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Report No: ICR00005990

IMPLEMENTATION COMPLETION AND RESULTS REPORT

IBRD LOAN NUMBER 83360
TRUST FUND NUMBER 15470

ON A

LOAN FROM THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
IN THE AMOUNT OF US$47.3 MILLION
AND A
GRANT FROM THE GLOBAL ENVIRONMENT FACILITY
IN THE AMOUNT OF US$10 MILLION

TO THE

Republic of Indonesia

FOR THE

Coral Reef Rehabilitation and Management Program – Coral Triangle Initiative
(COREMAP-CTI)

May 13, 2023

Environment, Natural Resources & The Blue Economy Global Practice
East Asia And Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 30, 2022)

Currency Unit =	Indonesia Rupiah (IDR)
IDR 14,285 =	US$1
US$0.00007 =	IDR 1

FISCAL YEAR
July 1 – June 30

Regional Vice President:	Manuela V. Ferro
Country Director:	Satu Kristiina Jyrintytar Kahkonen
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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
APL	Adaptable Program Loan
AusAid	Australian Agency for International Development Aid
BAPPENAS	*Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional*, Ministry of National Development Planning
BKKPN	*Balai Kawasan Konservasi Perairan Nasional Kupang*, National Marine Protected Area Agency
BRIN	National Research and Innovation Agency
CDPET	*Pusat Pembinaan, Pendidikan dan Pelatihan Perencana Bappenas*, Center for Planners Development, Education, and Training
CFF	Coral Reefs, Fisheries and Food Security
COREMAP	Coral Reef Rehabilitation and Management Program
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CTI	Coral Triangle Initiative
DKP	*Dinas Kelautan dan Perikanan*, Marine and Fishery Service
E-KKP3K	*Efektivitas Pengelolaan Kawasan Konservasi Perairan,* Marine Conservation Area Management Effectiveness
EA	executing agency
EVIKA	*Evaluasi Pengelolaan Efektivitas Kawasan*, Evaluation Tool for Management of the Effectiveness of Conservation Areas in Indonesia
GoI	Government of Indonesia
ICCTF	Indonesia Climate Change Trust Fund
ICR	Implementation Completion and Results
ICZM	integrated coastal zone management
ISR	Implementation Status and Results Report
KKLD	*Kawasan Konservasi Laut Daerah*, Regional Marine Protected Areas
KKPN	*Kawasan Konservasi Perairan Nasional,* National Conservation Area
km	kilometer
LIPI	*Lembaga llmu Pengetahuan Indonesia,* Indonesian Institute of Sciences
LPSP	*Lembaga Pengelola Sumberdaya Pesisir*, Coastal Resources Management Committee
MCA	Marine Conservation Area
MCS	monitoring, control, and surveillance
MMAF	Ministry of Marine Affairs and Fisheries
MPA	Marine Protected Area
MTR	Mid-Term Review
NGO	nongovernmental organization
PAD	Project Appraisal Document
PDO	Project Development Objective
PMU	Project Management Unit
POKMASWAS	Kelompok Masyarakat Pengawas, Community Surveillance Group
RCO	Research Center for Oceanography
RHI	Reef Health Index
RPJMN	*Rencana Pembangunan Jangka Menengah Nasional*, National Mid-Term Development Plan
SDG	Sustainable Development Goal
SINTA	Indonesia Science and Technology Index
SKKNI	*Standar Kompetensi Keria Nasional Indonesia*, Indonesia National Work Competency Standards
ToC	Theory of Change
TPD	*Tenaga Pendamping Desa*, village facilitators

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P127813	Coral Reef Rehabilitation and Management Program - Coral Triangle Initiative (COREMAP-CTI)
Country	**Financing Instrument**
Indonesia	Investment Project Financing
Original EA Category	**Revised EA Category**
Partial Assessment (B)	Partial Assessment (B)

Related Projects

Relationship	Project	Approval	Product Line
Supplement	P130389-Coral Reel Rehabilitation and Management Program - Coral Triangle Initiative (COREMAP-CTI)	21-Feb-2014	Global Environment Project

Organizations

Borrower	Implementing Agency
Republic of Indonesia	Indonesian Ministry of National Development Planning (BAPPENAS), National Reseach and Innovation Agency (BRIN)

Project Development Objective (PDO)

Original PDO

To institutionalize the COREMAP approach of a viable, decentralized and integrated framework for sustainable management of coral reef resources, associated eco-systems and bio-diversity for the welfare of the communities in the selected districts of the respective provinces in Indonesia.

Revised PDO

To strengthen institutional capacity in coastal ecosystems monitoring and research to produce evidence-based resource management information, and to improve management effectiveness of priority coastal ecosystems

FINANCING

		Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing				
P127813	IBRD-83360	47,380,000	44,751,627	44,751,627
P130389	TF-15470	10,000,000	9,899,929	9,899,929
Total		**57,380,000**	**54,651,556**	**54,651,556**
Non-World Bank Financing				
Total		**0**	**0**	**0**
Total Project Cost		**57,380,000**	**54,651,556**	**54,651,556**

KEY DATES

Project	Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
P127813	21-Feb-2014	05-Jun-2014	11-Nov-2016	30-Jun-2019	30-Jun-2022

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
05-Jun-2017	15.80	Change in Implementing Agency Change in Project Development Objectives Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Change in Financing Plan Reallocation between Disbursement Categories Change in Disbursements Arrangements Change in Legal Covenants Change in Institutional Arrangements Change in Financial Management Change in Procurement Change in Implementation Schedule
08-May-2019	24.06	Change in Implementing Agency Change in Project Development Objectives Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Disbursements Arrangements Change in Institutional Arrangements Change in Financial Management Change in Procurement Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	21-Jun-2014	Satisfactory	Satisfactory	0
02	03-Feb-2015	Satisfactory	Moderately Satisfactory	1.50

03	27-Aug-2015	Satisfactory	Moderately Satisfactory	6.50
04	21-Apr-2016	Moderately Unsatisfactory	Moderately Unsatisfactory	8.00
05	29-Oct-2016	Moderately Unsatisfactory	Moderately Unsatisfactory	15.10
06	29-Jun-2017	Moderately Satisfactory	Moderately Satisfactory	15.80
07	27-Dec-2017	Satisfactory	Satisfactory	15.80
08	21-Jun-2018	Satisfactory	Satisfactory	19.58
09	18-Dec-2018	Satisfactory	Satisfactory	22.16
10	20-Jun-2019	Satisfactory	Moderately Satisfactory	24.96
11	28-Dec-2019	Satisfactory	Moderately Satisfactory	27.96
12	22-Jun-2020	Moderately Satisfactory	Moderately Satisfactory	33.96
13	21-Dec-2020	Moderately Unsatisfactory	Moderately Satisfactory	34.71
14	11-Jun-2021	Moderately Satisfactory	Moderately Satisfactory	42.46
15	06-Jan-2022	Satisfactory	Moderately Satisfactory	44.26
16	26-Jun-2022	Satisfactory	Satisfactory	45.52

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Agriculture, Fishing and Forestry	**68**
Public Administration - Agriculture, Fishing & Forestry	25
Other Agriculture, Fishing and Forestry	43
Public Administration	**32**
Sub-National Government	32

