 ha)
- **PDO Indicator 2:** Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (*End Target:* 1,027,554 ha)
- **PDO Indicator 3:** Integrated watershed/sub-watershed action plans (IWAPs) including municipal, regional, and federal levels (*End Target:* Six watersheds)

### Components

- **Component 1: Creation and Consolidation of Protected Areas (GEF: US\$20.349 million; Co-finance: US\$54.669 million)**

11. Component 1 supported the creation of new protected areas (PAs) and strengthened management of existing ones including through the capitalization of the Coastal Watersheds Fund (*Fondo para Cuencas Costeras— FCC*) for financing biodiversity conservation activities, and through raising additional non-GEF funding to support the FCC mission over the long term. Protected areas in the selected watersheds have an immense global value as highly biodiverse ecosystems and carbon sinks. Component 1 was implemented by the National Commission of Protected Areas (*Comisión Nacional de Áreas Naturales Protegidas—CONANP*), which focused on the management and consolidation/creation of PAs. The Mexican Fund for the Conservation of Nature (*Fondo Mexicano para la Conservación*

<sup>4</sup> Global Environment Facility. (2013, December 11) "Grant Agreement: Coastal Watersheds Conservation in the Context of Climate Change Project)." GEF Grant number TF015475.



*de la Naturaleza—FMCN*) was responsible for the capitalization of the FCC with the support from CONANP.

- **Component 2: Promoting Sustainability within Watersheds (GEF: US\$17.096 million; Co-finance: US\$136.834 million)**

12. Component 2 aimed to promote watershed sustainability and climate change mitigation through activities against deforestation and land degradation. Through well-targeted PES, forest remnants were to be conserved and serve as connecting units within the watersheds. The Mexican Government would match 1:1 the contributions by GEF to the Biodiversity Endowment Fund. In addition, strategically situated subprojects would strengthen communities in sustainable forest management and in addressing land degradation. These subprojects aimed to reduce pressure on forest fragments which provide biological connectivity within the watershed. Component 2 was implemented by the National Forestry Commission (Comisión Nacional Forestal - CONAFOR) which carried out the PES and managed the Biodiversity Endowment Fund. FMCN was charged with management of the forestry and agro-ecology subprojects.

- **Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities (GEF: US\$0.439 million; Co-finance: US\$10.750 million)**

13. Component 3 aimed to identify priority sites for targeted intervention including development of IWAPs and strengthening community monitoring of ecosystem services. GEF support would allow integrating measures of three ecosystem services (biodiversity, Carbon stocks, and water quality and quantity) in six watersheds and relate these measures to land uses, livelihoods, and local capacities within each watershed. Combining community-based and national monitoring strategies would help ensure that the piecemeal approach to monitoring was transformed into a comprehensive system that provides constant feedback for integrated watershed management, including early warning of unsustainable uses being displaced to other areas. Component 3 was implemented by the National Institute of Ecology and Climate Change (*Instituto Nacional de Ecología y Cambio Climático—INECC*) which coordinated the design and participatory development of the IWAPs including leading efforts in community environmental monitoring.

- **Component 4: Innovative Mechanisms for Inter-Institutional Collaboration and Promoting Social Participation (GEF: US\$0.979 million; Co-finance: US\$15.913 million)**

14. Component 4 was designed to focus on mechanisms for inter-institutional collaboration, promoting social participation, monitoring and evaluation, and strengthening channels for coordination and learning. More specifically, Component 4 set out to carry inter-institutional coordination activities (including networks, forums, and learning communities) to regional and local levels, involving state and municipal governments, civil society, and academic institutions. The goal was to promote cross-sectoral coordination, and participation in and oversight of IWAPs. Component 4 was a collaborative effort by all implementing partners (CONANP, CONAFOR, INECC) under the leadership of the FMCN.

- **Component 5: Project Management (GEF: US\$0.655 million; ; Co-finance: US\$10.113 million)**

15. Component 5 aimed to support FMCN and CONAFOR, the Technical Project Committee (TPC), the Fund for the Gulf of Mexico (*Fondo Golfo de México—FGM*) and to the Northwest Fund (*Fondo Noroeste—FONNOR*) for the implementation and supervision of the Project. The support included, among other things, the acquisition of goods and the provision of technical assistance and training.



## B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

### Revised PDOs and Outcome Targets

16. There were no changes to the PDO during Project implementation.

### Revised PDO Indicators

17. Adjustments to PDO-level Indicator 3 were reviewed during Mid-Term Review (MTR) from January 23 to 27, 2017, and were formalized as part of a Level-II restructuring. These adjustments, refined to include the adoption of IWAPs at different levels of government and by local actors, were made to encourage institutional and community ownership and buy-in towards the Project outcomes. In view of the dedicated focus to community monitoring as part of Component 3, it was deemed important to encourage the adoption of the IWAPs by local actors.

<i>Original PDO Indicator 3</i>	<i>Revised PDO Indicator 3</i>
Integrated watershed/subwatershed action plans (IWAPs) including municipal, regional, and federal levels (six watersheds)	Integrated watershed/subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional, or federal) or local actors (six watersheds).

### Revised Components

18. There were no changes to the components during Project implementation.

### Other Changes

#### Changes to Intermediate Results Indicators (IRs)

19. The following updates were made to the Project's results framework during Level II restructuring:

- Intermediate Results Indicator (IR) 2.3 was dropped due to its close similarities with IR Indicator 3.1 and ambiguous target unit ("six monitoring systems").

<i>Original IR Indicator 2.3 (Dropped)</i>
At least one functioning monitoring system per watershed. [number of monitoring systems per watershed] Target: Six monitoring systems

- Adjustments were made to IR 3.1 to facilitate targeted monitoring of biodiversity and water quality—which are both key measures of environmental health and ecosystem services. The original IR indicator 3.1 emphasized the specific tools that may be employed for monitoring (remote sensing and local data gathering) but omitted the environmental attributes to be considered. The revised indicator allowed flexibility in monitoring tools to be employed.



<i>Original IR Indicator 3.1</i>	<i>Revised IR Indicator 3.1</i>
Number of watersheds/subwatersheds with priority sites being monitored with remote sensing and local data-gathering techniques. Target: Six watersheds	Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality. Target: Six watersheds

*Reallocation of Grant Proceeds among Disbursement Categories*

20. A reallocation of grant proceeds between disbursement categories took place as part of Project Restructuring. A projection of expenses at MTR was carried out to inform this reallocation. The results indicated that operational expenses supporting PA management needed additional immediate resources to ensure positive outcomes (see Restructuring Paper for detailed information). The reallocations amounted to more than 15 percent within each category and so restructuring was warranted. The original cost of components was not altered by this reallocation.

**Rationale for Changes and Their Implication on the Original Theory of Change**

21. The Project team and relevant partners deemed the Restructuring (and associated changes) to be necessary to streamline the Project activities, minimize duplication, and strengthen the delivery of development outcomes. The changes outlined above represent no implications on the reconstructed theory of change.

## **II. OUTCOME**

### **A. RELEVANCE OF PDOs**

**Rating: High**

#### **Assessment of Relevance of PDOs and Rating**

22. **Bank-Country Partnership Priorities:** At completion, the Project PDO remained highly relevant and closely aligned with the World Bank Group's Country Partnership Strategy (CPS). During Project design and at early stages of implementation, the PDO was in alignment with the FY08-13 CPS<sup>5</sup> by supporting its environmental sustainability pillar and the country's commitment to sustainable development and adaptation to climate change. Likewise, at Project closing, the PDO remained well aligned with the FY14-19 CPS,<sup>6</sup> as it directly supports key elements of the green and inclusive growth pillar, namely the need for managing natural assets under pressure, focusing on forest, biodiversity, water management, and renewable energy.

23. **GEF-7 Strategic Focus:** The PDO remained aligned with the priorities of the current 2018-22 Biodiversity Focal Areas of the GEF-7 Programming Directions that seek to "promote protected area co-management between government and indigenous peoples and local communities where such management models are appropriate." In this context, the Project contributed to biodiversity across sectors and landscapes/seascapes and addressed direct drivers

<sup>5</sup> Report number 42846-MX (CPS 2008-13)

<sup>6</sup> Report number 80800-MX (CPS 2014-19)





to protect habitats and species.

24. **National Development Priorities:** Throughout the life of the Project, the PDO remained relevant to Mexico's National Development Plan (*Plan Nacional de Desarrollo*) 2013-18. Specifically, it nurtured the biodiversity priorities of one of the Plan's five national goals, *Mexico Próspero*, which emphasized the sustainable use of natural resources and the preservation of the environment and biodiversity. Likewise, at the C6 Project's conclusion, the PDO remained relevant to the new government priorities, particularly in matters related to sustainable livelihoods, agroforestry management, and biodiversity.<sup>7</sup>

25. **International Commitments:** The PDO remained relevant to the country's national green growth agenda and its commitment, under the Climate Change Law of 2012, to reduce greenhouse gas emissions by 30 percent by 2020. The PDO remained well aligned also to global climate change mitigation and goals under the United Nations Framework Convention on Climate Change (UNFCCC) concerning reforestation and deforestation and forest degradation, all of which enhance carbon sequestration.

26. The Project contributed to Mexico's commitments under the Convention on Biological Diversity (CBD) as per the country's National Strategy for Biodiversity,<sup>8</sup> particularly reducing direct pressures on biodiversity and promoting sustainable land use as well as the creation of protected areas and their connectivity (Aichi goal 11). The C6 PDO also remained relevant to the Sustainable Development Goals in its efforts to enhance sustainable livelihoods and economies (SDG 1), help climate change mitigation and resilience (SDG 13), and promote sustainable use of terrestrial ecosystems, particularly forests for biodiversity conservation (SDG 15).

## B. ACHIEVEMENT OF PDOs (EFFICACY)

**Rating: Substantial**

### Assessment of Achievement of Each Objective/Outcome

27. Achievement of the PDO (Efficacy) is rated Substantial because the C6 Project was effective in achieving its objectives and meeting planned targets across results indicators at the PDO and intermediate levels (Table 1 and Annexes 1 and 7).

### Achievement of Objectives/Outcomes

#### Setting the Stage:

28. The C6 Project set out to promote and execute an integrated ("landscape") approach to conservation and rehabilitation of coastal watersheds. The Project aimed to conserve biodiversity, contribute to climate change mitigation, and enhance sustainable land use across selected watersheds in the Gulf of Mexico and the Gulf of California (Figure A7.1 in Annex 7). This integrated approach was important to finding solutions to land degradation and forest loss upstream for the benefit of ecosystems and communities spatially along a watershed, both adjacent to

<sup>7</sup> *Sembrando Vida* program under the new National Development Plan 2019-2024 (*Plan Nacional de Desarrollo 2019-2024*): [https://www.dof.gob.mx/nota\\_detalle.php?codigo=5565599&fecha=12/07/2019](https://www.dof.gob.mx/nota_detalle.php?codigo=5565599&fecha=12/07/2019)

<sup>8</sup> See report "*Estrategia Nacional sobre Biodiversidad de México y plan de acción 2016-2030*" <https://www.biodiversidad.gob.mx/pais/enbiomex/>





it and in downstream areas. In addition to operating across ecosystems, the landscape approach encouraged multiple institutions and stakeholders along each watershed and between protected areas to work together. Achieving harmonious collaboration among institutions for the successful implementation of activities spatially, under the framework of a landscape approach, was a challenging task to be tackled by the Project.

29. The TPC<sup>9</sup> was created early on in the Project with representatives from all four implementing partners (CONANP, CONAFOR, INECC, and FMCN—Figure A7.2 in Annex 7) to manage inter-institutional relations and ensure delivery of the many interconnected outcomes across watersheds in the two gulf regions. The selected implementing partners membership in the TPC made sense given their expertise and past successes in conservation endeavors, such as the successful recent implementation of the SINAP II Project by CONANP and the FMCN.<sup>10</sup> This deep involvement at the technical level fostered a shared sense of responsibility and accountability for success. Effective coordination under the strong leadership of the TPC was an evolutionary and adaptive process. This coordination became a key strength of the Project, helping it ultimately exceed expectations in achieving outcomes.

30. Successfully applying a landscape approach also meant the effective spatial execution of Project activities (Figure A7.2 in Annex 7). In the case of the C6, activities along a watershed were designed to be mutually complementary to reinforce overall outcomes. For instance, activities supported under Component 1 of the Project emphasized consolidating and effectively managing “core biodiversity areas” (PAs) that were enhancing biodiversity benefits and mitigation benefits, while preventing land use conversion from forest area. Component 2 activities, meanwhile, built corridors between these core PAs and promoted adjacent/downstream agro-ecology and climate-smart agriculture practices, thus supporting biodiversity and mitigation benefits by curtailing unsustainable land use. These outcomes are further explored below and detailed in Annex 7. See also the C6 Project website, <http://www.c6.org.mx/>

**(a) Outcome: Promotion of Integrated Environmental Management (Landscape Approach)**

31. The landscape approach, including the intertwined benefits of Project activities, entailed extensive community participation and co-development of six IWAPs,<sup>11</sup> known in Spanish as PAMICs. These IWAPs served as integrated ecosystem management tools—developed with energetic participation from community stakeholders who provided data inputs and local knowledge about biodiversity, water quality, and other environmental conditions. Under the leadership of INECC, the C6 supported training sessions between 2014 and 2019 by which community members became able biodiversity monitors at 104 sample points using remote sensing imagery for flora and fauna identification in-situ.<sup>12</sup> In addition, 171 water quality training workshops, employing the Global Water Watch (GWW) methodology, resulted in 106 certified monitors and 3,433 registries on physical, chemical, and biological variables related to water quality, including *E. coli* levels. These community monitoring training sessions and the widely disseminated results (through videos,<sup>13</sup> social media campaigns, pamphlets, and public events) were key to promoting the landscape approach, building capacity, and securing buy-in from local actors and stakeholder at different levels.

<sup>9</sup> The TPC was tasked with reviewing and approving operational procedures, providing policy guidance, and supervising and supporting the implementing agencies.

<sup>10</sup> Protected Areas System Project (P065988) approved on February 7, 2002 (SINAP II) – Satisfactory performance overall.

<sup>11</sup> Tuxpan, Antigua, and Jamapa watersheds in the Gulf of Mexico and Baluarte, San Pedro, and Puerto Vallarta region watersheds in the Gulf of California - <http://cuencas.cms.matrushka.com.mx/>

<sup>12</sup> Biodiversity monitoring employed cameras and sound recording devices to identify major fauna groups including jaguars, birds, amphibians, and bats as key bio-indicator species of ecosystem health.

<sup>13</sup> <https://www.youtube.com/watch?v=HbxL8jSA61o&feature=youtu.be>



32. The final IWAPs were published online and now serve as guides to conservation and environmental management activities, providing useful information and data on the supply and demand of ecosystem services. These watershed management plans and the ongoing monitoring by community members permeated every aspect of the C6 activities, including PA consolidation, subprojects, and PES deployment.

**(b) Outcome: Biodiversity Conservation**

33. PAs in Mexico have generally proven effective in reducing deforestation and promoting conservation.<sup>14</sup> To manage core biodiversity areas within watersheds and to ensure the sustainability of important ecosystems services including climate change mitigation (CO<sub>2</sub> avoidance), the C6 Project consolidated<sup>15</sup> 1,748,204.73 ha of PAs across watersheds (Table 1 below and Figure A7.5 in Annex 7). Under the leadership of CONANP and informed by IWAPs, the C6 supported the development of Annual Operational Plans (AOPs) outlining key conservation activities. These activities included community environmental monitoring and surveillance, fire prevention and control, environmental education, coral reef restoration, as well as the management of invasive species and pests. The annual reports of each PA show a progressive achievement in the activities of relevance. AOPs also outlined multiuse activities around the edges of the PAs to enhance livelihoods and prevent further land degradation and biodiversity loss.

34. Strong PA management also meant securing sustainable finance for the continuation and upscaling of conservation activities within core biodiversity areas and beyond. The C6 set out to establish two mutually supporting endowment funds—the FCC and the Biodiversity Endowment Fund—with GEF resources and equivalent matching finance successfully raised from an array of private and public sources (Annex 7). The total initial funds capitalizing the FCC (US\$39 million) and the Biodiversity Endowment Fund (US\$18.2 million) have continued to accrue interest (financial return in Mexican pesos from January to June 2019 was 9.44 percent and 4.8 percent respectively<sup>16</sup>) beyond project closing. These gains are important for the continuation of ecosystem management at the watershed level, including effective PA management and support of sustainable livelihood initiatives.

