

INTEGRATING STAKEHOLDERS IN ASSESSMENTS FOR SUSTAINABLE MANGROVE MANAGEMENT

ME-T1313

CERTIFICATION

I hereby certify that this operation was approved for financing under the **Biodiversity and Ecosystem Services Special Program (BIO)** through a communication dated July 7, 2016 and signed by Felipe Caicedo (**ORP/GCM**). Also, I certify that resources from said fund are available for up to **US\$300,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project for a period of four (4) calendar months counted from the date of eligibility from the funding source. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences represent a risk that will not be absorbed by the Fund.

(Original signed)

Sonia M. Rivera

Chief

Grants and Co-Financing Management Unit

ORP/GCM

Oct/20/2016

Date

Approved:

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Pedro Martel

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Environment, Rural Development and

Risk Management Division

CSD/RND

Oct/20/2016

Date

TC Document

I. Basic information for TC

▪ Country/Region:	Mexico
▪ TC Name:	Integrating stakeholders in assessments for sustainable mangrove management
▪ TC Number:	ME-T1313
▪ Team Leader/Members:	Cesar Bustamante (RND/CME), Team Leader; Michele Lemay (CSD/RND); Melanie Argimon (CSD/RND); Gmelina Ramírez (CCS/CME); David Cotacachi (SCL/GDI); Enrique Ibarra (SCL/GDI); Juan Carlos Pérez-Segnini (SGO/CME); and Rosario Gaggero (CSD/RND).
▪ Indicate if: Operational Support, Client Support, or Research & Dissemination.	Client Support
▪ Reference to Request: (IDB docs #)	40365548
▪ Date of TC Abstract authorization:	June 30, 2016
▪ Beneficiary:	Mexico, Comisión Nacional Forestal (CONAFOR), Comisión Nacional de Áreas Naturales Protegidas (CONANP), Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), Instituto de Ecología (INECOL)
▪ Donors providing funding:	Biodiversity and Ecosystem Services Special Program
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ IDB Funding Requested:	US\$300.000
▪ Local counterpart funding, if any:	0
▪ Disbursement period (which includes execution period):	24 months
▪ Required start date:	November 1st, 2016
▪ Types of consultants:	Individuals and Firms
▪ Prepared by Unit:	CSD/RND
▪ Unit of Disbursement Responsibility:	CSD/RND
▪ TC included in Country Strategy (y/n);	Yes
▪ TC included in CPD (y/n):	No
▪ GCI-9 Sector Priority:	Addressing climate change, renewable energy, environmental sustainability and food security

II. Objectives and Justification of the TC

- 2.1 The overall objective of this Technical Cooperation is to support the creation of a replicable model for mangrove ecosystem management and conservation. Specific objectives are to: (i) complete ecological, socioecological and socioeconomic assessments to value and enhance resilience of mangrove forest natural capital and underlying biodiversity in a pilot site in Veracruz, Mexico; (ii) engage local stakeholders in assessment and management activities to ensure long-term commitment to sustainable ecosystem use; and (iii) produce a replicable mangrove ecosystem management model for Latin America and the Caribbean.
- 2.2 Mangrove forests constitute one of the most productive ecosystems in the world, providing a diverse suite of ecosystems services upon which human well-being depends. These unique forests harbor exceptional biodiversity, including many threatened species, and support fish reproduction which enhances subsistence and commercial fishing incomes. In addition,

mangrove trees provide timber, wood and medicinal plants.¹ Their physical structures protect vulnerable coasts from erosion² and reduce the risk of human and material losses, thus enhancing economic benefits by upholding the diverse functions and uses of mangrove ecosystems, including potential biodiversity-related tourism.³ Finally, mangrove forests mitigate climate change as they sequester and store blue carbon.⁴