Themes

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

Private Sector Development	**5**
Jobs	5
Job Creation	5
Social Development and Protection	**4**
Social Inclusion	4
Participation and Civic Engagement	4
Urban and Rural Development	**10**
Urban Development	5
Urban Infrastructure and Service Delivery	5
Rural Development	5
Rural Infrastructure and service delivery	5
Environment and Natural Resource Management	**83**
Environmental Health and Pollution Management	39
Air quality management	13
Water Pollution	13
Soil Pollution	13
Renewable Natural Resources Asset Management	37
Biodiversity	37
Environmental policies and institutions	7

ADM STAFF

Role	At Approval	At ICR
Regional Vice President:	Axel van Trotsenburg	Manuela V. Ferro
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. Coral reefs are one of the most diverse and threatened ecosystems on our planet. The world has lost 20 to 50 percent of its coral reefs in the past few decades, and they are projected to decline further by up to 90 percent by 2050 if global warming persists, unless action is taken to reduce the threats.[1] Indonesia's coral reefs[2] comprise about 16 percent of the world's total stock and are the most biologically diverse in the world. In addition to the protection of coral reefs, as part of the regional Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF),[3] Indonesia also leads in initiatives aimed at protecting coral reef-associated ecosystems such as mangrove and seagrass. Coral reefs in Indonesia are suffering from damage by anthropogenic activities[4] that include overfishing and destructive fishing, extreme coral bleaching due to climate change, marine pollution, and eutrophication.[5] Given that nearly 60 million people live in coastal areas, and within 30 kilometers of a coral reef, these threats are significant to the lives and livelihoods of Indonesia's coastal area inhabitants.

2. To support the Government of Indonesia (GoI) in addressing the coral reef degradation challenge, the World Bank provided an innovative three-phase Adaptable Program Loan (APL) in 1998 to conserve coral reefs, the Coral Reef Rehabilitation and Management Program (COREMAP). Over the years, the program became increasingly important as local pollution and global factors, including climate change and its effects on marine life such as coral bleaching and ocean acidification, became more pronounced.

3. In its first phase (COREMAP I, 1998–2004), the program accomplished the foundational work for the management of coral reefs and associated coastal ecosystem resources through a decentralized, community-based approach in pilot sites in eastern and western Indonesia. The second phase of the program, COREMAP II (2005–2011), accelerated and scaled up the approach to implement the institutional framework for coral reef management, by supporting regulations, strengthening capacity, and expanding a decentralized architecture for administration of coral reefs on a much larger scale (implemented in 358 villages across eastern Indonesia) than in the first phase. A summary of key achievements and lessons learned from the previous COREMAP phases is presented in Annex 8.

4. COREMAP was successful and impactful over its first two phases despite concerns over the sustainability of some of the conservation and alternative income generation activities that were identified in the COREMAP-II Implementation Completion and Results Report (ICR, Report No.: ICR2245). One of the biggest legacies of COREMAP II was the key role it played in the establishment of the CTI-CFF in 2009. This was the first multilateral cooperation of its kind, which focused

[1] IPCC 2021. "Summary for Policymakers," in *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
[2] Approximately 590 species of hard coral and at least 2,200 reef fish species are recorded in Indonesian waters.
[3] The Coral Triangle Initiative (CTI) on Coral Reefs, Fisheries and Food Security (CFF) is a multilateral partnership established in 2009 comprising six countries (Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste) to address crucial issues such as food security, climate change, and marine biodiversity, particularly as they relate to marine and coastal resources.
[4] Anthropogenic activities are environmental changes caused or influenced by people, either directly or indirectly.
[5] Eutrophication is the excessive richness of nutrients in a lake or other body of water, which causes a dense growth of plant life and death of animal life from lack of oxygen.

on sustainable management of marine natural resources, addressing the climate change impacts affecting the participating countries, and addressing the critical need to safeguard the region's marine and coastal resources under the leadership of the then-Indonesian President. As part of the commitments to marine resources conservation embodied in the CTI-CFF initiative, the GoI pledged to commit 20 million hectares of marine space under Marine Conservation Areas (MCAs, or Marine Protected Areas, as they are commonly called) by 2020, to meet its obligations under the Convention on Biological Diversity[6] and other international agreements.

5. As of 2014, 14 million hectares had been demarcated, and 5.5 million hectares had been brought under management plans as part of Government's commitments and supported by previous COREMAP engagements. However, more funding and technical assistance was needed to support the GoI's commitment to scale up efforts to manage coral reefs and associated ecosystems more effectively, and to institutionalize the COREMAP approach, that is, to ensure institutional sustainability of program activities at the local government/village programs level. Therefore, at the time of project appraisal, the COREMAP Coral Triangle Initiative (COREMAP-CTI)—the subject of this report—constituted a key source of support, alongside loans from the Asian Development Bank (ADB) and grants from the Global Environment Facility (GEF),[7] to help implement Indonesia's National Action Plan to safeguard marine and coastal biological resources[8] under the CTI.

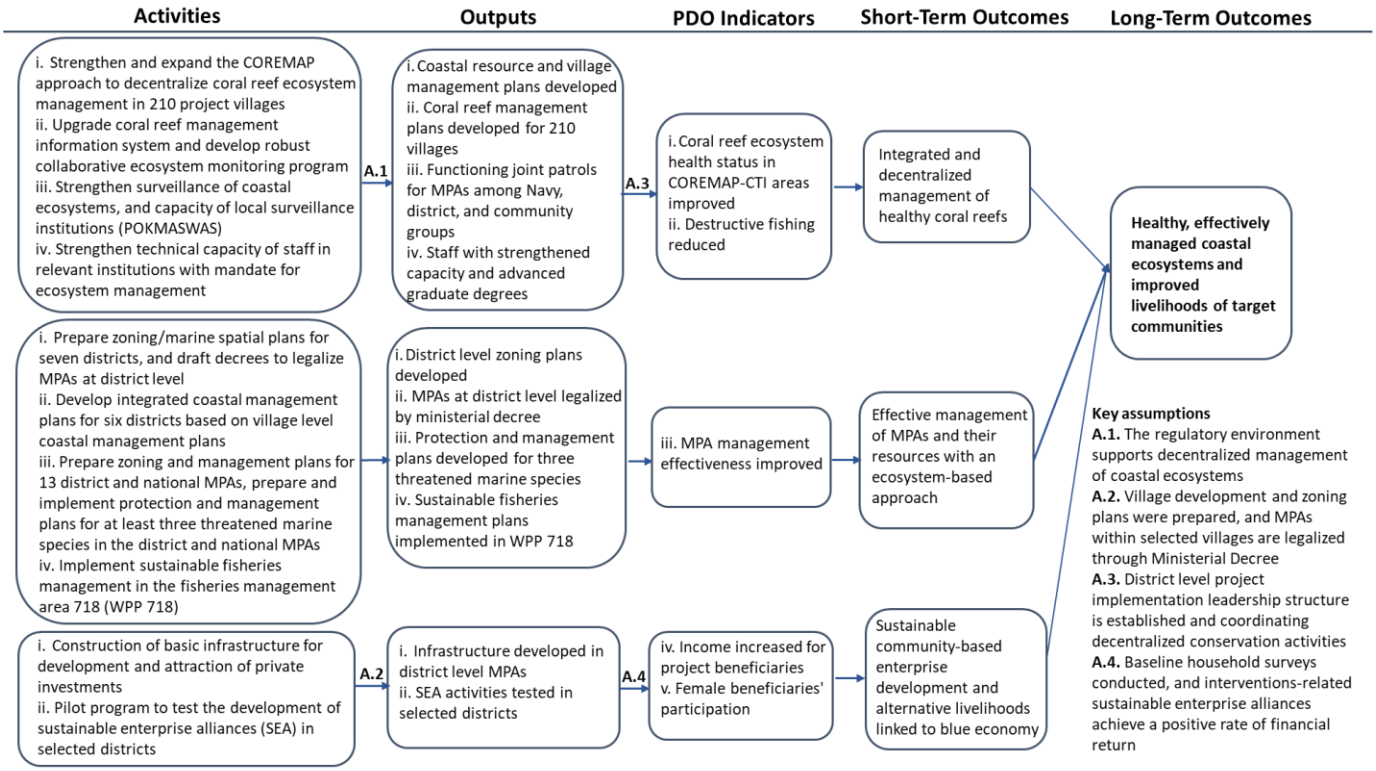
6. The planned activities under the COREMAP-CTI were well aligned with the World Bank-Indonesia Country Partnership Strategy (CPS) 2013–2015 (Report Number 72906), the main pillar of which was to help public institutions implement and deliver sustainable economic development and jobs growth. At appraisal, the World Bank Group's engagement aimed to support the development of results that would help implement enhanced protection for Indonesia's critical coastal resources (including coral reefs) and communities. Therefore, the CPS included the COREMAP-CTI project in the World Bank's country program as support to community stewardship of natural and marine resources through promoting good governance at the village, district, and national levels.