**(c) Outcome: Enhance Sustainable Land Use**

35. Adjacent to core biodiversity areas, in alignment with IWAPs and PAs' AOPs, the C6 supported activities to further maintain the integrity of the watershed ecosystem, including its biodiversity, and enhance sustainable livelihoods. To that end, CONAFOR led the establishment of biodiversity corridors supported through Payments for Ecosystem Services. The ecological corridor that is home range of the keystone and emblematic jaguar species *Panthera onca*<sup>17</sup> is a notable example, connecting three PAs across different watersheds along the Gulf of California (Figure A7.7 in Annex 7).<sup>18</sup> The contribution to collaborative efforts to protect the jaguar territory included supporting training, monitoring equipment for community brigades, and staging public knowledge exchange events such as “The

<sup>14</sup> F. Figueroa and V. Sánchez-Cordero. 2008. “Effectiveness of Natural Protected Areas to Prevent Land Use and Land Cover Change in Mexico.” *Biodiversity and Conservation* 17: 3223–40;

<sup>15</sup> Consolidated area meant effectively managed areas applying METT Scoring Evaluations (summarized in Annex 7); AOPs; essential personnel, infrastructure, and equipment; and a diversified, sustainably financed budget through endowment funds for long-term operations.

<sup>16</sup> For the Biodiversity Endowment Fund, 27.8 percent was the total accrued interest over the 5-year nominal return, while cumulative inflation during same period was 19.21 percent.

<sup>17</sup> Jaguars support biodiversity as a keystone species that influences the abundance and diversity of their prey and the ecosystem around them. See S.C. Wagner, 2010. *Keystone Species*. Nature Education Knowledge 3(10):51.

<sup>18</sup> “The Jaguar’s “Western Corridor” connects 9 percent of critical habitat terrain, according to the 2010 National Jaguar Census. The corridor is part of the Integrated Management of the Jaguar Habitat through Community Participation In Western Mexico (MiJO) project, funded by United States Fish and Wildlife Service, and implemented by FONNOR in collaboration with the C6.



Great Roar” series.

36. Under the leadership of FMCN, the C6 supported agro-ecology and climate-smart agriculture subprojects to reduce unsustainable land use while enhancing livelihood opportunities. Thirty-two agro-ecosystem subprojects, covering a total area of 23,572 ha, received support from the Project. These included areas used in honey and shade-grown coffee production and sustainable cattle ranching. Other areas underwent various ecological restoration.<sup>19</sup> At Project closing, 90 percent of subprojects reported continuity in their activities and are being closely monitored by communities whose members received training on the technical and administrative execution of subprojects. As part of the C6 package, a total of 1,669 workshops (directly benefiting 16,173 participants—6,585 women and 9,588 men, of whom 22.2 percent were indigenous<sup>20</sup>) were held to strengthen local capacities and contribute to this continuity rate.

**(d) Outcome: Contributions to Climate Change Mitigation**

37. As is characteristic in the landscape approach, Project activities contributed greatly as well to climate change mitigation. The consolidation of PAs and PES-associated activities prevented conversion of forest land to other uses. This was important for biodiversity conservation and also for carbon avoidance. Subprojects, meanwhile, addressed unsustainable land-use practices and contributed to carbon sequestration by helping rehabilitate soil and its ability to absorb Carbon. Deforestation rates and CO<sub>2</sub> emissions would have been substantially higher without the C6 interventions (see estimates in Annex 4). At Project closing, it was estimated that without the interventions, deforestation would have reached 11,743 ha. As such, C6 intervention prevented a total of 5.53 Mt of CO<sub>2</sub> from entering the atmosphere. Reducing forest loss is crucial due to forests’ role in ecosystem services including biodiversity, Carbon absorption, soil stability, and community livelihoods.

38. While the Project monitored and reported on Carbon sequestration/avoidance as the primary link to engaging climate change, most aspects of the C6 contributed in some way to adaptation and resilience building as well. For example, the IWAPs incorporated models of varying climate-change scenarios thus accounting for adaptation measures in guiding project activities at the watershed level.

**Justification of Overall Efficacy Rating**

39. The Project was successful in consolidating and creating new PAs and ensuring their effective management through appropriate means of sustainable finance (FCC and Biodiversity Endowment Fund), evaluative frameworks (Management Effectiveness Tracking Tool (METT) evaluation and reporting), and capacity in place (including the AOPs). Likewise, the Project succeeded in executing the PES to support biodiversity corridors and a variety of agro-ecology and forest management subprojects across watersheds. Overall, the C6 developed and adopted IWAPs in a participatory manner. It formed key partnerships at different levels and built ownership among community participants and other stakeholders (see Table 1 below and Annex 1).

Table 1: Achievement by Indicators—the C6 Project.

<sup>19</sup> Of the total 23,572 ha subproject area, 8,934 ha are devoted to forest conservation through legal or community frameworks; 6,870 ha are under forest reforestation treatment; 705 ha of forest are undergoing restoration treatment; 4,511 ha are under best practices in agriculture, cattle ranching, and shade coffee; and 2,552 ha are designated as legal forest plantations with sustainable management plans.

<sup>20</sup> Of the indigenous people, 1,980 were men and 1,605 were women.



	Original Baseline	End Target	At Project Closure	Percent Achieved
<b>PDO [Outcome] Indicators</b>				
<u>PDO Indicator 1</u> : Consolidation of at least 1.1 million ha of protected areas, including at least two new protected areas of an estimated 500,000 ha	0	1,100,000	1,748,204.70	158 percent
<u>PDO Indicator 2</u> : Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (ha)	1,008,858	1,027,554	1,092,026.80	102 percent
<u>PDO Indicator 3</u> : Integrated watershed/subwatershed action plans (IWAPs) adopted at different government levels (municipal, regional, or federal) or local actors (number of watersheds)	0	6	6	100 percent
<b>Project Intermediate Outcome Indicators (IR indicators)</b>				
IR 1.1: Protected areas meeting their management effectiveness targets (number of PAs)	0	12	10	83 percent
IR 1.2: Capitalization of permanent funding sources (US\$ million)	US\$5.20	US\$28.60	US\$28.60	100 percent
IR 2.1: PES, agro-ecosystem and sustainable forest management subprojects implemented in accordance with IWAPs (Ha)	0	18,696	35,784	191 percent
IR 2.2: CO <sub>2</sub> avoided and sequestered in the targeted watersheds/subwatersheds (Percentage)	0	100 percent 4.015 MtCO <sub>2</sub>	137 percent 5.53 MtCO <sub>2</sub>	137 percent
IR 3.1: Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality	2	6	6	100 percent
IR 4.1: Number of local partners that incorporated best land management practices	0	6	6	100 percent

40. While the Project succeeded in consolidating a PA area greater than the originally planned target (PDO Indicator 1), it created only one new PA, totaling 354,849 ha. Securing a decree for designating new PAs proved to be a complex process. Productive activities including mining in the Project's regions challenged the idea. Also, overlaps occurred with pre-existing decrees for other PAs outside of the Project's jurisdiction, particularly Marine Protected Areas that had already received federal priority for attaining the Aichi biodiversity targets. This challenge also influenced the achievement of improving management effectiveness of 12 PAs (10 PAs achieved—IR Indicator 1.1, Annex 7), as the planned new PAs were meant to be part of the total count. Two new PAs are expected to be decreed by December 2021, following extensive consultations with mining actors, and the establishment of a robust operational structure, including endowment finance, strong ownership, and capacity by the Project.

41. The Project delivered stellar performance in various indicators, significantly surpassing key targets—for example, 158 percent of PDO Indicator 1 was achieved. This success grew from two factors: (a) the conservative estimates of the targets during Project design, based on evidence from similar though less ambitious projects preceding the C6<sup>21</sup>; and (b) outstanding inter-institutional collaboration among all Project implementing partners.

<sup>21</sup> Targets across indicators were evidence-based estimations considered appropriate and scientifically sound during design.



During Project design, effective collaboration was a risk factor difficult to reflect in the estimation of the targets. The first-rate collaboration was due to the ample experience and expertise in conservation projects that each implementing partner brought in and applied from the early stages of C6.

42. The Project can be considered operationally effective in light of its numerous achievements, many of which exceeded expectations. An overall efficacy rating of “**Substantial**” is appropriate.

## C. EFFICIENCY

**Rating: Substantial**

### Assessment of Efficiency and Rating

#### Efficiency in Project Implementation:

43. The C6 Project met or exceeded all of its objectives as set out in the PDO and achieved them cost-efficiently. From the perspective of administrative efficiency, all components, staff costs, and outreach activities were managed within the budget envelope, deploying financing in line with procurement plans. The low turnover of Project team members among implementing partners and Bank staff/Task Team Leaders (TTLs) contributed as well to the fruitful use of resources and to flagging potential risks to overall operations. The TPC’s exceptional leadership and commitment to Project outcomes served well to facilitate smooth administration transactions and communications among implementing partners.

#### Cost-Effectiveness—Efficiency in Achieving Project Outcomes:

44. Regarding sustainable forest management and agroecology subproject efficiency, the Project reported at closing a cost per hectare of US\$279 over four years or US\$69.75 annually. This cost included the salaries of technicians in the field who advised the beneficiaries, local workers, inputs equipment, and training. The C6 costs remain relatively low compared to other agroforestry management projects where studies estimated costs at US\$55 per hectare annually<sup>22</sup> or US\$230.77 per year for agroecosystem activities and US\$446.15 per hectare annually for sustainable forest management activities. These figures come from CONAFOR data of 2014 which were the basis of Project design. The C6 efficiency can be attributed in part to the array of benefits to Project areas, such as the network of community monitors informing decision making at the subproject level.

45. The Project also reported the associated costs for the management of one hectare of shade coffee planting and the establishment of one hectare of silvopastoral systems<sup>23</sup> at US\$150 and US\$450 annually respectively. The differing costs of specialized equipment such as scales and dryers for coffee and electric fences and solar cells for the silvopastoral systems accounted for the variation in overall costs. The costs also included training and technical follow-

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These estimations were extensively discussed and agreed by all parties.

<sup>22</sup> A Guevara, J.A. Lara, and G. Estrada. 2012. *Financiamiento de Estrategias de Baja Intensidad de Carbono en Ambientes Forestales* (Financing low-carbon strategies in forest landscapes). *Reporte preparado en soporte del diseño de la línea de crédito de Financiera Rural dentro del Programa de Inversión forestal.*

<sup>23</sup> Silvopastoral systems integrate trees and foliage with the grazing of domestic animals in environmentally friendly ways.



up provided across subprojects.

### **Economic Analysis:**

46. The Project's Component 1 (creation and consolidation of protected areas—GEF US\$20.349 million) and Component 2 (promoting sustainability within watersheds—GEF US\$17.096 million) were the most important in financial terms, representing nearly 95 percent of the total grant budget of US\$39.518 million. The economic analysis focused mostly on the benefits of deforestation avoided due to consolidation and creation of protected areas and to the establishment of conditional payments based on performance or PES programs (see Annex 4 for a more detailed assessment). This economic analysis corresponds to the lower bound as it does not include the many implicit benefits associated with ecosystem services.

47. The economic analysis suggests that the Project generated substantial social and environmental benefits in the immediate watersheds served by the Project, as well as for Mexico's society as a whole. Overall, the NPV reached is US\$402 million (using a 6 percent discount rate). The investments evaluated for the economic analysis generated an internal rate of return of 46 percent. The economic analysis thus shows that the Project was effective.

48. Results are robust against adverse changes in the key parameters (see Table 2 below). Increasing Project costs by 10 percent or 25 percent, or reducing Project benefits by 25 or 50 percent, which corresponds to a reduction on the social price of carbon of US\$10 and US\$20, respectively, and varying the default discount factor by 4 and 6 percentage units (i.e., 10 percent and 12 percent) does not change our conclusions. In the worst-case scenario, reduction of benefits by 50 percent, benefits are still positive (US\$82 million) and an IRR of 33 percent. Under the different adverse scenarios therefore, the Project remains effective.

**Table 2:** Sensitivity Analysis—C6 Project.

	NPV	IRR
Base case	402	46 percent
Project expenditures increased by 10 percent	399	44 percent
Project expenditures increased by 25 percent	394	42 percent
Discount rate increased to 10 percent	247	46 percent
Discount rate increased to 12 percent	195	46 percent
Benefits reduced by 25 percent	139	40 percent
Benefits reduced by 50 percent	82	33 percent

## **D. JUSTIFICATION OF OVERALL OUTCOME RATING**

### **Rating: Satisfactory**

49. Given that (a) the Project's PDO is highly relevant, (b) the Project efficacy was rated substantial, as intended development outcomes were achieved with only minor shortcomings, and (c) the Project efficiency was rated substantial due to a combination of positive NPV and IRR, confirming the benefits anticipated during Project design, the overall outcome rating is "**Satisfactory.**" The Project made a significant contribution to strengthening institutional





coordination and capacity for an integrated environmental management/landscape approach essential for the conservation of biodiversity and for enhancing sustainable livelihoods.

## **E. OTHER OUTCOMES AND IMPACTS**

### **Gender**

50. The Project was successful in developing a gender strategy and indicators<sup>24</sup> that facilitated the targeted sensitization and meaningful participation of women across stakeholder groups including the FMCN, civil society organizations (CSOs), and communities at large. This enabled the C6 Project to strengthen the social fabric of communities through a consultative process facilitating inclusion and empowerment. In total, 6,585 women, including members of indigenous groups, took part in consultative activities such as workshops to inform the IWAPs. The gender strategy is well positioned for adoption by FGM, FONNOR, and FMCN because it harmonized gender considerations within the institutional context of Mexico's general law for climate change (2012-2018)<sup>25</sup> and its Special Program for Climate Change (2014-2018). The Project's continued priority on gender also facilitated key achievements such as the linking of women working on environmental issues with the International Women in Nature Network to form the Mexico chapter.

### **Institutional Strengthening**

51. The administrative capacities of implementing institutions were strengthened, particularly of the FMCN. This was accomplished through improvements in the information and monitoring system *SISEP—Sistema de Información y Seguimiento de Proyectos* as well as the financial management system. Both of these will facilitate enhanced management of future financial resources and better results. FMCN has become the first direct access entity in Mexico accredited by the Green Climate Fund and the C6 supported this process.

### **Mobilizing Private Sector Financing**

52. The enthusiasm of stakeholders and beneficiaries echoed in the private sector, sparking interest there in integrated environmental management and community monitoring. Inspired in great part by the C6 Project, the Industry Association of the state of Veracruz incorporated sustainable financing principles into its annual meeting discussions. Likewise inspired by the C6, two private-sector companies in the state of Veracruz began financially supporting rehabilitation of the watershed in which they operate, in close collaboration with CSOs. This is an unprecedented achievement—the first time in Mexico that a private firm has provided long-term financial resources (25 years) for watershed rehabilitation and sustainable management. An early decision by the Project's TPC to support an entity advising the private sector on the implementation of the Equator Principles<sup>26</sup> facilitated this outcome.

### **Poverty Reduction and Shared Prosperity**

53. PES and subproject activities together contributed to poverty reduction and shared prosperity. Subprojects promoted agro-ecological practices such as production of honey, pepper, and shade coffee but also branched into new

<sup>24</sup> C6 Gender and Climate Change Indicators—Harmonization Document (*Documento de armonización con indicadores de género y cambio climático*).

<sup>25</sup> <https://www.gob.mx/inecc/documentos/ley-general-de-cambio-climatico-junio-2012>

<sup>26</sup> The Equator Principles is a risk management framework adopted by financial institutions for assessing and managing environmental and social risk in project finance. Read more at <https://equator-principles.com/about/>



and innovative models of sustainable “adventure” tourism. Furthermore, the enhanced SISEP reportedly was picked up by CSOs and communities for their own use in managing subprojects.

### Other Unintended Outcomes and Impacts

54. The C6 Project generated additional unplanned outcomes and impacts including (a) the accreditation of FMCN by the Green Climate Fund (GCF), which could significantly increase the availability of biodiversity conservation and climate change finance in Mexico, (b) the development of a simplified but effective and reliable methodology for environmental monitoring at the community level<sup>27</sup>, (c) creation of two regional funds to support community involvement, forge new relationships, and most importantly, build trust, and (d) creation of two state environmental governance committees encompassing watersheds in the states of Veracruz and Tabasco, and two localized watershed committees in the Gulf of California—one for the Baluarte River and one for the San Pedro River.

## III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

### A. KEY FACTORS DURING PREPARATION

55. **Realistic objectives** (including setting objectives that are clear and at the right level of ambitiousness): The Project objectives were achievable and reflected country priorities as well as those of stakeholders and beneficiaries. In particular, measures to promote a truly integrated approach to environmental management and biodiversity conservation while balancing livelihoods yielded positive change in operational effectiveness and outcomes.