- 2.3 It is estimated that Mexico possesses about 5% of global mangrove coverage (more than 700,000 hectares), and is the fourth country worldwide in mangrove extent.⁵ However, mangrove forests are among the most threatened habitats in the tropics and sub-tropics.⁶ Mexico ranks among the top five countries in extent of mangrove forest cover lost,⁷ and has the second highest associated carbon emissions. Though current legislation (NOM-022-2003) recognizes the substantial value of mangroves for biodiversity and the provisioning of multiple ecosystem services and stipulates the protection and sustainable use of these ecosystems, illegal and destructive uses continue and mangrove management models which incorporate biodiversity and ecosystem service criteria are widely lacking. Mangrove loss in Mexico is motivated by clearing for agriculture, shrimp aquaculture and tree plantations, cattle grazing, fuelwood and timber overharvesting, and tourism development. Less direct impacts on mangroves include overfishing and pollution associated with urbanization. These impacts are exacerbated by sea level rise driven by climate change.⁸
- 2.4 Mangrove forest restoration and conservation, if successful, can offer multiple benefits, as evidenced above. However, historical conservation approaches have failed to value the full suite of provisioning, regulating, and cultural ecosystem services that mangroves provide.⁹ Furthermore, they have not sufficiently acknowledged the role of local stakeholders that have an investment or interest in mangrove ecosystem natural capital and ecological

¹ Mumby et al. 2004. Mangroves enhance the biomass of coral reef fish communities in the Caribbean. *Nature* 427(6974):533-536; Spalding et al. 2010. *World Atlas of Mangroves* (Earthscan London and Washington DC); Waite et al. 2014. *Coastal capital: ecosystem valuation for decision making in the Caribbean*. World Resources Institute; De Groot et al. 2012. Global estimates of the value of ecosystems and their services in monetary units. *Eco Serv* 1(1):50-61; Barbier 2015. Valuing the storm protection service of estuarine and coastal ecosystems. *Eco Serv* 11:32-38.

² McIvor et al. 2012. Storm surge reduction by mangroves. *The Nature Conservancy and Wetlands International*; Barbier 2016. The protective service of mangrove ecosystems: A review of valuation methods: *Marine Pollution Bulletin* special issue: "Turning the tide on mangrove loss". *Marine Pollution Bulletin*.

³ UNEP. 2014. *The Importance of Mangroves to People: A Call to Action*. J. van Bochove, E. Sullivan and T. Nakamura. United Nations Environment Programme World Conservation Monitoring Centre. Cambridge. Available from: http://apps.unep.org/publications/index.php?option=com_pub&task=download&file=011361_en; Danielsen et al. 2005. The Asian Tsunami: A Protective Role for Coastal Vegetation. *Science*, 310(5748):643.

⁴ Donato et al. 2011. "Mangroves among the most carbon-rich forests in the tropics." *Nature Geosci* 4(5): 293-297. *Estuaries* 2015. Coastal blue carbon 2015. Available from: <https://www.estuaries.org/bluecarbon>

⁵ Kauffman and Donato 2012. *Protocols for the measurement, monitoring and reporting of structure, biomass and carbon stocks in mangrove forests*. Center for International Forestry Research (CIFOR). Bogor, Indonesia. Available from: <http://www.cifor.org/nc/online-library/browse/view-publication/publication/3749.html>; Siikamäki et al. 2012. Global economic potential for reducing carbon dioxide emissions from mangrove loss. *PNAS* 109(36):14369-14374; EFE. 2014. Mexico is home to 5 pct of world's mangroves. EMIS Intelligence. Available from: [http://site.securities.com/php/search/doc?pc=AR&skin=emispro&dcid\[\]=432453030](http://site.securities.com/php/search/doc?pc=AR&skin=emispro&dcid[]=432453030)

⁶ Gilman et al. 2008. Threats to mangroves from climate change and adaptation options: A review. *Aquatic Botany*, 89(2):237-250; Cahoon et al. 2006. Coastal wetland vulnerability to relative sea-level rise: wetland elevation trends and process controls. In *Wetlands and natural resource management*, Springer, pp. 271-292.

⁷ FAO. 2005. *Global mangrove statistics*. FAO webpage. www.fao.org/forestry/mangrove/statistics/13547/en

⁸ Blankespoor et al. 2016. *Mangroves as protection from storm surges in a changing climate*. Policy Research working paper; no. WPS 7596. Washington, D.C., World Bank Group. <http://documents.worldbank.org/curated/en/2016/03/26067772/mangroves-protection-storm-surges-changing-climate>

⁹ UNEP. 2014. *The Importance of Mangroves to People: A Call to Action*. van Bochove, J., Sullivan, E., Nakamura, T. (Eds). UNEP World Conservation Monitoring Centre, Cambridge. 128 pp.

condition.¹⁰ This is manifested through the persistent decline in mangrove extent and health globally and poor success rate of restoration initiatives to date. It is estimated that, at current deforestation levels, in 25 years, close to 50% of Mexico's mangroves will have been eliminated.¹¹ To halt further decline, the development of pragmatic strategies to ensure sustainable use of mangrove ecosystems is of fundamental importance.

