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Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 25-Nov-2024 | Report No: PIDIA00800

Public Disclosure Authorized

BASIC INFORMATION

A. Basic Project Data

Project Beneficiary(ies)	Region	Operation ID	Operation Name
Indonesia	EAST ASIA AND PACIFIC	P181486	Indonesia Coral Bond
Financing Instrument	**Estimated Appraisal Date**	**Estimated Approval Date**	**Practice Area (Lead)**
Investment Project Financing (IPF)	28-Nov-2024	28-Feb-2025	Environment, Natural Resources & the Blue Economy
Borrower(s)	**Implementing Agency**	**GEF Focal Area**	
Republic of Indonesia	Indonesia Climate Change Trust Fund (ICCTF), Indonesian Environment Fund (IEF), Ministry of Marine Affairs and Fisheries	Biodiversity	

Proposed Development Objective(s)

To improve coral reef health and conservation outcomes in target marine protected areas

Components

Component 1. Improve Management Effectiveness of Target MPAs to Deliver Measurable Outcomes
Component 2: Project Management and Monitoring

PROJECT FINANCING DATA (US$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)?	Yes
Is this project Private Capital Enabling (PCE)?	No

SUMMARY

Total Operation Cost	**14.86**
Total Financing	**14.86**
Financing Gap	**0.00**

DETAILS

Non-World Bank Group Financing

Other Sources	1.10
Foundation/s (identified)	1.10
Trust Funds	13.76
Global Environment Facility (GEF)	13.76

Environmental And Social Risk Classification

Moderate

Decision

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **After two decades of political and institutional reforms, Indonesia is a stable democracy that significantly reduces poverty.** It is the world's fourth most populous nation, with 279 million people (2022) living throughout an archipelago of more than 6,000 inhabited islands. Indonesia has recently emerged as one of the world's largest economies, with a gross domestic product (GDP) of over US$1.3 trillion (2022). Between 2015 and 2019, Indonesia maintained an average real GDP growth rate of 5 percent. Growth fell sharply to 2.1 percent in 2020 following the onset of the global COVID-19 pandemic, but the economy rebounded in 2022 (5.3 percent) and 2023 (5.0 percent) as consumption, exports, and investment improved.[1] The government's goal to eliminate extreme poverty by 2024 has been almost met, yet 16 percent of the population remained poor in 2022,[2] with rural areas in Maluku, Papua, and Nusa Tenggara having significantly higher poverty levels than the rest of Indonesia.[3]

[1] World Bank (2023). "Macro Poverty Outlook: East Asia and the Pacific, Annual Meetings 2023."
[2] Poverty, measured at the lower middle-income country line of US$ 3.20 2011 Purchasing Power Parity per day.
[3] World Bank (2023). "Indonesia Poverty Assessment: Pathways Towards Economic Security."

2. **As the second most biodiverse country in the world,[4] Indonesia's natural resources have contributed to economic growth, but natural capital stocks are at risk.** Agriculture, forestry, and fisheries accounted for 12.4 percent of GDP in 2022.[5] However, uncontrolled natural resource exploitation undermines these economic benefits, leading to habitat degradation, biodiversity loss, and carbon emissions.[6] Over the next 25 years, Indonesia is projected to experience lower land and sea productivity, scarcer renewable natural resource goods and services, and more severe climate change impacts. For example, climate change is predicted to cause a 13 to 29 percent decline in total fish catch by 2050— the most substantial reduction of any nation and making Indonesia's fisheries sector one of the most vulnerable in the world.[7] These trends pose substantial risks to Indonesia's sustainable development goals, including the target to become a high-income country with near-zero poverty by 2045.[8]

Sectoral and Institutional Context

3. **Indonesia's blue economy, the largest in Southeast Asia, is valued at US$256 billion annually.[9]** Indonesia's coral reefs and associated ecosystems, such as seagrass meadows and mangroves, are globally significant. Coral reefs, home to 25 percent of all marine life, are one of the world's most vulnerable ecosystems, with one-third of reef-building corals facing extinction. Indonesia is home to 16 percent of the world's coral reefs. These coastal and marine ecosystems are vital for Indonesia's economy (the direct economic contribution of fishing and tourism on coral reefs is estimated at US$3.3 billion annually),[10] social welfare, including nutrition,[11] and provide significant climate change adaptation and mitigation benefits, for example holding 17 percent of the world's blue carbon reservoir. Fisheries and aquaculture provide an essential income source, with differentiated labor and asset ownership patterns driving participation across the value chain. For example, in 2018, women represented 42 percent of the workforce of the fisheries sector and 74 percent of the workforce of the aquaculture subsector. While women make up only 4 percent of fishers, they make up 65 percent of fish sellers.[12]

4. **Climate change and human activities jeopardize Indonesia's coastal and marine ecosystems. One-third of its reefs are in poor condition, and an estimated 40 percent of the country's mangroves and seagrasses are degraded or lost.** More than 85 percent of reefs within the Coral Triangle region[13] are currently threatened by local stressors, including overfishing, pollution, and coastal development—substantially higher than the global average of 60 percent.[14] Since the 1980s, the interval between severe coral bleaching events has dramatically declined from 25 to 5.9 years, reducing the time for coral reefs to recover from damage.[15] Future trends of accelerated climate change and higher pressure from human activities will exacerbate these impacts on corals, reducing their viability, resilience to climate change, and ecosystem services they provide. Indonesia's average sea temperature is expected to increase by 1.1-1.5°C by 2050,[16] with

[4] https://news.mongabay.com/2016/05/top-10-biodiverse-countries/
[5] World Bank National Accounts Data. Agriculture, Forestry, and Fishing, Value Added (percent of GDP) – Indonesia. Accessed January 9, 2024.
[6] World Bank (2019). "WAVES Partnership Policy Brief: Natural Capital Accounts and Policy in Indonesia."
[7] Barange, M. et al. (2018). "Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation, and migration options."
[8] BAPPENAS (2019). Indonesia Vision 2045.
[9] OECD (2021). "Sustainable Ocean Economy Country Diagnostic of Indonesia."
[10] Bartelet et al. (2024). "Estimating and comparing the direct economic contributions of reef fisheries and tourism in the Asia-Pacific."
[11] Selig, E. R. et al. (2019). "Mapping Global Human Dependence on Marine Ecosystems."
[12] Napitupulu et al. (2022). "Trends in Marine Resources and Fisheries Management in Indonesia."
[13] The Coral Triangle is a delineated area containing the greatest marine biodiversity on Earth. It comprises all or part of the maritime zones of six southeast Asian nations: Indonesia, Papua New Guinea, Philippines, Malaysia, Solomon Islands and Timor Leste.
[14] WRI (2015) "Reefs at Risk Revisited in the Coral Triangle."
[15] Hughes et al. (2018) "Spatial and temporal patterns of mass bleaching of corals in the Anthropocene."
[16] CMCC (2021) "G20 Climate Risk Atlas."

