CONFIDENTIAL
INTERNAL USE
PUBLIC UPON APPROVAL

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK
MULTILATERAL INVESTMENT FUND

BELIZE

HARNESSING DIGITAL TECHNOLOGY AND INNOVATION FOR BELIZE'S SMART MARINE INITIATIVE

(BL-T1151)

DONORS MEMORANDUM

This document was prepared by the project team consisting of: Svante Persson (LAB/DIS); Andres Rubio Chacon (DIS/CGU); Terry-Ann Segree (DIS/CJA); Yuri Chakalall (RND/CJA); Henry Wade (DIS/CBL); Alexandra Hambrook (GCL/FML); Daisy Ramirez (GCL/FML); Patricia Guevara (LAB/DIS).

CONTENTS

PROJECT SUMMARY

BELIZE
HARNESSING DIGITAL TECHNOLOGY AND INNOVATION FOR BELIZE'S SMART MARINE INITIATIVE
(BL-T1151)

Over 10 million people in the region depend directly on coral reefs for food and income, making these populations particularly vulnerable to reef-loss ('poverty trap'). Coral reefs provide vital protection to low-lying communities at risk from coastal flooding – their role as a natural flood defense infrastructure has become ever more important in the context of accelerating climate change.

In Belize, the Turneffe Atoll Marine Reserve (TAMR) is the largest of three offshore Atolls and is designated as a marine protected area (MPA). This MPA is considered to be an integral part of Belize's reef system, and one of the best developed Atolls of the Mesoamerican Reef (MAR) region - a global ecological hotspot for marine biodiversity. Turneffe offers over US$191M in shoreline protection to Belize City. In addition, tourism and fisheries production to Belize's economy is estimated at over US$79M, which contributes to the national fishing industry by providing direct employment for over 2,710 fishers, and supports an estimated 15,000 Belizeans from 20 communities, with a further 1,000 people involved indirectly in processing and export (Belize Fisheries Department, 2021). As a result, the Belize Barrier Reef is considered one of the main contributors to the economic growth and prosperity of the people of Belize. Unfortunately, more than 40% of Belize's coral reefs are under immediate and direct threats (WRI, 2018) including overfishing, sedimentation, marinene pollution, ocean warming, and acidification. In more recent years, coral health has declined due to impacts from a combination of coral bleaching, disturbance events (primarily hurricanes) and chronic stressors, leading to declining coral cover and increases in macro-algae.

The project seeks to contribute to the conservation and adaptation efforts in the Turneffe Atoll Marine Reserve (TAMR) through the implementation of digital technologies that will improve management of marine areas that provides significant socioeconomic benefits to the local fishing communities. The solution will implement innovative digital systems and tools to increase ecological and economic benefits for local communities that depend on TAMR for their livelihoods, allowing them to become better stewards of marine resources. This project supports IDB Group Country Strategy with Belize 2022-2025 to aid Belize in achieving robust, inclusive, and sustainable growth, with an emphasis on private sector productivity and sustainable growth, focusing on MSMEs, and human capital.

Direct project benefeciaries will include over 860 fisherfolk who collectively operate within and around the Turneffe Atoll Marine Reserve and indirectly over 4,300 Belizeans who are impacted by the direct and indirect effects of climate change and who have also seen a substantial reduction of income as a result of the global pandemic. The executing agency is Turneffe Atoll Sustainability Association (TASA) and the total of the project budget is US$800,000, of which US$400,000 will be provided by the IDB Lab through a non-reimbursable technical cooperation.

ABBREVIATIONS

DNA	Diagnostic needs assessment of the executing agency
GOB	Belize Government
IDB	Inter-American Development Bank
IDB Lab	Multilateral Investment Fund
PSR	Project Status Report
TAMR	Turneffe Atoll Marine Reserve
TASA	Turneffe Atoll Sustainability Association

PROJECT INFORMATION

BELIZE
HARNESSING DIGITAL TECHNOLOGY AND INNOVATION FOR BELIZE'S SMART MARINE INITIATIVE
(BL-T1151)