- 2.5 To foster sustainable use of mangrove ecosystems in Mexico, an integrated conservation and management approach will be piloted in the Alvarado Lagoon System (ALS), Veracruz, in light of its high social and ecological importance. The ALS is inhabited by more than 50,000 people, including indigenous communities, dependent on mangroves for subsistence, income, and cultural uses, among other ecosystem services. This system represents the third largest wetland in Mexico and one of the most productive estuarine-lagoon systems in the Gulf of Mexico, encompassing more than 100 inner lagoons of mangrove forest. It is characterized by a diversity of interactions with adjacent systems, particularly with an extensive coastal salt marsh, which contributes greatly to its biological productivity. In addition, the ALS lies along one of the most important waterfowl and shorebird continental migratory routes and provides critical habitat for a variety of endemic and threatened species including birds, reptiles, amphibians and mammals.¹² In fact, the lagoon is recognized as the most important regions in Veracruz for the conservation of the highly endangered manatee (*Trichechus manatus*).¹³ Composed of private and ejido lands, the ALS features 15,000 hectares of intact mangrove forests and more than 11,000 hectares of impacted mangroves with restoration potential.¹⁴ To date, over 2,554 ha of private conservation areas have been established in the ALS however no federal protected areas have been declared. Despite declaration as a RAMSAR site of international importance and prior designations as a wetland of national priority, this coastal wetland is among the most polluted lagoon systems in the State and is highly threatened by agriculture, cattle ranching, unsustainable fishing and timber harvest, and other activities.¹⁵ Between 2010 and 2013 alone, for example, over 15% of mangrove cover was replaced by pasture land for cattle. If this trend persists, the entire mangrove cover in this system will be lost in 20 years. This threatened lagoon system has drawn attention from national and international conservation organizations, which are addressing mangrove degradation through various conservation and restoration initiatives, as well as awareness building activities, within the ALS.
- 2.6 Under this TC, the management approach will be tested through an innovation platform consisting of a NatureServe, Pronatura Veracruz and Conservation Strategy Fund (CSF) collaboration. The approach will be tested within La Mojarra Ejido, where land is collectively managed and, thus, characterized by substantial ecosystem management complexity. Stakeholders in La Mojarra will be integrated into ecological, socioeconomic, and

¹⁰ Dungumaro, E.W. 2013. Biodiversity conservation and the poor: Practical issues beyond global conferences. *Natural Resources* 4:333-340.

¹¹ iLCP . 2015. The Mangroves of Mexico – By Numbers. International League of Conservation Photographers <http://voices.nationalgeographic.com/2015/02/03/the-mangroves-of-mexico-by-numbers/>

¹² Guentzel et al. 2011. The Alvarado lagoon-environment, impact, and conservation. In: Friedman, Adam G., *Lagoons: biology, management and environmental impact*, Hauppauge, Nova, 397-415.

¹³ Cruz-Escalona, V. H., Arreguin-Sanchez, F., Zetina-Rejon, M. 2007. Analysis of the ecosystem structure of Laguna Alvarado, western Gulf of Mexico, by means of a mass balance model. *Estuarine, Coastal and Shelf Science*, 72(1):155-167.

¹⁴ Pronatura, unpublished data.

¹⁵ Espino. 2013. Integrated Assessment and Management of the Gulf of Mexico Large Marine Ecosystem. Diagnosis of the present state of Gulf of Mexico wetlands regarding geological, physical, biological, fluvial anthropological, and social aspects. http://gomlme.iwlearn.org/en/document-center/coastal-lagoons/diagnosis-of-the-present-state-of-gulf-of-mexico-wetlands-regarding-geological-physical-biological-fluvial-anthropological-and-social-aspects/at_download/file

socioecological assessments through an adaptive process¹⁶ and project activities will culminate in mangrove system management planning for the local level. With NGO and government agency collaboration, an integrated stakeholder vision and management plan will be developed for mangrove ecosystem use ensuring natural capital and biodiversity protection, conservation, and resilience. Based on the experience in the Ejido, which shares a similar legal context and legal mechanisms as private lands,¹⁷ the project team will develop a management model, consisting of a written and visual guide detailing stakeholder-integrated processes. It is expected the model will serve as a toolbox containing best practices and lessons learned to guide government agencies and conservation and development organizations in Latin American and the Caribbean (LAC) in developing and implementing sustainable mangrove management plans with their own stakeholders.

