



1. Project Data

Project ID P131408	Project Name BZ Marine Conserv & Climate Adaptation	
Country Belize	Practice Area(Lead) Environment, Natural Resources & the Blue Economy	
L/C/TF Number(s) TF-18449	Closing Date (Original) 31-Mar-2020	Total Project Cost (USD) 5,160,605.70
Bank Approval Date 03-Mar-2015	Closing Date (Actual) 30-Sep-2020	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	5,530,000.00	5,530,000.00
Revised Commitment	5,160,605.70	5,160,605.70
Actual	5,160,605.70	5,160,605.70

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2. Project Objectives and Components

a. Objectives

The objective of the project was to implement priority ecosystem-based marine conservation and climate adaptation measures to strengthen the climate resilience of the Belize Barrier Reef System (Grant Agreement, Schedule 1, page 6), which was stated identically in PAD (page vii).



Based on the PDO formulation, this assessment regards the PDO to be “to strengthen the climate resilience of the Belize Barrier Reef System,” an objective which was to be achieved through implementing priority ecosystem-based marine conservation and climate adaptation measures.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

06-May-2019

c. Will a split evaluation be undertaken?

Yes

d. Components

Component 1. Improving the Protection Regime of Marine and Coastal Ecosystems (Estimated: US\$2.0 million; Actual: US\$2.54 million, 127 percent of the original estimate) intended to strengthen: (a) regulatory and institutional measures to expand and improve the management of Marine Protected Areas (MPAs) and (b) physical measures to restore the reef. This component comprised four sub-components: (i) supporting refinement and demarcation of the boundary and no-take zones for the Turneffe Atoll Marine Reserve (a new marine reserve declared in 2012 during project preparation), as well as realigning or expanding the boundaries and no-take zones for the South Water Caye Marine Reserve and the Corozal Bay Wildlife Sanctuary, through participatory processes involving the surrounding communities, in order to achieve about 20.2% of area under protection and creating replenishment zones in the selected MPAs; (ii) promoting effective management of the selected MPAs, including their replenishment fishing zones; (iii) repopulating coral reefs within replenishment fishing zones; and (iv) strengthening the legal framework for the management of Belize’s MPA network and coastal zone.

Component 2. Promotion of Viable Alternative Livelihoods (Estimated: US\$2.45 million; Actual: US\$1.67 million, 68 percent of the original estimate) intended to reduce the local anthropogenic stressors on the marine resource base by providing grant financing to promote economically viable and sustainable alternative livelihoods for communities adversely impacted by climate change and by the expansion and consolidation of MPAs and replenishment zones under the project. This component comprised three sub-components: (i) supporting community mobilization for the development of alternative livelihoods; (ii) carrying out alternative livelihoods sub-projects; and (iii) capacity building to transition to economically viable and sustainable alternative livelihoods through business and occupational skills training.

Component 3. Raising Awareness and Building Local Capacity (Estimated: US\$0.56 million; Actual: US\$0.61 million, 109 percent of the original estimate) intended to build support for the National Protected Areas Policy and System Plan, to build local capacity to develop and explore climate resilience strategies, and to promote behavior change designed to minimize climate risks in MPAs and replenishment zones. This component’s activities included: conducting a climate change knowledge, attitude, and behavioral



practice survey, disseminating the project information, establishing a coordinated behavior change communication strategy, and promoting inter-community learning and dialogue.

Component 4. Project Management, Monitoring and Assessment (Estimated: US\$0.52 million; Actual: US\$0.34 million, 65 percent of the original estimate) intended to support project management and implementation, including technical, administrative, and fiduciary support and compliance with environmental and social safeguards; and monitoring and evaluation, data collection, and stakeholder involvement and coordination.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: At appraisal, the total project cost was estimated to be US\$7.31 million (PAD, page vii). At project closing, the total actual cost was US\$5.16 million (ICR, page 2). The difference between estimated and actual costs was due to the Government's in-kind contribution that was included in the appraisal estimate.

Financing: At appraisal, the project was expected to be funded by US\$5.53 million grant by the Adaptation Fund and US\$1.78 million in-kind contribution by the Government (PAD, para 29). At project closing, the project executed US\$5.16 million grant (93% of the original amount) (ICR, page 2). The grant account with the remaining amount of US\$369,394.30 was cancelled and closed after the project closing (Letter on Cancellation and Closing of Grant Account, dated March 4, 2021).

Dates: The project was approved on March 3, 2015, and became effective on July 15 in the same year. The Mid-Term Review (MTR) was completed on April 3, 2018. The project was closed on September 30, 2020, six months after the original closing date of March 31, 2020. The account of the Adaptation Fund Grant was cancelled and closed on January 30, 2021.

Restructuring: There were two restructurings in May 2019 and January 2020. In the first restructuring, the results framework and components were revised, as well as costs were reallocated between disbursement categories. In the second restructuring, the project duration was extended for six months to complete implementation of project activities.

The pre-restructuring period covered from the project approval in March 2015 to the first restructuring in May 2019. The post-restructuring period covered from June 2019 until the project closing in September 2020. The share of actual credit disbursements made by each period was as follows: 69% (US\$3.55 million) and 31% (US\$1.61 million).

Split Evaluation: The project's scope was downscaled, and three of the four outcome targets were revised downwards in the restructuring in May 2019, in consideration of the long-term nature of the intended outcomes (i.e. strengthening climate resilience of an ecosystem, changing behaviors of communities) to become observable. As the scope of the project shrank and project commitments remained approximately at the same level, IEG concurred with the ICR team that a split rating of the outcome was deemed necessary.