Country and geographic location:	Belize. Turneffe Atoll Marine Reserve (TAMR)		
Executing Agency:	Turneffe Atoll Sustainability Association (TASA)		
Focus area:	Climate Smart Agriculture (CSA), Inclusive Cities		
Coordination with other donors/Bank operations:	This project supports IDB Group Country Strategy with Belize 2022-2025 to aid Belize in achieving robust, inclusive, and sustainable growth, with an emphasis on private sector productivity and sustainable growth, focusing on MSMEs, and human capital. In addition, the project is aligned with IDB loan operation BL-L1042 "Promoting Growth in Sustainable Blue Economy Program" and BL-T1149 "Support the Formulation of a Program to Promote Sustainable Growth in the Blue Economy" that both seek to enable and increase sustainable economic growth, sector diversification, and maintain quality sustainable livelihoods in the offshore deep-slope demersal marine finfish value chain of the Belize Blue Economy sector. Finally, this operation will collaborate with the newly approved TC BL-T1145 "Development of the Blue Economy of Belize" that aims to strengthen the policy and institutional framework for the development of the Blue Economy in Belize, which will provide a platform for economic recovery in promoting new investments in key sectors of the economy, including tourism, agriculture, and fisheries.		
Project beneficiaries:	**Directly**: 860 fisherfolk who collectively operate within and around the Turneffe Atoll Marine Reserve. **Indirectly**: Over 4,300 Belizeans who are impacted by the direct and indirect effects of climate change and who have also seen a substantial reduction in income resulting from the global pandemic.		
Financing:	Non-Reimbursable Technical Cooperation funding:	US$400,000	48%
	Total IDB Lab funding:	US$400,000	
	Counterpart:	US$430,500	52%
	Total project budget:	**US$830,500**	**100%**
Execution and disbursement periods:	30 months for execution and 36 months for disbursement.		
Special contractual conditions:	Conditions prior to first disbursement will be, to the Bank's satisfaction: (i) selection of the Project Manager; (ii) establishment of the Steering Committee; (iii) Signed Agreement confirming in-kind and cash contributions from Blue Finance; and (iv) letter of commitment from TASA certifying its counterpart contribution to the project.		
Environmental and social impact review:	This operation was screened and classified in accordance with the IDB's Environmental and Social Policy Framework (document GN-2965-21) on 6th		

	July 2022. Given the limited impacts and risks, the project has been proposed as a category C operation.
Unit responsible for disbursements:	Belize Country Office (CID/CBL)

I. THE PROBLEM

A. Problem description

1.1. Over 10 million people in the region depend directly on coral reefs for food and income, making these populations particularly vulnerable to reef-loss ('poverty trap'). Coral reefs provide vital protection to low-lying communities at risk from coastal flooding – their role as a natural flood defense infrastructure has become ever more important in the context of accelerating climate change.

1.2. It is clear that well managed and financed Marine Protected Areas (MPAs) are the cornerstones of international efforts to "replenish biodiversity and nourish the growing human population" (IUCN, 2018). Benefits that flow from improved marine ecosystems include enhanced and secured food supply and fishing incomes for coastal communities, opportunities for nature tourism businesses, shoreline protection and greater resilience to climate change (positively impacting SDGs: 1, 5, 8 and 14). However, these efforts are undermined by the fact that MPAs face a broad range of challenges, with many sites struggling to meet minimum standards, due to insufficient, unpredictable and short-term funding, largely provided by public and development finance avenues (Gill et al, 2018). MPAs also lack efficiency in the execution of the various management functions primarily due to the lack of incorporated digital solutions to enhance efficiencies and augment the human resources available that improve effectiveness.

1.3. In Belize, the Turneffe Atoll Marine Reserve (TAMR) is the largest of three offshore Atolls and is designated as a marine protected area (MPA). This MPA is considered an integral part of Belize's reef system, and one of the best developed Atolls of the Mesoamerican Reef (MAR) region - a global ecological hotspot for marine biodiversity. Turneffe offers over US$191M in shoreline protection to Belize City. In addition, tourism and fisheries production to Belize's economy is estimated at over US$79M, which contributes to the national fishing industry by providing direct employment for over 2,710 fishers, and supports an estimated 15,000 Belizeans from 20 communities, with a further 1,000 people involved indirectly in processing and export (Belize Fisheries Department, 2021). As a result, the Belize Barrier Reef is considered one of the main contributors to the economic growth and prosperity of the people of Belize. Unfortunately, more than 40% of Belize's coral reefs are under immediate and direct threats (WRI, 2018) including overfishing, sedimentation, marinene pollution, ocean warming, and acidification. In more recent years, coral health has declined due to impacts from a combination of coral bleaching, disturbance events (primarily hurricanes) and chronic stressors, leading to declining coral cover and increases in macro-algae.

1.4. Consequences for local fisherfolks and rural communities include the following:

a) loss of fish stocks as they move due to temperature changes and to follow their food;
b) loss of biodiversity, including due to degradation of coral reefs and mangroves;
c) migration and conflict over precious resources;
d) even greater vulnerability of small-scale fishers with small boats to storms;
e) reduced number of days at sea for small fishers and low technology equipment; and

f) increased risk of small fishers due to lack of risk management tools.