- 2.6 This TC is consistent with the IDB Country Strategy with Mexico (2013-2018), which includes reducing vulnerability and enhancing adaptation to climate change, as well as improving conservation and sustainable use of ecosystem services. The strategy also emphasizes increasing resilience within productive systems while addressing the needs of vulnerable populations. This strategy is aligned with the Convention on Biological Diversity's (CBD) Strategic Plan for Biodiversity (2011-2020) and Aichi Biodiversity Targets, which emphasize the participation of indigenous communities as an essential component for the conservation of ecosystems and associated livelihoods (Target 14). This TC will support the Government of Mexico in the implementation of its National Biodiversity Strategy (CONABIO 2000),¹⁸ specifically a project to develop a program of long term, systematic monitoring of mangroves of Mexico. Protecting the ALS is recognized as a high priority by CONAFOR and national, regional, and municipal governments, in light of the environmental services the lagoon system provides. The TC is consistent with CONAFOR's National Forest Program (2014-2018),¹⁹ as well as the National Climate Change Strategy (Federal Government of Mexico 2013).²⁰ This operation is aligned with the GCI-9 priorities of (ii) climate change, sustainable energy and environmental sustainability. Lastly, the project is also aligned with the objectives of the Environment and Biodiversity Sector Framework Document (GN-2827-3) §5.1: "[support for the] *continuity and functionality of land and marine ecosystems and their ability to supply goods and services to the economy and contribute to the livelihoods of the population, especially the most marginalized*" and Gender and Diversity Sector Framework Document (GN-2800) §5.8: "*support for strategies to protect ecosystems and provide livelihood opportunities for indigenous peoples*". Lastly, the proposed TC is consistent with the BIO Program priorities, while expected outputs and products are fully consistent with two of its lines of action, namely (i) protecting ecosystems with regionally significant biodiversity and (ii) supporting effective environmental governance.

III. Description of activities/components and budget

A. Description of Activities

- 3.1 The proposed components and activities described below are designed to bring together conservation science, ecosystem valuation, and local capacity-building, offering a scalable, bottom-up approach that engenders stakeholder responsibility for long-term sustainability of

¹⁶ Lynam et al. 2007. A review of tools for incorporating community knowledge, preferences and values into decision making in natural resources management.

¹⁷ Over one third of mangrove forests in Veracruz are associated with ejido lands (Pronatura, pers.comm.).

¹⁸ http://www.conabio.gob.mx/conocimiento/estrategia_nacional/doctos/pdf/ENB.pdf

¹⁹ <http://www.conafor.gob.mx/web/apoyos/apoyos-2016/>

²⁰ http://www.semarnat.gob.mx/archivosanteriores/informacionambiental/Documents/06_otras/ENCC.pdf

healthy mangrove ecosystems. This project builds upon national mangrove conservation and management initiatives, including valuation of mangrove ecosystem services, being carried out by INECC, CONAFOR and other stakeholders, including civil society. TC results will also complement ongoing mangrove conservation and management initiatives within the wider IDB portfolio (HO-T1227: Update local mangrove inventories, conservation, mitigation and adaptation to climate change in indigenous and afro-descendant territories, EC-M1078: Mangrove management led by their own communities, in preparation).