56. **Simple design** (including clearly structured components with clear operational logic, and appropriate timing and sequencing of tasks, given the country context): The overall design rested on four mutually supportive components. The Project’s implementation framework seemed at first glance to be cumbersome and overoptimistic given the number of implementing agencies taking part and the division of tasks. During the Project’s life, however, this design proved to be effective and even exemplary.

57. **Appropriate plan for monitoring** (including realistic measures in place to collect information that constitutes evidence of achievement of outcomes): The Project established a performance-based M&E system, including indicators well-aligned with objectives, that was well executed during the life of C6.

58. **Appropriate selection of stakeholders to engage or beneficiary groups to target:** Initial beneficiary selection focused primarily on CSOs and communities (including indigenous communities) at the subwatershed level. This was essential to targeted interventions fostering greater inclusion, building ownership, and delivering tangible outcomes. Likewise, the array of implementing partners selected at Project inception made sense given their past successes with similar conservation endeavors.

59. **Adequacy of risk and mitigation measures identification:** Risk and mitigation measures were generally satisfactory. The initial overall risk assessment was appropriate, particularly given the broad array of institutions taking

<sup>27</sup> The updated methodology, BIOCUMUNI (community biological monitoring), was a collaborative work developed by CONAFOR, FMCN, and other external partners including USAID and the USA Forest Service: FMCN, CONAFOR, USAID y USFS (2018), “Manual para trazar la Unidad de Muestreo en bosques, selvas, zonas áridas y semiáridas”, BIOCUMUNI-Monitoreo Comunitario de la Biodiversidad, una guía para núcleos agrarios, Comisión Nacional Forestal-Fondo Mexicano para la Conservación de la Naturaleza, México. <https://fonnor.org/wp-content/uploads/2019/02/1.-Manual-de-Monitoreo.pdf>





part in implementation, possible coordination challenges, and the threat of limited matching finance from government and other sources. Mitigation measures were appropriate and successful in view of the overall success of the Project at closing.

60. **Readiness for implementation:** At the start of work, the implementing institutions proved to be well prepared for the tasks at hand. During the early stages of implementation, planning and coordination were fine-tuned to reach the level of effectiveness characteristic of the Project.

## B. KEY FACTORS DURING IMPLEMENTATION

61. Implementation was overall successful and resulted in the achievement of all the objectives set out.

### (a) Factors Subject to the Control of the Government and/or Implementing Entities

- **Commitment and leadership** (including continuous commitment and leadership in the government or relevant stakeholders and articulation of clear organizational priorities): The Project's success grew from the exemplary commitment and leadership of implementing partners and the TPC. A key factor was the strong interpersonal and professional relationships among technical experts and stakeholders. The TPC also enjoyed the membership and active participation by political representatives from various jurisdictions covered by the Project. Their commitment was stable through the Project's life cycle, providing strong support and continuity of activities. Overall, the C6 Project benefitted from the work of a cohesive group of professionals, representative of the Project's scope and sharing a vision as well as a professional commitment to deliver results.
- **Coordination and engagement** (including clear roles and responsibilities of different stakeholders and avoiding administrative barriers or structures that slow implementation): Initial coordination of implementation was a cumbersome task in view of the array of implementing partners and coordinating mechanisms. At design, Regional Committees were envisioned to allow for state governmental participation, but changes in regional governments gave rise instead to participatory forums at the watershed level. This change did not undermine Project implementation due to the continued exemplary leadership of the TPC. That body did face initial challenges in identifying and communicating key messages to relevant stakeholders. The TPC remained proactive and solutions-oriented despite these challenges, succeeding in overcoming the learning curve in communications and managing the inter-institutional collaboration. This job included developing and building a wide audience for the Project website, [www.c6.org.mx](http://www.c6.org.mx).
- **Human resources and organizational capacity** (including mobilization of skilled human resources, and broad organizational capacity): The implementing partners made available a large pool of motivated men and women to tackle the many parts of the Project and share knowledge and lessons. This was a key strength of the Project.
- **Governance and politics** (including clear accountability and limited political interference): Government administrations at the three levels—federal, state, and local—changed several times during Project execution. But this did not cause major delays, even when Project team members from a particular level of government were displaced. Through changing political winds, the C6 Project demonstrated commitment, solid capacity, and resilience.



**(b) Factors Subject to the Control of the World Bank**

- **Adequacy of reporting** (including candor and quality reporting of implementation issues in ISRs): TTL consistency throughout the life of the Project helped lend stability. Minor issues with Project design that were flagged by implementing partners at MTR were promptly addressed. This allowed a smooth and well executed restructuring process without derailing successful implementation. Reporting by Project partners was thorough, timely, and well documented to the satisfaction of the Bank team.

**(c) Factors outside the control of government and/or implementing entities**

- **Macroeconomic environment** (including changes in world markets and prices): The main challenge for fundraising to meet the Project's target of US\$28.6 million was the declining interest in endowment funds by donors' due to lower market returns over the last decade. Engaging persistently with donors and communicating Project outcomes in real time proved critical and ultimately successful in meeting the Project's full financial needs. Government support to fundraising efforts was essential.

**IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME**

**A. QUALITY OF MONITORING AND EVALUATION (M&E)**

**Rating: Substantial**

**M&E Design**

62. Despite the lack of an illustrative results chain in the PAD (Figure 1), the Results Framework and M&E arrangements were formulated at appropriate levels and proved generally effective in tracking progress towards achievement of the PDO and long-term outcomes. The overall Project M&E framework was conceptualized as a multi-institutional and multi-disciplinary effort with responsibilities distributed among implementing partners.<sup>28</sup> The Project M&E system also improved upon available tools such as the SISEP, which was created earlier for the SINAP projects.<sup>29</sup> Use of these pre-existing platforms paired nicely with clear evaluative and reporting responsibilities by the TPC tasked with conducting midterm and final evaluations. These included quantitative assessment of outcomes, analysis of achievements, safeguard compliance, and the capture of relevant lessons.

63. Minor perceived shortcomings in M&E design included:

- *Indicators measures and targets values*: PDO Indicator 1 included in its description two measures—PA area consolidated, and new PAs created. The design of this indicator and its target prioritized the total PA area (1,100,000 ha) which included new PAs. Overall, the focus on total area proved effective as the Project surpassed this target, including with the creation of one new PA and several more on the horizon. Target

<sup>28</sup> INECC was responsible for designing the monitoring system and ensuring the feeding of data and updating of the IWAPs. CONANP monitored advances in consolidation of the Protected Areas. Data on subprojects (agro-ecosystems and sustainable forest management) were provided by FGM under the supervision of FMCN. CONAFOR provided monitoring data and information on areas receiving PES.

<sup>29</sup> The National Protected Areas Project (P052209), approved on June 4, 1997 (SINAP I), and the Consolidation of the Protected Areas System Project (P065988), approved on February 7, 2002 (SINAP II).



values for several of the indicators may seem to have been under-estimated at design considering the strong performance of the Project. On the contrary, the target values were designed based on evidence and discussed at length during design. Perhaps what was underestimated was the first-class inter-agency collaboration and dedication to delivering results.

- *Lack of gender-specific indicators:* The Project nonetheless engaged gender dimensions including the collaborative design and implementation of a gender strategy and a set of indicators to further advance Project outcomes.

64. These minor shortcomings did not represent a significant issue or risk to the Project.

### **M&E Implementation**

65. The M&E system established under the Project was generally well executed. The system is based on a bi-annual Monitoring and Evaluation Plan which also outlines biannual Bank supervision missions. This ensured that all watersheds were visited and effectively monitored by the relevant implementing partner and the Bank team. The Bank's biannual missions took place as scheduled. Key monitoring activities such as the baseline METT measurements occurred at Project inception, again at MTR, and at Project closing. Monitoring teams across implementing partners relayed information to the TPC, which FMCN compiled and systematically recorded and reported on the advances in activities and towards overall outcomes. Overall, the implementation of the M&E system was comprehensive, well organized, and effective, with all Project documents, presentations, reports, and SISEP transactions throughout the Project's life cycle digitally archived and readily accessible via Dropbox.

### **M&E Utilization**

66. M&E data and information were well utilized throughout the life cycle of the Project, informing key outputs and administrative decisions and facilitating course correction as needed. The M&E data triggered a restructuring process at MTR, flagging weakness in the language of intermediate Indicators 2.3 and 3.1 and strengthening language of PDO Indicator 3 (see Section I.B of this ICR). Likewise, the M&E data were used to flag the reallocation of funds across disbursement categories, shifting from subprojects to management effectiveness activities of PAs. Lastly, M&E data and information helped inform the IWAPs and the guidelines for PES and subprojects.

### **Justification of Overall Rating of Quality of M&E**

67. The M&E system was adequately designed and satisfactorily implemented. The use of M&E data was effective for Project monitoring, coordination, and reporting. The monitoring and reporting process facilitated inter-institutional coordination and adaptive learning for better Project implementation. Likewise, the community monitoring activities successfully informed Project outputs and enabled adaptive learning for improving the methodologies and further engaging communities. The overall quality of M&E is therefore rated "**Substantial.**"



## **B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE**

68. Social and Environmental Safeguards performance is Satisfactory. At appraisal, the Project was designated a “B” safeguards category. All aspects of Project implementation followed Environmental and social safeguards consideration, including the design and execution of subprojects under Component 2.

### **Environmental**

69. The Project triggered the following environmental safeguards: Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.04); Forests (OP/BP 4.36); and Physical Cultural Resources (OP/BP 4.11). An environmental assessment was completed and disclosed on July 31, 2012.

70. During the life of the Project, all environmental safeguards categories consistently received Satisfactory ratings and no significant environmental issues arose.

### **Social**

71. The Project triggered two social safeguards: Indigenous Peoples (OP) (BP 4.10) and Involuntary Resettlement (OP) (BP 4.12). The OPs were triggered because indigenous peoples live in four watersheds in the Gulf of Mexico and two watersheds in the Gulf of California that might be influenced by the Project.

72. The Project followed guidelines established in the Environmental and Social Management Framework (ESMF), Indigenous Peoples Planning Framework (IPPF), and Process Framework (PF). Eleven IPPs were drafted for the 3,585 IPs whom the Project reached. In total, the Project reached 16,173 individuals, of whom 22 percent were IPs. Each of the 11 IPPs was prepared in a participatory manner and with the authorization of the Communal Assembly. In addition, the Project produced a gender strategy to inform activities and generate gender-sensitive outcomes. Overall, the Project has complied with the social safeguards’ instruments satisfactorily, as supervised during missions in collaboration with CONANP, FMCN, and the regional funds.

73. The Grievance Redress Mechanism was accessible through the life of the Project. It received only one formal grievance, which was resolved satisfactorily.

### **Fiduciary Compliance**

#### **Financial Management**

74. Overall, compliance was Satisfactory. Implementing partners and the World Bank worked together closely on Financial Management of the Project. The Project’s TPC adhered to standards required by the Bank. The FMCN grants specialist, who was responsible for all Project accounting and reporting, was diligent in overseeing compliance with Bank financial management requirements during implementation. Financial transactions were recorded using the LOVIS tool, which facilitated timely preparation of quarterly interim financial reports. Project funds were audited by external auditors, as part of the entity-wide financial statements prepared by the implementing partners and led by the TPC. The audit reports covering the life of the Project were well prepared, provided on time, and acceptable to the Bank. The implementing partners also promptly submitted audited financial reports that were deemed free of any internal control inadequacies pertaining to the Project. In sum, the Project’s asset management transactions, financial reporting, expenditures, and audits were all reviewed by Bank personnel and found to be Satisfactory.



### **Procurement**

75. Overall, compliance was Satisfactory. Project procurement was carried out by implementing partners experienced in managing or implementing World Bank and other donor-financed activities. The FMCN was directly responsible for monitoring procurement activities outlined in the Operating Plans of the PAs. The FMCN has proven capable of handling the procurement of large projects according to World Bank procedures and it was deemed to operate satisfactorily in this regard. Regional funds (FGM and FONNOR) both also made use of the SISEP tool for procurement-related matters. All goods and technical services procured under the Project followed Bank guidelines.

## **C. BANK PERFORMANCE**

### **Rating: Satisfactory**

#### **Quality at Entry**

76. Project design was clear, and components were well defined. The PDO built upon the need to tackle stressors to elements of the environmental base that support key ecosystem services including biodiversity, climate change mitigation, and sustainable livelihoods. Despite the absence of explicit social indicators on gender and indigenous peoples, the Results Framework was deemed appropriate to support measures of environmental health and quality. The Project's "landscape" approach engaged diverse aspects of ecosystem management simultaneously, employing the expertise and rapport built across watershed communities by the implementing partners. The Project's excellent inter-agency collaboration was facilitated by the creation of the TPC to lead coordination. The Project design at entry was consistent with the strategic priorities of the Mexican federal government.

#### **Quality of Supervision**

77. The quality of supervision was satisfactory. The mid-term review (MTR) was successfully conducted on January 27, 2017, about two years prior to Project closure. The level II restructuring took place once the matching resources for the endowment funds were confirmed and a precise budget reallocation among disbursement categories could be determined. Thanks to the timely information provided by the Project's M&E system, the MTR yielded insights into how to fine-tune Project operations as part of a restructuring. While effective, the restructuring missed the opportunity to include indicators specific to gender and indigenous peoples, even though data on their participation were being collected. In addition, indicator targets remained untouched by the restructuring despite the impressive progress already achieved in most indicators.

78. Issues were consistently identified, clarified, and successfully resolved during the biannual supervision missions. The channels of communication for problem solving remained open during periods between missions as well. In this regard, the implementing partners expressed gratitude to the Bank teams making field visits in between official missions including staff with expertise in such fields as financial management.

79. Aide Memoires and ISRs were timely and clear. The candid conversations and evident passion for the work at hand among the Bank team and colleagues in implementing entities forged a positive relationship that aided in clear reporting, adaptive learning, and real-time problem-solving. This was helped by the stability of the Bank team throughout the Project, including retention of the same Task Team Leadership until closing. Overall, reporting on



supervision missions was clear and helpful.

#### Justification of Overall Rating of Bank Performance

80. Given consistently satisfactory supervision throughout the life cycle of the Project, clear and substantive reporting, responsiveness to client needs, and use of monitoring data in real time to adjust course as necessary, triggering restructuring, Bank performance is rated **Satisfactory**.

#### D. RISK TO DEVELOPMENT OUTCOME

81. The risk to development outcomes can be considered Moderate. The “landscape” approach to Project design and execution built strong constituency, ownership of outcomes, and supporting sustainable finance, including from the private sector. Funds raised by the Project to capitalize the FCC and the Biodiversity Endowment Fund continued accruing interest beyond Project closing, which will aid in continuation of activities and sustainability of outcomes. The Project also catalyzed buy-in across communities and partners to continue developing, updating, and employing IWAPs. This will help guide further actions, including new projects, and make effective and efficient use of financial resources.

82. Potential future challenges and risks to the long-term outcomes of the Project may include decreasing engagement by the implementing partners. While the C6 inter-institutional coordination was exemplary and indeed a key strength, there is a small possibility that this level of engagement may decrease over the long term, in view of implementing partners’ many other responsibilities across the watersheds. This may weaken the links in the landscape approach. It is important to note, however, that these impacts seem unlikely given the legal commitment that the TPC made as an integral and permanent part of the FMCN. Upon closing, the C6 Project laid out a clear plan for the TPC, indicating that it will continue its activities following the legal agreement among its four institutions (CONAFOR, INECC, CONANP, and FMCN). Under this legal agreement, the TPC now operates more broadly in watershed ecosystem management across institutions and projects, including the C6.

#### V. LESSONS AND RECOMMENDATIONS

##### Lessons on PA Management Using an Integrated Approach

83. Manage at the landscape level. To best manage and protect PAs from adjacent threats, such as upstream water contamination and spillover effects of land degradation, work should proceed at the landscape level. Applied by the C6 Project, this approach was crucial to managing PAs because it facilitated effective coordination among implementing partners and across areas that were previously disconnected from a management perspective. The C6 successfully balanced priorities, such as conservation vs. sustainable livelihoods, among adjacent areas along watersheds to maximize the benefits from these ecosystem services.

84. Work with civil society and community networks. Working closely with CSOs and regional networks facilitates the flow of knowledge and strengthens the bonds of communities across regions. In the case of the C6, these bonds often turned into networks or coalitions to continue the work after the Project close. These include the Coalition of Organizations of the Jamapa-Antigua Bio-basin, composed of seven groups that work with a total of 4,500 coffee producers, all with sustainable ecosystem management in mind. Regional networks can also bolster community



enterprises to support economies of scale, collective marketing, and integration into the local economy.