3. Relevance of Objectives

Rationale

Country and Sector Context. As a small island development state with extensive and low-lying coastal areas, Belize is vulnerable to the adverse impacts of climate change. The value of ecosystem services generated by the coral reefs and mangroves was estimated to contribute between 15% and 22% of GDP in Belize (in the range of US\$395–559 million per year) (WRI, 2008). Of the ecosystem services, tourism accounted for over 15% of GDP by providing a large amount of foreign exchange earnings and employment (PAD, para 6). Given Belize's location and vulnerability to climate change, one effective way of adapting to climate change was through the promotion of ecosystem-based adaptation measures that strengthen the resilience of the reef and associated habitats. The Belize Barrier Reef was classified as one of the world's marine hotspots with an abundance of globally and locally significant biodiversity. Climate change induced destabilization of the barrier reef ecosystem, affecting livelihoods of coastal communities. Increased sea-surface temperatures and intensified coral bleaching caused declines in fisheries stocks, endangering livelihoods of people who were dependent on catch fishing. The Belize Barrier Reef not only provided resources for fishing and tourism, but also sheltered the country's extensive coast from high velocity winds that caused erosion and coastal damage. In the Belize Barrier Reef, the Turneffe Atoll Marine Reserve, the South Water Caye Marine Reserve, and the Corozal Bay Wildlife Sanctuary were targeted by the project due to their criticality in terms of the integrity and connectivity of marine ecosystem and climate impacts (PAD, para 21).

Relevance to Bank Assistance Strategies. At appraisal, the project was expected to contribute to *Results Area 3: Investment to strengthen climate resilience* in the Bank's Country Partnership Strategy (CPS) FY2012-2015 (CPS, para 76). At project closing, the project was aligned with *Focus Area 1. Fostering Climate Resilience and Environmental Sustainability* and *Objective 1b. Enhancing sustainable natural resource management in target areas* in the Bank's Country Partnership Framework (CPF) FY2018-2022 (CPF, page 30). The CPF was informed by the Systematic Country Diagnostic (SCD) 2016, which empathized the importance of the Belize Barrier Reef as a basis of economic activities and a shelter from coastal erosions (SCD, para 28).

Relevance to Government Strategies. Throughout the project duration, the project objective was aligned with the National Development Framework 2010-2030 (called Horizon 2030). Horizon 2030 (page 34) stated that incorporating environmental sustainability into development planning and strengthening protected areas management as strategies for promoting sustainable social and economic development. In addition, the coastal and marine resources sector was identified as one of the priority sectors to build climate resilience in the Nationally Determined Contribution (NDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 (NDC, page 12). At appraisal, the project was aligned with the 2005 National Protected Areas System Plan (NPASP), which provided recommendations and identified targets to enhance management of protected areas in accordance with the country's commitments the Convention of Biological Diversity (CBD). At project closing, the project objective was also in line with the National Biodiversity Strategy and Action Plan 2016-2020 submitted to the CBD, which promoted comprehensive use and management of Belize's biological resources.

Clarity and Ambition of the Objective. The formulation of the objective captured only PDO Outcome 1 on the improvements in the protection regime of marine and coastal ecosystems and did not adequately capture PDO Outcomes 2 and 3 on the strengthened capacity and resilience as well as the improved knowledge and practices of communities who depend on the reef (ICR, para 65). Logical paths to derive intended



outcomes from planned outputs and activities were not explicitly presented in the PAD. The vagueness in the objective and the results chain negatively affected the project design to set the project scope at an appropriate level.

The objective was highly relevant to the strategies and plans of the Bank and the Government. Considerations on the institutional capacity and realism were sufficient for the government and agencies, but could have been more thorough for the communities. Moreover, the objective could have been more precisely worded to include its targeted outcomes through community-based activities. Overall, the relevance of objective is rated substantial.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To strengthen the climate resilience of the Belize Barrier Reef System

Rationale

Under this objective, this ICRR separately presents and assesses the three PDO outcomes, that are, coral reef protection regime improved, livelihoods of affected users of the reef diversified, and the value of marine conservation and impacts of climate change are understood by local people.

Original PDO Outcome 1: Coral reef protection regime improved

Theory of Change:

The PDO Outcome 1's theory of change envisioned that project activities such as creating spatial maps and revising zoning of the selected Marine Protected Areas (MPAs) through field verification and consultation, incorporating the maps in the management plans of the selected MPAs, and re-demarcating the MPAs would result in outputs such as expansion and consolidation of the MPAs. The project activities such as strengthening surveillance, monitoring, and enforcement, and supporting biological and water quality monitoring would result in outputs such as promotion of effective management of selected MPAs. The project activities such as establishing coral nurseries and out-planting corals in replenishment zones would result in outputs such as repopulation of coral reefs. The project activities such as reforming the legal and institutional framework for protected areas, reviewing the mangrove regulations, reforming the Coastal Zone Management Act, and implementing an Integrated Coastal Zone Management plan would result in outputs such as strengthened legal framework for the management of MPAs and coastal zones. *A critical assumption here was that enabling legislative framework would improve effectiveness of MPA management.* Those outputs on expanding and realigning the selected MPAs and creating replenishment zones within the MPAs, enhancing management of the MPAs, strengthening the legal framework for management of the MPAs and the



coastal zone, and repopulating coral reefs within replenishment zones would result in the intermediate outcome on **coral reef protection regime improved**. *Critical assumptions here were: (i) establishing replenishment zones and restoring coral reefs would produce intended adaptation benefits; and (ii) improved effectiveness of the management of the MPAs would reduce stressors to the ecosystems.*

Outputs:

- The actual achieved for the indicators on the Management Effectiveness Tracking Tool (METT) scores for the three MPAs could not be compared with the original target, as the achieved values were measured in a scale ranging from 0 to 1, while the original baselines and targets were in a scale ranging from 1 to 4. Therefore, the actual achieved could not be compared with the original target of 3.50. These indicators were replaced with revised indicators at the restructuring in 2019, please refer to descriptions under the revised PDO Outcome 1 below.
- 12 coral sites with total area of 1,400 square meters were restored in the South Water Caye Marine Reserve and the Turneffe Atoll Marine Reserve with 28,927 out-planted corals, surpassing the target of 6 sites (200% of the original target). However, these sites have not yet reached their full potential of 300 square meters per site as set in the original targets, as the coral replenishment would take at least 5 years while the restoration was initiated in 2017 (ICR, page 36).
- Baselines for the monitoring of adherence to Integrated Coastal Zone Management Plan guidelines were established in 3 regions (northern, central, and southern Belize), meeting the target of 3 (100% of the revised target). The project completed geographic information system mapping inventory of three coastal planning regions.

In addition to the outputs in the RF, the ICR reported on the following achieved outputs. None of them had formal targets.