annual severe bleaching projected to affect more than half of Indonesia's reefs by 2044.[17] Certain reef regions in Indonesia have been identified as climate refugia, including in Raja Ampat and Alor[18,19]—areas where conservation efforts are critical to limit future loss of coral reef biodiversity.

5. **The World Bank's Oceans for Prosperity[20] report demonstrated that the future of Indonesia's oceanic sectors, such as fisheries, tourism, and aquaculture, relies on the health of these natural assets.** The report proposed key strategies to ensure a sustainable transition to a blue economy in Indonesia, including the need to improve the management of coral reefs, mangrove forests, and seagrass meadows by investing in Marine Protected Areas (MPAs) effectiveness and providing a sustainable flow of financing for MPA management. Effectively managed MPAs conserve marine and coastal ecosystem services, contribute to healthy fisheries and the wellbeing of coastal communities[21], and are a key nature-based solution to promote climate adaptation and mitigation.[22] These outcomes are achieved because effective management of MPAs enhances the resilience of marine ecosystems as evidenced by faster recovery rates following marine heat wave events.[23] These benefits far exceed the capital and operational investments into MPAs.

6. **The Government of Indonesia (GoI) has established 201 MPAs encompassing 24.1 million hectares,[24] the GoI's main tool to reverse the decline of coral reefs and associated ecosystems.** Currently, 40 percent of Indonesia's coral reef and seagrass meadow areas and 25 percent of mangrove forests are within MPAs.[25] These MPAs include local MPAs managed by the provincial government and national MPAs managed by the Ministry of Marine Affairs and Fisheries (MMAF) or the Ministry of Environment (MoE). The GoI further aims to expand the MPA network to 32.5 million hectares of effectively managed MPAs by 2030 and 97.5 million hectares by 2045.[26]

7. **Globally, there is growing recognition of the need to transition from MPA establishment to effective management**. Yet up to 70 percent of MPAs globally do not reach their conservation goals,[27] including in Indonesia.[28] A recent performance assessment of 61 MPAs in Indonesia showed that implementation processes, outputs, and outcomes are not aligned with well-designed plans.[29] MPAs tend to focus on management processes rather than outcome measures of success, and stakeholders are insufficiently engaged in governance and decision-making. Independent validation of MPA effectiveness assessments or use of international standards for guidance and improvement is absent. For most MPAs in Indonesia, conservation and socio-economic priorities are not clearly defined through appropriate targets and indicators. Routine assessments of socio-economic and equity outcomes are not conducted, while conservation monitoring is undertaken on an ad hoc basis. Consequently, it is challenging for MPA management units to evaluate whether strategies are effective and to inform management planning accordingly. Stakeholders and rightsholders are not explicitly identified in management plans, no targets are set on stakeholders' participation and benefits, and efforts to increase them are inadequate. Women and marginalized groups are underrepresented in marine resource policy,

[17] de Clippele et al (2023) "Evaluating annual severe coral bleaching risk for marine protected areas across Indonesia."
[18] Beyer et al. (2018). "Risk-sensitive planning for conserving coral reefs under rapid climate change."
[19] Mellin et al. (2024). "Cumulative risk of future bleaching for the world's coral reefs."
[20] World Bank (2021). "Oceans for Prosperity: Reforms for a Blue Economy in Indonesia."
[21] Nowakowski et al. (2023). "Co-benefits of marine protected areas for nature and people."
[22] Jacquemont et al. (2022). "Ocean conservation boosts climate change mitigation and adaptation."
[23] Ziegler et al. (2023). "Marine protected areas, marine heatwaves, and the resilience of nearshore fish communities."
[24] MMAF (2021). "MPA Management Status in 2020."
[25] Amkieltiela et al. (2022). "The rapid expansion of Indonesia's marine protected area requires improvement in management effectiveness."
[26] MMAF (2020). "MPA Vision 2030 and Roadmap to MPA Management"; BAPPENAS (2023). "Indonesia Blue Economy Roadmap."
[27] Bohorquez et al. (2022). "A new tool to evaluate, improve and sustain marine protected area financing built on a comprehensive review of finance sources and instruments."
[28] UNEP-WCMC (2024). "Protected Area Profile for Indonesia from the World Database on Protected Areas." Accessed January 2024; MMAF (2018). "Our MPAs: Sharing Plans, Investments, and Responsibilities."
[29] Meilana et al. (2023). "How Indonesian MPAs are doing: a management performance-based evaluation."

governance, and management frameworks—the very populations that tend to be disproportionately affected by the enforcement of conservation area rules that are inconsistent with traditional livelihoods.

8. **The proposed project builds on the GoI's efforts to improve MPA effectiveness, including through the US$210 million World Bank-financed Oceans for Prosperity Project (LAUTRA**). LAUTRA, approved in March 2023, aims to strengthen the management of Indonesia's marine biodiversity–including coral reefs and associated ecosystems by (i) improving the effectiveness and management performance of twenty MPAs to a level consistent with the "Implemented" stage of MPA establishment[30] (in particular, LAUTRA will strengthen the government and regulatory framework, enhance human resource capacity, and upgrade infrastructure and assets for MPA management); (ii) developing diversified and sustainable livelihoods for coastal communities, and (iii) developing the necessary enabling environment and long-term strategies for addressing the financing gap in MPA management and other priority blue economy sectors. LAUTRA uses the GoI's evaluation tool, *Evaluasi Efektivitas Pengelolaan Kawasan Konservasi* (EVIKA), to measure an increase in management effectiveness in target MPAs. The GoI is keen for EVIKA to receive independent validation and alignment to measure progress against international standards.