1.5. Furthermore, thousands of citizens, and their communities, depend on the quality of the marine environment and the availability of living marine resources for their well-being. Fish stocks, which are important for commercial fisheries, are reduced by loss of biodiversity and habitat, ultimately impacting the entire coastal communities that depend on fishing for livelihoods. Poor and marginalized persons are usually directly dependent on environmental services, such as local fisheries and other food sources, employment from coastal tourism, among others, and the steady degradation of the natural resource base therefore impacts their lives and livelihoods disproportionately. Within the last few years there has been increasing concern over the consequences of environmental change for people and communities that depend on already fragile marine resources, given the mounting evidence of sustained over-exploitation and climate change impacts on marine systems. Climate change and environmental degradation in coastal areas are already affecting the natural resource base on which smallholders depend for their food security and livelihoods. Future projections outline an increasingly urgent need to help communities adapt to these changes and protect these fragile resources.

1.6. In the case of fisheries management, most MPAs depend entirely on having sufficient human resources to collect data accurately and properly. For example, to monitor fish mortality, in many cases commercial fishers are expected to use paper and pencil to record catch information. In other instances, there are no proper means of collecting data, yet resources from the blue economy are being extracted. Furthermore, it may take an entire year for information to be converted from paper to digital in order to carry out important data analysis that would enable adaptive management. These delays result in inadequate management decisions, or interventions being carried out a year or more later, resulting in the continued decline of commercial fish stock even with management presence.

1.7. Tourism programs for financial sustainability at MPAs are traditionally designed to expect visitors to simply enjoy the sand and sea. As a result, there exists a lost opportunity to promote and engage these visitors with life-changing experiences through participation in conservation and biodiversity monitoring, in an easy and impactful way allowing the visitors to have added value as a traveler to Belize.

II. THE INNOVATION PROPOSAL

A. Project description

2.1. The project's main objective is to contribute to the conservation and adaptation efforts in the Turneffe Atoll Marine Reserve (TAMR) through the implementation of digital technologies that will improve the management of marine areas that provide significant socio-economic benefits to the local fishing communities.

2.2. **Model.** The solution will implement innovative digital systems and tools to increase ecological and economic benefits for local communities that depend on TAMR for their livelihoods, allowing them to become better stewards of marine resources. Digital applications, tools, and technological solutions have the potential to radically transform the fishing and tourism industries in Belize and boost

businesses and income for local communities. Examples would include the use of open-source and proprietary software applications to improve traceability and minimize illegal, unreported and unregulated fishing, fishing vessel monitoring, tracking fish catch daily to avoid over-fishing, among other tools. Furthermore, these tools will enable fishers and other key stakeholders, to maximize the benefits that can be derived from fishing and tourism via an enhanced decision-making business approach. For example, a digital engagement application will be developed to quantify and share fish catch data allowing for the immediate generation of vital fisheries information to provide fisherfolk details on how their respective fishery area is performing, weather and climate related data, as well as migratory patterns of fish among others. Enhanced fisherfolk knowledge of the seasonal rhythms of coastal fish behavior and adaptations of their fishing practices will allow them to provide some degree of livelihood stability through the year. Rich biodiversity can also help to create alternative market opportunities which can offset adverse changes in prices for some species and allow stakeholders to modify their livelihood strategies and substitute for products that are less in demand.

2.3. **Innovation.** The proposed solutions seek to combine traditional nature-based solutions for sustainable development with technological advancements to create digitalized-nature-based solutions. The project will enable increased incomes to the local communities and beneficiaries of Turneffe through sustainable tourism. This solution will use the content created for the TASA website as part of the global "BlueRise[1]" network where it can leverage a wider audience through global marketing. The project will also use a digital application solution for fisheries management called Vericatch to enable better integration of commercial and recreational fishing, as well as piloting by fishers. This will improve management of the fisheries, tackle illegal, unreported and unregulated fishing while increasing benefits to local communities via alternative income streams. In addition, the project will create its own digital solution for enforcement of fishing regulations as an expansion of the Spatial Monitoring and Reporting Tool (SMART). In the same manner, this project will build on the SMART technology to create a more advanced version of the tool that is able to generate adaptive management recommendations based on historical information. TASA's use of SMART has the potential to include additional parameters for monitoring that can be aligned with the Vericatch app to allow for a robust and integrated approach to adaptive management. SMART was also designed as an open-source software through partnerships with several international non-governmental organizations for terrestrial parks. Notably, Belize was one of the first countries to use SMART in the marine space.

2.4. **Component I: Strengthen TASA's Sustainable Financing Program Through Income Diversification (IDB Lab US$106,000; Counterpart: Cash US$52,500, In-kind US$5,000).** The objective of this component is to increase the Executing Agency's economic sustainability at Turneffe. This will be achieved by focusing on expanding its number of tourism products, strengthening marketing and outreach, and thereby contributing to jobs creation. Furthermore, in the context of the project

[1] The brand "BlueRise" was created by Blue-Finance to promote sustainable visitor attractions in Turneffe. More information can be found at https://bluerise-turneffe.org/

the Executing Agency will develop a cross-platform mobile-based application that will:

a) enhance the visitor's overall experience with rich and informative real-time content;
b) increase product offering visibility and uptake by international and local visitors (tourists) to the reserve;
c) improve adaptive MPA management through field data collection for ecological monitoring; and
d) allow fishers to become paid resource monitors and improve their livelihood.