85. Support community monitoring in the field. Community participation in environmental monitoring builds awareness of the importance of conserving resources and managing threats effectively. In the case of the C6, community water quality and biodiversity monitoring fostered a sense of stewardship towards the resource and triggered an enhancement of monitoring methodologies—for instance, the creation of BIOCOMUNI and application of the National Biodiversity Monitoring System (SNMB), coordinated by CONABIO.

86. Ensure early socialization of newly created PAs and align with policy objectives for conservation and climate change. Communicating plans for PA creation at the national government level can, for example, facilitate the inclusion of these plans into pre-existing conservation area objectives that contribute to meeting international commitments such as the Aichi targets of the CBD. At the local level, communicating plans early can serve to minimize conflicts among existing resource users. In the C6 Project, discussions with local producers affected by mining operations in the areas to be protected served well to reduce initial opposition to restrictions in access and land use. Likewise, at the national level, the planned PAs aligned well with commitments towards the achievements of the Aichi targets.

#### **Lessons on Endowment Finance, Including Leveraging Private Sector Finance**

87. Put your best foot forward with a strong advisory and supervisory body for successful resource mobilization. Professional management of endowment funds, coupled with clear policy mandates and transparent processes, are critical to ensuring credibility. This in turn enhances the funds' stature, thereby improving prospects for fund raising. Fund raising and fund management are also enhanced by having a strong advisory and supervisory body that helps ensure alignment between public and private partners while recognizing institutional autonomy for the private entity. The main challenge to fund raising for the C6 Project was the generally declining interest in endowment funds among donors with unsuccessful bids addressed to sources such as USAID, the Tinker Foundation, IKI, and several foundations based in California. In the end, swift action taken by the TPC as the advisory and supervisory body, to strengthen donor relations and accurately depict the Project's impacts in real time served to build trust across stakeholders and successfully mobilize finance.

#### **Lessons on Overall Coordination**

88. Craft a clear and effective communication strategy and key messages early on. To secure commitment and build ownership early in Project implementation, it is important to formulate the immediate needs and count with the support of a dedicated communications team to disseminate key information and results. The C6 Project's TPC faced initial challenges in identifying and communicating key messages to relevant Project stakeholders, including donors. This prompted the hiring of a communications firm to develop an overall strategy that the Project's implementing partners then championed after the firm's contract ended.

89. Ensure operational effectiveness by employing the right tools for the job. It is vital to have a strong, dedicated team that is well versed in technology tools and remains stable through the life of a Project. In the case of the C6 Project, the TPC championed the monitoring of good practices including reporting and verification of Project outcomes, ensuring timely channeling of resources, accountability, and solutions in real time. Moreover, the Project team undertook systematic tracking and recording of Project data digitally, building a database that could be analyzed to inform future interventions and enhance investment impacts. To better inform future interventions, projects can make greater use of remote sensing technologies to complement other monitoring data.





## ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

### A. RESULTS INDICATORS

#### A.1 PDO Indicators

**Objective/Outcome:** Promote integrated environmental management of selected coastal watersheds

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Areas brought under enhanced biodiversity protection (ha)	Hectare(Ha)	0.00 14-Jun-2013	1100000.00 28-Jun-2019		1748204.70 28-Jun-2019

**Comments (achievements against targets):**

This is a GEF Core Indicator, its target and achievement was linked to those of PDO Indicator 1: "Consolidation of at least 1.1 million hectares of protected areas, including at least 2 new protected areas of an estimated 500,000 hectares."

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 1: Consolidation of	Hectare(Ha)	0.00	1100000.00		1748204.70





at least 1.1 million hectares of protected areas, including at least 2 new protected areas of an estimated 500,000 hectares		14-Jun-2013	28-Jun-2019		28-Jun-2019
<p><b>Comments (achievements against targets):</b></p> <p>The project consolidated a total of 1,748,204.73 hectares of protected areas, surpassing the End-Target projection (1,100,000.00 hectares) and achieving thus 158% of results. The total consolidated hectares include: 752,071 ha of existing protected area (Pantanos de Centla, Cofre de Perote, Pico de Orizaba, Sistema Arrecifal Veracruzano, Los Tuxtlas, Lobos-Tuxpan, Cañón de Usumacinta, Marismas Nacionales Nayarit) for which long term endowment financing for sustained management has been secured; 354,849 ha have been formalized as protected area for the CAD 043 portion of Río Ameca; and 641,284.73 ha from the Natural Reserve Islas Marías, for which as of January 2019, endowment funds for its sustained management have been secured.</p> <p>The GEF METT methodology was used for assessing Protected Areas management effectiveness. Intermediate Results indicator 1.1 contributed toward this objective, and has shown improvement in management effectiveness in most protected areas.</p>					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 2: Improved land and forest management with reduced carbon emissions in selected sites in 6 watersheds	Hectare(Ha)	1008858.00 14-Jun-2013	1027554.00 28-Jun-2019		1092026.80 28-Jun-2019
<p><b>Comments (achievements against targets):</b></p>					



Based on the baseline of 1,008,858 ha derived from the Payment of Environmental Services (PES) in the large watersheds, the project brought a total of 1,092,026.8 ha under improved management surpassing thus the end-target of 1,027,554.00 and achieving thus 102% of results. This total area under improved management includes: i) 1,056,242.8 ha which amount to the annual average ground surface covered by CONAFOR's PES between the years 2014-2018; ii) 12,212 ha which amount to the ground surface covered by the Biodiversity Endowment Fund supported PES; and iii) 23,572 ha which amount to the ground surface covered by sub-projects.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 3: Integrated watershed/ subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional or federal) or local actors (6 watersheds)	Number	0.00 14-Jun-2013	6.00 28-Jun-2019		6.00 28-Jun-2019

**Comments (achievements against targets):**

In relation to PDO Indicator 3, the INECC presented the finalized six integrated watershed/subwatershed action plans (IWAPs), these are known as Action Plans for the Integrated Management of Watershed with its acronym in spanish being PAMIC (Planes de Acción de Manejo Integrado de Cuenca). The PAMICs promote conectivity and healthy function of watersheds and the proper management of their ecosystem services. At project closing, the six PAMICs include: the Tuxpan, Jamapa, and Antigua watersheds on the Gulf of Mexico; and the Baluarte, San Pedro, and Vallarta region watersheds across the Pacific coast. These six PAMICs represent a 100% achievement of outcome indicator 3.



These PAMICs are already being considered by local organizations, CONANP and CONAFOR as a useful tool to direct investments from public programs and the private sector as well as a key tool for management of payment of ecosystem services. The PAMICs are instruments that contain a high quality of information, the integration of variables, and sophisticated processes of analysis - an important strength for the Project. The PAMICs can guide the resources available in the participating agencies of the Project so that they have a greater impact on the management of watersheds. PAMICs will also help regional coalitions of NGOs (such as the COBIJA) to establish methodological proposals for the well-being of watersheds.

The PAMIC web platform is found here: <http://cuencas.cms.matrushka.com.mx>.

Soon, the PAMIC web platform will migrate to [www.pamic.cambioclimatico.gob.mx](http://www.pamic.cambioclimatico.gob.mx)

## A.2 Intermediate Results Indicators

**Component:** Component 1: Creation and Consolidation of Protected Areas

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 1.1: Protected areas meeting their management effectiveness target	Number	0.00 14-Jun-2013	12.00 28-Jun-2019		10.00 28-Jun-2019



**Comments (achievements against targets):**

A total of 10 protected areas have endowment funds and have conducted METT evaluations. In 2014 the METT was applied to 7 PAs in Gulf of Mexico to define a baseline. In 2016, during the MTR, the METT was applied again to the original 7 PAs and also an additional PA in the Gulf of California. In 2019, METT was applied to all 10 PAs. The 10 PAs (83% of results) include: National Park of Cofre de Perote; Pico de Orizaba; Sistema Arrecifal Veracruzano; Biosphere Reserve of Pantanos de Centla; Los Tuxtlas; Marismas Nacionales Nayarit and Islas Marías; Areas of Protection of Flora and Fauna of Cañón de Usumacinta; Sistema Arrecifal Lobos Tuxpan; Natural Resource Protection Area of Sierra Vallejo-Ameca.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 1.2: Capitalization of permanent funding sources	Amount(USD)	5.20 14-Jun-2013	28.60 28-Jun-2019		28.60 28-Jun-2019

**Comments (achievements against targets):**

Regarding the Capitalization of permanent funding sources, the project partners have achieved 100% of the end-target having raised US\$28.6 million. The funding sources include: US\$5.296 million from Packard-FIH SIN and RLF; US\$9.091 million from CONAFOR; US\$7.017 million from KfW Braskem-Idesa, Helmsley, Grupo Materias Primas; and US\$7.204 million from KfW Sierra y Mar. Despite challenges and general donor disinterest in supporting endowment trusts, the project implementation team was successful in raising the targeted finance, an impressive achievement.

**Component:** Component 2: Promoting Sustainability within Watersheds

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised	Actual Achieved at
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				Target	Completion
Indicator 2.1: PES, agro-ecosystem and sustainable forest management subprojects implemented in accordance with IWAPs	Hectare(Ha)	0.00 14-Jun-2013	18696.00 28-Jun-2019		35784.00 28-Jun-2019
<p><b>Comments (achievements against targets):</b></p> <p>Total area in watersheds implementing Payment for Ecosystem Services (PES), agro-ecosystem and sustainable forest management subprojects in accordance with IWAPs is 35,784.00 ha, surpassing thus the end-target of 18,696.00 ha and achieving thus 191% of results. Of the total area (35,784.00 ha), 23,572 ha are under sustainable use sub-projects and 12,212 ha are under payments for biodiversity conservation (Biodiversity Fund - CONAFOR). Beyond the project, the regional funds and partners will continue to strengthen management effectiveness of this area, enhancing forest and land management practices across watersheds and engaging diverse stakeholders in collaborative planning, monitoring and learning.</p> <p>Sub-projects: the Project identified and approved 32 sub-projects aimed at sustainable forestry, while also involving agro-ecosystems. The design, careful selection and implementation of the sub-projects has been one of the strengths in this Project. The inclusion of community organizations as agents of design, organization, and supervision of sub-projects has generated ownership towards the Project, which has been fundamental to its success at mid-term and remaining strong at closing. Capacity building activities have taken place throughout to allow for the organizations responsible for the sub-projects to comply with Project technical and administrative requirements. The regional coordination unit invested a lot of effort in selecting, training, and accompanying the community organizations to implement the subprojects with the local people, and the effort has had its positive consequences, generating successful results. 1,669 workshops in total have been held to strengthen local capacities, while adopting a gender strategy. As a result, many organizations have a high capacity for the operation, supervision, support, and monitoring of sub-projects.</p> <p>PES: The Biodiversity Fund at CONAFOR was capitalized to implement the PES activities. CONAFOR defined the watersheds and biological corridor subject to receiving the payments of ecosystem services by uniting criteria of biodiversity conservation and integrated watershed management. CONAFOR</p>					



identified the forest owners of 12,212 hectares, which received the payments starting in 2016. Protected areas and local organizations are applying the new national methodology to measure biodiversity in the watersheds. CONAFOR is analyzing the incorporation of this methodology and its adjustments for community monitoring in its payments for ecosystem program.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 2.2 CO2 avoided and sequestered in the targeted watersheds/subwatersheds	Percentage	0.00 14-Jun-2013	100.00 28-Jun-2019		137.00 28-Jun-2019

**Comments (achievements against targets):**

Utilizing the FAO Ex Act Tool, based on 8,120 ha in agro-ecosystem and sustainable forest management sub-projects, as well as on the 12,212 ha in PSA and the reduction in deforestation in protected natural areas, an estimate of the CO2 emissions avoided/sequestered was generated. At project closing, 5.53 MtCO2 were avoided/sequestered across the relevant watersheds surpassing the original end target laid out during project design of 4.015 MtCO2 and achieving thus 137% of results.

**Component:** Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 3.1: Number of	Number	2.00	6.00		6.00



watersheds/ subwatersheds with priority sites that monitor biodiversity and water quality		14-Jun-2013	28-Jun-2019		28-Jun-2019
<p><b>Comments (achievements against targets):</b></p> <p>Six watersheds were monitored with remote sensing and local data gathering techniques, reaching its end-target for the project (6 watersheds). Biodiversity and community water monitoring systems [utilizing the Global Water Watch methodology] are in place in the following watersheds: Tuxpan, Antigua, Jamapa, Huazuntlán, Temoloapa and Usumacinta basins. In addition, the project monitors the change in land use and carbon in these watersheds and in the Gulf of California.</p> <p>The CONANP team together with civil society organizations gathered biodiversity data periodically. This data and information were loaded onto the database of the National System for Biodiversity Monitoring (Sistema Nacional de Monitoreo de la Biodiversidad) which is hosted by the National Commission for Knowledge and Use of Biodiversity (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO)). Additionally, the civil society organizations together with community members across the six watersheds monitored water quality according to the Global Water Watch methodology. The summaries of the water and biodiversity monitoring are included in the final reports of each sub-project implemented by civil society organizations.</p> <p>Throughout C6 Project implementation, 104 biodiversity monitoring events took place. Through these, local communities found endemic fauna not previously recorded in any of the watersheds. The civil society organizations adopted the monitoring methodologies into their core practice. The information generated and analyzed through the monitoring systems has informed the Integrated Watershed Action Plans (IWAPs or PAMICs) for each watershed, to strengthen local institutions and promote adaptive management.</p>					



**Component:** Component 4: Innovative Mechanisms for Inter-institutional Collaboration and Promoting Social Participation

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Indicator 4.1: Number of local partners that have incorporated best land management practices	Number	0.00 14-Jun-2013	6.00 28-Jun-2019		6.00 28-Jun-2019

**Comments (achievements against targets):**

There are currently six (6) local organizations incorporating better land use and biodiversity friendly practices derived from the interaction with the project in two states (Veracruz and Jalisco): Fondo Ambiental Veracruzano, Instituto de Ecología, Asociación de Industriales de Veracruz, Ayuntamiento de Xalapa, Junta Intermunicipal de Medio Ambiente Sierra Occidental y Costa (JISOC), Fondo Ambiental de Jalisco. The project thus achieved 100% of the end-target.

In total, the project reached 16,173 people (6585 women and 9588 men) of which 22% are indigenous peoples from 5 different ethnic groups (Nahua, Popoluca, Tzeltales, Nayeri and Huasteca). The project conducted 1,669 capacity building workshops in four (4) years.

Related to innovative mechanisms for inter-agency collaboration and social participation, the project has triggered changes in six important partners. In the state of Veracruz, the project participated in the design of the first environmental State fund, which supported civil society organizations (CSOs) through open calls and independent evaluators. This model catalyzed the Jalisco Environmental Fund, which was incorporated in July 2017 and already has resources to operate. On the other hand, the project and INECOL organized a forum on sustainable livestock in October 2017, which was successful and counted on the participation of more than 300 people and resulted in the publication of the book "Sustainable livestock in the Gulf of Mexico." In the Gulf of California, the Intermunicipal Environmental board Sierra Occidental y Costa (JISOC) has adopted the use of PAMIC for its area of incidence as an





essential planning tool. The Association of Industrialists of the state of Veracruz (AIEVAC) conducted a forum on environmental standards organized by the project. The city of Xalapa currently operates with the Gulf of Mexico Fund (FGM) in the implementation of the ecosystem-based adaptation project, which has established the technical and administrative monitoring mechanisms generated by C6.