9. **MPAs in Indonesia need additional support to move from the "Implemented" to "Actively Managed" stage of establishment–even those supported by LAUTRA with the aim to achieve EVIKA Gold rating, the highest rating under EVIKA**. An "Actively Managed" MPA means all management functions are fully implemented, stakeholders are meaningfully engaged, demonstrable biodiversity outcomes are being achieved, and comprehensive systems are in place to evaluate performance and inform management. Reaching EVIKA Gold rating will not be enough to meet all the requirements of the "Actively Managed" stage. For example, there is no requirement under EVIKA Gold to achieve (a) a reduction in threat intensity or frequency or (b) an increase in biophysical outcomes. The Coral Bond will, therefore, leverage LAUTRA investments while addressing five specific barriers to delivering equitable and measurable biodiversity outcomes. These include (i) suboptimal identification and mitigation of threats to conservation targets, (ii) limited monitoring of MPA outcomes, (iii) absence of independent validation of MPA performance, (iv) lack of community and stakeholder awareness of MPA rules and benefits and engagement in MPA management processes, and (v) lack of MPA management financial sustainability.

10. **Domestic public investment is by far the largest source of biodiversity finance. Private financing for biodiversity is limited,[31] especially for marine biodiversity,[32] but interest is growing**. There is a recognized need to unlock new funding sources, particularly from the private sector. This is particularly important for MPAs as less than 20 percent of the financial needs for effective management are currently covered, and the MPA network is expanding to meet the country's global commitments, such as the protection of 30 percent of land and oceans by 2030 under the United Nations Convention on Biological Diversity. Current funding is typically provided by non-profits, philanthropic sources, official development assistance, and government budgets, and it competes with other government services such as education, health, and public services.[33] The latter are given priority, partly due to the lack of understanding of the benefits of MPAs. Key challenges associated with attracting scalable private sector capital to sustainable marine investments, and specifically MPAs, include (i) poor data on fisheries, coral reefs, and marine ecosystem services;[34] (ii) the lack of data-driven impact measurement; and (iii) the lack of track record of scalable and replicable transactions. While suboptimal funding is a barrier

[30] As defined in Grorud-Colvert et al (2022). "The MPA Guide: A Framework to achieve global goals for the ocean." This MPA Guide defines four stages of establishment of an MPA: (i) Proposed; (ii) Designated; (iii) Implemented; and (iv) Actively Managed. In the "Implemented stage" institutions promote compliance and enforcement, resources users are aware of MPA regulations, and management plans are being implemented.
[31] World Bank (2020). "Mobilizing Private Finance for Nature."
[32] Friends of Ocean Action (2020). "The Ocean Finance Handbook."
[33] ADB (2014). "State of the Coral Triangle: Indonesia"; MMAF (2020). "MPA Vision 2030 and Roadmap to MPA Management."
[34] Baralon, J. et al. (2021). "Conservation Finance 2021: An Unfolding Opportunity. Coalition for Private Investment in Conservation."

to conservation outcomes, other barriers also exist. These include inadequate legal or institutional mechanisms, which can inhibit sustainable financing. In response, LAUTRA is already making targeted investments to enhance MPA management capacity, legal frameworks, and institutions.

11. **The Coral Bond is modeled after the World Bank-issued Wildlife Conservation Bond or Rhino Bond,[35] which pilots an outcome-based instrument to channel private finance for conservation, addressing the challenges related to metrics and measurement and providing an innovative structure to mitigate risk, secure project outcomes, and expand partnerships**. The key innovation mechanism behind this instrument is the repayment of investors by outcome funders (the Global Environment Facility) only when pre-defined results have been achieved and independently assured and verified. Compared to traditional marine conservation funding that is output-focused, this outcome-focused instrument allows donors' scarce resources to be optimized because capital is only released for successful activities. Due to challenges in defining and measuring robust outcomes, this innovative, outcome-based model has never been tested at scale for marine ecosystems. Instruments that "push the envelope" are critical to building capacity and crowding in additional private capital to finance conservation, both consistent with the World Bank's new vision and mission and urgently required to close the biodiversity financing gap.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

To improve coral reef health and conservation outcomes in target marine protected areas

Key Results

i. Target MPAs achieve independently verified conservation outcomes in line with IUCN Green List of Protected and Conserved Areas (number MPAs)
ii. Increase in coral reef fish biomass in core zone in target MPAs relative to open access areas (percent)

D. Project Description

12. **The project utilizes an innovative financing model to secure private finance for outcome-focused management of MPAs.** The innovation transaction enables private and institutional bond investors to participate in a market that traditionally consists of bilateral, multilateral, and philanthropic donors. Two different sources finance the operation's total cost: (a) US$10 million for conservation activities financed by coupon payments foregone by bond investors and (b) a results-based GEF-financed Non-Grant Instrument (NGI) of US$13.76 million[41] + EUR$1 million grant from BNP Paribas, for a total equivalent of US$14.86 in Conservation Success Payment to be paid to investors, if the project's Key Performance Indicator (KPI) for improved coral reef health is achieved. **Bondholders finance conservation activities; GEF and BNP Paribas finance Conservation Success Payments to investors if conservation outcomes are met.**

[35] The Rhino bond, launched by the World Bank in 2022 to support conservation of rhinos in South Africa, is a first-of-its-kind outcome-based bond that supports the financing of conservation activities. The Rhino Bond is a non-sovereign, non-debt Sustainable Development Bond also known as a the "Wildlife Conservation Bond", which transfers project risk from donors to investors, who only receive their interest payments when project outcomes are attained. It channels investments to achieve conservation outcomes – measured by an increase in black rhino populations.

13. **The World Bank will issue an AAA-rated [120–150 million][36] five-year US dollar-denominated principal-protected World Bank Sustainable Development Bond or Coral Bond.** Investors in the bond will agree to forego bond coupon payments, estimated at US$10 million on a present value basis, which will be delivered to the project upfront and channeled towards activities in three target MPAs. To mobilize a bond of this size, the team would anticipate attracting between 10-15 institutional investors with a mandate to support conservation and other Environmental, Social and Corporate Governance (ESG) objectives, as well as possible participation of private investors. Assessments suggest sufficient depth in the market to mobilize the amount targeted from the growing pool of investors in this space, particularly as they increasingly face new pressure to show impact through their investments. Under this structure, not only does the investor have the chance to earn a higher spread than normal by taking exposure to a development project, they also achieve the "additionality" of demonstrating the highly visible impacts of their investments. While most of the investors involved have to date been large financial institutions and pension funds who are familiar with World Bank bonds and similar supranational issues in the High-Grade sector, there has been increasing interest in other market segments, including family offices, retail, and even sovereign wealth funds, presenting a potential for scale-up.