2.5. The activities of this component to be implemented by the Executing Agency will include: (i) to design and launch the TASA website, whereby a consulting firm will be contracted to design the website including developing content, conducting consultations with TASA staff and key stakeholders to ensure accuracy of content and information, collecting high resolution videos and photos for the website that can also be used as promotion on social media; (ii) design and development of a TASA mobile app, whereby a professional application developer will be contracted to work with TASA staff and stakeholders to design and develop an app that will enable and encourage users to increase their interaction with Turneffe; (iii) preparation of a digital marketing strategy/action plan and implementation of the plan in which TASA will work with its business advisor Blue Finance to prepare the strategy (the TASA App developed in activity (i) above, as well as other tourism products and services will be marketed through the implementation of this strategy - the services to be provided will include marketing campaigns, advertisements, content development, among other necessary actions); (iv) training and capacity-building for TASA staff, whereby the software developer will also train TASA staff and key tour operators and resorts on the use of app and special training on how to upload and manage content for the App will also be done for key TASA staff members; (v) payment for website and app hosting will be completed throughout the project and beyond.

2.6. The expected results of this component will be: (i) TASA's income from its tourism program would show a 10% increase from the 2021 baseline; (ii) launch of a TASA website; (iii) development of an App for TASA's sustainable financing program; (iv) marketing events; and (v) training sessions for individuals in the use of the App.

2.7. **Component II: Enhance TASA's Adaptive Management Program via Digital Systems and Tools (IDB Lab US$95,000; Counterpart: Cash US$67,000, In-kind US$55,000).** The objective of this component is to augment the Executing Agency's Adaptive Management Program by transforming data collection and analysis to a digital and semi-automated modality with a built-in dashboard. This will increase effectiveness by allowing for faster analysis to generate recommended management interventions for selected fishery types. Decisions and or policies for fisheries management in TAMR are being made using reliable and sufficient fisheries resources scientific monitoring data. The Executing Agency has been investing in building its science and adaptive management program both from a programmatic and administrative standpoint. Key Performance Indicators (KPI) have been developed along with a robust scientific monitoring program to collect data on the KPIs to measure the impact of the overall investment and management of TAMR. A fisheries-catch smart phone/tablet application known as "Vericatch" has been launched in Turneffe, as the first Marine Protected Area to

utilize a digital solution to record catch. This app has an integrated dashboard that presents quick high-level data analysis, that provides the user with real-time data on fishery performance. Park rangers will replace paper and pens with a digital app, thereby minimizing errors and enabling fast and accurate data analysis.

2.8. While using this model, a few selected fishers will also pilot this technology to determine the feasibility of technology transfer from managers to fishers. For the app to be properly piloted, the Executing Agency will incentivize the submission of data from fishers who will be using the app. It is expected that once the app becomes mainstream, it will be a requirement of the fishers through regulations enacted by the Fisheries Department, thus becoming a sustainable and accurate means of data collection. The expansion of the Vericatch app is required to enable inter-communication through the development of Application Program Interface (API), to incorporate existing data from multiple parameters thereby allowing integrated dataset analysis to serve informed decision-making by management.

2.9. With the flats fishery being a major revenue earner in Turneffe and highly utilized by the anglers that vacation at TAMR just to fly fish, additional data collection from the flats/sports fishery sector can collect provide information on the species, size, and weight of the sports fish caught. This is necessary as park rangers cannot approach or inspect sports fishers' catch due to the sensitive nature of the fishing methods. The project will include field testing of the app as well as training for relevant staff on its use and functions. Once the Vericatch app has been tweaked to enable the integration of the additional data, implementation across a wider geographic region that considers the various Managed Access Zones across Belize can occur. This is in line with approaching fisheries management at a regional scale, as opposed to site-based (small-scale). It is expected that a science and technology-based management approach will be piloted and adopted to strengthen and maintain targeted research, monitoring, and collaboration with partners and being able to fine tune the Flats Fishery Strategy and other national fisheries plans and strategies. It is also expected that the management effectiveness score for TAMR will not decrease but will either remain stable or increase.