- MPA boundaries and zoning maps were redrawn based on remote sensing data and verified through observations and consultations in the fields (ICR, page 40). The project took a participatory process with stakeholders, in particular fisher households in the 12 coastal communities that were to be affected by the MPA expansion/realignment, to share the new zoning schemes and to resolve existing and potential conflicts with respect to the proposed management schemes, thereby enhancing the effectiveness and sustainability of proposed actions (ICR, para 28).
- Of legislation to improve the legal framework for the management of MPAs and coastal zones, the Forest (Protection of Mangroves) Regulations 2018 were updated and entered into force. On the other hand, legislation to update the MPA boundaries and zoning and the Coastal Zone Management Act 1998 was not completed, though the underlying conditions and the technical basis for adoption of legislation were improved.

Outcomes:

The achievements of outcomes are measured by three PDO outcome indicators below.

- Marine areas of 405,512 hectare (ha) were under biodiversity protection, progressing from the baseline of 248,810 ha and achieving the target of 386,612 ha (105% of the original target). The MPAs expanded to 21.2% of territorial waters (ICR, para 27), surpassing the indicative target of 20.2% as defined in the National Protected Areas System Plan (NPASP) in a participatory manner (PAD, para 21). However, by appraisal, Belize's MPA system had already been expanded to about 20% of



the country's territorial sea in terms of designation (PAD, para 18 in Annex 2). This indicator might not be fully adequate to measure the project's contribution to PDO Outcome 1, as described in Section 9.a.

- Replenishment zones of 58,699 ha were under biodiversity protection, progressing from the baseline of 38,278 ha and almost achieving the target of 59,331 ha (98% of the original target). The project increased marine replenishment zones from approximately 2% to 3% of territorial waters, almost achieving the indicative target of 3.1% as defined in the NPASP in a participatory manner (PAD, para 21).
- Coastline in kilometers (km) brought under biodiversity protection was not measurable, thus not achieved the target of 386 km (0% of the original target). At appraisal, this indicator was intended to be measured by no net loss of mangrove coverage (PAD, page 16). Such data for the entire coastline covering 9 planning regions was not available to set a reliable baseline and monitor a progress under the project (ICR, page 32). This indicator was replaced with a revised indicator at the restructuring in 2019. Please also refer to descriptions under the revised PDO Outcome 1.

Expansion of marine areas under biodiversity protection was achieved, though there was a lack of a relevant indicator to adequately measure the expansion of marine areas under protection. Expansion of replenishment zones was almost fully achieved. Coastline brought under biodiversity protection was not measurable due to lack of data. Overall, the original PDO Outcome 1 was substantially achieved, as the first of the three outcome indicators presented above was achieved, but with an indicator that is not fully relevant, the second was very nearly achieved and the third was not measured and was removed at restructuring.

Original PDO Outcome 2: Livelihoods of affected users of the reef diversified

Theory of Change:

The PDO Outcome 2's theory of change envisioned the project inputs/activities such as providing training on business and occupational skills to communities, conducting community needs assessments and participatory workshops for planning alternative livelihoods sub-projects would result in the outputs such as the developments of the sub-projects. Further building upon the outputs, the project activities on supporting implementation of alternative livelihoods sub-projects with relevant training would result in intermediate outcomes such as **livelihoods of the reef users affected by the expanded MPAs diversified**. *A critical assumption here was that the project activities were adequate to ensure the target population's willingness and capacities to adapt to alternative livelihoods.*

Providing training on business and occupational skills to communities would build their capacity for transition to economically viable and sustainable alternative livelihoods. Undertaking community needs assessments and participatory workshops for planning alternative livelihoods sub-projects would support community mobilization for development of the sub-projects. Implementing alternative livelihoods sub-projects and providing relevant training would **enhance income diversification of the reef users affected by the expanded MPAs**. *A critical assumption here was that the project activities were adequate to ensure the target population's willingness and capacities to adapt to alternative livelihoods.*

Outputs:

- 10 alternative livelihoods sub-projects were developed and completed, not meeting the target of 20 sub-projects (50% of the original target).



- Based on training needs assessment, 759 persons participated in training, not meeting the target of 2,000 participants (38% of the original target). 58% of the trainees were women, meeting the target of 30% (193% of the original target). The training in marketable individual skills sets were in line with customized training curriculum developed by the project, in subjects such as entrepreneurship, communications, and information technology; arranged learning exchanges; and facilitated community service, internships, external examinations, and trade licenses for participants.
- 1,535 users of the reef benefited directly through participation in the occupational and skills training and the implementation of the 10 sub-projects, not achieving the target of 2,500 (61% of the revised target). Of which, women were 49.5%, achieving the target of 30% (110% of the original target). This indicator was designed as a PDO outcome indicator by the project; however, the number of direct beneficiaries is not sufficient to measure diversification of livelihoods of affected reef users, as described in Section 9.a.

In addition to the outputs in the RF, the ICR reported on the following achieved outputs. None of them had formal targets.

- 104 community mobilization meetings in the 12 targeted communities were held to develop sub-projects, recording 1,009 participants (of which 31% were women) (ICR, para 33).

Outcomes:

No outcome-level indicator was designed by the project, as described above and in Section 9.a. The ICR team provided additional evidence to make up for the missing indicator and to enable triangulation of data.

- Total additional income of US\$41,195.33 was generated by four out of ten sub-projects during project implementation (ICR, Table 3 in Annex 6). Not all sub-projects aimed to quantify the livelihoods benefits derived from the sub-projects, as some sub-projects intended to provide training for diversified livelihoods. Of the additional incomes, more than 93% came from one sub-project on enhancing organic vegetable production in Chunox Village, which supported 12 fishers and their families in Chunox Village to generate substantial additional income of BZ\$293 (approx. US\$147 equivalent) per month between March and July 2020 (ICR, footnote 7 in page 15).

Outcome-level achievements were observed in terms of the additional incomes generated by the sub-projects; however, the achievements did not provide an overview on outcome-level achievements by the whole sub-project portfolio. Overall, the original PDO Outcome 2 was modestly achieved.