14. **The GEF Non-Grant Instrument (NGI) and BNP Paribas will fund the Conservation Success Payment to bondholders, contingent on achieving the pre-agreed impact metric.** The World Bank will retain the bond proceeds for the Bank's general sustainable development purposes. Investors will receive their principal back at maturity from the World Bank regardless of project performance and implementation risk. For taking a risk, they are offered a potential reward that is some amount greater than the value of the coupon returns, which they gave up. US$13.76 million from GEF-NGI will be held in reserve and later released, in part or in full, to bond investors, subject to the success achieved in the MPAs. In addition, BNP Paribas committed to provide a EUR1 million grant as Conservation Success Payment for the project. With this approach, GEF and BNP Paribas financing can be optimized as it will only be released upon achievement of agreed targets, and project implementation risk is passed to capital market investors. Successful outcome payments will demonstrate the potential of this structured debt instrument, thus creating an enabling environment for replication and drawing in future added capital or more donor commitments for marine biodiversity conservation.[37]

15. **A key project design and implementation component is identifying a robust outcome metric or KPI to define success and trigger Conservation Success Payments.** This project's proposed KPI and payment trigger is achieving a biodiversity indicator related to coral reef health – an increase in coral reef fish biomass. This metric has been selected due to its ecological relevance, governance utility, and supporting scientific evidence. Coral reef fish biomass is a widely adopted reef monitoring parameter reported in the scientific literature for at least four decades. Coral reef fish biomass exhibits rapid and detectable responses to the implementation of MPAs[38,39] with the most effective MPAs restoring fish assemblages to a state approaching pristine.[40,41] It is measured via relatively rapid field assessment and forms the basis of global reef monitoring efforts such as the International Coral Reef Initiative and the Global Coral Reef Monitoring

[36] Actual size is subject to market conditions at time of issuance.

[37] In the absence of greater mobilization of donors, scaling can also involve directing the capital generated by a bond issue towards investments in activities that themselves generate revenue or which can generate assets that can be monetized or sold. These revenues or sales of assets can be used to finance the outcome payments required later if a project successfully achieves its objectives. The World Bank Treasury team has done exactly this with outcome bond structures in other jurisdictions, in which the development activities funded by a bond are generating carbon credit and/or plastic credit that can be monetized through an offtake agreement with a third party and used to finance outcome payments. In the marine space, there is also very strong scope to make investments in projects that generate blue carbon assets, which can, in the future, be used to scale these instruments further.

[38] Taylor & McIlwain (2010). "Beyond abundance and biomass: Effects of marine protected areas on the demography of a highly exploited reef fish."

[39] Kaplan et al. (2019). "Setting expected timelines of fished population recovery for the adaptive management of a marine protected area network."

[40] Aburto-Oropeza et al. (2011) "Large recovery of fish biomass in a no-take marine reserve."

[41] Guidetti et al. (2014). "Large-scale assessment of Mediterranean marine protected areas effects on fish assemblages."

Network.[42] The project will apply a standardized methodology within all target sites to assess coral reef fish biomass, building on the Global Coral Reef Monitoring Network's monitoring guidelines and using the MERMAID (Marine Ecological Research Management AID)[43] data platform to standardize and streamline coral reef health data collection, analysis, and reporting.

16. **The proposed Coral Bond aims to increase coral reef fish biomass in the core zones within the target MPAs relative to areas outside the MPA boundary.** During project preparation, historical reef fish biomass trends were examined for the three target MPAs, revealing a negative trend. In the business-as-usual scenario, these trends are predicted to continue, resulting in at least a 2 percent decline in reef fish biomass over the next five years. An extensive review of the scientific literature indicates that reef fish biomass has been reported to increase by between 50 and 1,000 percent over a 10-year period[44,45,46,47] within well-managed no-take zones. Given the current negative trajectory, the proposed project adopts a conservative target of a 25 percent increase in reef fish biomass within core zones (also called no-take areas) of target MPAs relative to open access control sites over the project period. Central to this target is the selection of indicator species that have been shown to respond rapidly to protection. These are large, carnivorous species that are subject to fishing pressure, notably species within the following family groups: Carangidae, Carcharhinidae, Haemullidae, Lethrinidae, Lutjanidae, Serranidae, and Sphyraenidae.

17. **The choice of alignment with the IUCN Green List Standard as a PDO-level indicator offers a scalable, verified, results-oriented model for MPA management.** The intricate ecological characteristics of tropical marine ecosystems and coral reefs, combined with the unpredictability of climate impacts, call for going beyond a single, definitive biodiversity metric to validate the efficacy of conservation funding. The IUCN Green List is a sustainability standard that recognizes effectively managed and governed terrestrial and marine protected and conserved areas achieving their conservation outcomes. It allows for verified claims of site effectiveness based on quantifiable data and independent verification of assessments and evidence by accredited IUCN evaluators and an independent reviewer. One project objective is to have the three target MPAs at least 80 percent aligned with all IUCN Green List Standard criteria, the minimum requirement for a site to be included in the Green List.[48] Currently, the baseline is 38 percent alignment on average for the three MPAs. An analysis of the three MPAs against the Green List identified key gaps in alignment on stakeholder engagement, the definition of and targets for major site values, threat prioritization and management, monitoring of ecological and socioeconomic outcomes, and MPA financial sustainability. Addressing these issues would bring the MPAs closer to the 80 percent alignment. The project will thus finance site-specific activities to fill the identified gaps at each target MPA.