- 3.2 **Component 1. Stakeholder Engagement and Assessment in ALS.** A comprehensive assessment of all stakeholders (landowners, land users, communities, NGOs, research institutes, municipal governments, CONAFOR, CONANP, and others) will be completed in the pilot site, La Mojarra Ejido,²¹ to provide insight into the nature of stakeholder relationships and interests within the mangrove ecosystem. Using participatory appraisal methods, connections will be identified between stakeholders and mangrove natural capital and biodiversity resilience. Expected results include mapping of natural resource governance, stakeholder benefits, power relations, and conflicts that impact maintenance of the ecosystem. This information will be used to design a strategy to involve local stakeholders in subsequent project components for more effective implementation of each activity.
- 3.3 **Component 2. Ecological Assessment of Pilot Site Mangrove Ecosystem.** Under this component, an ecological assessment will be conducted to evaluate pilot site ecosystem condition²² and help project future risks. Using NatureServe's tested Ecological Integrity Assessment (EIA) framework,²³ the structure, composition, and function of the ecosystem will be assessed; pilot site condition will be compared to a high quality (well-protected) mangrove reference site; and a future risk projection will be completed for the pilot site and lagoon under a business as usual scenario. The EIA will document the current status of mangrove forests in the ALS, including relationships between landscape, vegetation, hydrology and soils, and between these factors and faunal indicators and stressors. This component will establish quantitative metrics and baseline values to track ecosystem condition over time. Involvement in assessment activities and access to ecological data will enhance the monitoring capacity of municipal governments, SEMARNAT, CONAFOR and CONANP in mangrove ecosystems. In addition, ecological attributes will be linked to the ecosystem services assessed through economic valuation under Component 3 to demonstrate the link between ecosystem condition and the value of goods and services provided to local communities.
- 3.4 **Component 3. Socioeconomic and Socioecological Assessment of Mangrove Use.** Under this component, socioeconomic and socioecological assessments will be carried out in participatory workshops with La Mojarra stakeholders to improve local understanding of (i) stakeholder decision making; (ii) the link between ecological functions and human well-being; and (iii) the factors influencing integrity and resilience of mangrove natural capital.

²¹ Roughly 210 people live on the ejido lands (800 hectares), and many more depend on them for their livelihoods.

²² *Lindenmayer and Franklin. 2002. Conserving forest biodiversity: A comprehensive multiscaled approach.* Island Press, Washington, DC. 351 pp; Young and Sanzone (ed.). 2002. A framework for assessing and reporting on ecological condition. Prepared by the Ecological Reporting Panel, Ecological Processes and Effects Committee. EPA Science Advisory Board. Washington, DC. 142 pp.; *Fennessy et al. 2007. An evaluation of rapid methods for assessing the ecological condition of wetlands.* *Wetland* 27:543-560.

²³ Faber-Langendoen et al. 2012. Assessment of wetland ecosystem condition across landscape regions: A multi-metric approach. Part B. Ecological Integrity Assessment protocols for rapid field methods (L2). EPA/600/R-12/021b. U.S. Environmental Protection Agency Office of Research and Development, Washington, DC. See also: <http://www.natureserve.org/conservation-tools/ecological-integrity-assessment>.

The socioeconomic assessment will address tradeoffs associated with various mangrove use and management scenarios including those related to ecosystem services provisioning and social and economic benefits. For example, current mangrove use scenarios will be compared with more sustainable forms of management, such as mangrove restoration for fish and forestry production, and potentially tourism. The assessment will take into account the institutional factors (legislation and government authorities) influencing mangrove use and management in La Mojarra/ALS. The socioecological assessment will evaluate the relationships between ecosystem condition and stakeholder well-being, with an emphasis on natural capital gains and losses related to system stressors and mangrove management alternatives. Under this component, local stakeholders will be provided with basic tools to measure and value locally relevant ecosystem services provisioning resulting from management decisions over time.

- 3.5 **Component 4. Mangrove Ecosystem Management Plan and Replicable Model.** This component will contribute a sustainable mangrove ecosystem management plan and replicable model which ensures natural capital and biodiversity resilience to anthropogenic and natural stressors in ALS and elsewhere. Under this component, a scenario-building process will be carried out with stakeholders within the ALS to develop a collective vision for sustainable mangrove use in the future.²⁴ To enable the achievement of this vision, stakeholders will be guided in the design of a Mangrove Ecosystem Management Plan within ALS. The final Management Plan will reflect and integrate EIA outputs, socioeconomic and socioecological assessments and stakeholder decisions. The plans will be structured to encompass: (i) goal(s) statement; (ii) management activities; (iii) responsibilities; (iv) monitoring indicators; (v) evaluation criteria; and (vi) a process for adaptive management. Based on the experience at the pilot site, a scalable model will be refined, resulting in a written and visual guide detailing the step-by-step process of stakeholder engagement, ecological integrity assessment, projection scenario, socioeconomic and socioecological assessments, scenario building, and management planning. This model will be incorporated into a final report containing best practices and lessons learned that can be applied for integrated conservation, restoration and management of mangrove ecosystems throughout LAC. The final report will be disseminated to local stakeholders, NGOs, environmental and natural resource agencies, research institutes, and key decision makers from Mexico and elsewhere in LAC. Though it is not possible to measure the level of uptake of the management model during the life of the project, it is expected the management model will be applied outside the ALS within five years.