2.10. The activities of this component to be implemented by the Executing Agency will include: (i) to enhance/develop a digital solution for fisheries management, whereby a consulting firm will be contracted to review the current fisheries management solution and make enhancements to the existing platform to accomplish TASA's objective (alternatively, the firm can also propose a new tool that fits within the budget allocation for this activity); (ii) procure hardware and software tools to support digital fisheries management solutions (this will include data storage and processing computers, and rugged/field tablets for TASA staff to collect field data); (iii) pilot the use of digital fisheries catch reporting among fishers in Turneffe, whereby selected fishers will be trained and provided with rugged tablets pre-programmed with the fisheries catch application to upload digital fisheries catch directly to a centralized web-based database where the data can be used to generate monthly catch reporting; (iv) training and capacity-building for the Executing Agency staff in data management and analysis will also be done by contracting a qualified consulting firm or individual.

2.11. The expected results of this component will be: (i) an improved adaptive management program that will use enhanced digital solutions for fisheries catch

reporting and analysis; (ii) 50 fishers trained and piloting the use of the App for reporting their catch; (iii) 80 fishers participating in digital data collection.

2.12. **Component III: Develop and Implement an Integrated Surveillance System within Turneffe Atoll Marine Reserve (IDB Lab US$99,000; Counterpart: Cash US$127,000, In-kind US$92,000).** The objective of this component is for the Executing Agency to develop a new "MPA Belize Enforcement" application that can use the existing intelligence information collected by the SMART platform and generate recommendations for enforcement strategies on a daily, weekly, and or monthly basis. Park rangers will then have the option to follow the recommendation of the app that has used intelligence from past data to determine where the hotspots are for any given day, week, or month. Strategic patroling to these specific hotspots at certain times of year will enable increased effectiveness and decrease costs as a result of decreased fuel consumption that is usually required in random patrolling. In addition, there exists the opportunity to collect data for research on fish migration due to climate change. Some fisheries scientists believe that fishing trends are evolving and are indicating that fish are migrating to cooler waters as sea temperature rises, particularly in the tropical regions due to climate change.The use of AI in the "MPA Belize Enforcement" app will enable park rangers to track the movement of fishers who also follow the migrating patterns of fish and would be able to predict which areas fishers are most likely to migrate to within a given timeframe. These types of predictions are invaluable to fisheries managers for planning, strategizing, and adaptive management. This component will also require testing the app in the field and training key personnel on its use and functions.

2.13. The activities of this component to be implemented by the Executing Agency will include: (i) to explore and develop digital solutions for enforcement, whereby the Executing Agency will hire a qualified firm to assess the existing Spatial Monitoring and Reporting Tool (SMART) for its effectiveness in performing the functions that TASA desires – a comprehensive and real-time reporting of fishing activities including legal and illegal actions by fishers; (ii) pilot the new and improved digital solution for enforcement of fisheries regulations, whereby the Executing Agency's conservation officers will test the new and improved application in the field to ensure it is able to perform all the required functions in an enhanced and faster manner; (iii) capacity-building in use of the new technology at the completion of the piloting exercise, the developers of the application will train additional TASA conservation officers on how to collect data; (iv) monthly data analysis and training for staff in using the application to generate reports to inform patrol routes and times for more effective patrols that target hotspots identified by the application through Artificial Intelligence.

2.14. The expected results of this component will be: (i) 255,000 hectares of land and seascape are maintained through direct management of the marine environment, surveillance and enforcement and direct management interventions; (ii) an enhanced digital solution for improving fisheries law enforcement; (iii) at least 28 TASA field staff trained in the use of the new App and how to conduct analysis of the information to inform management.

B. Project results, measurement, monitoring, and evaluation

2.15. The expected outcomes of the project are: Direct impact to over 860 active fisherfolk, with 150 fisherfolk trained and utilizing marine management and conservation tools; 300 cumulative number of new income opportunities created; 255,000 hectares under sustainable management and conservation. The project results will contribute to the accomplishment of the following Sustainable Development Goals: SDG 8 - Decent Work and Economic Growth; SDG 12 - Responsible Consumption and Production; and SDG 14 - Life Below Water.

2.16. **Monitoring**. The Executing Agency will be responsible for collection of data and reporting on results and achievements in a timely manner. The Executing Agency will develop a monitoring plan at the start of the project that will ensure tracking and measuring of indicators that are relevant for the performance of the project and have verifiable sources. Progress in monitoring these indicators will be facilitated by The Executing Agency internal systems. Additionally, The Executing Agency will report to the Bank every six months through a Project Status Report (PSR) and submit a Project Completion Report (PCR) on the project's final outcomes. Where applicable, monitoring systems will identify both areas of early success and areas where corrective intervention is needed in the project.

2.17. **Evaluation.** The project will complete a final evaluation. Prior to execution of the evaluation, appropriate timelines and data sources will be identified. Any additional information collected that is not already part of the project monitoring system will be appropriately catalogued.

III. ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS

A. Alignment with the IDB Group

3.1. The project is aligned with the IDB's Vision 2025, in promoting growth opportunities for everyone in a sustainable way, boosting the digital economy and promoting gender and equality diversity.

3.2. Moreover, this project supports IDB Group Country Strategy with Belize 2022-2025 to aid Belize in achieving robust, inclusive, and sustainable growth, with an emphasis on private sector productivity and sustainable growth, focusing on MSMEs, and human capital. In this regard, the project intends to improve the management and preservation of the natural capital specifically related to the marine ecosystems and the opportunities for income generation for coastal communities.

3.3. In addition, the project is aligned with IDB loan operation BL-L1042 "Promoting Growth in Sustainable Blue Economy Program" and BL-T1149 "Support the Formulation of a Program to Promote Sustainable Growth in the Blue Economy" that both seek to enable and increase sustainable economic growth, sector diversification, and maintain quality sustainable livelihoods in the offshore deep-slope demersal marine finfish value chain of the Belize Blue Economy sector. Specifically, this project will support the public sector loan via knowledge sharing activities. These complementarities will aid in reducing the significant information deficit that exists on the state of finfish fisheries, among others, which will inform decisions and interventions noted under the public sector loan.

3.4. This operation will collaborate with the newly approved TC BL-T1145 “Development of the Blue Economy of Belize” that aims to strengthen the policy and institutional framework for the development of the Blue Economy in Belize, which will provide a platform for economic recovery in promoting new investments in key sectors of the economy, including tourism, agriculture, and fisheries. Specifically, this project will support the development of the Blue Economy via implementation capacity building interventions aimed at fisherfolk that will aid in the sector’s promotion of environmental protection and sustainability, and targeted resilient and sustainable recovery from the global pandemic.

3.5. The project also aligns with the implementation of the commitments under Clause I of the Conservation Funding Agreement of the Blue Bond Debt restructuring. Under Clause I, Belize is expected to expand Biodiversity Protection Zones and Marine Protected areas. This execution of this project will assist in the management of Turneffe Atoll Marine Reserve, which has been expanded under the conservation agreement commitments. In addition, Milestone 7, Clause II of the agreement speaks to the designation of at least three (3) marine protected areas being enlisted under IUCN green list areas. This project will aid towards the preparation of TAMR for such green listing by ensuring the protected areas are providing jobs for local communities and ensuring gender equity by targeting women and girls in its engagement and protecting biodiversity. Finally, Section B, Clause II focuses on fisheries management. This project falls directly in line with this clause as it advances Belize’s commitment to the management of fisheries to prevent illegal, unregulated and unreported fishing in its waters. This includes enhanced monitoring, sustainable harvest, reducing bycatch or endangered species and habitat destruction.

3.6. 64% of the resources of the project will be invested in climate change mitigation and/or adaptation activities, according to the joint methodology of the Multilateral Development Banks. These resources contribute to the IDB's climate finance target (30% of the volume of approvals annually).

B. Scalability

3.7. The project intends to work with several international organizations to generate reliable data that will be available and shared with local and international partners to facilitate new fisheries policy consultation forums aimed at strengthening local and regional fisheries management. For example, the Executing Agency currently has a working relationship with The Nature Conservancy (TNC) that was instrumental in negotiating the Belize Blue Bond and is assisting TASA with developing a blue carbon project for Turneffe and seaweed farming with various community groups.

3.8. The Executing Agency has an excellent working relationship with Environmental Defense Fund (EDF) to enhance adaptive management, the use to the Vericatch app, and improve fish spawning aggregation, commercial and recreational fisheries monitoring that will contribute to the transformation of international seafood markets by mainstreaming sustainability in seafood supply chains originating in developing countries.

3.9. The Executing Agency is also a member of a group of Marine Protected Areas network that spans across Central America and the Caribbean where a peer-to-peer learning approach is used – this network is led by MPA Connect and is an

initiative through the Gulf and Caribbean Fisheries Institute, which will support initiatives to allow for the development of gender strategies to dedicate specific resources to address gender gaps and challenges in fishery improvement to ensure that projects contribute to gender equality and women's empowerment.

3.10. Important engagements with the private sector will be carried out to conduct feasibility studies and develop business plans to provide the equipment, servicing, repairs, and training on the technology. This is an important step in the ability to scale-up the model across other MPAs within Belize, as economies of scale in obtaining the technology will realized.

3.11. From a financial support perspective, the Belize Fund for a Sustainable Future (BFSF), that was established out of the blue bond, as well as the Protected Areas Conservation Trust (PACT) and Mesoamerican Reef Fund, including the Belize Marine Fund, are strong partners to support scaling and replication of the proposed technologies.