18. **Key threats must be mitigated in the target MPAs to improve coral reef health and align with the IUCN Green List Standard.** A preliminary assessment undertaken during project preparation revealed three key threats: (i) overfishing and destructive fishing, including the use of illegal fishing methods; (ii) lack of zone compliance with permit requirements and incursions by fishing vessels into restricted zones; and (iii) pollution and visitor impacts causing physical damage to reefs. Management units do not understand the intensity and frequency of threats well, and threat response tends to be

[42] Live coral cover is another metric often used to evaluate coral reef health and MPA effectiveness though most published studies concur that MPAs do not lead to an increase in coral cover but rather stabilize the negative trends that continue beyond the MPA boundary. Significant differences in coral cover on reefs inside compared to outside MPAs only occur under certain circumstances (i.e., fully no-take, very well-enforced MPAs that have been established for at least 10 years), with some studies finding no significant difference even after 30 years of protection.
[43] https://datamermaid.org/
[44] Roberts (1995) "Rapid Build-up of Fish Biomass in a Caribbean Marine Reserve."
[45] Chirico et al. (2017) "Community- and government-managed marine protected areas increase fish size, biomass and potential value."
[46] Campbell et al. (2018). "Fishing-gear restrictions and biomass gains for coral reef fishes in marine protected areas."
[47] McClanahan & Graham (2005) "Recovery trajectories of coral reef fish assemblages within Kenyan marine protected areas."
[48] https://iucngreenlist.org/standard/components-criteria/

reactive rather than strategic. Demonstrating an understanding of threats and how this informs management action is a requirement of the Green List Standard.

19. **The proposed interventions will go beyond LAUTRA by accelerating the target MPAs from the "Implemented" to the "Actively Managed" stage of establishment.** LAUTRA lays critical groundwork for this transition by addressing the enabling environment for MPA management, including strengthening government and regulatory frameworks and enhancing institutional capacity. LAUTRA also invests in much-needed infrastructure and assets for MPA management and in MPA-associated livelihoods. Meanwhile, the Coral Bond Project focuses on strengthening inclusive MPA governance and reducing priority threats to conservation, which are key actions that leverage LAUTRA investments but are additional to them. The expected improved management performance will be measured using the IUCN Green List, which is an enhancement of the existing EVIKA scorecard as it is a more quantitative, evidence-based approach to assessing MPA performance. A benchmarking exercise comparing EVIKA and Green List indicators identified six key investment areas not currently addressed by LAUTRA that are required to meet the certification standard. The Coral Bond will, therefore, finance activities beyond LAUTRA that will facilitate the MPAs' achievement of the Green List.[49] The high complementarity between LAUTRA and the Coral Bond will accelerate this transition. Table 1 (on page 12) presents these complementary activities.

20. **The operation presents an opportunity to develop a robust blended finance operation for MPAs, leveraging much-needed private sector finance.** The project will build the capacity of the GoI to execute innovative financing instruments and demonstrate the utility of robust metrics in acting as payment triggers while creating engagements with institutional investors in a vastly underserved sector. If successful, it will increase the mobilization of financial resources for the country's growing MPA network by enhancing the credibility and international visibility of the government's efforts to protect its unique marine biodiversity.

21. The project will: (i) finance site-based conservation management activities to improve the management effectiveness of target MPAs to deliver measurable outcomes in line with a global standard (Component 1); and (ii) ensure project management, capacity building, coordination, knowledge management and monitoring and evaluation of results (Component 2).

Component 1. Improve Management Effectiveness of Target MPAs to Deliver Measurable Outcomes (US$8.5 million, funded by foregone coupon payments)

22. **This component will finance site-level activities in three target MPAs:**

- KKN Raja Ampat (325,085 hectares) located in Papua Barat Daya province and under the jurisdiction of MMAF;
- KKPD Raja Ampat (1,348,459 hectares) located in Papua Barat Daya province and under the jurisdiction of a provincial government Regional Public Service Agency (BLUD);
- KKPD Selat Pantar (Alor) (277,072 hectares) located in East Nusa Tenggara province and under the jurisdiction of East Nusa Tenggara provincial government.

[49] (i) clear identification of all MPA rights-holders and affected stakeholders, and documented evidence that governance arrangements are helping to advance inclusion and equity; (ii) evidence that the socio-economic context is understood, and that socio-economic impacts and effects are considered in the management planning and implementation process; (iii) clear identification of measurable biodiversity and socioeconomic management targets; (iv) clear identification of major threats to management targets, and evidence that effective, risk-based mitigation actions are implemented; (v) statistically robust evidence that priority threats are being managed and that conservation and socio-economic outcomes are being achieved; and (vi) the implementation of arrangements to improve long-term financial sustainability.

23. **These MPAs were selected based on three key criteria: their global biodiversity significance, representativeness of their institutional setting, and their existing management performance.** First, they lie within the globally significant Coral Triangle ecoregion and encompass a significant proportion of two seascapes. The Birds Head Seascape contains KKN Raja Ampat and KKPD Raja Ampat and is the most biodiverse marine area on Earth, with about 1,600 reef fish species and over 550 coral species recorded. The Sunda Banda Seascape contains KKPD Alor and is a priority conservation region, harboring over three-quarters of known coral species. It is identified as one of the Earth's coral reef regions at the lowest risk of increased bleaching.[50] Second, institutionally, these MPAs represent the two models of MPA management in Indonesia: one managed by the national government and two managed by provincial governments, which allows the project to be tested within two different institutional settings. Third, these MPAs have some of the highest MPA management performance levels in Indonesia according to national standards[51] and are strong candidates for accelerating international standards of management effectiveness for improved conservation outcomes.

Subcomponent 1.1. Benchmarking against IUCN Green List Standard (US$1 million funded by foregone coupon payment)

24. **The component will support technical assistance and investments to maintain regular, independent assessments of the MPAs against the Green List.** This includes (i) crosswalk analyses of EVIKA and the Green List Standard to identify EVIKA data and evidence that can fulfill the evidence requirements of the Green List; (ii) assessing and benchmarking each target MPA performance against the Green List Standard; (iii) developing a detailed, gender-sensitive action plan to make expected improvements against the IUCN Green List Standard (which includes gender equity under Green List Standard criteria 1.1); (iv) capacity building and technical assistance to support implementation of this action plan; and (v) establishing an independent scientific advisory group (EAGL) and finance external assessments by Assurance Services International. Gender-sensitive action plans will consider gender-disaggregated data in socio-economic assessments, the involvement of women and women's groups in community-based biodiversity monitoring and data collection, and ensure women are included in identifying threats and co-creating options to strengthen compliance. This subcomponent will be implemented by IUCN, which IEF contracts.