Original PDO Outcome 3: The value of marine conservation and impacts of climate change are understood by local people

Theory of Change:

The PDO Outcome 3's theory of change envisioned that the project outputs such as a knowledge and awareness raising programs, dissemination of the project information, and a coordinated behavior change communication strategy would result in the intermediate outcomes such as **raised awareness and built local capacity for climate adaptation measures**. *A critical assumption here was that the project activities would effectively induce behavior changes of the target population in a timely manner.*



Outputs:

- 18 behavior change communication campaigns were conducted for the target communities, surpassing the target of 12 campaigns (150% of the original target). The campaigns reached 2,371 fishers and community members.

In addition to the outputs in the RF, the ICR reported on the following achieved outputs. None of them had formal targets.

- For youth: training courses, field trips, community events, and internships were held to raise awareness and increase capacity on climate change mitigation and adoption (ICR, para 40).
- For teachers: training on delivering climate change instructions to students and other teachers were conducted; and training manuals were developed and distributed (ICR, para 40).
- A climate change unit was developed and introduced into the secondary school curriculum by the Ministry of Education, which also expressed interest in implementing the same approach at the primary level. (ICR, para 40). This new curriculum comprised classroom interactions, field trips, and detailed workbooks, and was complemented by comprehensive teacher-training modules (RD comments).

In addition to the outputs in the RF, the project team provided information on June 28, 2021 (RD comments) reporting on the following achieved outputs. None of them had formal targets.

- Boat-to-boat sharing events were organized for 230 fishers that built an important community across the fisheries supply chain to share information and new technologies.
- 10 community events were organized, reaching 2,380 community members and 610 fishers from over 18 communities, in order to launch a discussion around climate change.
- The topic of climate change was included in the Punta Fuego drama and talk show (over 20 episodes), which was expected to have an influence on popular culture.
- The annual Women in Fisheries Forum was initiated as a safe space for women in the fishing industry and the fisheries value chain were enabled to come together to talk about their challenges and discuss possible solutions.

Outcomes:

The achievements of outcomes were measured by one PDO outcome indicator. No indicator for the climate change education in the secondary schools was designed as the outcome was unintended (See Section 10.c.)

- According to the knowledge, attitude, and behavioral practice survey carried out in 2020, the change of attitude and/or behavior was observed in 38.3% of targeted beneficiaries, progressing from the baseline of 32% but not meeting the target of 75% (51% of the original target). The level of climate change knowledge and practice among the target population improved by 6.3 percentage points (absolute) or 20 percent (relative) (ICR, para 40). The low achievement of the PDO outcome indicator was due to the late commencement of the behavior change and communications strategy, which commenced in late 2018 and limited the time to implement the activities aimed at achieving the PDO outcome indicator (ICR, para 41). This indicator was replaced with a downscaled indicator at the restructuring in 2019, as described in the revised PDO Outcome 3.



- Climate change education at the secondary level was initiated nation-wide, in collaboration with the Ministry of Education, according to Belizean Studies Curriculum: Second form Belizean Studies Learning Outcomes (2019) (ICR, page 47). Studies showed that climate change education influences individual behavior, and, if applied at scale, were able to generate substantial positive impact (ICR, footnote 10 in page 17). The activity on climate change education was not originally planned, thus not measured by any indicator. The quality and effectiveness of the climate change unit to induce behavior change among the affected reef users or the youth were not fully assessed by the project. To what extent the climate change education would contribute to behavior change in the long-term was still to be observed. Nevertheless, as the Barrier Reef ecosystem extended beyond the targeted communities, scaling up the climate change education to the national level by engaging the Ministry of Education would cement gains from ecosystem-based adaptation measures.

The change of attitude and/or behavior caused by the project was observed in less than 40% of the targeted beneficiaries, due to the late commencement of the behavior change and communications strategy. An outcome-level achievement was observed in terms of climate change education initiated in secondary schools nation-wide, which was expected to enhance young people's understanding on climate change. The evidence on project-supported events and initiatives on awareness raising provided in additional team comments strengthened the evidence on a wide range of attempts to raise awareness of populations by adopting multiple approaches. This additional evidence was not originally intended and captured by the RF, but implied there was a possibility of having a lasting impact on behaviors. Thus, the original PDO Outcome 3 was substantially achieved.

The achievements for the original PDO Outcome 1 was substantial. The legal framework for coral reef protection was improved through the updated regulation on protection of mangroves and the enhanced no-take zones. However, to what extent the legislations improved the protection of coral reef on the ground and to what extent the effectiveness of MPA management was improved were not clearly verified by outcome-level evidence. The achievements for the original PDO Outcome 2 was modest. The livelihood of the people especially the fisherfolks affected by the MPA expansion was diversified under some sub-projects that generated alternative incomes through vegetable production. Nevertheless, the livelihoods diversification was verified only in a part of target groups and the sustainability of the alternative livelihoods was uncertain. The achievements for the original PDO Outcome 3 was substantial. The understanding on the value of marine conservation and impacts of climate change among the local people who were vulnerable to climate change remained at a low level according to the survey results. So while the climate resilience was strengthened in terms of forest protection and awareness raising amongst the population was achieved, there was a limited evidence that people's vulnerability to climate change was adequately decreased. However, on balance the achievement of the original objective is rated substantial but with notable shortcomings.

Rating

Substantial

OBJECTIVE 1 REVISION 1

Revised Objective

To strengthen the climate resilience of the Belize Barrier Reef System (The Objective formulation was not revised but some PDO outcome indicators and targets were revised.)



Revised Rationale

Revised PDO 1: Coral reef protection regime improved (The PDO formulation was not revised but the third PDO outcome indicator and its target were revised.)

Theory of Change:

Revisions in the PDO outcome indicator and its targets were consistent with the theory of change described under the original PDO Outcome 1.

Outputs:

The targets of the output indicators below were revised.