3.12. In addition, the project will seek opportunites under the Belize Marine Fund (BMF), established within the Mesoamerican Reef Fund (MAR Fund), that has been designed "to provide long-term financial sustainability for addressing high priority marine resources management and conservation issues in Belize for greater impact throughout the Mesoamerican Reef Eco-region."

3.13. Furthermore, Belize is eligible, and has been accessing funding from the EU, World Bank, and climate funds, such as the Green Climate Funds, for economic development and preparedness for climate funding. The EU has now established an office in Belize with the intention of financing conservation and marine protected areas. The project team will be liaising with the EU, World Bank and other locally based IFIs to develop working relationships and seek synergies with these institutions.

3.14. An ongoing relationship with the United National Development Programme (UNDP) has also positioned the Executing Agency to be able to partner with the UNPD directly through mechanisms including Official Development Assistance programmes.

3.15. The Caribbean Development Bank's strategic plan "Financing the Blue Economy: A Caribbean Development Opportunity" looks at the potential of the blue economy to drive sustained and inclusive economic growth in SIDS. These mechanisms can provide the means to strengthen the Executing Agency's blended finance model for Marine Protected Areas and increase its ability to leverage private-public investments to build the blue economy. The Executing Agency is already implementing an impact investment that enabled critical capital investments required for sustaining and financing its conservation and management objectives in the Turneffe Atoll Marine Reserve. The Executing Agency's continued and strengthened work with larger financial institutions as mentioned above has the potential to scale its model nationally as well as regionally.

C. Project and institutional risks

3.16. **Lack of a regulatory framework and limited capacity for enforcement of the finfish sector.** There is a lack of regulation for finfish such as quotas, catch sizes and landing sites, and an inability of the regulators to enforce sustainable fishing

practices. **Mitigation:** The project will promote standards and practices for the autoregulation of the market.

3.17. **Adoption of new technology.** Fisherfolks may be hesitant to adopt the new technology. **Mitigation:** The project will start working with those fisherfolks known as positive leaders and influencers in their communities and with whom the app will be tested. The fisherfolk will be trained in the use of the digital tools and its permanent use will be encouraged to file accurate records as an incentive to eventually have access to finance.

3.18. **Technology development.** The development of technology can be a costly endeavor and could negatively impact on the timeline of the project. **Mitigation:** TASA will hire an experienced project manager to ensure the project remains on schedule and within budget.

3.19. **Lack of acceptance of best practices.** Fisherfolks may not be interested in adopting innovative technology or applying the best practices in training. **Mitigation:** Fisherfolks will be selected based on their history of willingness to participate in projects and collaboration with TASA. TASA has a list of these potential stewards that will be engaged in the project.

3.20. **Institutional Risks.** The Executing Agency was established in 2013 in Belize and their role has been focused on advocacy for environmental protection and minimal on project implementation. To ensure strong project execution, TASA will utilize the experience and networks of the organization to augment their capacity to execute. To mitigate risks related to procurement and fiscal management, IDB Lab resources will be utilized to: (i) hire a consultant with strong financial and procurement skills; (ii) contribute 80% to the hiring of a project coordinator; and (iii) hire a consultant to develop a monitoring and evaluation framework to be used by TASA in Belize to complement its existing team. This support will also be supplemented by ex-ante review of all procurements within the first year of execution.

3.21. The Project Team, with the support of OII, conducted integrity due diligence (IDD) on the Project and found heightened integrity and related reputational risks as well as mitigating factors. The integrity and related reputational risks presented by this Project are within the appetite of IDB Lab for such risks. For more details see the Integrity Annex.

3.22. Considering IDB Lab will only be financing digital systems and applications, this can be precategorized as "C" given that it is expected to have small E&S risks and impacts.

IV. INSTRUMENT AND BUDGET PROPOSAL

4.1. The project has a total cost of US$830,500, of which US$400,000 (48%) will be provided by IDB Lab, and US$430,500 (52%) by the counterpart. The instrument to be used is a non-reimbursable technical cooperation. Funds will also be used to develop a new business model for marine protected area management. The costs associated with the acquisition of all major assets under the project will be supported by TASA with its counterpart funding.

DETAILED BUDGET Turneffe Atoll Sustainability Association - BL-T1151						
	COMPONENTS	Project Total Amount	IDB Lab	Counterpart Executing Agency		TOTAL
				In kind	Cash	
1	COMPONENT 1: To strengthen TASA's sustainable financing program through income diversification	163,500	106,000	5,000	52,500	163,500
2	COMPONENT 2: To enhance the effectiveness of TASA's fisheries management program	217,000	95,000	55,000	67,000	217,000
3	COMPONENT 3: Develop and implement an integrated surveillance and control program	318,000	99,000	92,000	127,000	318,000
4	Project Administration	132,000	100,000	2,000	30,000	132,000
	TOTAL	830,500	400,000	154,000	276,500	830,500
	% of Financing	100	48	19	33	100