Subcomponent 1.2. Stakeholder Engagement and Threat Identification, Prioritization and Mitigation (US$5.5 million funded by foregone coupon payment)

25. The performance assessment to be conducted during implementation will confirm specific activities to be financed in each target MPA.

26. **Preliminary activities identified that would support MPAs to enhance stakeholder engagement include**: (i) comprehensive and gender-sensitive stakeholder mapping to identify and document all affected stakeholders, including minority and marginalized groups and women; (ii) developing and documenting stakeholder input processes and grievance redress mechanisms, including evaluating the adequacy of and documenting existing processes (e.g., village development plans, LAPOR!) and drafting of technical manuals and Standard Operating Procedures (SOPs) where required; (iii) design and deploy effective and inclusive community and stakeholder engagement strategies to raise awareness about the importance, rules and benefits of the MPAs; and (iv) define and monitor socio-economic outcome targets.

27. **Gender-sensitive actions are central to stakeholder engagement activities and will be defined in site-specific plans.** Plans will consider factors such as meeting timing and location, hiring female facilitators, and working through

[50] Mellin et al. (2024). "Cumulative risk of future bleaching for the world's coral reefs."

[51] The most recent EVIKA assessment (2023) scores for the 3 MPAs are: 86.7 percent (Gold) for KKN Raja Ampat, 91.5 percent (Gold) for KKPD Raja Ampat and 88.2 percent (Gold) for KKPD Alor.

women's networks and existing community platforms where women participate. Gender-sensitive actions will ensure inclusive communications and outreach activities and safeguard measures to prevent intimidation of women mainly. Activities will be consistent with the Green List process, which requires evidence that management (including threat mitigation) is performed with consideration for socioeconomic contact, including gender. The effectiveness of stakeholder engagement activities in improving community awareness of MPA management systems (including a specific gender target) will be tracked as an intermediate results indicator.

28. **This subcomponent also aims to improve the ability of target MPAs to manage threats to conservation outcomes.** This would involve target setting and strategic threat management initiatives. Proposed activities include (i) identification of conservation targets, baseline conditions, thresholds and acceptable limits of change; (ii) implementation of risk evaluation and comprehensive threat mapping, assessment and prioritization; (ii) design of intelligence-led threat mitigation strategies, including improving processes for employing stakeholder intelligence; and (iii) implementation of risk-based surveillance and monitoring patrol protocols, to include collaborative, community-based systems (POKMASWAS), and; (iv) the use of technology such as SMART [52] (a conservation area management platform, including mobile, desktop, and cloud-based components to help collect, visualize, store, analyze, report and act on conservation monitoring data), hydrophones or other tools to improve illegal fishing detection and mapping.

29. **Threat mitigation activities will also include but are not limited to, depending on thorough threat assessments to be conducted during implementation:** (i) improving compliance by supporting small-scale producers to apply for and comply with appropriate license and permit requirements; (ii) establishing carrying capacity limits for visitor sites, and implementing appropriate limitations on visitor numbers; (iii) developing and implementing codes of conduct, anchoring restrictions, waste and wastewater management provisions to mitigate visitor impacts; and (iv) implementing rights-based fisheries management approaches in priority areas, by allocating fishing rights to communities and supporting them in the development and implementation of coastal fisheries co-management plans. This subcomponent will be implemented by NGOs (LEMTARA) via a subgrant issued by IEF.

30. **These proposed activities will build upon and complement the foundational investments under the LAUTRA Project.** LAUTRA will have established essential building block elements such as (i) stakeholder maps of the private sector and community projects; (ii) operational stakeholder coordination forums; (iii) MPA information centers; (iv) engagement with communities on livelihoods activities; (v) enhanced capacity of MPA management unit staff; (vi) updated MPA management plans; and (vii) routine MPA surveillance patrols and enhanced surveillance tools, technologies, and infrastructure. See Table 1 on page 22 for how project activities complement LAUTRA investments.

Subcomponent 1.3. Coral Reef Health Monitoring (US$1 million funded by foregone coupon payment)

31. **This subcomponent will focus on supporting MPAs to monitor coral reef health systematically, particularly systematically, but not limited to, the change in coral reef fish biomass, the project KPI.** Annual scientifically robust field surveys will be conducted by experienced coral reef surveyors across the three target MPAs using a pre-determined sampling protocol and survey method while building the capacity of the MPA Management Units to conduct coral reef monitoring in the long run. A standardized pre-determined sampling protocol and survey methodology will be used to employ an underwater visual census (UVC) to provide a statistically rigorous assessment of coral reef fish biomass changes. Surveys will be conducted in the core zones of the three MPAs and control sites outside the MPAs. Data collected during coral reef monitoring surveys will be uploaded and analyzed using MERMAID, a secure online data management system. MERMAID would allow coral reef monitoring data to be collated, validated, and stored in a secure, transparent, and

[52] https://smartconservationtools.org/en-us/

auditable manner. An annual report will be produced by each MPA based on the findings and observations from the field surveys, to include the general condition of the reef ecosystem, notable challenges faced during the survey mission, and robust statistical analysis to show trends in biophysical metrics, especially the coral reef fish biomass metric. The reports should analyze progress made towards thresholds for successful outcomes, identify potential threats to the ecosystem, and make management recommendations. A Monitoring Agent contracted by IEF will implement this subcomponent.

Subcomponent 1.4. Ensuring Financial Sustainability (US$1 million funded by foregone coupon payment)

32. **This subcomponent aims to strengthen the ability of MPAs to mobilize financial resources for their long-term sustainability.** Specific activities to be financed in each target MPA will include (i) developing target MPA business plans, (ii) building capacity of site managers in financial planning and management, (iii) identifying options and best-practice mechanisms for advancing Ecological Fiscal Transfer to support MPAs; (iv) piloting and evaluating a new MPA revenue stream in at least one target MPA; and (v) piloting and evaluating a new performance-based payment instrument in at least one target MPA. This component will be implemented by ICCTF, which is also implementing Component 3 of LAUTRA, on developing strategies for innovative financing for marine conservation. LAUTRA investments in building ICCTF's capacity and establishing the Blue Finance Advisory Committee (BFAC), a cross-ministerial body responsible for coordinating blue economy activities, have created the enabling institutional environment needed to implement the subcomponent successfully.