²⁴ Evans et al. 2008. Future Scenarios as a Tool for Collaboration in Forest Communities. *Sapiens*1(2); *Wollenberg et al. 2000*. Anticipating change: scenarios as a tool for adaptive forest management: a guide. CIFOR. Bogor, Indonesia. <http://www.cifor.org/library/744/anticipating-change-scenarios-as-a-tool-for-adaptive-forest-management-a-guide/>

Table 1. Results Matrix

Activity/Component	Output	Unit of measure	Target	Target Year	Means of verification	Cost (\$USD)	Outcome
General	--	--	--	--	--	--	Increased capacity of resource users and decision-makers to conserve and manage mangrove ecosystems in the wider Latin America and Caribbean.
Component 1. Stakeholder engagement and assessment in ALS	Output 1. Report on stakeholder assessment completed.	Report	1	2017	Final Report	\$22,500	Enhanced understanding of mangrove ecosystem stakeholders and interests (resource users and decision-makers) in ALS.
Component 2. Ecological Assessment of Pilot Site Mangrove Ecosystem	Output 2. Report of i) ecological integrity assessment for pilot project site and reference site in the ALS, and ii) future risk projection for pilot site and ALS completed.	Report	1	2017	Final Report	\$40,000	Demonstration of the link between mangrove condition and goods and services provisioning. Metrics and baseline established to track mangrove ecosystem condition over time.
Component 3. Socioeconomic and Socioecological Assessments of Mangrove Use	Output 3. Report on socioeconomic and socioecological assessment in pilot site completed.	Report	1	2017	Final Report	\$93,200	Increased local awareness of mangrove ecosystem values among resource users and decision makers, as well as an enhanced understanding of stakeholder decision-making in ALS mangrove ecosystem.
Component 4. Mangrove Ecosystem Management Plan and Replicable Model	Output 4a. Report describing stakeholder vision and detailing scenario-building process and results completed.	Report	1	2018	Interim Report	40,100	Output 4a and 4b feed directly into outputs 4c and 4d. Outputs 4c and 4d will lead to the application of final management model within and outside of the ALS, resulting in increased capacity of local resource users and decision-makers to conserve, restore and manage mangrove ecosystems to ensure natural capital and biodiversity resilience to anthropogenic and natural stressors in ALS and the wider Latin America and Caribbean.
	Output 4b. Document describing Mangrove Ecosystem Management Plan completed.	Document	1	2018	Final Management Plan	40,100	
	Output 4c. Report describing replicable mangrove ecosystem management model completed.	Report	1	2018	Final Report	40,100	
	Output 4d. Mangrove ecosystem management model dissemination workshop held.	Workshop	1	2018	Workshop in Mexico	20,000	

3.6. The total budget for this TC has been estimated at US\$300,000 as shown in Table 2.

Table 2. Indicative Budget

Activity/Component	Description	IDB/BIO funding (US\$)	Counter part funding (US\$)	Total Financing (US\$)
Component 1. Stakeholder engagement and assessment in ALS	Stakeholder mapping and analysis	22,500	--	22,500
Component 2. Ecological Assessment of Pilot Site Mangrove Ecosystem	Ecological assessment mangrove ecosystem condition for pilot site and future risk projection for pilot site and ALS.	44,000	--	44,000
Component 3. Socioeconomic and Socioecological Assessments of Mangrove Use	Socioeconomic and socioecological assessments with local stakeholders in pilot site.	93,200	--	93,200
Component 4. Mangrove Ecosystem Management Plan and Replicable Model	Participatory activities with local stakeholders to develop mangrove ecosystem management plan for pilot site. Elaboration of replicable mangrove ecosystem management model and final report. Dissemination of model and report.	140,300	--	140,300
Total		300,000	--	300,000