Theory of Change (Results Chain)

7. The aim of COREMAP-CTI was to develop an integrated approach to sustainable coastal resources planning and management that would serve as a blueprint for its broader extension to other parts of Indonesia. The project promoted a three-pronged approach: (a) institutional strengthening for decentralized coral reef management, (b) improvement of management of national and district marine conservation areas and creation of enabling conditions for sustainable use of the surrounding production seascape, and (c) supporting the development of sustainable ecosystem-based marine enterprises. Figure 1 presents a Theory of Change derived from the project description in the Project Appraisal Document (PAD).[9]

[6] The convention on Biological Diversity is an international agreement signed by 150 government leaders, including Indonesia, at the 1992 Rio Earth Summit, dedicated to promoting sustainable development: https://www.cbd.int/convention/.
[7] The GEF funding was provided under two focal areas: Biodiversity (US$8 million) and International Waters (US$2 million).
[8] Action Plan for Implementing the Convention on Biological Diversity's Programme for Work on Protected Areas for the Republic of Indonesia; https://www.cbd.int/doc/world/id/id-nbsap-powpa-en.pdf.
[9] World Bank 2014. "Project Appraisal Document on proposed loan and grant to the Republic of Indonesia for the Coral Reef Rehabilitation and Management Program Coral Triangle Initiative (COREMAP-CTI) project." Report No: PAD376.

Figure 1. COREMAP-CTI Theory of Change



Project Development Objectives (PDOs)

8. The PDO as stated in both the Loan Agreement and the PAD was "to institutionalize the COREMAP approach of a viable, decentralized, and integrated framework for sustainable management of coral reef resources, associated ecosystems and biodiversity for the welfare of the communities in seven selected districts of five provinces in Indonesia."

Key Expected Outcomes and Outcome Indicators

9. According to the PAD (see PAD paragraph 23), the project planned to achieve its PDO by focusing on three key groups of outcomes: (a) improved health of coastal ecosystems and biodiversity protection; (b) more effective management of marine conservation areas (MCAs)[10] and their resources through the introduction of an ecosystem-based approach; and (c) sustainable, community-based enterprise development and alternative livelihoods linked to the blue economy.

10. The PDO-level outcome indicators established to assess achievement of the PDO[11] were (a) coral reef health status in COREMAP-CTI areas improved, (b) destructive fishing reduced, (c) improved biodiversity conservation, (d) MCA

[10] Marine Conservation Areas (MCAs) are today more popularly called Marine Protected Areas (MPAs). When the project was initiated in 2014, the terms were used interchangeably throughout the document, and MCAs was particularly used when referring to specific statements in the original PDO and objectives of the project before restructuring. MPAs was used to describe references to activities performed after restructuring.
[11] The PDO indicators in the PAD main text were slightly different from the ones listed in PAD Annex 1. This ICR uses the indicators in Annex 1.

(or MPA) management effectiveness improved, (e) improvements over an ecosystem-based approach to sustainable fisheries in Fisheries Management Area/Wilayah Pengelolaan Perikanan (WPP) 718 (MCA SAP Aru Tenggara), (f) income of COREMAP-CTI beneficiaries increased, and (g) female beneficiaries participation.

Components

11. The project consisted of the following components[12]:

12. **Component 1: Institutional Strengthening for Decentralized Coral Reef Management** (estimated at appraisal: US$15.83 million, comprising a US$13.89 million IBRD loan, a US$1.04 million GEF grant, and US$0.9 million counterpart funding). The PAD proposed that this component would support the following activities:

(a) Strengthening and expanding the COREMAP approach to continue to decentralize coral reef ecosystem management within local governments and villages (210 project villages) and transforming village-level coastal resource management plans to coastal resource management plans that link up with district-level zoning plans.
(b) Supporting robust ecological and socioeconomic monitoring through upgrade of the Coral Reef Management Information System, development of a certification and training program for best practice in coral reef monitoring, conducting coral reef ecosystem monitoring and raising awareness through educating students and equipping communities with adaptation measures to respond to coral reef-related climate change impacts.
(c) Strengthening surveillance of coastal ecosystems and the capacity of local monitoring, control, and surveillance (MCS) institutions (POKMASWAS).
(d) Strengthening technical capacity through both short-term training and advanced graduate degree programs for staff in relevant institutions with a mandate for ecosystem management.

13. **Component 2: Development of Ecosystem-Based Resource Management** (estimated at appraisal: US$16.51 million, comprising a US$6.25 million IBRD loan, a US$8.96 million GEF grant, and US$1.41 million counterpart funding). The PAD proposed the following activities:

(a) Supporting zoning and marine spatial planning activities for seven districts in five provinces.
(b) Supporting the development of Integrated Coastal Management plans for six districts based on village-level coastal management plans.
(c) Supporting the improvement of management effectiveness of MCAs through the preparation of zoning and management plans and carrying out investments and activities relating to conservation management.
(d) Piloting a community rights-based approach.
(e) Sustainable fisheries management in fisheries management area 718 (WPP 718).

14. **Component 3: Strengthening a Sustainable Marine-based Economy** (estimated at appraisal: US$22.76 million, comprising a US$22.12 million IBRD loan and US$0.64 million counterpart funding). The PAD proposed that this would include the following:

(a) Construction of basic infrastructure for the development and attraction of private investments.
(b) A pilot program to test the development of sustainable enterprise alliances in selected districts.

[12] Project costs at closing were not provided in this section given the significant changes to project component and activities. The costs were provided in the revised component section (Paragraph 21). More details on cost allocation per component throughout the project are provided in Annex 3 tables A3.1 and A3.2.

15. **Component 4: Project Management, Coordination, and Learning** (estimated at appraisal: US$7.89 million, comprising a US$5.12 million IBRD loan, a US$0.02 million GEF grant, and US$2.75 million counterpart funding). The PAD proposed that this component include the following:

(a) Monitoring and evaluation of project performance.
(b) Learning networks and dissemination of best practices.
(c) Safeguards and fiduciary compliance monitoring.
(d) Coordination with the Asian Development Bank and other partners.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

16. The project underwent two restructurings. The first was a Level 1 restructuring in June 2017 (loan disbursement at 33.35 percent and GEF Grant disbursement at 48.19 percent) following the Mid-term Review (MTR) in December 2016. The second was a Level 2 restructuring in 2019 (loan disbursement at 50.8 percent). Details on this restructuring and the underlying reasons are presented in the subsequent paragraphs.