## B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: Promote integrated environmental management	
Outcome Indicators	<ol style="list-style-type: none"> <li>1. PDO Indicator 2: Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (End Target: 1,027,554 ha)</li> <li>2. PDO Indicator 3: Integrated watershed/subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional, or federal) or local actors (End Target: Six watersheds)</li> </ol>
Intermediate Results Indicators	<ol style="list-style-type: none"> <li>1. IR 2.1: PES, agro-ecosystem and sustainable forest management subprojects implemented in accordance with IWAPs (End Target: 18,696 ha)</li> <li>2. IR 3.1: Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality (End Target: Six watersheds)</li> <li>3. IR 4.1: Number of local partners that have incorporated best land management practices (End Target: Six partners)</li> </ol>
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<p><b>Component 2: Promoting Sustainability within watersheds</b></p> <ol style="list-style-type: none"> <li>1. PES and subprojects were developed in line with IWAPs.</li> </ol> <p><b>Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities</b></p> <ol style="list-style-type: none"> <li>1. Six Integrated Watershed Action Plans (IWAPs) were developed.</li> <li>2. Participatory approach to environmental monitoring and to build project ownership.</li> </ol> <p><b>Component 4: Inter-Institutional Collaboration and Promoting Social Participation</b></p> <p><i>This component focused on mechanisms for inter-institutional collaboration, promoting social participation, monitoring and evaluation, and strengthening channels for coordination and learning.</i></p> <ol style="list-style-type: none"> <li>1. Six new partnerships were formed.</li> </ol>
Objective/Outcome 2: Conserve biodiversity	
Outcome Indicators	<ol style="list-style-type: none"> <li>1. PDO Indicator 1: Consolidation of at least 1.1 million ha of protected areas, including at least two new protected areas of an estimated 500,000 ha (End Target: 1,100,000 ha)</li> </ol>



	<p>2. PDO Indicator 2: Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (End Target: 1,027,554 ha)</p> <p>3. PDO Indicator 3: Integrated watershed/subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional, or federal) or local actors (End Target: Six watersheds)</p>
Intermediate Results Indicators	<p>1. IR 1.1: Protected areas meeting their management effectiveness targets (End Target: 12 PAs)</p> <p>2. IR 1.2: Capitalization of permanent funding sources (End Target: US\$28.60 million)</p> <p>3. IR 2.1: PES, agro-ecosystem, and sustainable forest management subprojects implemented in accordance with IWAPs (End Target: 18,696 ha)</p> <p>4. IR 3.1: Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality (End Target: Six watersheds)</p>
Key Outputs by Component (linked to the achievement of Objective/Outcome 1)	<p><b>Component 1: Creation and Consolidation of Protected Areas</b>  <i>The goal of this component was to support the creation of new Protected Areas (PAs) and strengthen management of existing ones including through capitalization of sustainable finance.</i></p> <p>1. A total of 1,748,204.73 ha of PA was consolidated (10 PAs including one newly created PA).</p> <p>2. One new PA with a total area of 354,849 ha was created.</p> <p>3. Annual Operating Plans (AOP) were developed for all PAs and finance secured for long-term support of PAs' management effectiveness.</p> <p>4. Finance was secured for biodiversity conservation—capitalization of the Coastal Watersheds Fund (<i>Fondo para Cuencas Costeras – FCC</i>) with matching finance equivalent to US\$19.518 million.</p> <p><b>Component 2: Promoting Sustainability within Watersheds</b>  <i>The goal of this component was to mitigate climate change through activities aimed at reducing deforestation and degradation, including loss of biodiversity.</i></p> <p>1. Finance was secured for biodiversity conservation—capitalization of the Biodiversity Endowment Fund with matching finance equivalent to US\$9.1 million.</p> <p>2. Biodiversity-conscious subprojects were supported, including shade-grown coffee for enhanced biodiversity.</p> <p>3. A total of 23,572 ha was established under sustainable use subprojects, including 8,934 ha of land devoted to forest conservation through legal or community frameworks, 6,870 ha under forest reforestation treatment, and 705 ha of forest under restoration treatment.</p>



	<p><b>4.</b> A total 12,212 ha was established under payments for biodiversity conservation (Biodiversity Endowment Fund).</p> <p><b>5.</b> Integrated management of the jaguar habitat was enhanced through community participation in Western Mexico (Mijo Project).</p> <p><b>Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities</b>  <i>The goal of this component was to identify priority sites for targeted intervention, including development of integrated management tools (IWAPs) and strengthening of community monitoring of ecosystem services.</i></p> <p><b>1.</b> Community biodiversity training and field monitoring were conducted.</p> <p><b>2.</b> BIOCUMUNI community monitoring methodology was developed.</p>
<b>Objective/Outcome 3: Enhance sustainable land use</b>	
Outcome Indicators	<p><b>2.</b> PDO Indicator 2: Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (End Target: 1,027,554 ha)</p> <p><b>3.</b> PDO Indicator 3: Integrated watershed/subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional, or federal) or local actors (End Target: Six watersheds)</p>
Intermediate Results Indicators	<p><b>2.</b> IR 1.2: Capitalization of permanent funding sources (End Target: US\$28.60 million)</p> <p><b>3.</b> IR 2.1: PES, agro-ecosystem, and sustainable forest management subprojects implemented in accordance with IWAPs (End Target: 18,696.00 ha)</p> <p><b>4.</b> IR 3.1: Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality (End Target: Six watersheds)</p>
Key Outputs by Component (linked to the achievement of Objective/Outcome 2)	<p><b>Component 1: Creation and Consolidation of Protected Areas</b></p> <p><b>1.</b> Finance was secured for sustainable land use subprojects and related activities—capitalization of the Biodiversity Endowment Fund and the FCC.</p> <p><b>Component 2: Promoting Sustainability within Watersheds</b></p> <p><b>1.</b> Establishment of 12,212 ha of biodiversity corridors supported through Payments for Ecosystem Services.</p>



	<p>2. In the Gulf of Mexico (across six watersheds), a total of 29 subprojects, led by 24 organizations were carried out. Among the 29 subprojects, 12 developed activities linked to good practices in agro-ecosystems in areas producing honey, pepper, shade-grown coffee, cattle, and cocoa, among others. Of the 29 subprojects selected in the Gulf of Mexico, 17 focused on sustainable forest management.</p> <p><b>Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities</b></p> <p>1. Wide community monitoring activities of ecosystem health and land use/management (biodiversity and water quality)</p>
<b>Objective/Outcome 4: Contribute to climate change mitigation</b>	
Outcome Indicators	<p>1. PDO Indicator 1: Consolidation of at least 1.1 million ha of protected areas, including at least two new protected areas of an estimated 500,000 ha (End Target: 1,100,000 ha)</p> <p>2. PDO Indicator 2: Improved land and forest management with reduced carbon emissions in selected sites in six watersheds (End Target: 1,027,554 ha)</p> <p>3. PDO Indicator 3: Integrated watershed/subwatershed action plans (IWAPs) adopted by different government levels (municipal, regional, or federal) or local actors (End Target: Six watersheds)</p>
Intermediate Results Indicators	<p>1. IR 1.1: Protected areas meeting their management effectiveness targets (End Target: 12 PAs)</p> <p>2. IR 2.1: PES, agro-ecosystem, and sustainable forest management subprojects implemented in accordance with IWAPs (End Target: 18,696 ha)</p> <p>3. IR 2.2: CO<sub>2</sub> avoided and sequestered in the targeted watersheds/subwatersheds (End Target: 100% of 4.015 Mt CO<sub>2</sub>)</p> <p>4. IR 3.1: Number of watersheds/subwatersheds with priority sites that monitor biodiversity and water quality (End Target: Six watersheds)</p>
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<p><b>Component 1: Creation and Consolidation of Protected Areas</b></p> <p>1. A total of 1,748,204.73 ha of PA was consolidated (10 PAs total including the newly created PA) and management effectiveness ensured (finance secured and AOPs prepared). The conserved forest area translates to increase capacity to absorb CO<sub>2</sub>.</p> <p><b>Component 2: Promoting Sustainability within Watersheds</b></p> <p>1. Management of forest area (subprojects and PAs) was improved.</p>



2. 5.53 Mt CO<sub>2</sub> were estimated to have been avoided/sequestered.

**Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities**

1. CO<sub>2</sub> community monitoring training and field activities were conducted.

**ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION****A. TASK TEAM MEMBERS**

Name	Role
<b>Preparation</b>	
Marcelo Hector Acerbi	Task Team Leader
Gabriel Penaloza	Procurement Specialist
Dmitri Gourfinkel	Financial Management Specialist
Adriana Goncalves Moreira	Team Member
Ricardo Hernandez Murillo	Social Specialist
Kristyna Bishop	Social Specialist
Marcelo Hector Acerbi	Social Specialist
<b>Supervision/ICR</b>	
Adriana Goncalves Moreira, Sylvia Michele Diez	Task Team Leaders
Gabriel Penaloza, Francisco Rodriguez	Procurement Specialists
Daniel Chalupowicz	Financial Management Specialist
Dora Patricia Andrade	Environmental Specialist
Dorothee Georg	Social Specialist
Jorge Guillermo Barbosa	Team Member – ICR Main Author
Paola Carvalho Costa	Team Member
Juan Jose Miranda Montero	Environmental Economist – ICR contributor: Economic Analysis

**B. STAFF TIME AND COST**

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
<b>Preparation</b>		
FY13	20.691	159,430.95
FY14	10.482	41,256.95
<b>Total</b>	<b>31.17</b>	<b>200,687.90</b>
<b>Supervision/ICR</b>		
FY14	10.609	46,508.93
FY15	17.271	81,958.62
FY16	14.611	61,551.03
FY17	8.492	41,309.06
FY18	12.310	69,042.08
FY19	12.643	87,349.41
FY20	9.078	44,700.45
<b>Total</b>	<b>85.01</b>	<b>432,419.58</b>



**ANNEX 3. PROJECT COST BY COMPONENT**

<b>Components</b>	<b>Amount at Approval (US\$m)</b>	<b>Actual at Project Closing (US\$m)</b>	<b>Percentage of Approval (US\$m)</b>
Component 1: Creation and Consolidation of Protected Areas	20.349	20.349	51.4
Component 2: Promoting Sustainability within Watersheds	17.096	17.096	43.2
Component 3: Enabling Adaptive Management by Strengthening Monitoring Capacities	0.439	0.439	1.1
Component 4: Innovative Mechanisms for Inter-Institutional Collaboration and Promoting Social Participation	0.979	0.979	2.7
Component 5: Project Management	0.655	0.655	1.8
<b>Total</b>	<b>39.518</b>	<b>39.518</b>	<b>100.00</b>



## ANNEX 4. EFFICIENCY ANALYSIS

1. The Project's Component 1 (creation and consolidation of protected areas—GEF: US\$20.349 million) and Component 2 (promoting sustainability within watersheds—GEF: US\$17.096 million) are the largest in financial terms, representing nearly 95 percent of the total grant budget (US\$37.445 million of US\$39.518 million).
2. The economic analysis carried out here focuses mostly on the benefits of avoided deforestation due to protection by consolidation and creation of protected areas and by the establishment of conditional payments based on performance or PES programs.
3. Economic literature has clearly suggested that PES schemes and establishment of protected areas bring substantial benefits in reducing deforestation and poverty and increasing employment. Miteva, Pattanayak, and Ferraro (2012)<sup>30</sup> found that protected areas are effective at stalling deforestation (11 academic studies reviewed) and PES schemes tend to reduce deforestation and increase reforestation (nine academic studies reviewed). Programs in Costa Rica, Mexico, Ecuador, and Brazil have achieved substantial relative reductions in deforestation among PES participants, nearly 50 percent in some cases, but absolute avoided deforestation impacts have been small to modest when the initial rates of forest loss were low (1-2 percent per year). Greater impacts occurred in locations with high risk of deforestation (Börner et al. 2018).<sup>31</sup>
4. Table 1 shows the forest cover loss with and without the Project ("C6"). It clearly indicates that deforestation rates and CO<sub>2</sub> emissions would have been significantly higher without C6 Project intervention. Deforestation, for example, would have reached 11,743 ha, up from 8,517 ha.

**Table 1:** Estimates of deforestation and CO<sub>2</sub> emissions with and without C6 Project intervention in each PA.

PA	Deforestation Rate (%)	Forest loss (ha)		Total Emissions (tCO <sub>2</sub> -eq)		Emissions Balance (tCO <sub>2</sub> -eq)
		Without C6	With C6	Without C6	With C6	
Cofre de Perote	1.34	154	123	110,387	88,374	-22,013
Pico de Orizaba	0.14	28	22	13,240	10,592	-2,648
Pantanos de Centla	2.61	7,902	6,322	3,849,526	3,079,621	-769,905
Marismas Nacionales Nayarit	0.36	477	382	232,518	186,014	-46,504

<sup>30</sup> Daniela A. Miteva, Subhrendu K. Pattanayak, and Paul J. Ferraro. 2012. "Evaluation of biodiversity policy instruments: What works and what doesn't?" *Oxford Review of Economic Policy*, Volume 28, Issue 1, Spring 2012, Pages 69–92, <https://doi.org/10.1093/oxrep/grs009>

<sup>31</sup> J. Börner and T.A.P. West, with A. Blackman, D.A. Miteva, K.R.E. Sims, and S. Wunder. 2018. "National and subnational forest conservation policies: What works, what doesn't." In A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham, eds. *Transforming REDD+: Lessons and new directions*. pp 105–115. Bogor, Indonesia: CIFOR.



Río Ameca Vallejo	0.09	233	187	106,255	85,004	-21,251
Marismas Nacionales Sin.+ Monte Mojino	0.33	806	725	387,751	348,976	-38,775
Los Tuxtlas	0.23	402	322	288,921	231,307	-57,615
Cañón de Usumacinta	1.18	539	431	387,557	310,045	-77,511
Islas Marías	0.02	4	4	3,237	2,589	-647
Isla Isabel	0.002	0	0	1	1	0
Islas Marietas	0.06	0	0	32	26	-6
PSA 2014-2018 + FPB	0.70	918	0	441,545	0	-441,545
Subproyectos (sin restauración)	2.16	280	0	194,345	0	-194,345
Total Deforestation		11,743	8,517	6,015,518	4,342,550	-1,672,978

Calculations generated through the Ex-Act V7.1.6 by FAO

5. According to the latest official estimates from the government of Mexico, the average yearly deforestation rate from 1993 to 2011 was 0.7 percent. At Project closing, it was assumed that the Project had helped to reduce deforestation by 20 percent, based on evidence suggested by Sims and Alix-Garcia (2017).<sup>32,33</sup> In the case of PES, given that it is a performance payment, it was assumed that deforestation reduced fully. To estimate avoided emissions, the ExAct model was applied.<sup>34</sup> Protecting one hectare, on average, reduced CO<sub>2</sub> emissions by approximately 518 tons equivalent. In the case of restoration, a hectare protected reduced emissions by 441 tons. Thus, C6 intervention prevented an additional 1.67 Mt CO<sub>2</sub> from entering the atmosphere.

6. Considering the shadow price of carbon suggested by the World Bank (2017),<sup>35</sup> which varies from US\$40 to US\$80 per ton of CO<sub>2</sub>, benefits can be monetized. Finally, the economic analysis considers a time horizon of 20 years, to take into account the long-term benefits of the Project. The analysis uses a baseline discount rate of 6 percent, as suggested by the World Bank (2016),<sup>36</sup> and assumes a 1 percent annual maintenance cost. Further, it is assumed that benefits begin realizing after the end of the Project, under the (conservative) assumption that communities and private agents will need some time to adapt to changes in investment and policies.

7. The economic analysis suggests that the Project generated substantial social and environmental benefits in the watersheds it served, as well as for Mexico's society as a whole. Overall, the NPV reached is US\$402 million (using a 6 percent discount rate). The investments evaluated for the economic analysis generated an internal rate of return of 46 percent. The economic analysis thus shows that the Project was

<sup>32</sup> K.R.E. Sims and J.M. Alix-Garcia. 2017. "Parks versus PES: Evaluating direct and incentive-based land conservation in Mexico." *Journal of Environmental Economics and Management*, 86: 8–28.

<sup>33</sup> Sims and Alix-Garcia (2017) found that PES and PAs reduced deforestation by 25.2 percent and 23.6 percent, respectively in 2000–2010. PES not only reduced deforestation, but reduced poverty (11.2 percent) while PAs had neutral impacts on livelihoods in 2000–2012.

<sup>34</sup> This model was applied by the project implementing partners.

<sup>35</sup> World Bank 2017. "Guidance note on shadow price of carbon in economic analysis." Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/621721519940107694/Guidance-note-on-shadow-price-of-carbon-in-economic-analysis>

<sup>36</sup> World Bank 2016. "Technical note on discounting costs and benefits in economic analysis of World Bank projects." [http://intresources.worldbank.org/INTOPCS/Resources/380831-1360104418611/Discount\\_Rate\\_TechnicalNote.pdf](http://intresources.worldbank.org/INTOPCS/Resources/380831-1360104418611/Discount_Rate_TechnicalNote.pdf)



effective.

8. Results are robust against adverse changes in the key parameters (see Table 5). Increasing project costs by 10 percent or 25 percent, or reducing Project benefits by 25 or 50 percent, which corresponds to a reduction in the social price of carbon of US\$10 and US\$20, respectively, and varying the default discount factor by 4 and 6 percentage units (that is, to 10 percent and 12 percent) does not change our conclusions. In the worst-case scenario, reduction of benefits by 50 percent, benefits are still positive (US\$82 million) with an IRR of 33 percent. Under the different adverse scenarios, therefore, the Project remains effective.