- In the Turneffe Atoll Marine Reserve, the Management Effectiveness Tracking Tool (METT) scored 0.71 (in a scale ranging from 0 to 1), increasing from the baseline of 0.69 but not meeting the target of 0.80 (18% of the revised target). In the Corozal Bay Wildlife Sanctuary, the METT scored 0.79, increasing from the baseline of 0.65 and almost meeting the target of 0.80 (93% of the revised target). In the South Water Caye Marine Reserve, the METT scored 0.56, declining from the baseline of 0.62 and moving backward from the target of 0.80 (-33% of the revised target). The METT scores in all three targeted MPAs did not meet the targets. This project adopted an innovative approach to include climate change indicators to the METTs for the first time. Nevertheless, most of the underlying variables to calculate the METT scores, including socio-economic, governance, and biophysical indicators, were outside of the scope of the project (ICR, page 36).
- Baselines for the monitoring of adherence to Integrated Coastal Zone Management Plan guidelines were established in 3 regions (northern, central, and southern Belize), meeting the target of 3 (100% of the revised target). The project completed geographic information system mapping inventory of three coastal planning regions.

Other than the above, the outputs obtained were the same as under the original PDO Outcome 1.

Outcomes:

The PDO outcome indicator on coastline length (km) was revised to measure coastal areas (ha), which increased its measurability.

- Coastal regions of 19,970 ha in three planning regions were under improved regulation (measured by mangrove coverage), achieving the target of 18,900 ha (106% of the revised target). The revised indicator captured the coastal territory in three planning regions, for which data could be monitored, that was brought under improved mangrove regulation, as measured by mangrove coverage. The revised target measured the area (ha) which maintained 95% of mangrove coverage.

Other than the above, the outcomes achieved were the same as under the original PDO Outcome 1.

Expansion of coastal regions under improved regulations was achieved, in addition to the other achieved outcomes described under the original PDO Outcome 1. Overall, the revised PDO Outcome 1 was substantially achieved.



Revised PDO Outcome 2: Livelihoods of affected users of the reef diversified (The PDO formulation was not revised but targets were revised.)

Theory of Change:

Revisions in targets were consistent with the theory of change described under the original PDO Outcome 2.

Outputs:

The targets of the output indicators below were revised.

- 10 alternative livelihoods sub-projects were developed and completed, meeting the target of 10 sub-projects (100% of the revised target). Some sub-project activities on procurement and training were delayed or cancelled due to the nationwide lockdown from March to July 2020 in response to the COVID-19 pandemic.
- Based on training needs assessment, 759 persons participated in training, meeting the target of 500 participants (152% of the revised target). Of which, 58% of trainees were women, meeting the target of 30% (193% of the original target). The training in marketable individual skills sets were in line with customized training curriculum developed by the project, in subjects such as entrepreneurship, communications, and information technology; arranged learning exchanges; and facilitated community service, internships, external examinations, and trade licenses for participants.
- 1,535 users of the reef benefited directly through participation in the occupational and skills training and the implementation of the 10 sub-projects, achieving the target of 1,500 (102% of the revised target). Of which, women were 49.5%, achieving the target of 30% (110% of the original target). This indicator was designed as a PDO outcome indicator by the project; however, the number of direct beneficiaries is not sufficient in itself to measure diversification of livelihoods of affected reef users, as described in Section 9.a.

Other than the above, the outputs obtained were the same as under the original PDO Outcome 2.

Outcomes:

The outcomes obtained were the same as under the original PDO Outcome 2.

Overall, the revised PDO Outcome 2 was modestly achieved.

Revised PDO Outcome 3: The value of marine conservation and impacts of climate change are understood by local people (The PDO formulation was not revised but the PDO outcome indicator and its target were revised.)

Theory of Change:

Revisions in the PDO outcome indicator and its target were consistent with the theory of change described under the original PDO Outcome 3.

Outputs:



The outputs obtained were the same as under the original PDO Outcome 3.

Outcomes:

The PDO outcome indicator to measure changes in “attitude and/or behavior” was revised to measure changes in “knowledge and/or behavior,” which downscaled the scope. The target was also revised downwards from 75% to 50%.

- Change of knowledge and/or behavior was observed in 38.3% of targeted beneficiaries, progressing from the baseline of 32% but not meeting the target of 50% (77% of the revised target).

Other than the above, the outcomes obtained were the same as under the original PDO Outcome 3.

The change of knowledge and/or behavior was observed in 38.3% of the target beneficiaries, not meeting the revised target of 50%. The low achievement against the PDO outcome indicator was due to: (a) the short period of time from the rollout of a targeted behavior changes and communications strategy in late 2018 to the KAP survey in 2020 (ICR, para 41); (b) the scope of the KAP survey which did not capture changes induced by the national curricular activities on climate change education (Ibid); (c) the weakness of the KAP survey design to serve as a data source for the PDO outcome indicator (See Section 9.a.); and d) as noted by the project team, the final survey being undertaken during the COVID-pandemic when attention to climate change was understandably not top-of-mind. Nonetheless, there was a 20% increase in knowledge on climate change from the beginning of the project among the target population; thus, the achievement of the revised PDO Outcome 3 was substantial.

The achievement of the revised PDO Outcome 1 was substantial. Coral reef protection regime was improved to enhance the protection of mangroves and fish, which led to the protection of coastal areas and biodiversity, respectively. The revised indicators were insufficient to provide evidence on to what extent the effectiveness of MPA management was improved. The achievements for the revised PDO Outcome 2 was modest and substantial for Outcome 3. In sum, the climate resilience was strengthened in terms of coastal and biodiversity protection, as well as awareness-raising of the local population. On the other hand, there was limited evidence that people’s vulnerability to climate change was adequately decreased. Though on balance, the achievement of the revised objective is rated Substantial with moderate shortcomings.

Revised Rating

Substantial

OVERALL EFFICACY

Rationale

Under both the original and revised objectives, the PDO outcome 1 on the enhancement of protection regimes was substantially achieved; the PDO outcome 2 on the diversification of livelihoods of affected reef users was modestly achieved; and the PDO outcome 3 on awareness raising and capacity building for climate adaptation was substantially achieved. Insufficient evidence for the achievements of the PDO for



outcome 2 was observed. Overall, the efficacy is rated substantial for both the original and the revised objectives but with moderate shortcomings.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Analysis: At appraisal, a cost-benefit analysis was conducted, which focused on Components 1 and 2 given the difficulty in quantifying the effects of increased awareness. For Component 1, the key benefits were tourism and the shoreline protection benefits provided by coral reefs and mangroves. For component 2, the key benefits were the increased income gained by fishers from the recovery of fisheries through more effective management of existing protected areas and the designation of new replenishment zones, and alternative livelihoods income. This analysis found net positive benefits from all three streams over a 10 and 20-year project horizon, applying various discount rates.