Revised PDOs and Outcome Targets

17. As part of the 2017 restructuring, the PDO was revised as follows: "to strengthen institutional capacity in coastal ecosystems monitoring and research to produce evidence-based resource management information." The revised PDO remained consistent with the original intent of the project.

18. The 2019 restructuring amended the PDO to: "to strengthen institutional capacity in coastal ecosystems monitoring and research to produce evidence-based resource management information, and to improve management effectiveness of priority coastal ecosystems."

19. The revised PDO reflects the following set of outcomes: (a) Strengthened monitoring and research capacity for producing evidenced-based ecosystem management information, (b) Institutional capacity for ecosystems research strengthened, and (c) MPA management effectiveness improved.

Revised PDO Indicators

20. The original PDO indicators were replaced in the 2017 restructuring, as shown below. The 2019 restructuring increased the targets of indicators (a), (b), and (c), and added a new indicator, (d).

(a) "Sites at which Indonesia's new Coral Reef Health Index is applied" (2017 target: 31, increased to 39 in 2019).
(b) "Coastal ecosystems area under continuous monitoring according to defined criteria" (2017 target: 9,235,028 ha, increased to 11,241,404 in 2019).
(c) "Coastal ecosystems scientific research papers published by LIPI[13] and research grant recipients that meet the need for evidence-based resources management" (2017 target: 38, increased to 57 in 2019).
(d) MPAs with a Blue Level Management Effectiveness Score of at least 75 percent.

[13] LIPI is the Indonesian Institute of Sciences (*Lembaga llmu Pengetahuan Indonesia*), operational under Presidential Act No. 103 of 2001 to serve a key role in assessment and formulation of national policies around scientific research; implementation of basic, inter-, and multidisciplinary research, monitoring, and evaluation of progress; review of the tendency of science and technology; and provision of scientific guidance to government institutions and public administration. Following a national merger of research institutions into the National Research and Innovation Agency (BRIN), LIPI's Research Center for Oceanography unit was merged in October 2021 into BRIN's Research Organization of Earth Sciences and Maritime Unit. Therefore, BRIN became the lead implementation agency between October 2021 and project closing. References to BRIN instead of LIPI will be used henceforth in the ICR.

Revised Components

21. The Level 1 restructuring in 2017 included changes to most of the activities under each component. The new components were renamed as follows:

(a) Component 1: Institutional Strengthening for Coastal Ecosystems Monitoring (estimated at 2019 restructuring: US$28.12 million IBRD funding; actual amount at closing US$27.53 million).
(b) Component 2: Support for Demand-Driven Coastal Ecosystems Research (estimated at 2019 restructuring: US$16.39 million IBRD funding; actual amount at closing US$16.36 million).
(c) Component 3: Strengthening Institutional Systems for Coastal Ecosystems Monitoring and Research (estimated at 2019 restructuring: US$9.07 million GEF funding; actual amount at closing US$8.57 million).
(d) Component 4: Project Management, Coordination, and Learning (estimated at 2019 restructuring: US$3.80 million combined IBRD and GEF funding[14]; actual amount at closing US$2.19 million).

22. In the 2019 restructuring, the structure of the components was revised.[15] The revisions included:

(a) Creation of a new Component 3, "Management of Priority Coastal Ecosystems," which included the reintroduced GEF-financed activities.
(b) With the creation of new Component 3, ongoing activities under the previous Component 3 from the 2017 restructuring were reallocated to Components 1 and 2, involving no change to associated budgets or implementation arrangements for the activities reallocated to Components 1 and 2.
(c) Inclusion of a demand-driven grant mechanism to support on-the-ground management activities through experience and established nongovernmental organizations (NGOs) and other eligible organizations.

23. Key activities excluded from the revised project included the original Component 3 (Strengthened Sustainable Marine-based Economy), Subcomponent 2.4 original (Piloting Community Rights-based Approach), and Subcomponent 2.5 original (Sustainable Fisheries Management in Two Fisheries Management Areas).

Other Changes

24. **Changes to Results Framework.** The results framework was significantly revised to reflect the changes in project structure, the revised targets, and indicators during the 2017 restructuring. Following the 2019 restructuring, the targets of the revised indicators were increased, while new targets were included in alignment with the formal resumption of the GEF-financed activities.

25. **Change in institutional arrangements and implementing agency at first restructuring.** The Ministry of Marine Affairs and Fisheries (MMAF) exited the project as executing agency (EA), and the EA role was transferred to the Research Center for Oceanography unit of the Indonesian Institute of Sciences (LIPI) and later renamed the National Research and Innovation Agency (BRIN),[16] whose mandate was closely aligned with the revised structure of COREMAP-CTI. Despite

[14] The executing agency at project closing could not delineate the amounts of IBRD and GEF funds that were expended for Project Management given the multiple changes the project underwent.
[15] The 2019 restructuring paper (World Bank Report No: RES32268) included a detailed table itemizing the changes made to the project component structure and a list of revised activities following the two restructurings, as compared with the original project design.
[16] Following a national merger of research institutions to the National Research and Innovation Agency (BRIN), the Research Center for Oceanography unit of LIPI was merged in October 2021 into the Research Organization of Earth Sciences and Maritime Unit of BRIN. BRIN became the lead implementation agency between October 2021 and project closing.

exiting the project, the MMAF, through the Directorate General of Marine Spatial Management, remained part of the Steering Committee of the COREMAP-CTI project post-restructuring.

26. **Changes to overall risk rating.** The overall risk rating was assessed as Moderate during the 2017 restructuring.

27. **Changes to legal covenants.** The legal covenants related to the Financing Agreement were changed in line with the change in Implementing Agency during the 2017 restructuring.

28. **Change in institutional arrangement at second restructuring.** Considering the addition of a new Component 3 as part of the restructuring in 2019, a new EA was introduced—the Indonesia Climate Change Trust Fund under the Ministry of National Development Planning (ICCTF-BAPPENAS). In addition, the Center for Planners' Development, Education, and Training under the Ministry of National Development Planning (CDPET-BAPPENAS) also became the implementation agency for the 2019 revised Component 1.2 (see table 1).

29. **Reallocation of project funds in alignment with changes in component structure, project activities, and costs.** The two restructurings resulted in revisions to the funding allocations across project components, which are illustrated in table 1. The Restructuring Paper[17] for the 2019 restructuring includes a table that details the originally proposed activities and those at both restructurings, which necessitated the reallocation of project funds (Figure 2).

30. **Changes in Fiduciary Arrangements.** The change of implementation agency, project components, and activities triggered changes in fiduciary arrangements, disbursement estimates, and the procurement plan.

31. **Extension of closing date and implementation schedule.** The project was granted two separate 18-month extensions of the closing date: at the first restructuring in 2017 and at the second restructuring in 2019. Thus, the closing date was extended for a total of 36 months over the life of the project.

Rationale for Changes and their Implications on the Original Theory of Change

32. The project underwent restructuring due to multiple challenges during implementation leading up to the MTR. Prior to the MTR, the GoI enacted Law No. 23/2014,[18] which shifted management authority over coastal waters to 12 nautical miles from the district level to the provincial level.[19] Given the focus of the COREMAP approach on strengthening decentralized coral reef management at the district level, the project needed a Level 2 restructuring to realign implementation arrangements with Law No. 23/2014. A formal request was not received by the World Bank until the

[17] World Bank 2019. "Coral Reef Rehabilitation and Management Program – Coral Triangle Initiative (COREMAP-CTI, P127813) Restructuring paper." Report No: RES32268.