**Table 5:** Sensitivity Analysis—C6 Project

	NPV	IRR
Base case	402	46 percent
Increased Project expenditures by 10 percent	399	44 percent
Increased Project expenditures by 25 percent	394	42 percent
Increased discount rate to 10 percent	247	46 percent
Increased discount rate to 12 percent	195	46 percent
Reduced benefits by 25 percent	139	40 percent
Reduced benefits by 50 percent	82	33 percent

9. Results shown here correspond to the lower bound. There are other related benefits that can be incorporated—a few examples are listed below—but for simplicity's sake they were omitted from the analysis.

- There are benefits associated with the ecosystem services provided by the forest. Siikamäki et al. (2015)<sup>37</sup> found that the estimated value of forest ecosystem services used is, on average, US\$147.1 per ha per year when four types of ecosystem services are included: (a) water (incorporating erosion and flood control), (b) habitat and species protection, (c) recreation values, and (d) non-forest wood products.
- On the other hand, a recent study (INECC 2018)<sup>38</sup> estimated, using contingent valuation methods, willingness to pay among consumers and users of selected ecosystem services.<sup>39</sup> It found that 30.4 percent of tourists are willing to pay US\$107 per visit for the conservation of hydrological services and US\$123 per visit for scenic beauty. In the case of residents, the study estimated that 13.7 percent of households are willing to pay US\$5 every two months to maintain hydrological services and US\$1 every two months to preserve scenic beauty.<sup>40</sup>

<sup>37</sup> J. Siikamäki, F.J. Santiago-Ávila, and P. Vail. 2015. "Global Assessment of Nonwood Forest Ecosystem Services. Spatially explicit meta-analysis and benefit transfer to improve the World Bank's forest wealth database." Working Paper. World Bank–PROFOR.

<sup>38</sup> INECC. (2018). *Valoración económica de servicios ecosistémicos y propuesta de costo de oportunidad para un Pago por Servicios Ambientales de las cuencas abastecedoras a Puerto Vallarta, Jalisco*. Instituto Nacional de Ecología y Cambio Climático (INECC), México.

<sup>39</sup> A field survey was applied to a total of 551 people with two user profiles: tourists (national and foreign) and residents.

<sup>40</sup> Original values are in Mexican pesos, with an assumed exchange rate of 19.22 pesos per U.S. dollar.



## **ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS**

### CONAFOR's Perspectives

- From CONAFOR's vision, it is important to continue promoting and strengthening an integrated watershed management. It is recognized that in order to advance this issue, two of the main elements are institutional coordination and local stakeholder participation.
- As a best practice of institutional collaboration, CONAFOR intends to continue participating in the Technical Committee of the Project (TPC) in order to enhance both dialogue and inter-institutional collaboration actions with project partners. The *"Convenio de Concertación"* between the project partners' is currently under review by CONAFOR, with the purpose of formalizing the collaboration to follow up both technical and financial follow-up to future actions.
- In the same way, CONAFOR expects to join forces in the territory collaborating so that the PAMICs (IWAPs) can be implemented with its logic of provision of hydrological services, working in a harmonized way with other regional scale strategies that CONAFOR operates in watersheds, for example the Biodiversity Heritage [Endowment] Fund (Fondo Patrimonial para la Biodiversidad - FBP), National REDD+ Strategy (ENAREDD+) 2017-2030 and the Forest Management Units (UMAFOR), as well as through the development of PES Local Mechanisms through Concurrent Funds (MLPES-FC).
- Regarding PAMICs, in 2020 CONAFOR will maintain this tool as an eligibility criterion in its operating rules to improve the targeting of PES.
- An important contribution of PAMICs is that in addition to being planning instruments, they are elements that contribute to the management of economic participation of users of hydrological services. CONAFOR identifies as an opportunity the implementation of PAMICs to internalize externalities. This is the basis of local PES mechanisms: they seek to connect users with suppliers, in this sense CONAFOR participates in an initiative that is being developed within the framework of this project in Puerto Vallarta *"Bahía Montaña Alliance"*. This mechanism is being designed based on PAMIC, and in two complementary studies: one to assess environmental services and another to propose an opportunity cost, these studies were promoted by CONAFOR and INECC.

### **BIODIVERSITY ENDOWMENT FUND (FPB)**

- Regarding the FPB of CONAFOR, which was supported by C6 it was possible to increase conservation area, adding the area (area three) known as *"Jaguar Corridor"* with a surface of 12,212 hectares. Currently the FPB has a total of almost 39,000 hectares located in the states of Durango, Jalisco and Nayarit.



- This long-term PES scheme is based on *Convenios de Concertación* with the beneficiaries for a period of five years, which are renewed based on the results and verifications in the field. In the case of area three, created within the framework of this project, it is expected to conclude its first five-year period in 2020 and endorse in 2021.
- According to the annual progress reports, the results indicate that the beneficiaries are complying in a timely manner. Therefore, no problem or disagreement is expected to endorse the agreements in 2021.
- A theme that will continue to work strongly is community monitoring of biodiversity under the BIOCOMUNI methodology, which was included as a mandatory activity in the 2019 call of the FPB. All beneficiaries have already been trained in this protocol; however, the implementation is still in the process of being completed, for which CONAFOR has planned to increase technical support in coordination with the project “Integrated Management of Jaguar Habitat in Western Mexico” (MiJO), which is implemented jointly with the Northwest Fund (FONNOR AC).
- All technical aspects related to monitoring data collection will be strengthened, hoping that in the course of next year the people who integrate the *ejido* monitoring brigades (the monitors) will increase their capabilities and specialize to have better data; which will feed the online platform to process and systematize the information that is being developed in coordination with the FMCN and the United States Forest Service (USFS).
- It is also anticipated that good management practices, conservation and productive projects, such as nature tourism, will be consolidated in the lands supported by patrimonial resources of the C6 in the FPB. This strengthens and demonstrates the vision of the PES to conserve ecosystems, generate income and well-being for forest owners.
- Regarding the management of financial resources in equity, it is important to note that these are under the guidelines of the Joint Committee of the Mexican Forest Fund and the Technical Committee of the FPB.
- According to what has been observed in this project, it is concluded that the Payment for Environmental Services positively influences the integral management of the territory with a watershed scale, boosting a greater participation of the population in decision-making and developing self-management capacities, at the same time that changes in the behavior of forest land owners are achieved to maintain the ecosystem integrity generating environmental services, on which the welfare and development of society depends.



#### INECC's Perspective

- The IWAPs methodology allows the visualization and focus of mitigation and adaptation efforts to climate change with a territorial, relational and spatially explicit approach. The technical bases of the methodology allow replication in any region of the country. At the same time, the participatory component provides the necessary flexibility for the incorporation of particular characteristics (environmental, social, organizational and institutional) in each watershed or region. Territorial planning instruments should be dynamic tools and facilitate constant updating. As new climate change information is available these tools must be upgraded and improved, and work is being undertaken by the INECC. Also, the INECC, is preparing the technical submission of this methodology to be included in national norms, as territorial planning must include the climate change component, which current norms do not consider.

#### FMCN's Perspective

- The C6 project is an excellent opportunity to showcase the importance of endowment funds managed both by public (CONAFOR) and private (FMCN) actors. They not only leveraged matching funds, but they are key in providing long term support to key innovative aspects of the C6, mainly interinstitutional coordination and a landscape approach. Both require time to have evident impact. The non-endowment funds channeled through five years of project operation allowed to build the social base and technical foundation. The interest from the endowment funds will trigger new projects that build upon this foundation. The Global Environment Facility and the World Bank are institutions with decades of experience in conservation finance, their continued support in endowment funds as part of more integral projects will be key to scale up impact in the territory.



## ANNEX 6. SUPPORTING DOCUMENTS

### World Bank Project and Financing Documents

- Grant Agreement: "Coastal Watersheds Conservation in the Context of Climate Change Project." 2013, December 11. GEF Grant number: TF015475.
- Project Appraisal Document – October 23, 2019 (Report No. 81857-MX).
- Aide Memoires for Project Supervision Missions
- Project Implementation Status and Results Reports (ISRs)
- Restructuring Paper June 15, 2018 (Report No. RES32053).

### WBG Engagement Strategy Documents

- Mexico Partnership Strategy (CPS) FY 2008–2013.
- Mexico Partnership Strategy (CPS) FY 2014–2019.

### Project Outputs

- Integrated Watershed Action Plans (IWAPs or PAMICs). Found at <http://cuencas.cms.matrushka.com.mx/>
  - Gulf of Mexico
    - Tuxpan IWAP
    - Antigua IWAP
    - Jamapa IWAP
  - Gulf of California
    - Baluarte IWAP
    - San Pedro
    - Region Vallarta
- C6 Gender and Climate Change Indicators - Harmonization document (*Documento de armonización con indicadores de género y cambio climático*)

### Other Documents

- Final C6 Independent Evaluation (in Spanish, with an executive summary in English). Found at: <https://fmcn.org/es/programas-proyectos/proyecto-c6>
- Yearly progress reports with associated technical annexes (available upon request).
- C6 final report dated August 2019 with annexes (available upon request).





## ANNEX 7. ADDITIONAL PROJECT OUTCOME INFORMATION

1. Achievement of the PDO (Efficacy) is rated Substantial as the C6 Project was highly effective in achieving its objectives and meeting planned targets across results indicators at the PDO and intermediate levels (Annex 1).
2. The C6 Project set out to promote and execute an integrated (“landscape”) approach to coastal watersheds conservation and rehabilitation. The Project aimed to conserve biodiversity, contribute to climate change mitigation, and enhance sustainable land use across selected watersheds in the Gulf of Mexico and the Gulf of California (Figure A7.1 below). This integrated approach was vital for developing solutions to land degradation and forest loss upstream to benefit ecosystems and communities spatially along a watershed, both adjacent and in downstream areas.

Figure A7.1. Six Project Sites on Conservation of Coastal Watersheds



Source: C6 Project website<sup>41</sup>

3. To successfully manage inter-institutional relations and to ensure delivery of the array of interconnected outcomes across watersheds in the two gulf regions, the TPC was tasked with reviewing and approving operational procedures, providing policy guidance, and supervising and supporting the implementing agencies. It was created early on, with representatives from all four implementing partners (CONANP, CONAFOR, INECC, and FMCN—Figure A7.2 below). Giving these partners membership in the TPC made sense in view of their complementary expertise and past successes in conservation endeavors, such as the successful recent implementation of the SINAP II Project by CONANP and the FMCN.<sup>42</sup> This deep involvement at the technical level fostered a shared sense of responsibility and accountability for success. Effective coordination, under the strong leadership of the TPC, was an evolutionary and adaptive

<sup>41</sup> Source: C6 website <http://cuencas.cms.matrushka.com.mx/>

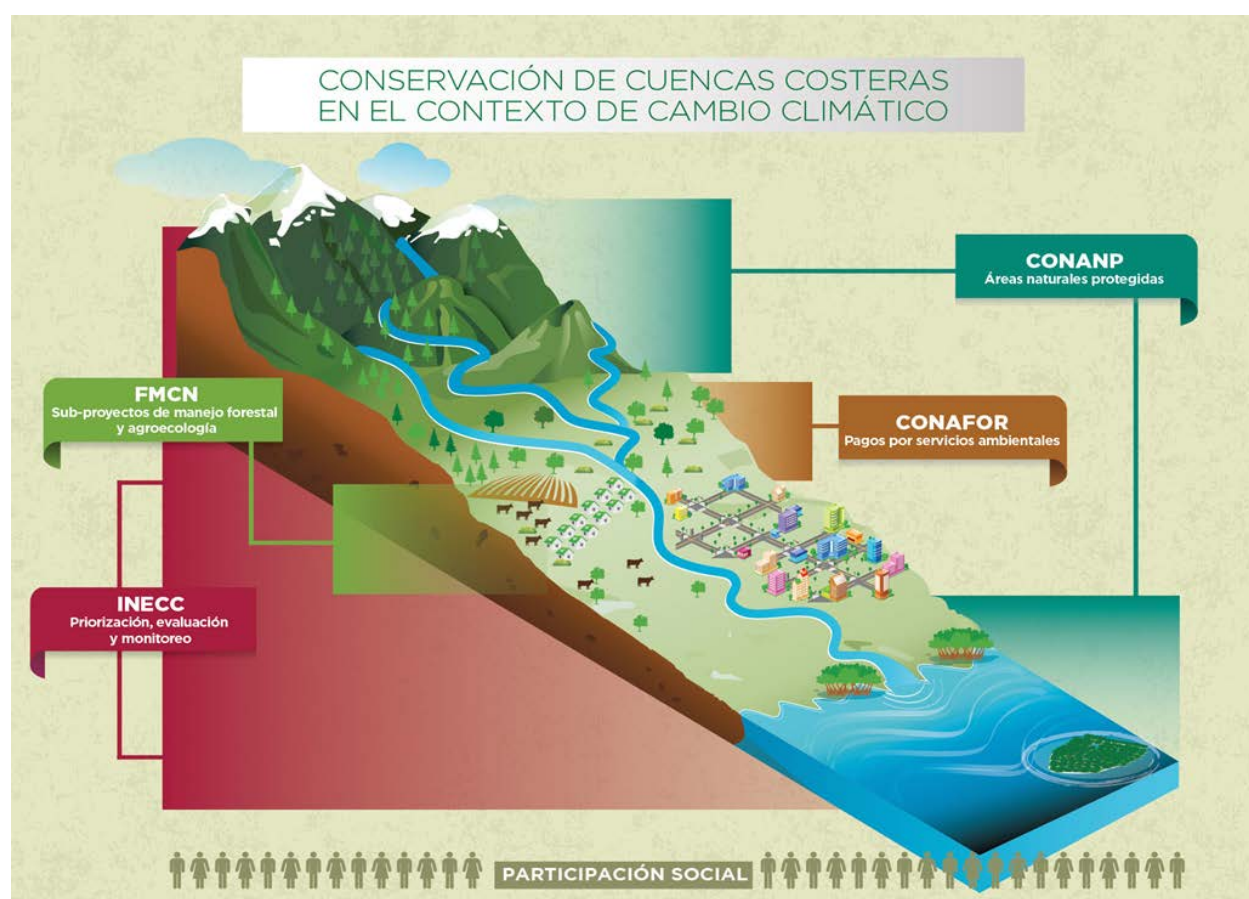
<sup>42</sup> Protected Areas System Project (P065988) approved on February 7, 2002 (SINAP II) – Satisfactory performance overall.



process that ultimately helped Project outcomes exceed expectations.

4. Successfully applying a landscape approach required effective interagency collaboration and the spatial execution of Project activities along a watershed (Figure A7.2 below). Activities along a watershed were designed to be mutually complementary to reinforce overall outcomes. For instance, activities supported under Component 1 of the Project placed emphasis on consolidating and effectively managing “core biodiversity areas” (i.e. PAs), enhancing biodiversity benefits and mitigation benefits, while preventing conversion of forest area to other uses. Component 2 activities in the meantime, built corridors between these core PAs and promoted adjacent and downstream agro-ecology and climate-smart agriculture practices. In this way, the Project supported biodiversity benefits (through the corridors) and mitigation benefits (through climate-smart agriculture as means of reducing unsustainable land use). Components 1 and 2 in parallel raised the sustainable finance necessary to carry out key activities onto the future. Activities under Components 3 and 4 supported the promotion of the landscape approach through the development and adoption of IWAPs and enhanced community monitoring and overall participation.

Figure A7.2: C6 Project Partners: Where They Operate along a Watershed and What They Do.



- Component 1 was implemented by the National Commission of Protected Areas (*Comisión Nacional de Áreas Naturales Protegidas*—CONANP), which focused on the management and



consolidation and creation of Protected Areas (PAs). The Mexican Fund for the Conservation of Nature (*Fondo Mexicano para la Conservación de la Naturaleza—FMCN*) was responsible for the capitalization of the FCC with the support from CONANP.

- Component 2 was implemented by the National Forestry Commission (CONAFOR), which carried out the PES paid with the interest of the Biodiversity Endowment Fund. FMCN was charged with management of the forestry and agro-ecology subprojects.
- Component 3 was implemented by the National Institute of Ecology and Climate Change (*Instituto Nacional de Ecología y Cambio Climático—INECC*), which coordinated the design and participatory development of the IWAPs, including leading efforts in community environmental monitoring.
- Component 4 was coordinated by FMCN but with important collaboration among implementing partners.