IV. Executing agency and execution structure

- 4.1. The TC will be executed by the CSD/RND department BIO program within the Bank. The project team recommends the sole source selection method (SSS) to contract NatureServe based on experience of exceptional worth.²⁵ The NatureServe team is uniquely positioned to contribute expertise from a cadre of international specialists in biodiversity and conservation science and help bring together the methods, tools, and scientific data (ecological, social and economic) needed to respond to climate change and natural disasters, understand and abate threats, restore ecosystems, and support resilient coastlines. Moreover, NatureServe is a leader in developing methods and tools for species and ecosystem assessment across a variety of geographies, ecosystems, and scales.²⁶ Such tools include NatureServe's Ecological Integrity Assessment Framework,²⁷ which incorporates a multi-level framework and multiple metrics, and has been applied in wetlands across North America²⁸.
- 4.2 NatureServe will serve as the backbone of the innovation platform, leading ecological integrity assessments and will sub-contract Pronatura Veracruz and CSF for collaborative efforts throughout the project. Pronatura, a trusted NatureServe partner, will be involved in all project components and will lead community outreach and training efforts. Pronatura Veracruz is a non-profit organization that for 12 years has blended stakeholder engagement, scientific research, innovation, conservation and community sustainability to restore and manage mangroves in the ALS. CSF, involved in all components except Component 2, will

²⁵ NatureServe is the hub and bridge of the more than 80 member NatureServe Network connecting science with conservation, linking member programs in 12 countries in Latin America.

²⁶ <http://www.natureserve.org/conservation-tools/data-maps-tools>

²⁷ <http://www.natureserve.org/conservation-tools/ecological-integrity-assessment>.

²⁸ NatureServe's proficiency in biodiversity assessment and monitoring, and stakeholder engagement and training for improved resource management, has been substantiated in previous work with IDB. These efforts include: i) technical guidance for the development *BK-C0147: Instruments and Operational Tools for Environmental and Social Risk Management* and ii) technical guidance, training, and stakeholder engagement to support *BO-T1043: Participatory Biodiversity Management for Environmental Policy & Planning*.

lead ecosystem services valuation. CSF, an international NGO and winner of the 2012 MacArthur Foundation Award for Creative and Effective Institutions, has demonstrated success in sustaining natural ecosystems and human communities through enhanced use of economic tools in conservation efforts. The project team will work closely with key environmental and natural resource agencies throughout the project. CONAFOR will provide technical and legal guidance, for example, regarding the sustainable use of mangrove wood. The Ecological Institute (INECOL) will share information related to ecological monitoring and introduce themes for mangrove management. CONANP and SEMARNAT will participate in workshops to share and disseminate information, including legal guidance. Municipal governments will be involved in announcing workshops and disseminating project results.

- 4.3 The CSD/RND Department BIO Program will provide overall supervision of the Project through the natural resource specialist (CSD/RND), based in Washington, DC. The Bank will hire individual consultants and firms according to current Bank policies and procedures.

V. Major issues

- 5.1 The primary risk associated with this TC is the potential lack of participation or commitment of ALS stakeholders in the assessments and management planning activities. This risk is mitigated by the extensive experience of NatureServe and partners in stakeholder engagement and the trust they have built with local populations. Any risk related to a lack of utilization of the mangrove ecosystem management plan and toolkit disseminated for application in other mangrove ecosystem will be mitigated by directly involving key policymakers throughout the implementation of the project, and by widely disseminating knowledge products throughout the Region upon its completion. Climate change is a long-term risk factor in the ALS however related impacts should not have any measurable impact on project activities. Nonetheless, climate change will likely have significant impacts on hydrological flows and critical habitats in the future, which will influence ecosystem goods and services provisioning and, ultimately, human well-being. The assessments proposed under this TC will incorporate scenarios associated with climate change impacts, and the management model will be designed to be adaptive to a changing climate.

VI. Exceptions to Bank policy

- 6.1 None.

VII. Environmental and Social Strategy

- 7.1 Activities to be financed in this TC are anticipated to have only positive direct or indirect social or environmental impacts. The TC is classified as Category "C" pursuant to the Bank's Environment and Safeguards Compliance Policy (OP 703): (i) no environmental or social risks; and (ii) direct contribution to solve an environmental issue. See [Safeguard Policy Report](#). The TC is designed to support the implementation of the National Biodiversity Strategy of Mexico, it is expected the results will positively impact the conservation of mangrove ecosystems, with important benefits for local communities. The operation follows the Operational Policy on Indigenous Peoples (OP-765).

Required Annexes:

[Annex I: Letter of request](#)

[Annex II: Procurement Plan](#)

[Annex III: Terms of Reference – Consultancy –](#)