At project closing, an incremental economic analysis was conducted on Components 1 and 2, estimating benefits from three streams: (i) ecosystem services, (ii) carbon storage and sequestration (mangroves), and (iii) beneficiaries' future income from alternative livelihoods support. This analysis showed that the net present value (NPV) of the project is projected to reach between US\$0.36 million (lower bound) and US\$16 million (upper bound) in the baseline scenario using very conservative parameters (10 year horizon, carbon prices of US\$4.3 per ton carbon dioxide equivalent (tCO₂e) and US\$18/tCO₂e, and 6 and 9 percent discount rate). The investments evaluated for the economic analysis would generate a benefit-cost ratio between 1.08 and 4.34 and an internal rate of return (IRR) between 10.76 and 38.03 percent. Calculations for a 20-year project horizon using the same parameters showed project NPV between US\$4 and US\$36 million and a benefit-cost ratio between 1.89 and 8.34. The economic analysis thus showed that project-supported investments would bring substantial financial and economic benefits to fishers, processors, and other potential beneficiaries in the project area and to the country at large. The results of the quantitative simulations were robust in terms of sensitivity analyses.

Aspects of Design and Implementation that Influenced Efficiency: The project experienced initial delays in the implementation of alternative livelihoods sub-projects. Some of these delays could have been mitigated at the project design stage, given the extensive body of experience in community-driven livelihoods activities in Belize and other countries. For example, anticipatory measures, such as a clear delineation of safeguards requirements and the early provision of handholding support for communities to develop sub-projects, could have been included in project design.

Efficiency Rating

Substantial



a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	38.03	81.58 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The relevance of the objective is substantial. The efficacy is substantial with moderate shortcomings. The efficiency is substantial. Thus, overall, the achievements of the objective before and after restructuring are both rated moderately satisfactory.

a. Outcome Rating

Moderately Satisfactory

7. Risk to Development Outcome

The following risks to the sustainability of the achieved results were presented in the ICR:

Government Ownership Risk: The government showed commitments to maintain the development outcomes by advancing national laws and policies on the management of marine and coastal resources under the project, including the Forest (Protection of Mangroves) Regulations, the Coastal Zone Management Act and Regulations, the national policy to expand the Fisheries Replenishment (No-Take) Zones, and the National Fisheries Policy, Strategy & Action Plan 2020-2024. The development outcomes were aligned with the Government priorities at project closing. Nevertheless, there would still be potential risks related to government ownership, which could substantially affect development outcomes in case of occurrence.

Institutional Risk: Improvements in the capacities of key stakeholders and coordination among them might not be sustained without the project support, posing uncertainty on self-sustainability and effectiveness of alternative livelihoods in the long-term. At appraisal, the project recognized the risk related to low-capacity and coordination among the implementing entities and the community organizations, thus aimed to mitigate the risk through providing training, strengthening technical capacity, and adopting a participatory process to involve different stakeholders (PAD, para 38). At the national level, the project contributed substantially to institutional strengthening within the Fisheries Department and the Coastal Zone Management Authority and Institute that should support continued inter-agency coordination on coastal and marine resource management; however, without the coordinating role of the project, and the additional funding it provided to supplement ongoing activities, these efforts might not be sustainable. At the community level, the project gradually shifted its focus to diversifying incomes of communities rather than redirecting them away from



fishing, as well as explicitly targeted women and youth in livelihoods and behavior change activities. These measures were expected to contribute to mitigate the risk; nevertheless, a residual risk still remained at the project closing, as it was unclear to what degree the sub-project activities would be sustained long-term or whether there would be meaningful generation of additional income for beneficiaries.

Environmental Risk: Restored corals might be damaged by bleaching, disease, and extreme weather events induced by climate change, reducing development outcomes achieved through the repopulation activities. At appraisal, the project intended to mitigate the general risk of coral loss by outplanting a coral species which was resistant to bleaching, disease, and temperature change. During implementation, Stony Coral Tissue Loss Disease was first reported in northern Belize in 2019 and spread to further south in the Hol Chan and the Caye Caulker Marine Reserves in less than a year (ICR, para 78). While the disease was not reported in the Turneffe Atoll Marine Reserve and the South Water Caye Marine Reserve at project closing, a persistent risk on loss of corals remained, requiring mitigation measures including monitoring of the corals by the Fisheries Department and expanding locations to outplant corals.

8. Assessment of Bank Performance

a. Quality-at-Entry

The project's strategic relevance and approach was aligned with the Government's priorities. The project design considered technical, environmental, fiduciary, and policy aspects to make appropriate arrangements for preparation and implementation. Preparation of the project took over 34 months from the Concept Review (May 2012) to Board Approval (March 2015), mostly due to the processes and availability of grant funds from the Adaptation Fund (ICR, para 72). The implementation arrangements designed at appraisal caused delays in decision-making processes, as both the Technical Advisory Committee (comprised of government and non-government agencies) and the Project Steering Committee (comprised of the CEOs of relevant ministries) needed to physically convene and review technical details, such as terms of reference and selection of consultants, to proceed with activities. Risk identification and mitigation were mostly adequate, except for an underestimation of the time required to implement alternative livelihoods sub-projects under component 2 and navigate legislative processes in Belize to achieve the passage of legislation under component 1. Technical inputs from the World Bank on development of community-driven livelihoods activities could have been strengthened by drawing lessons from the prior operations in Belize and other countries; for example, by suggesting mitigation measures such as a clear delineation of safeguards requirements and the early provision of handholding support for communities to develop sub-projects (ICR, para 45). There were shortcomings in the design of the Results Framework, as some indicators were not adequate to measure expected outcomes, some indicators did not show clear verification methods and data sources, and some indicators did not capture the achievements made by the project activities. The shortcomings directly affected the project's inability to measure, record, and report on relevant outputs and outcomes, leading to the insufficient evidence on the achievements of objective 2. Please see Section 9 for details.



Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

The Bank provided technical advice, as well as fiduciary and safeguard oversight, through ten implementation support missions and communication that were conducted both remotely and physically. The Bank facilitated efforts to build financial management and procurement capacity early in project implementation through WB training offered to the Project Coordinator and Procurement Officer in the Project Implementing Agency Group. The sub-projects faced challenges in complying with environmental and social safeguards set by the Government and the Bank during the first half of implementation, partially due to frequent turnover of Environmental and Social Specialists in the Bank team. After the Mid-Term Review, the Bank's support to safeguards compliance was strengthened through the participation of Environmental and Social Specialists in project missions, the extensive correspondence between the Project Implementing Agency Group and the Bank on safeguards documents prepared for the sub-projects, and the provision of training to the consulting firm on environmental and social screening for the sub-projects. The delay in the commencement of the behavior change campaigns was critical, given that it resulted in low achievement on the PDO Outcome 3. After the revisions in the Results Framework in the restructuring in 2019, the measurability and achievability of the indicators were improved to a certain extent, though some indicators remained irrelevant and some relevant indicators were lacking.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The project's Theory of Change was not thoroughly explained in the PAD and not explicitly reflected in the Results Framework at appraisal. The indicators were not fully adequate to encompass outcomes and outputs achieved under the project. For PDO outcome 1, the quantity of marine area under protection was not sufficient to measure changes in the quality of protection brought by the project. As the PAD (Annex 2, page 27) stated, Marine Protected Areas (MPAs) were expanded to about 20% of Belize's territorial sea after the Turneffe Atoll was legally declared a marine reserve in November 2012. Thus, the outcome indicator's target of 386,612 ha (20.2% of territorial waters) was already almost achieved before this project. The outcome indicator could be more adequate if it focused on improvements in the quality of protection in the MPAs, for example, by measuring a decrease in a number of stressors or harmful incidents to the ecosystem. For PDO outcome 2, no indicator was set to appropriately measure diversification of livelihoods of affected reef users. The indicator on direct project beneficiaries was output-focused and did not measure quality and spread of results (ICR, para 65). Moreover, the coastline under biodiversity protection in kilometer was not a measurable indicator due to lack of a measurement methodology to cover the 9 regions, as described in Section 4. Regarding the Intermediate Result (IR)



indicator 1, the changes in the METT scores was not solely attributable to the project, as most of the underlying variables in the METT score calculation fell outside the project's scope. The IR indicator also did not specify a methodology to establish a missing baseline. For PDO outcome 3, the formulation of the PDO outcome indicator and the suggested data sources and methodology did not match, as the design of the Knowledge, Attitude, and Practice (KAP) survey overlooked the variance in the attitudes of the target population, especially between the fisherfolks and the community households, towards climate change, resulting in the unrealistic original baseline and target of the PDO outcome indicator.

b. M&E Implementation

The baseline data collection was not carried out in a timely manner due to lack of clarity and feasibility of data collection methodologies, which resulted in missing baseline values for two PDO outcome indicators and an Intermediate Results indicator. It also negatively affected reliability of targets for some indicators, which required adjustments to take into account baseline values. The weakness in the design of the Results Framework was formally addressed only after the Mid-Term Review in 2018, which was done three years after the project approval. After the revisions in the Results Framework in the restructuring in 2019, some of the were indicators improved, though some indicators remained inadequate. The M&E function was led by the Project Implementing Agency Group and supported by the other agencies and partners involved in project implementation based on the methodology established in the Project Operations Manual.

c. M&E Utilization

M&E data was used to track progress toward project objectives and to inform shifts in management direction of the project. For example, the initial delays in the preparation of sub-projects were addressed by engaging a firm for more thorough support to the communities and reducing the target number of sub-projects to increase achievability; the lack of baseline data for coastal zone management was addressed by gathering the data to establish the baseline inventory for monitoring adherence of the implementation to the Integrated Coastal Zone Management Plan; and the restoration network was extended to the northern Belize by increasing the target sites for coral out-planting. On the other hand, the shortcomings in the PDO outcome indicators described in Section 9.a. were not adequately addressed, which limited the usability of M&E data to provide evidence of achievement of outcomes.

As described above, the shortcomings in the M&E design, including the missing explicit Theory of Change, the unclear data collection methodology and baseline values, and the weak relevance of PDO outcome indicators, affected the M&E implementation and utilization, and as such also the project's ability to measure, record and report on relevant results. A number of adaptive approaches were embraced by project management as a consequence of M&E results, though the revision of the Results Framework was not conducted until the restructuring in 2019. Overall, the M&E quality is rated modest.

M&E Quality Rating

Modest



10. Other Issues

a. Safeguards

Environmental safeguards: The project was classified as environmental category B and triggered *Environmental Assessment (OP/BP 4.01)*, *Natural Habitats (OP/BP 4.04)*, *Forests (OP/BP 4.36)*, *Pest Management (OP 4.09)*, and *Physical and Cultural Resources (OP/BP 4.11)* throughout the project duration. An Environmental Management Framework (EMF) was created by the Government, consulted with the project stakeholders, and disclosed, in order to serve as a guide during implementation, since the exact locations and nature of small-scale investments to be financed under the project were not yet determined during preparation.

Social safeguards: Social Safeguard policies triggered by the project included *Indigenous Peoples (OP/BP 4.10)* and *Involuntary Resettlement (OP/BP 4.12)*. During the project preparation, the Government created, consulted with the project stakeholders, and disclosed a Culturally Appropriate Consultation and Participation Plan (Indigenous Peoples Plan) in compliance with OP 4.10, as well as a Resettlement Policy Framework and a Process Framework in compliance with OP 4.12 (ICR, para 69). To mitigate a range of social risks, a project-wide Grievance Redress Mechanism (GRM) with a GRM Manual as described in the Process Framework was established and formalized during implementation. The ICR (para 66) reported that the Project Implementation Agency Group responded to queries and grievances appropriately and recorded a grievance log.