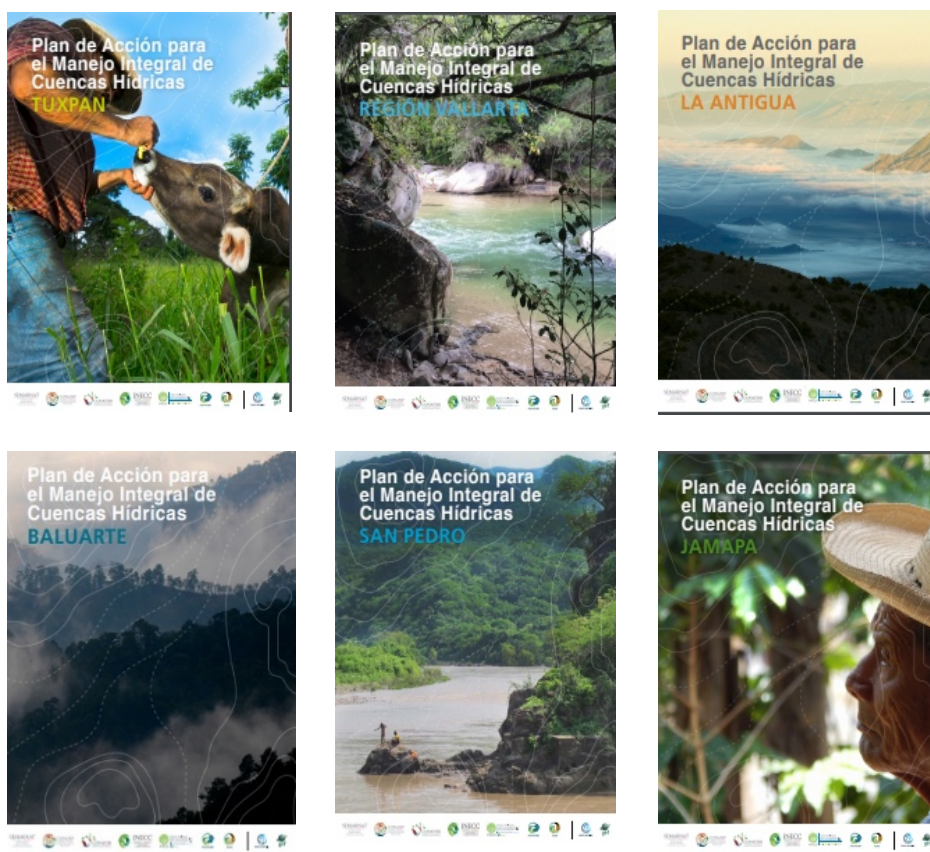
### **Achievement of Objectives/Outcomes**

#### **(a) Outcome – Promotion of Integrated Environmental Management (Landscape Approach)**

5. The Integrated Watershed Action Plans or IWAPs (known in Spanish as *Planes de Manejo Integrado de Cuencas* or *PAMICs*—Figure A7.3) were developed under Component 3. They served as the key instrument to inform Project activities, build constituency, and promote the landscape approach. The objectives of the IWAPs were to guide conservation and environmental management activities, providing pertinent information and data on the supply and demand of ecosystem services. Six IWAPs were developed as “one-stop shop” tools that would describe the necessary actions to conserve key ecosystem services; incorporate information on supply and demand for these services; and identify existing public instruments to conserve ecosystem functions, possible funding sources, costs, and local technical capacities. The models for the IWAPs were developed with careful consideration for climate-change scenarios.

6. The IWAPs incorporated community monitoring data and technical input across stakeholders. The Project supported workshops in each watershed, where the IWAPs were presented to the main actors to further enrich the plans’ development. In a simultaneous synchronous effort, the Project also supported community training sessions on biodiversity and water quality monitoring across the six watersheds. These served both as both inputs to the IWAPs and to inform ecosystem health of PAs and subproject/PES areas.

Figure A7.3: The six IWAPs (PAMICs)—Tuxpan, Antigua, and Jamapa watersheds in the Gulf of Mexico and Baluarte, San Pedro, and Puerto Vallarta region watersheds in the Gulf of California.  
<http://cuencas.cms.matrushka.com.mx/>



### Community Biodiversity Monitoring<sup>43</sup>

7. Between 2014 and 2019, the FGM successfully trained local people as monitors of 104 sample points. Participants learned to mount cameras and sound recording devices to identify major fauna groups including jaguars, birds, amphibians, and bats as key bioindicator species<sup>44</sup> (Figure A7.4). Supported by expert biologists, community monitors tracked biodiversity as a proxy of effective management of subprojects.

Figure A7.4: Community biodiversity and water monitoring

<sup>43</sup> Biodiversity monitoring followed the methodology known as High Resolution System for Monitoring Diversity (SAR-MOD), developed by the National Commission for the Knowledge and Use of Biodiversity (CONABIO).

<sup>44</sup> Studies show that the presence of bioindicator species—species such as jaguars that play a key role in an ecosystem—is a proxy for the overall health of that ecosystem. E.A. Holt, and S.W. Miller. 2010. "Bioindicators: Using Organisms to Measure Environmental Impacts." *Nature Education Knowledge* 3(10):8.





### Community Water Quality Monitoring

8. Monitoring of water quality at the community level followed the methodology of the Global Water Watch (GWW). The Project supported GWW-Mexico in the coordination of 171 workshops that resulted in 106 certified monitors and 3,433 registries on physical, chemical, and biological variables related to water quality. GWW-Mexico trained monitors to interpret the data obtained, in order to understand the dynamics of their rivers and streams. For example, constant monitoring through four years of a subproject supporting the reforestation of riparian corridors revealed considerable reduction of fecal bacteria and suspended solids—a testament to management effectiveness of PAs and subproject/PES sites upstream.

9. In addition to biodiversity and water quality, the Project monitored changes in land use and carbon in the selected watersheds, providing a continuous stream of useful information to PAs and subprojects.

10. Community monitoring training sessions and the widely disseminated results (through pamphlets, public events, and videos, and social media campaigns) were key to promoting the landscape approach, building capacity, and securing buy-in from local actors and stakeholders.

- C6 Website: <http://www.c6.org.mx/>
- IWAPs/PAMICs: <http://cuencas.cms.matrushka.com.mx/>
- Video: <https://www.youtube.com/watch?v=HbxL8jSA61o&feature=youtu.be>

11. Community members received more frequent information about their natural heritage and key responsibilities for enhanced management. Water monitoring, for example, developed awareness of the connection that rivers provide to the territory, including the effects of deforestation and reforestation along their banks and the potential for collective action to improve the health of the watersheds. Similarly, biodiversity monitoring developed a keen understanding among local people of the integrated and interconnected nature of ecosystem services.



12. Interviews conducted with actors as part of the final independent evaluation suggest that this enhanced knowledge has enabled community members to develop a sense of pride and stewardship for their environment. For example, seven organizations working in the upper watersheds of the Jamapa and Antigua rivers formed a coalition (*COBIJA*) that represents more than 4,500 coffee producers in the area. It is dedicated to ensuring the preservation of ecosystem services, including clean water. Other groups have established direct contact with authorities to improve water quality.

13. Promotion of the landscape approach through the IWAPs has had a deep and lasting effect on local partners. The approach helped create six local organizations promoting better land use and biodiversity- friendly practices derived from the C6. In the state of Veracruz, it helped bring about the Environmental Fund of Veracruz (known by its Spanish acronym FAV). In the state of Jalisco, it supported the creation of the Environmental Fund. Through participatory engagements, the private sector learned about the IWAPs during a forum that was jointly organized by the Project and the Association of Industrialists of Veracruz. Wide engagement created an appetite among partners in regions beyond the Project to develop and adopt IWAPs.

14. The Project achieved the participatory development, adoption, and publication of six IWAPs or PAMICs.<sup>45</sup> Through extensive community engagement and participatory activities, communities internalized monitoring and practices of integrated environmental management. Examples include:

- The coalition of organizations at the upper part of the Jamapa and Antigua rivers, *COBIJA*, took the IWAPs of both of these watersheds to independently derive planning exercises at the micro-watershed level. These exercises served to align existing public programs and coordinate investment into improved ecosystem health through local participation.
- The private sector entity responsible for water provision in the city of Veracruz is considering using the IWAP to channel a portion of fees paid by water users into restoring the watershed.
- CONAFOR modified the guidelines for the National PES Program to incorporate the IWAPs assigning additional points to the areas identified as priority by the IWAPs.

15. The focus on community involvement served well to inform key aspects of PA management and ecosystem health for biodiversity conservation and land-use conversion. PES and subprojects have promoted enhanced sustainable land use, biodiversity conservation, and mitigation benefits. The dedication to community participation served to build ownership and wide understanding of the Project outcomes and the importance of continuing engaging after completion of the Project. All of these elements came together as ingredients for the successful integrated management of watersheds, enhancing ecosystem services, including biodiversity and climate change mitigation.

#### **(b) Achievement Outcome – Biodiversity Conservation**

16. All activities that were planned to contribute directly to biodiversity conservation were successfully undertaken during the life of the Project.

17. The Project was successful in consolidating a total of 1,748,204.73 ha of protected area—10 PAs total across the six watersheds (Figure A7.5). The consolidated area had effectively managed areas (as per

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<sup>45</sup> <http://cuencas.cms.matrushka.com.mx/>

- Of the ten PAs, seven were in the Gulf of Mexico region (Pantanos de Centla, Cofre de Perote, Pico de Orizaba, Sistema Arrecifal Veracruzano, Los Tuxtlas, Lobos-Tuxpan, and Cañón de Usumacinta), while three were in the Gulf of California region (Marismas Nacionales Nayarit, Rio Ameca—a new PA—and the Natural Reserve Islas Marías).
- The new PA decreed has a total area of 354,849 ha. It has a robust jurisdictional framework decreed by local and federal authorities.

**MEXICO**

# COASTAL WATERSHEDS CONSERVATION IN THE CONTEXT OF CLIMATE CHANGE PROJECT

- WATERSHEDS (GULF OF CALIFORNIA, GULF OF MEXICO)
- NATURAL PROTECTED AREAS
- NATURAL PROTECTED AREAS TO BE DECREED
- INTER-AMERICAN HIGHWAY
- MAIN HIGHWAYS
- MAIN ROADS
- RIVERS
- CITIES AND TOWNS
- STATE CAPITALS
- NATIONAL CAPITAL
- INTERNATIONAL BOUNDARIES

0 100 200 Kilometers  
0 100 200 Miles

UNITED STATES OF AMERICA

GSDPM  
The Global Design Project Map

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

PACIFIC OCEAN

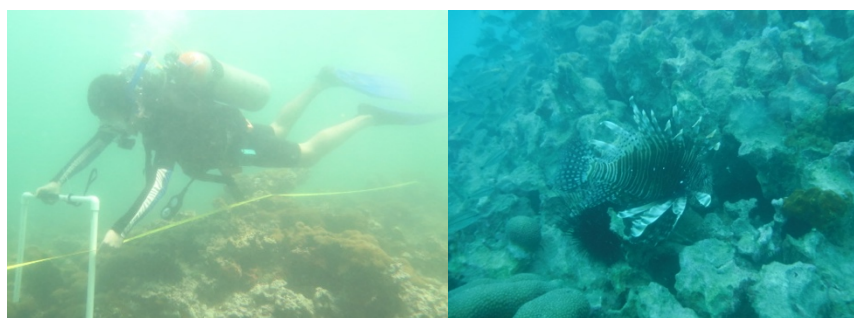
GUATEMALA

18. Under the leadership of CONANP and informed by IWAPs, the C6 supported the development of Annual Operational Plans (AOPs) for each PAs. These outlined key conservation activities including community environmental monitoring and surveillance, fire prevention and control, environmental



education, and management of invasive species and pests. In the coastal PAs, such as in the Sistema Arrecifal Veracruzano, reef restoration activities were conducted as well as removal of invasive species (lion fish) and monitoring of sea turtles (Figure A7.6). The annual reports of each PA show progressive achievement in Project goals. AOPs also outlined multiuse activities around the edges of the PAs to enhance livelihoods and prevent further land degradation and biodiversity loss.

Figure A7.6: Reef monitoring (left) and lion fish removal (right)



19. The Project implementing partners, particularly FMCN and CONANP successfully raised US\$28.6 million to match the original finance allocated for the capitalization of the FCC (GEF funds totaling US\$19.5 million) and of the Biodiversity Endowment Fund (GEF funds totaling US\$9.1 million). See Table A7.1 below. The financial return (interest accrual) from January to June 2019 was 9.44 percent in Mexican pesos for the FCC and 4.8 percent for the Biodiversity Endowment Fund<sup>46</sup>.

Table A7.1: Breakdown of funding sources (matching finance) for the FCC capitalization.

Source	Date	Amount (million US\$)
Packard Foundation	December 2007	US\$ 4.710 million
FIHSIN (Hydraulic Infrastructure Fund of Sinaloa)	December 2010	US\$ 0.486 million
Resources Legacy Fund	December 2013	US\$ 0.100 million
Braskem-Idesa	April to October 2016	US\$ 0.189 million
Helmsley Foundation	March 2015 to March 2017	US\$ 1.086 million
KfW (German Development Bank)	March 2017	US\$ 5.396 million
Materias Primas de Monterrey (now COVIA)	May 2017	US\$ 0.346 million
KfW	November 2018	US\$ 7.205 million
<b>Total</b>		<b>US\$19.518 million</b>

20. These financial gains are vital to the continuation of ecosystem management activities at the watershed level, including effective PA management and sustainable livelihood initiatives. At Project closing, the financial return for the FCC and the Biodiversity Endowment Fund provided long-term support

<sup>46</sup> For the Biodiversity Endowment Fund, 27.8 percent was the total accrued interest over the 5-year nominal return.





to operational capacity in 10 protected areas and PES, community monitoring activities, inter-institutional collaboration, social participation, and administration of the FCC itself. In addition, the funds destined for PAs have fostered synergies and greater collaboration among institutions and civil society beyond the limits of the PA. Matching funds raised are further helping underwrite effective management of additional PAs in the Gulf of California and the Gulf of Mexico.

21. Quantitative measures of management effectiveness are captured in the METT evaluations, which are part of the consolidation criteria. At Project inception in 2014 and again at mid-term, the GEF tracking tool known as “METT” was applied to PAs across the Gulf of Mexico and Gulf California to define the baseline. At Project closing, a total of 10 protected areas were being funded with the long-term endowment of the FCC and were being evaluated according to the METT methodology. The capitalized percentage from the endowment funds created under the Project serve to continue the activities outlined in the AOPs and to continue monitoring METT scores. These 10 PAs are generally regarded as having improved their management effectiveness or being on the path to doing so (Table A7.2 below - Los Tuxtlas had change of staff that affected its METT Evaluation).

Table A7.2: METT Scores of the 10 PAs Engaged by the C6.

PA	START 2014	MID-TERM 2016	FINAL 2018
Pico de Orizaba	56	56	78
Cofre de Perote	51	74	74
Sist. Arrec. Veracruzano	63	68	72
Los Tuxtlas	73	58	47
Pantanos de Centla	76	73	73
Cañón de Usumacinta	57	59	61
Sist. Arrec. Lobos-Tuxpan	25	61	76
Islas Marías	-	40	46
Ameca-Vallejo	-	50	50
Marismas Nac. Nayarit	-	68	68

22. Protected Areas in Mexico have generally been found to be effective at reducing deforestation



and promoting conservation.<sup>47</sup> Numerous studies and projects, including Mexico's own SINAP II project,<sup>48</sup> have concluded that sensitive species being monitored increased or maintained their frequency within protected areas. Likewise, Pas considerably reduce habitat alteration that affects species frequency and biodiversity more generally. The consolidation of PAs under the C6 Project bought management effectiveness mechanisms such as endowment financing and technical coordination for the foreseeable future. This contributed to the envisioned medium- [at PDO level] and long-term Project outcomes, particularly in biodiversity conservation and enhanced carbon sequestration.

### (c) Achievement Outcome – Enhance Sustainable Land Use

23. All activities that were planned to contribute to biodiversity conservation, climate change mitigation, and sustainable land use were successfully undertaken during the life of the Project.

24. Adjacent to core biodiversity areas, in alignment with IWAPs and PAs' AOPs, the C6 supported activities to further maintain the integrity of the watershed ecosystem, including its biodiversity, and to enhance sustainable livelihoods. In this regard, CONAFOR led the establishment of 12,212 ha of biodiversity corridors supported through Payments for Ecosystem Services.

25. In 2016, CONAFOR designated an area for the Biodiversity Endowment Fund to support based on the home range of the jaguar (*Panthera onca*). The jaguar's "Western Corridor" was selected, connecting 9 percent of critical habitat terrain according to the 2010 National Jaguar Census and encompassing some of the watersheds in the Gulf of California (Figure A7.7). Selection of jaguar was supported by technology (the software Corridor Design), and by scientific experts through a collaboration that CONAFOR secured from the National Alliance for the Conservation of the Jaguar, Peace Corps-Mexico, INECC, and FMCN. In June 2017, the MiJO (Integrated management of the jaguar habitat through community participation in Western Mexico) project was officially started, funded by United States Fish and Wildlife Service (USFWS), and implemented and designed by FONNOR A.C. in collaboration with CONAFOR. Since then, the MiJO project has provided technical support to the PES sites under the C6 that were incorporated as beneficiaries of the Biodiversity Endowment Fund. Together with the C6 project, the MiJO has promoted continued training, monitoring equipment to community brigades, and facilitated knowledge exchange. The communities that benefit, as well as municipal authorities, have increased their awareness through such events as "The Great Roar," which has drawn hundreds of participants to workshops, talks with experts, and screenings of documentaries that stress the importance of the jaguar.