V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

A. Executing agency description

5.1. TASA will be the executing agency of this project and will sign the agreement with the Bank. TASA is the official co-management entity of the Turneffe Atoll Marine Reserve and was formed in Belize in October 2013 as a Non-Governmental Organzation. The organization is composed of twenty-seven (27) full time professional staff including 5 administrative staff, 6 program managers and 16 Conservation Officers. TASA's main activities are linked to Community Development & Engagement, Biodiversity Conservation & Science, Management & Infrastructure and Law Compliance. TASA's average turnover is approximately US$600,000 per annum. TASA will work in close collaboration with the NGO Blue Finance (Bf), which specializes in MPA management and financial sustainability.

5.2. Blue Finance's role will be as co-partner in the development of the "TASA Virtual Reality Engagement Application", along with providing counterpart funding support and as technical advisor to the Executing Agency throughout the project. Bf is a social enterprise that works under the institutional flagship of United Nations and has forged strong partnerships with more than 30 international conservation partners and financial institutions to cover and address all the needs of the MPA ecosystem. Blue Finance develops solutions for the effective management and sustainable financing of MPAs. Blue Finance and local partners are co-managing a portfolio of 4 high-impact "bankable" MPAs,improving the management and conservation activities in 950,000ha of marine ecosystems, with 4 other MPA projects underway for 2022.

B. Implementation structure and mechanism

5.3. The Executing Agency will establish an execution unit and the necessary structure to execute project activities and manage project resources effectively and efficiently. The Executing Agency will also be responsible for submitting progress reports on project implementation. Details on the structure of the execution unit and reporting requirements are in Annex V in the project technical files.

5.4. In addition, the Executing Agency will create a project advisory committee that will include the Fisheries Department, Belize Tourism Board and the Ministry of the Blue Economy and Civil Aviation to govern the project implementation, manage risks and address challenges. Other organizations and research institutes such as University of Belize may be invited to participate on an ad hoc basis. The advisory committee will also include a representative from IDB Lab to provide input and advice on changes that may be necessary to strengthen impact and achievement of project results as well as to foster connections with IDB Lab's technical partners in the region supporting knowledge sharing and regional scaling. The project advisory committee will convene on a semiannual basis or more often as necessary, to assess project progress, risks and take strategic decisions required to support achievement of results.

5.5. Implementation of field activities will require consultations with various stakeholders and the Executing Agency staff to provide content and feedback for the development of the digital solutions contemplated in this project. Further description of implementation of actions in the field are provided below for each of the three components as well as the project management aspect. For component I, the Executing Agency will engage relevant tourism stakeholders in designing the App as well as field-testing and training on the use of the App. One of the main actions is also the marketing of the App to encourage customer use. In component II, the Executing Agency will collect morphometric information from landed and under-water commercial and sports fish, as well as encourage at least 50 fishers to submit their catch data via the digial App. For component III, the Executing Agency will revise and enhance the use of Spatial Monitoring and Reporting Tool including field-testing, adjusting and training its staff on the use of the new tool.

5.6. Implementation of field activities will require consultations with various stakeholders and the Executing Agency staff to provide content and feedback for the development of the digital solutions contemplated in this project. Further description of implementation of actions in the field are provided below for each of the three components as well as the project management aspect.

VI. Fulfillment of Milestones and Special Fiduciary Arrangements

6.1. **Disbursement by results and fiduciary arrangements**. The Executing Agency will adhere to the standard IDB Lab arrangements relating to disbursement by results, Bank procurement[2] and financial management[3] policies, as specified in Annexes V and VI and any future policies and procedures. The Project will be

[2] Link to the Policies for the Procurement of Goods and Works financed by the Inter-American Development Bank.

[3] Link to the Financial Management Guidelines for IDB-financed Projects.

monitored by the Country Office of Belize. Monitoring will be undertaken in accordance with the performance and risk management policies (fulfilment of milestones) established by the IDB Lab. Project disbursements will be contingent upon verification of the achievement of milestones.

6.2. **Financial Management and Supervision.** The Executing Agency will establish and be responsible for maintaining adequate accounts of its finances, internal controls, and project files according to the financial management policy of the IDB Lab.

VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY

7.1. **Access to information**. This document contains confidential information related to one or more of the ten exceptions to Access to Information Policy and will be initially treated as confidential and made available only to Bank employees. This document will be disclosed and made available to the public upon approval.

7.2. **Intellectual property**. All work financed by the IDB Lab and the results obtained under the Project will be the intellectual property of the Bank. The IDB will grant a non-exclusive and free license to the Executing Agency, including the rights of dissemination, reproduction and publication in any medium of any product. The dissemination, reproduction and publication must indicate that it has been financed by the IDB Lab.