To mitigate environmental and social risks of the sub-projects, the project developed instruments such as: Environmental and Social Impact Assessments, Environmental and Social Management Plans, best practice guidelines, and documentation of the participatory processes undertaken to design and implement sub-projects under Components 1 and 2. The Bank team, including Environmental and Social Specialists, supported safeguards implementation through the supervision mission in Belize in 2017, which provided training on environmental and social safeguards to project staff, discuss the implementation of the project's social safeguards instruments, and carry out discussions with user groups belonging to the Marine Protected Areas under the project (ICR, para 69). Mission findings were recorded in Aide Memoires.

Legal safeguards: The legal safeguard of *Projects in Disputed Areas (OP/BP 7.60)* was also triggered. Though there was no description of implementation of the safeguard in the ICR, the PAD (page 49) confirmed that “[i]n line with OP/BP 7.60, the World Bank has ensured compliance with the requirements of the policy,” as the project was determined as not harmful to the territorial interests of Guatemala, in consideration of the scope of project activities covering capacity building, small-scale community driven sustainable forest management practices, and improvements to the management of Protected Areas.

b. Fiduciary Compliance

Financial Management: The Protected Areas Conservation Trust (PACT) was the sole fiduciary agent responsible for the project's financial management. In the first two years of project implementation, there were shortcomings related to proper establishment of the project's chart of accounts, adequate reviews and approvals of transactions posted to project accounts, timely reconciliation and addressing discrepancies in the expenditure records of the PACT and the Bank. Those issues resulted in late submissions of Interim Financial Reports to comply with the Bank's requirements. After a financial



management review in 2017, the PACT followed an action plan and its recommendations to address fiduciary challenges. As a result, the PACT received an unqualified (clean) opinion from auditors for the project’s financial statements for the fiscal years ending March 31, 2017, 2018, and 2019.

Procurement: Based on the Bank’s guidelines as described in the PAD (para 46), the project’s procurement was mainly conducted by a Procurement Officer in the PACT with support from the Project Implementation Agency Group (PIAG). The Bank supported the building of procurement capacity of the project staff through two workshops on fiduciary, safeguards, and procurement frameworks held in 2016. The Bank also conducted annual post-review missions to verify all procurement under the project. Procurement challenges were mainly caused by the need to purchase a large number of small items and services for the sub-projects in adherence to the Bank’s requirements, as well as the temporary freeze on new procurement contracts during the COVID-19 lockdown from April to June 2020. Despite these challenges, most of the procurement for the sub-projects were completed by the project closing.

c. Unintended impacts (Positive or Negative)

Though not originally planned, the project achieved strong collaboration with the Ministry of Education in the implementation of teacher training and the introduction of climate change into the national secondary school curriculum. The nation-wide initiation of the climate change education in the secondary schools was expected to show positive impacts of improved awareness on climate adaptation and behavior change among youth in the long-term.

d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	There was limited progress and evidence against achievement of the second aspect of the objective.
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	
Quality of M&E	Modest	Modest	
Quality of ICR	---	Substantial	

12. Lessons



The following lessons in the ICR stood out as important and relevant to other projects on marine conservation and climate resilience, and are presented here with some editing.

1. Embedding project activities on adaptation measures into ministries' work plans has the potential to mainstream climate resilience in government policy and activities. The project aimed to incorporate adaptation actions into activities that were already underway or planned by different government ministries and departments. This approach strengthened government ownership; enhanced inter-agency coordination by supporting discrete activities undertaken by different agencies; and helped to ensure that changes in policy and regulations were achieved during the project lifetime. The project also adopted this approach with respect to the management of protected areas, for the first time developing and incorporating climate change indicators into the METT assessment process.

2. Nature-based solutions designed in a participatory manner and implemented in a multi-pronged approach can enhance climate resilience of an ecosystem and achieve social and environmental benefits. The nature-based adaptation measures supported by the project, including the expansion of replenishment zones, protection of mangroves, and coral restoration, were expected to enhance coastal protection, carbon sequestration, a sanctuary for marine flora and fauna, sustainable fisheries management, and tourism, which would generate environmental and economic benefits. The project employed an equitable and participatory approach by consulting with communities and implementing partners throughout the project duration. While such approach required substantial time and resources, it strengthened community involvement in natural resources management. Moreover, the project employed a multi-pronged strategy that combined actions on legislation, coral restoration, and community livelihoods, while implementing these actions in a sequence to achieve intended results, for example, providing livelihoods support prior to regulatory measures taking effect). Those successful practices suggested a potential for scaling up the activities to cover the whole coastline of the Belize Barrier Reef in the future.

3. Community-driven livelihoods activities may require considerable effort and capacity during project design and early implementation to initiate them in an effective and timely manner. The project's highly participatory approach to engage affected communities in identifying and developing sub-projects to ensure transparency, inclusiveness, and prioritization of local needs was aligned with the project objective. However, the approach required significant facilitation support and capacity building that was not sufficiently provisioned during project design and early implementation. There were initial delays in preparation and implementation of alternative livelihoods sub-projects. After the MTR, the project accelerated the community-driven livelihoods activities by focusing on a smaller number of sub-projects with higher contribution to the project and expanding implementation support through a consulting firm with solid local experience in livelihoods activities. Assigning time and resources in the early stages of project design and implementation have a potential to ensure an adequate time for generating tangible results.

13. Assessment Recommended?

No



14. Comments on Quality of ICR

The ICR provides a detailed overview of the project. The report is results-oriented and focuses on the outcome-level achievements which link to potential impacts of the project's intervention. The ICR's lessons are useful and largely based on evidence outlined in the ICR. There is a reference to the project's theory of change that helps the reader to understand how the ratings have been reached, though the description could have been more detailed to clarify logical paths to link each output, outcome, and intended impact. Where evidence of achievements of outcomes were not adequately measurable by the given indicators, the ICR is candid to highlight the issue and attempts to triangulate data to reach conclusions, though some gaps in evidence remain. Some of the evidence gaps were filled by additional evidence provided by the project team in their draft comments, especially on the achievement of the PDO 3. Despite the fact that the project was classified environmental category B and triggered eight safeguards policies, evidence described in the ICR were insufficient to fully verify what mitigation activities were implemented for each triggered safeguard. Overall, the quality of ICR is rated substantial.

a. Quality of ICR Rating Substantial