Component 2: Project Management and Monitoring (US$1.5 million funded by foregone coupon payments)

33. **The IEF will serve as the Project Management Unit (PMU) and have fiduciary responsibility over the project.** The choice of IEF as the executing agency enables the institution to gain experience working with a non-sovereign instrument and develop its capacity to issue similar instruments in the future. IEF will implement this component.

34. **Sub-component 2.1. Project Management** (US$0.7 million funded by foregone coupon payments). This sub-component will support project management that includes, *inter alia*, staffing, operations, financial management, procurement, environmental and social risk management, including implementation of the grievance redress mechanism.

35. **Sub-component 2.2. Monitoring and Evaluation** (US$0.3 million funded by foregone coupon payments). This sub-component will support monitoring, reporting, and evaluating project activities, outputs, and outcomes.

36. **Sub-component 2.3. Capacity Building, Coordination, and Knowledge Management** (US$0.5 million funded by foregone coupon payments). The IEF Operational Handbook outlines the expectation that the IEF will attract private sector financing in the future. It emphasizes the importance of blended finance mechanisms and instruments, such as Green Bonds, in ensuring the long-term sustainable management of various IEF initiatives. This vision aligns with the World Bank's strategy of developing an exit plan, where institutions benefiting from World Bank funding gradually transition towards sustainable funding sources by mobilizing private sector capital and reducing reliance on concessional or donor funding. To facilitate the transition towards sustainable funding, the project will support IEF with the following key activities: (i) identification of mechanisms through which IEF can mobilize private sector capital; (ii) enhancing IEF accounting and reporting standards to align with International Financial Reporting Standards-like standard; (iii) building capacity to prepare ESG and Sustainability Reports; (iv) enhancing capacity to adopt and consistently monitor the Environmental & Social (E&S) Framework; and (v) building capacity to develop a pipeline of bankable projects that could be financed through future bond issuances. Coordination and knowledge management activities will include, *inter alia*: (i) citizen and stakeholder engagement activities; (ii) collaboration and coordination with other partners and programs, including participation in donor coordination forums, MMAF-led meetings among marine programs, and the GoI BFAC;

and (iii) events and knowledge sharing initiatives, including through vehicles such as the Coral Triangle Initiative, the International Coral Reef Initiative, and the IUCN Green List community.

Table 1: Overview of activities of the Coral Bond and LAUTRA under complementary components

Coral Bond	LAUTRA
Component 1.2 – Stakeholder engagement	
1. **Comprehensive stakeholder mapping** 2. **Develop and document stakeholder input processes** 3. **Develop and document grievance redress mechanisms** including a regular process within the MPA management plan 4. **Deploy stakeholder engagement strategies** 5. **Integrate stakeholder inputs** into management planning 6. **Develop protocols for monitoring socio-economic outcomes** 7. **Implement socio-economic monitoring**	1. **Limited stakeholder mapping** 2. **Operationalise stakeholder coordination forums** 3. **Implement grievance redress mechanisms** as per World Bank ESMF requirements
Component 1.2 - Threat identification, prioritization and mitigation	
1. **Define measurable biophysical conservation targets** 2. Comprehensive **threat mapping, risk assessment, and threat prioritization** 3. **Develop and implement intelligence-led threat mitigation strategies** 4. **Deploy SMART Conservation Tools** to monitor threats 5. **Deploy hydrophones or other strategies** to improve illegal fishing detection and mapping 6. **Improve compliance** including by supporting small-scale producers to apply for and meet appropriate license and permit requirements 7. **Mitigate visitor impacts** by establishing baseline conditions and limits of acceptable change for visitor sites, defining threshold measures 8. **Implement rights-based fisheries management**	1. **Update management plans** to incorporate targets and monitoring strategies developed under the Coral Bond, as well as threat identification and risk assessment findings 2. **Implement biophysical monitoring** by MPA units 3. **Implement routine MPA surveillance patrols** 4. **Procure surveillance equipment and infrastructure**
Component 1.4 – Ensuring Financial Sustainability	
1. Develop MPA **business plans** 2. **Build capacity of site managers** in financial planning and management 3. Identify options and best-practice mechanisms for advancing **Ecological Fiscal Transfer** to support MPAs 4. Pilot a new **MPA revenue stream** and a new **performance-based payment instrument** in at least one target MPA	1. Establish **Blue Finance Advisory Committee** (BFAC) 2. Develop **policy and regulatory instruments** for blue finance 3. Develop three long-term **sustainable blue financing strategies** and financing proposals

Conservation Success Payment (US$13.76 million funded by GEF NGI and EUR1 million, or approximatively US$1.1 million, funded by BNP Paribas)

37. **The GEF NGI and BNP Paribas funds (US$14.86 million in total) will be used to pay bondholders a Conservation Success Payment as part of bond redemption.** The World Bank will hold GEF and BNP Paribas resources until year 5 of the project. It will only be paid out (single Conservation Success Payment) if there is a verified achievement in the target MPAs of coral reef fish biomass targets. If the impact metric targets are not achieved, GEF and BNP Paribas funds will be returned to the GEF and BNP Paribas. The amount of the Conservation Success Payment paid to the investors will depend on the level of achievement of the KPI "increase in coral reef fish biomass in the core zone in target MPAs relative to open access areas (percent)" in year 5 of the project compared to year 1. No Conservation Success Payment will be made if the KPI increase is below 25 percent in all target MPAs. If the KPI increase equals or exceeds 25 percent in only one target

MPA, one-third of the Conservation Success Payment will be made. If the KPI increase equals or exceeds 25 percent in two target MPAs, two-thirds of the Conservation Success Payment will be made. The total Conservation Success Payment will be made if the KPI increase equals or exceeds 25 percent in the three target MPAs.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Area OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

38. **The Project will not involve any civil work construction, such as new physical buildings or infrastructure development.** It will not procure any substances that could pose serious risks to human health or the environment. The project's primary activities fall under the category of Technical Assistance (TA), which aims to enhance the management of the selected marine protected areas in Indonesia, including the assessment, monitoring, and overall management of the three target existing MPAs. The project will not provide funding for Type 1 TA, which typically assists the client in various phases of preparing future investments in infrastructure or other sectors. The proposed project will support Type 2 and Type 3 TA activities to further progress towards the Green List standard by investing in assessment and capacity building activities. These TA activities under the project, if successfully implemented, will improve effective management for the three existing MPAs (through improved governance and management of MPA, and conservation outcomes) in line with international standards and three MPAs to be admitted to IUCNs Green List of Protected and Conservation Areas. The improvement of biodiversity conservation and management of living natural resources is expected to be a positive impact from the project.