Figure A7.7: The Jaguar's Western Corridor, Part of the MiJO Project in Partnership with the C6, Supporting 12,212 ha through PES.

<sup>47</sup> See, for example, F. Figueroa and V. Sánchez-Cordero. 2008. "Effectiveness of Natural Protected Areas to Prevent Land Use and Land Cover Change in Mexico." *Biodiversity and Conservation* 17: 3223–40; and J.F. Mas. 2004. "Assessing Protected Area Effectiveness Using Surrounding (Buffer) Areas Environmentally Similar to the Target Area." *Environmental Monitoring and Assessment* 105: 69–80.

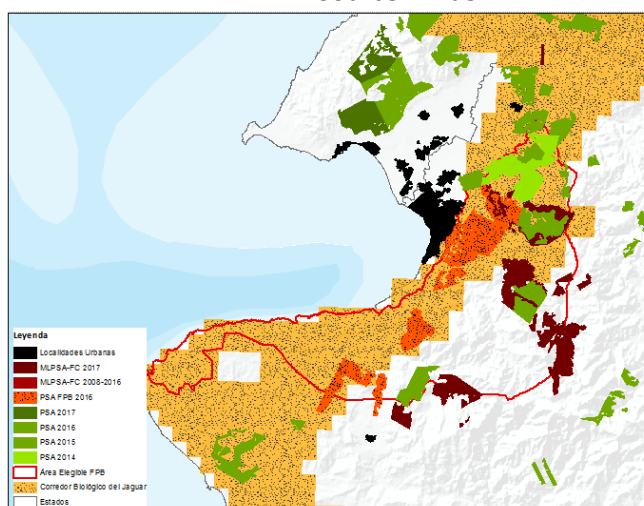
<sup>48</sup> Consolidation of the Protected Areas System Project (P065988) approved on February 7, 2002 (SINAP II).



Source: MiJO<sup>49</sup>



Source: MiJO



Source: FMCN

26. The jaguar was selected for special attention because it plays a vital role in biodiversity. As a

<sup>49</sup> Source: MiJO <https://twitter.com/ProyectoMiJO/status/1176308012132327425/photo/1>



keystone species, it influences the abundance and diversity of its prey and, by close ecological association, the diversity of species across trophic levels and food chains.<sup>50 51</sup> The jaguar is classified as “Near Threatened” by the International Union for Conservation of Nature (IUCN) due to population declines across its historical range from Mexico to Argentina. The C6 Project has successfully employed an integrated environmental management approach to jaguar conservation by pairing the consolidation of PAs with PES across sensitive jaguar habitats in the Gulf of California. This approach helps ensure the maintenance of habitat connectivity and biological corridors, even across “human-use areas,” which is essential for the jaguar’s survival.<sup>52</sup>

27. Under the leadership of FMCN, the C6 supported agro-ecology and climate-smart sustainable forest management subprojects to reduce unsustainable land use while enhancing livelihood opportunities.

- **Agro-Ecosystem Subprojects:** In the Gulf of Mexico, a total of 29 subprojects led by 24 organizations were carried out. Among the 29 subprojects, 12 promoted good practices in agro-ecosystems in areas producing such farm commodities as honey, pepper, shade-grown coffee, cattle, and cocoa. In the Gulf of California, three additional subprojects focusing on agro-ecosystems were cofinanced with counterpart funds.
- **Sustainable Forestry Management Subprojects:** Of the 29 subprojects selected in the Gulf of Mexico, 17 focused on sustainable forest management. Along the Tuxpan watershed, for example, civil society organizations worked to improve their forests, recover riparian areas and restore native species. The subprojects also fostered production of orchids and resins for commercialization, in addition to updating forest management programs and training brigades to fight forest fires.

28. Agro-ecosystem subprojects, covering a total area of 23,572 ha, had a variety of objectives: 8,934 ha were devoted to forest conservation through legal or community frameworks; 6,870 ha were undergoing reforestation treatment; 705 ha of forest were under restoration treatment; 4,511 ha were under best practices in agriculture, cattle ranching and shade coffee; and 2,552 ha were designated as legal forest plantations with sustainable management plans.

29. All 32 agro-ecosystem and sustainable forestry management subprojects were financed on a competitive basis following a comprehensive selection process developed early in Project implementation and further enhanced with the IWAPs. Subprojects approved for support were subject to risk mitigation and safeguards guidelines (see list of subprojects in the pages following this assessment of efficacy).

30. Capacity-building activities through the life of the C6 Project facilitated the successful technical and administrative execution of subprojects. For example, 1,669 workshops, directly benefiting 16,173 participants—6,585 women and 9,588 men, including 22.2 percent indigenous—strengthened local capacities in the operation, supervision, support, and monitoring of subprojects (Figure A7.8). The regional coordination unit’s efforts in selecting, training, and accompanying community organizations in

<sup>50</sup> J. Estes et al. 2011. “Trophic downgrading of planet Earth. *Science*. 2011;333: 301–306. 10.1126/science.1205106.

<sup>51</sup> S.C. Wagner. 2010. *Keystone Species*. Nature Education Knowledge 3(10):51.

<sup>52</sup> V. Boron et al. 2016. “Jaguar densities across human-dominated landscapes in Colombia: The contribution of unprotected areas to long-term conservation.” *PloS one*. 11(5):e0153973 10.1371/journal.pone.0153973





implementing the subprojects with local people yielded concrete management results beyond improved capacity. In the Antigua and Jamapa watersheds, for example, community organizations restricted the use of firewood from forest and shade-grown coffee areas to domestic purposes only. In addition, community groups in these watersheds are now certifying and publicly recognizing private conservation efforts in areas deemed to be under high pressure for changes in land use. At Project closing, 90 percent of subprojects reported continuity in their activities and were being closely monitored by community members who received technical and administrative training for execution of subprojects.

Figure A7.8: Local People Attending a Jaguar Conservation Workshop, One of a Series Held in Early May 2019 in Autlán and Playa Grande in Jalisco, and Acaponeta in Nayarit.



31. The inclusion of community organizations as agents of design, organization, and supervision of subprojects and PES area has generated ownership towards the C6 Project as a whole. This was fundamental to its success at mid-term and remained strong at closing.

32. Through C6 Project activities, beneficiaries have internalized the need to promote sustainable forest management and address degradation. Now they also have the tools and capacity to organize and together make mutually beneficial decisions.

#### **(d) Achievement Outcome – Contributions to Climate Change Mitigation**

33. In line with the landscape approach, the many C6 Project activities contributed greatly to climate change mitigation. The consolidation of PAs and PES-associated activities prevented land use conversion from forest area. This advanced the cause of biodiversity conservation and also carbon avoidance. Subprojects, on the other hand, addressed unsustainable land-use practices and simultaneously increased



carbon sequestration because they rehabilitated the soil and its ability to absorb carbon. Furthermore, deforestation rates and CO<sub>2</sub> emissions would have been significantly higher without the C6 interventions (see estimates of deforestation and CO<sub>2</sub> emissions table in Annex 4 and Ex Act tool calculations below). At Project closing, it was estimated that without C6 intervention, deforestation would have risen to 11,743 ha. C6 intervention prevented a total of 5.53 Mt CO<sub>2</sub> from entering the atmosphere. The avoidance of forest loss is of special significance given the importance of forests in ecosystem services including biodiversity, Carbon absorption, soil stability, and community livelihoods. While the C6 Project monitored and reported on carbon sequestration and avoidance as the primary link to engaging climate change, most aspects of it contributed as well to adaptation and resilience building. The development of IWAPs, for example, incorporated models of varying climate change scenarios, helping craft Project adaptation measures for the watershed level.

Figure A7.9: Ex Act tool calculations for the C6.

Project Name	C6 project		Climate	Tropical (humid)					Project Duration (yrs) 5		
Continent	North America		Predominant regional soil type	Soil HAC					Total Area (ha) 1363642		
Project Component	All flows		Balance	Part of the GEI's balance					Results per year		Balance
	Without C6	With C6		All GEI in tCO2eq			N2O	CH4	Without C6	With C6	
	All GEI in tCO2eq										
	CO2	Soil		Other							
Positive = Source / negative = sum			Biomasa								
Changes in soil use											
Deforestation	6015527.92	4342549.98	-1672977.94	-1653460	-18953.2		-645.492	0	1203105.583	868510	-334596
Aforestation	0	0	0	0	0		0	0	0	0	0
Other	0	0	0	0	0		0	0	0	0	0
Agriculture											
Annual Cultivation	0	0	0	0	0		0	0	0	0	0
Perenial Cultivation	0	0	0	0	0		0	0	0	0	0
Rice	0	0	0	0	0		0	0	0	0	0
Grassland and Cattle											
Grassland	0	0	0	0	0		0	0	0	0	0
Cattle	0	0	0				0	0	0	0	0
Degradation and Management	1154203.88	-2308407.77	-3462611.653	-3392586	-70025.3		0	0	230840.7768	-461682	-692522
Coastal wetlands	220813.07	-182269.82	-403082.8906	-310634	-92448.5		0	0	44162.61407	-36454	-80616.6
Acquisitions and Investments	0	0	0			0	0	0	0	0	0
Fishery & Aquaculture	0	0	0			0	0	0	0	0	0
Total	7390544.87	1851872.39	-5538672.483	-5356681	-181427	0	-645.492	0	1478108.974	370374	-1107734
Per hectare	5.42	1.36	-4.06	-3.93	-0.13	0.00	0.00	0.00			
Per hectare per year	1.08	0.27	-0.81	-0.79	-0.03	0.00	0.00	0.00	1.08	0.27	-0.81



***Table A7.3 List of subprojects:***

Number	Region	sub-project / enterprise name	Brief description
1	Tuxpan	<b>Agroproductores Forestales de Zacualpan SPR de RL</b>	Consolidation of the mountain mesophilic forest in Zacualpan Veracruz.
2	Tuxpan	<b>Instituto Mexicano para el Desarrollo Económico y Social Comunitario, IMDESOCO A.C.</b>	Hydrological-Environmental restoration of the microwatershed known as 'El Crucero de Jacales' forming part of the greater Rio Tuxpan watershed; through soil and water restoration techniques for the benefit of communities.
3	Tuxpan	<b>Asesoría Social Productiva, A.C.</b>	Silvo-pastoral practices to support the conservation of the Tuxpan basin in Chicontepec de Tejeda, Veracruz.
4	Tuxpan	<b>Asociación Mexicana para el Estudio y Conservación de los Recursos Naturales, AMECORENA AC.</b>	Environmental hydrological restoration of the microwatershed Los Duraznos microbasin, located in the upper part of the Tuxpan river basin, Veracruz; through the participation and benefit of the population, and the establishment of water management and soil preservation practices.
5	Tuxpan	<b>Fundación Pedro y Elena Hernández A.C</b>	Construction of the first community strategies for the ecological restoration of landscapes, on the southeast slope of the 'Sierra de Otontepec' Protected Area, head of a tributary of the Tuxpan River.



6	Tuxpan	<b>Centro de Estudios Socioeconómicos y Ambientales para el Desarrollo Social de la Huasteca-CESADESH A.C.</b>	Establish silvopastoral systems and 'live' fences as a tool for sustainable and sustainable production in the agricultural and cattle ranching sectors.
7	Antigua	<b>SENDAS A.C.</b>	Integrated and shared management of the sub-basins that supply water to the community of Xico, Ver.
8	Antigua	<b>Consejo Regional de Café A.C.</b>	Sustainable coffee production for environmental conservation in the face of climate change in the Coatepec region, Ver.
9	Antigua	<b>PRONATURA MÉXICO A.C.</b>	Enrichment and connectivity on the windward slope of the Cofre de Perote PA and its adjacent areas of influence.
10	Antigua	<b>Consejo Civil Mexicano para la Silvicultura Sostenible A.C.</b>	Forest restoration in lands affected by the 2013 fire in the community of La Toma, municipalities of Ayahualulco, within the Cofre de Perote PA.
11	Antigua	<b>Consejo Civil Mexicano para la Silvicultura Sostenible A.C.</b>	Maintenance and development of soil and water restoration works carried out by the CCMSS on land within the Cofre de Perote PA.
12	Antigua	<b>INANA A.C.</b>	Bee farming (meliponicultura) for conservation. Dissemination of the importance of stingless bees through the Teocelo meliponicultura school with demonstrative meliponarios (bee farmers) in the La Antigua sub-basin.





13	Antigua	<b>Estudios Rurales y Asesoría Campesina A.C. ERA</b>	Soil and water conservation for community development in the Limones-Tlapécatl corridor.
14	Antigua /Jamapa	<b>Conecta tierra A.C.</b>	Management of the agroecological forest system of coffee plantations in 18 locations in the sub-basins of the La Antigua and Jamapa rivers.
15	Jamapa	<b>Consultora para el Desarrollo Rural y Ordenamiento Ambiental CEDRO S.A. de C. V.</b>	Social articulation for the conservation of the upper Jamapa River basin.
16	Antigua /Jamapa	<b>Pronatura México A.C.</b>	Conserve and increase biological diversity in coffee landscapes of high hydro-ecological relevance in the upper basins of the Jamapa and La Antigua rivers.
17	Jamapa	<b>GRUTA DEL RÍO JAMAPA SC DE RL DE CV</b>	Agroecological modules in coffee plantations of Capulapa, Huatusco, and Veracruz, to promote the sustainable use of natural resources.
18	Jamapa	<b>Productores de alimentos para las zonas rurales de México S.C.</b>	Reintroduction and sustainable management of native species as a strategy for the conservation of native flora and fauna in the communities of Ixhuatlán del Café.
19	Huazuntlán y Temoloapa	<b>Desarrollo Comunitario de los Tuxtlas, A.C.</b>	Adding new extensions to the restoration and conservation program of the Watersheds in the Sierra de Santa Marta.
20	Huazuntlán y Temoloapa	<b>DECOTUX A.C</b>	Strengthening social capital for the conservation, management, and sustainable use of biodiversity, soil and water, in communities of the Huazuntlan River subwatershed.



21	Huazuntlán y Temoloapa	<b>Agua y Monte de Pajapan S.C. De R.L. De C.V.</b>	Socio-economic and environmental benefits through strategies of restoration and sustainable management of forest resources in the Pajapan sub-watershed of the Temoloapa River.
22	Huazuntlán y Temoloapa	<b>Gente Sustentable, A.C.</b>	Sustainable forest agricultural use in the indigenous ejido of Mecayapan, belonging to the sub-watersheds around the Huazuntlán rivers.
23	Huazuntlán y Temoloapa	<b>Sembrando Semilla Sagrada AC</b>	Conservation-reforestation of riparian areas with native germplasm around the Agachapan-Temoloapa rivers and beekeeping introduction in mangroves in El Pescador, Pajapan, Veracruz.
24	Huazuntlán y Temoloapa	<b>Espacios Naturales y Desarrollo Sustentable A.C.</b>	Forest management and restoration in the Ocotál Grande community, as a mechanism for adaptation to climate change in the upper Huazuntlán watershed.
25	Usumacinta	<b>IDESMAC INSTITUTO PARA EL DESARROLLO SUSTENTABLE EN MESOAMERICA, A.C.</b>	Execution of the riparian and agroforestry restoration strategy at the landscape level and hydro-biological corridors in the Catazajá wetland system.
26	Usumacinta	<b>Espacios Naturales y Desarrollo Sustentable A.C.</b>	Restoration for the connectivity of forest trails on the Usumacinta riverbank.
27	Usumacinta	<b>Cooperativa AMBIO, S.C. de R.L.</b>	Restoration of the riparian ecosystem of the southern sector of the Usumacinta-Tabasco watershed.
28	Usumacinta	<b>Espacios Naturales y Desarrollo Sustentable A.C.</b>	Consolidation of restoration processes in the Flora and Fauna Cañón de Usumacinta Protected Area and its area of influence.



29	Todas	<b>Pronatura Mexico A.C.</b>	Strengthening of biodiversity nurseries as the basis for an effective ecological restoration in priority sites in the Gulf of Mexico.
30	Usumacinta	<b>Espacios Naturales y Desarrollo Sustentable A.C.</b>	Operation of Casa del Agua in the Pantanos de Centla Biosphere Reserve.