[18] COREMAP originally focused on institutionalizing and strengthening decentralized coral reef management at the district level; issuance of Law No. 23/2014 necessitated a change in project structure and in institutional and financial arrangements to reflect the fact that decentralized coral reef management would now be under the purview of provincial governments.

[19] Anecdotal information gathered by the ICR team revealed that GoI's objective for enacting Law No. 23/2014 was to strengthen conservation activities within districts, as certain villages permitted use of coastal resources for activities that did not promote conservation. While the provinces will maintain authority over coastal resources, in certain instances where conservation activities were promoted, the provincial governments retained power to delegate authority over certain areas to district governments. Therefore, Law No. 23/2014 would not have weakened the possibilities of achieving the overall COREMAP objective to strengthen decentralized management of coastal resources but enabled it.

MTR. The new PDO reflected a change in project scope and nature, resulting in significant streamlining of overall project objectives.

33. During the COREMAP-CTI Mid-term Review (MTR) in December 2016, progress toward achievement of the PDO and implementation progress were rated Moderately Unsatisfactory.[20] In addition, under the new ministerial leadership in 2016, the MMAF cancelled the use of external loan funds to support their activities.[21] As a result of the delays in project implementation by the MMAF, the internal policy on external loans with the MMAF, and the implications of Law No. 23/2014, project activities stopped between December 2015 and July 2016. The MTR recommended a Level 1 restructuring to address the identified challenges, and the GoI sent a request to the World Bank, accordingly.

34. The project was therefore restructured to (a) reflect the MMAF's exit as EA and to transfer the EA role to the Indonesian Institute of Science (LIPI), (b) address the implications of Law No. 23/2014 on implementation modality, (c) expedite project implementation, (d) improve M&E design and change the PDO[22] to reflect the change in project scope and nature in line with the institutional mandate of LIPI, (e) improve project ratings, and (f) strengthen post-closure sustainability of the project and program results. The revised PDO necessitated a revision of component names, activities, costs, and the Results Framework, as discussed above.

35. The GoI requested a second restructuring to restart the use of unexpended GEF resources (US$6.22 million), particularly as the implementation of IBRD-financed activities had been progressing well since the first restructuring in 2017. Due to internal GoI budget cycle timelines, which conflicted with GEF Council approval timelines, the 2017 restructuring did not include the GEF activities. GEF activities were put on hold, with an agreement to proceed with a further restructuring of these once the revised IBRD-financed activities were underway. While the GEF activities captured in the second restructuring remained consistent with the original project design, revisions were made to ensure their alignment with the new operating environment, namely the legal shift in authority over coastal waters from the district to the provincial level of government due to Law No. 23/2014, and the MMAF's exit as EA. However, several activities originally planned under the COREMAP-CTI, including for those planned for GEF financing, were already being implemented by the MMAF (supported by their own resources), notwithstanding the MMAF decision to refrain from further direct implementation of COREMAP.[23]

[20] The project was rated Moderately Unsatisfactory because of prolonged delays, culminating in an internal MMAF suspension of all project activities from December 28, 2015 to April 16, 2016 (six months).

[21] Although not reported in the Restructuring Paper in 2017, the MMAF not only cancelled the World Bank-funded COREMAP-CTI Project, but also the ADB-Funded COREMAP project in West Indonesia and the Coastal Community Development Program of the International Fund for Agricultural Development.

[22] The ICR team gathered anecdotal information that despite the reduced scope, the MMAF committed, through a ministerial letter to the Indonesia Development Planning Ministry (BAPENNAS) on March 13, 2017, to continue to use Indonesian government funds to carry out some of the activities that were dropped under COREMAP-CTI, and remained committed to the conservation of coastal resources, including coral reefs. The following complementary activities were undertaken by the MMAF through government funds, further contributing to the overall achievement of decentralized and institutionalized management of coral reefs and associated ecosystems: (a) MPA management conservation and sustainable use of fisheries and associated resources through community rights-based governance, and (b) capacity building for marine spatial planning including preparation of zoning plans and regulations to strengthen conservation management in line with the original COREMAP-CTI approach. The commitment was further reflected in GoI's decision to request a US$200 million IBRD loan for the Oceans for Prosperity – LAUTRA Project (P173391), with the MMAF as executing agency which, similarly to COREMAP, aims to sustainably manage ocean resources.

[23] Although the MMAF exited the project and "institutionalization" was dropped from the PDO, there had been successful institutionalization of some elements of the COREMAP-CTI approach within the MMAF, including (a) annual Marine Protected Area (MPA) management effectiveness scorecard assessments, (b) implementation of national strategic action plans for threatened species, (c) a strengthened legal basis for rights-based coastal resources management, and (d) implementation of an ecosystem approach for sustainable fisheries management. The 2015–2019 Strategic Plan for the Directorate General for Management of Marine Areas of the MMAF includes dedicated performance indicators and budget allocations, confirming

36. The second restructuring, in 2019, was carried out to improve the management effectiveness of priority coral reef and associated ecosystems. The modifications, which were relatively minor, also allowed for a change of the Project Implementation Unit of GEF-financed activities to the Ministry of National Development Planning (BAPPENAS).

37. The two restructurings changed the original (implied) Theory of Change, which was simplified to clarify project objectives, taking into consideration the operating environment of the project and the overall goals of COREMAP. The revised PDO from the first restructuring focused on strengthening capacity to generate robust coastal ecosystem monitoring and demand-driven priority research to inform ecosystem and coastal resources management, decision-making, and investment priorities. The revision of the PDO at the second restructuring allowed the project to resume the focus on improving management effectiveness of priority coastal ecosystems (in line with the resumption of GEF-funded activities).