39. **Potential downstream impact of access restriction resulting from stronger enforcement and monitoring system of existing MPAs on traditional/ artisanal and small-scale fishers, including adat communities, is less likely to occur.** If it occurs, it is envisaged to be less significant, as confirmed through a series of workshop and consultations with local implementing units (BKKPN Kupang, BLUD and BLU) and local communities during project preparation. Communities in few villages in coastal and small islands of the 3 MPAs are aware that specific seaspace is 'no take zone', of which they do not go fish there but still could fish in the designated fishing ground ('utilisation zone'), and majority are engaged in other oceans-based economics, such as ecotourism and seaweed farming. However, as precautionary measures, the project will prepare a Process Framework (PF) and plans for further assessment in the first 12-months of project implementation to assess the occurrences of this potential downstream impact. including its nature, scale, magnitude and geographical/ spatial spreads, and respond with further mitigation plan based on the findings (to be streamlined with the project technical plan). Adat communities (indigenous peoples) are present in the 3 MPAs, and known to have been involved in sustainable fishing practices, such as through Mulung and Sasi in Alor and Raja Ampat respectively (temporary closure/disclosure of fishing ground).

40. **Potential E&S risks are expected to be moderate, and to be further assessed after TA details are known. At the Appraisal Stage, the E&S risks are both rated as Moderate**. These impacts and risks can be managed by the project ESCP, and management procedures in the POM with strong implementation support provided by the WB team at least for the first 12 months of the project implementation. Regarding the E&S management of TA activities, the TORs for TA activities

within the project will necessitate the involvement of PIUs' E&S specialists in the screening and analysis of any downstream impact, indirect and cumulative impacts related to the applicable ESSs. Additionally, the World Bank task team will review the TORs to ensure their alignment with the relevant ESSs. Relevant safeguards requirements have been included in the project ESCP.

E. Implementation

Institutional and Implementation Arrangements

41. **The Indonesian Environment Fund (IEF) will serve as the lead executing agency**. The IEF is a public service agency mandated to channel and distribute environmental and climate funds to support Indonesia's sustainability targets. It is accountable for and structurally operationalized under the Ministry of Finance (MOF). A Project Management Unit (PMU) will be established in the IEF to administer the project. The PMU is responsible for overall project coordination, day-to-day management, budgeting, financial management, safeguards monitoring, project progress monitoring, evaluation and reporting, and coordination with other government agencies. The PMU will be staffed with a project director, project manager, and fiduciary and safeguards specialists. The PMU will prepare an annual work plan, budget, update monitoring and evaluation indicators, procurement plan, and required reporting, which the Project Technical Committee will endorse. The PMU will also prepare consolidated quarterly financial and annual financial reports. The PMU will conduct monthly coordination meetings with all key implementing partners, including the PIUs, LEMTARA, the Monitoring Agent, IUCN, and the World Bank.

42. **A Project Committee will be formed within two months of project effectiveness**. The Project Committee will consist of an Oversight Committee and a Technical Committee. The Oversight Committee will be chaired by the Deputy of Natural Resources Management (echelon 1), BAPPENAS, and provide overall strategic guidance. The Technical Committee will be chaired by the Ministry of Marine Affairs and Fisheries (echelon 2). It will endorse the Annual Work Plans, Procurement Plans, and TORs, provide technical guidance and advice for project planning, implementation, monitoring, and evaluation, and play a key role in intra- and inter-ministerial coordination. The recommendations and decisions of the Technical Committee will guide the decisions of the PMU.

43. **Four Project Implementation Units (PIUs) will be formed and housed in: 1) BKKPN Kupang (MMAF); 2) UPTD MPA Alor, East Nusa Tenggara; 3) UPTD-BLUD MPA Raja Ampat; 4) ICCTF - BAPPENAS**. The PIUs are responsible for facilitating activity planning, including providing technical inputs to the Annual Work Plan, Procurement Plan, and TORs for project activities relevant to their sites, facilitating project implementation, monitoring and evaluation, and reporting of activities at the subnational level (provincial/district/village), as well as coordination with relevant stakeholders at the subnational level. The PIUs will not manage funds directly but can access cash advances from IEF for their operational expenses.

44. **IEF Lembaga Perantara (LEMTARA) or Intermediary Agencies will implement activities at the target sites under the supervision of PIUs and PMU**. LEMTARA will prepare (draft) project planning documents, including inputs to the Annual Work Plan and Budget (AWPB) based on inputs from PIUs, which includes planning for budgeting, procurement, financial administration, safeguards monitoring, project monitoring, evaluation, gender, and the feedback and grievance redress mechanism. LEMTARA will implement project activities and manage the achievement of project indicators under the supervision of PIUs, prepare technical guidance, manuals, SOPs, and technical documents, prepare (draft) project reports, and coordinate with relevant stakeholders at the subnational level. The hiring of LEMTARA, NGOs, in the case of Component 1.2, is underway. MMAF and IEF conducted the NGO selection process. First, a selection committee convened

by MMAF shortlisted three NGOs based on a) existing cooperation MOUs between MMAF and the NGO, b) technical competence in the subject matter, and 3) on-the-ground capacity. IEF will then conduct due diligence on the NGOs' fiduciary capacity and thus eligibility as IEF's LEMTARA before inviting them to submit project proposals. A joint committee between IEF and MMAF will select two NGOs as LEMTARA. The selection process has been and will be documented and shared with the Bank team.

45. **IEF will contract service providers to support project implementation**. Service providers will include IUCN as the Verification Agent, who will also provide Technical Assistance, as well as a Monitoring Agent, who will be in charge of conducting the coral reef surveys to monitor coral reef health and the KPI in particular.

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