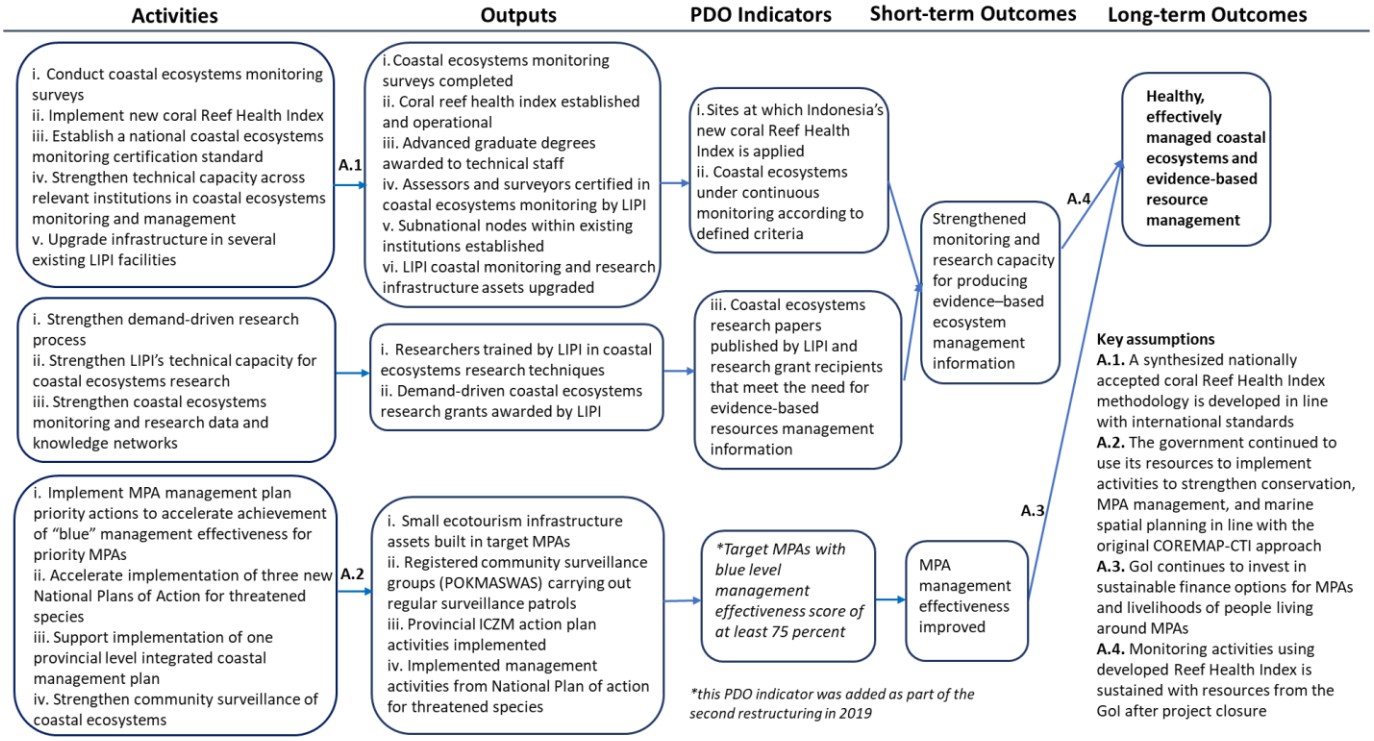
38. LIPI/BRIN was appointed the EA of the restructured project in 2017, because it had the national institutional mandate for both monitoring and research and on decision-making on coral reef management. Besides, LIPI implemented COREMAP I as EA, and supported the implementation of the MMAF-implemented COREMAP II. However, LIPI does not possess an institutional mandate to implement livelihood activities under the original Component 3. In addition, there were severe delays in subnational implementation of several key project activities under Component 3 prior to restructuring, leading to weak implementation and continuous slow disbursement. Therefore, the original Component 3 was dropped.

39. The two extensions to the project closing date were granted to ensure sufficient time to implement the revised activities.

40. Given the significant changes in project components, scope, activities, and indicators, the Theory of Change and results chain were revised, as presented in figure 2.

MMAF's commitment to these elements of the COREMAP-CTI approach, including maintaining and evaluating effective management for all 13 COREMAP-CTI MPAs.

Figure 2. Theory of Change of the Restructured COREMAP-CTI Project



Note: ICZM = integrated coastal zone management.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

Rating: High

41. The PDO at project closure was consistent with the current World Bank Group Indonesia Country Partnership Framework (FY2021–2025; Report No. 157221-ID), as this project directly supports the fourth engagement area: Sustain Management of Natural Assets, Natural Resources-Based Livelihoods and Disaster Resilience. The PDO addresses all three objectives of this engagement area: (a) strengthen management of natural assets and the environment; (b) improve agricultural and natural resources-based livelihoods; and (c) strengthen multi-hazard disaster resilience. Livelihood activities under Component 3 (Improving the Management Effectiveness of Target MPAs) post-2019 restructuring, focused on improving the livelihood of communities through small-scale infrastructure and better finance/market access in the Savu Sea and Raja Ampat MPAs. In addition to its alignment with the CPF, the COREMAP-CTI also aligned with the Indonesian Presidential Priority since 2014 to develop the ocean economy, for which Indonesia's massive coral reef and associated ecosystems are the primary resource. The program's technical design and achieved outcomes are well aligned with the GoI's National Development Agenda, as stated in the National Mid-Term Development Plan (RPJMN) 2015–2019.

The project's objectives were well aligned to one priority area[24] that aims to strengthen the environment and improve resilience against natural disasters and climate change. The coastal ecosystem monitoring approaches implemented under the COREMAP-CTI reflect the national priority to improve the quality of the environment to increase resilience against climate change. The PDO post-restructuring remained well aligned with the two priority areas of marine sector development outlined under the MMAF Five-Year Strategic Plan (Rencana Strategis/RENSTRA) 2020–2024), which aimed to improve the conservation of marine and fisheries resources, as well as institutional capacity and competence.

42. The PDO contributed to the mission of the regional CTI-CFF[25] and is closely aligned with United Nations Sustainable Development Goal (SGD) 14.[26] By strengthening institutional capacity in coastal ecosystems monitoring and research to produce evidence-based resource management information, and by improving the management effectiveness of priority coastal and marine ecosystems, COREMAP-CTI's achievements contribute to Indonesia using ecosystem-based approaches for managing marine areas. The project strengthened institutional capacity to manage coral reef ecosystems in Indonesia, thereby promoting climate resilience for coastal communities inhabiting the world's most populous coral reef-associated human ecosystem, where 60 million inhabitants reside.

43. The relevance of the PDO is therefore rated High, considering its close alignment with national and regional development priorities, the current World Bank Group CPF objectives, and global biodiversity conservation agendas such as the United Nations SDGs[27] and the Convention on Biological Diversity.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

Rating: "Modest" rating for the original PDO and "High" for the revised PDOs after restructuring

44. The assessment of the achievement of the PDO is based on a split rating to account for the change in the PDO during the two project restructurings.[28] The assessment assigns a "Modest" efficacy rating to the achievement of the original PDO, and a "High" efficacy rating to the revised PDO.

Achievement of Original PDO

45. The original PDO was unpacked into three outcomes, as stated in the PAD: (a) improved health of coastal ecosystems and biodiversity protection, (b) an ecosystem-based approach informing effective management of MPAs and their resources, and (c) sustainable community-based enterprise development and alternative livelihoods linked to the

[24] This priority area includes three policy groups: (a) improving the quality of the environment, (b) increasing resilience against natural disasters and climate change, and (c) applying a low-carbon development approach.

[25] The mission of the CTI-CFF is "to preserve and manage the vast marine, coastal and small islands ecosystems and the unique biodiversity of the coral triangle region of the Indo Pacific, which provide invaluable livelihood and food security."

[26] SDG 14: "Conserve and sustainably use the oceans, seas, and marine resources for sustainable development"; https://sdgs.un.org/goals/goal14. The project also contributes to the target of SDG 14.2: "By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans"; https://sdgs.un.org/goals/goal14.

[27] United Nations SDGs; https://sdgs.un.org/goals/goal14.

[28] With the 2017 restructuring, the project scope was narrowed, therefore requiring a split rating. With the 2019 restructuring, the scope was expanded, which does not require a split rating. Furthermore, as explained in Section I.B of this ICR, the added statement to the PDO as part of the 2019 restructuring, which was a technicality to formally capture the restart of GEF-funded activities, was implicit in the 2017 restructuring. Therefore, the split rating assessment used the original PDO outcomes and the 2019 outcomes, but for the calculation, the ICR uses the disbursement at the time of the 2017 restructuring.

blue economy.[29] There were five PDO outcome indicators, providing a measure for the three outcomes, as shown in table 1. Achievement of the original PDO was evaluated against 2016 milestones when the project was restructured, prior to the change in the PDO and indicators, complemented by additional information post-restructuring.

Table 1. PDO Indicators and Achievements (Original PDO Indicators)

Outcome	Achievement of Outcome Indicators					Achieve-ment
	Outcome Indicators	**Baseline**	**Target**	**Actual Achieved by end of 2016**	**Achievement post restructuring (Post 2017)**	
Outcome 1: Improved health of coastal ecosystems and biodiversity protection	Coral reef health status in COREMAP-CTI areas improved	2014 status of sites (18 sites)	Improvement in at least 80 percent of sites	Status is maintained or improved in all project sites (18 sites)	Coral Reef Health Status was monitored in 39 sites at project closing, with the average live coral cover seen to either be maintained or increased across all sites	Substantial
	Destructive fishing reduced	2014 assessment	Declining trend over the project period	A decline in destructive fishing was measured in one district Anecdotal evidence suggests a decline in destructive fishing in the remining six project sites	While destructive fishing was not directly measured following restructuring, the target of the replacement indicator that monitored the registration and activity of surveillance groups (POKMASWAS) monitoring destructive fishing was exceeded as 23 POKMASWAS were actively conducting surveillance patrols	
Outcome 2: Ecosystem-based approach informed effective management of MPAs and their resources	MPA management effectiveness improved	All 13 MPAs have 80 percent red score status	All 13 MCAs achieve 100 percent yellow score status with nine having at least 50 percent green level	All 13 MPAs achieved the 2016 target of "at least 50 percent of the yellow level score"	Post-restructuring, the project achieved a blue level management effectiveness score of at least 75 percent in four sites, as initially	Substantial

[29] The evaluation in this ICR uses the outcomes as stated in PAD paragraph 23, which differ in wording from the PDO statement, but were deemed to better reflect the intent of the project.

			score Of this nine, four have at least 10 percent blue level score		targeted	
Outcome 3: Sustainable community-based enterprise development and alternative livelihood linked to the blue economy	Income increased for project beneficiaries	0	15 percent net of inflation	0	Not monitored following restructuring	Negligible
	Female beneficiaries' participation	0	30 percent	29 percent as of 2016 exceeding the 15 percent intermediate target		

Outcome 1: Improved health of coral reef ecosystems and biodiversity protection

46. The ICR assessed the achievement of this outcome through PDO Indicator 1, "Coral reef health status in COREMAP-CTI improved," and Indicator 2, "Destructive fishing shows a declining trend."

47. Achievement of this outcome was delivered via a suite of integrated activities. Prior to restructuring, these activities included (a) enhancing community conservation knowledge and awareness through outreach campaigns and construction of village information centers; (b) strengthening the capacity of stakeholder groups such as POKMASWAS and the Coastal Resources Management Committee (*Lembaga Pengelola Sumberdaya Pesisir*, LPSP) to manage coastal resources; (c) developing and endorsing plans to minimize resource conflicts, including village development plans, district-level marine spatial plans (RZWP3K), and district-level marine conservation area plans; and (d) enhancing monitoring, control, and surveillance via interagency joint patrols (Navy, police, and MPA management units) and Community Surveillance Groups (POKMASWAS). Post-restructuring activities focused on three MPAs and included (a) establishing and strengthening community surveillance POKMASWAS, (b) procuring equipment and infrastructure for surveillance (such as watchtowers), and (c) enhancing MPA management effectiveness ratings.

48. For the "Coral reef health status in COREMAP-CTI improved" indicator, the project monitored coral reef health status at 18 sites using a defined methodology.[30] The 2016 target for this indicator was "status is maintained or improved in all project sites," and the end-of-project target was "status is improved in at least 80 percent of all project sites." Evidence shows that between 2014 and 2016, coral reef health status was maintained or improved in 13 of the 18 project sites, with a slight decline in reef health detected at the remaining five sites. Global best practices typically indicate that reef survey methodologies of the type deployed by the project can detect a minimum change in reef health status of between 5[31] and 10 percent[32] live hard coral cover. Assuming the most conservative detection limit of 5 percent, only one site showed a statistically significant decline in coral reef health status, and status was maintained or improved at the

[30] The Reef Health Index methodology was developed by LIPI following Giyanto et al. (2014). "Coral Reef Health Monitoring Guide" ("Panduan Monitoring Keschatan Terumbu Karang"); http://coremap.or.id/downloads/rhm-02042015_.pdf. It consists of two main elements: (a) percentage of live coral cover and coral recovery rate (seaweed or rubble cover), and (b) total fish biomass (economically important species).
[31] GCRMN 2016. "Caribbean Guidelines for Coral Reef Biophysical Monitoring."
[32] Muhando 2009. "Coral reef monitoring in Tanzania: an analysis of the last 20 years"; doi: 10.4314/wiojms.v8i2.56981.

remaining 17 sites. PDO Indicator 1 of the restructured project continued monitoring of coral reef health status in 39 sites (against the initial 18 sites) and recorded an increase in coral reef health status in all 39 sites compared to the original target of 18 sites proposed during appraisal (see Results Framework and Key Outputs, Annex 1). The ICR therefore assessed this target as exceeded. National-level coastal ecosystem monitoring activities by BRIN stopped following project closure. However, coastal ecosystem monitoring in areas within national MPAs is still being undertaken by the MMAF, albeit sporadically, using the COREMAP methodology developed by BRIN (for example, in MPA Savu Sea).

49. At appraisal, when the "Destructive fishing shows a declining trend" was established, the project documents indicated that trends in destructive fishing could be monitored based on a range of data sources including (a) survey reports at landing sites, (b) survey reports at fish markets, (c) reports from patrols on sea, (d) reports from divers, and (e) reports from underwater acoustic devices placed at hotspots. The Results Framework defined this indicator as a qualitative assessment of trends, based on the percentage of reports/data sources that indicate destructive fishing. The Results Framework further indicated that data collected during the first year of the project (2014) would provide the indicator baseline, with all subsequent years targeting a "declining trend." Monitoring, control, and surveillance of destructive fishing practices within the district coastal waters and conservation areas targeted by the project were carried out via joint patrols consisting of district government Marine and Fishery Services (*Dinas Kelautan dan Perikanan*, DKP) and Community Surveillance Groups (*Kelompok Masyarakat Pengawas*, POKMASWAS).

50. The project obtained sufficient quantitative data for one of the seven target districts—Pangkep District—to demonstrate a significant decline in the incidence of bomb fishing (from 14 cases in 2015 to seven cases in 2016). At the time of the 2017 restructuring, the project had not obtained sufficient quantitative data for the remaining six districts to evaluate trends in destructive fishing. Qualitative data were available, however, including anecdotal reports from the DKPs in Selayar, Buton, Biak Numfor, and Raja Ampat, and indicated that the incidence of destructive fishing had declined. This trend is corroborated by official data reported by the Kupang National Marine Protected Area Agency (*Balai Kawasan Konservasi Perairan Nasional Kupang*, BKKPN) for the national MPAs targeted by the project, which show a decline in cases of blast fishing and potassium cyanide fishing across all sites for which data are available. Community Surveillance Groups (POKMASWAS) continued to monitor and control for destructive fishing practices (see Results Framework and Key Outputs, Annex 1),[33] with anecdotal information revealing that the operation of surveillance groups (typically three times a week) resulted in a decline in destructive fishing activities. Surveillance operations for the prevention of destructive fishing have continued in most of the locations following project closure. While indirect reports point to a declining trend in destructive fishing, it is not possible to assess with certainty the extent to which this target was achieved, given that the indicator was not clearly defined.

51. The quality and robustness of evidence informing these indicators are moderate. The project did not establish a baseline measure of destructive fishing or a procedure for monitoring and evaluating this indicator; consequently, the assessment is based on anecdotal information and published reports that do not necessarily align with the project's locations or interventions. While a robust methodology for assessing reef health was established by the project, it remains unclear to what extent monitoring sites overlap with intervention sites or whether any sites were selected to provide a counterfactual. This limits the ability to assign causation to the project's interventions.

52. Despite the relatively modest achievement against Outcome 1 in 2017 (see table 1), the ICR rated achievement of Outcome 1 as substantial because both outcome indicators were further substantially achieved on balance, even after project restructuring.

Outcome 2: Ecosystem-based approach informed effective management of MPAs and their resources

53. The ICR assessed the achievement of this outcome through PDO Indicator 3 "MPA management effectiveness improved."

54. Achievement of this outcome was delivered in part through the activities to enhance coral reef health and reduce destructive fishing described above, and through a series of activities to strengthen the capacity of MPA management units including (a) preparation of zoning and management plans; (b) legalization of MPA boundaries; (iii) training and development of MPA management unit human resources; and (iv) procurement of the tools, equipment, and infrastructure required for MPA management.

55. The project used the GoI's Marine Conservation Area Management Effectiveness (*Efektivitas Pengelolaan Kawasan Konservasi Perairan,* E-KKP3K) scorecard to evaluate this indicator. E-KKP3K classifies MPAs according to five levels: red (planning initiated), yellow (established), green (managed minimally), blue (managed optimally), and gold (self-reliant). The 2016 target was "all 13 MPAs achieve at least 50 percent of the Yellow level score," and the end-of-project target was "all 13 MPAs achieve Yellow status; nine have at least 50 percent of Green level score; of these nine, four have at least 10 percent of Blue level score." At the time of the 2017 restructuring, seven national MPAs[34] and one district MPA (Raja Ampat) had achieved Yellow status. Four district MPAs had zoning plans approved by the respective Bupati (KKLD[35]/Kabupaten Selayar and KKLD/Kabupaten Pangkep, South Sulawesi; KKLD/Kabupaten Biak Numfor; and KKLD/Kabupaten Sikka, NTT); and one (KKLD/Kabupaten Buton, Southeast Sulawesi) had a zoning plan pending Bupati approval. These five district MPAs all required finalization of management plans and management unit organizational plans to fully achieve Yellow status. All 13 MPAs achieved the 2016 target of "at least 50 percent of the E-KKP3K Yellow level score."

56. The quality and robustness of evidence informing this indicator is high. The GoI has established a regular process for evaluating MPA management effectiveness in the form of the EVIKA scorecard, with clearly defined indicators, transparent reporting of scores, and a robust peer review process. The project was able to leverage this existing country system while also contributing to its refinement and development.

57. This indicator was on track to meet the end target before restructuring. A similar PDO indicator, "target MPAs with a Blue Level Management Effectiveness score of at least 75 percent," which was introduced as part of the second restructuring in 2019, met its target.[36] This further facilitated the improvement of MPA management effectiveness—a key objective of the COREMAP approach. The ICR thus evaluates Outcome 2 as substantially achieved.

Outcome 3: Sustainable community-based enterprise development and alternative livelihoods linked to the blue economy

58. The ICR assessed the achievement of this outcome through PDO Indicator 4, "Income of COREMAP-CTI beneficiaries increased," and Indicator 5, "Female beneficiaries' participation."

59. The project anticipated that fishers who remained in fishing would experience an increase in income due to

[34] KKPN Laut Sawu, NTT; KKPN Laut Banda, Maluku; KKPN Padaido, Papua; KKPN Kapoposang, South Sulawesi; KKPN Aru Tenggara, Maluku; KKPN/SAP Raja Ampat, West Papua; KKPN/SAP Waigeo, West Papua.
[35] KKLD = *Kawasan Konservasi Laut Daerah*, Regional Marine Protected Areas.
[36] See paragraphs 70 and 71.

project interventions related to sustainable fishing strategies (such as reduced numbers of fishers, closed seasons, more selective fishing gear, and reduced quantity of biomass extracted). It was also anticipated that the sustainable enterprise alliances directly supported by the project would achieve a positive rate of financial return. Baseline household incomes were scheduled to be assessed in the second year of the project (2015). The project experienced significant delays in implementing interventions to improve the income of beneficiaries and to strengthen marine-based economies. These delays arose in part due to limited institutional knowledge and experience of enterprise and value chain development among the key project implementation units. Limited progress toward this indicator was noted during the project Mid-term Review (MTR), and a series of remedial steps were formulated; however, the project was restructured before these steps could be implemented. As no interventions were implemented, no direct impact on beneficiary livelihoods can be expected. The ICR assesses the achievement of this target as not achieved.

60. The project aimed to increase the participation of female beneficiaries, with a 2016 target of 15 percent and end-of-project target of 30 percent. However, the project documents contained no clear and unambiguous definition of "project beneficiary," no clear guidance on how female participation in project activities should be measured by the implementing agencies, no quantified baseline, and no activities that specifically address promotion of female beneficiaries in project areas. The PAD defined beneficiaries as (a) fishers and households located in the 210 villages in project districts and in the MCAs; (b) communities, civil society organizations, and private sector institutions; (c) teachers and students in elementary school and high school; (d) community members and local and national government staff; and (e) private sector operators. Gender-disaggregated data are available to assess female involvement in only two village-level community organizations: (a) Coastal Resources Management Committees (*Lembaga Pengelola Sumberdaya Pesisir*, LPSP), and (b) teams of village facilitators (*Tenaga Pendamping Desa*, TPD).

61. The project implemented activities to improve the position of women in their families and society, and to enhance their knowledge and awareness of the importance of protecting coastal resources in their villages. These activities included training on fishery product processing and community surveillance for women in the community. Data collected in 2016 indicated that female participation in LPSPs exceeded 30 percent in the districts of Sikka, Kepulauan Pangkep, and Biak Numfor, and exceeded 15 percent in the remaining four project districts. On average, the participation of women in LPSPs was estimated at 29 percent, well above the 2016 target of 15 percent and approaching the end-of-project target. In contrast, female participation in TPDs was lower, particularly in Biak, Raja Ampat, and Wakatobi. In four of the seven districts, female participation in TPDs exceeded the 2016 target of 15 percent, and three of the seven exceeded the end-of-project target of 30 percent. The ICR assesses this target as substantially achieved.

62. The ICR evaluates the achievement of Outcome 3 as negligible, on balance. While PDO Indicator 4 was not achieved due to implementation delays and the change in project scope and objectives following restructuring, PDO Indicator 5 was substantially achieved. However, as the main activities informing Outcome 3 were not implemented, the ICR assesses the achievement of Outcome 3 as Negligible.

63. The overall efficacy rating of the original PDO is Modest, as achievement of Outcome 3 is negligible despite the substantial achievement of Outcomes 1 and 2.

Achievement of revised PDO post-restructurings

64. The revised PDO was to "strengthen institutional capacity in coastal ecosystems monitoring and research to produce evidence-based resource management information, and to improve management effectiveness of priority coastal ecosystems." It was unpacked into two outcomes for the purposes of this assessment: (a) Strengthened monitoring and research capacity for producing evidence-based coastal ecosystem management information, and (b) Improved management effectiveness of existing and new MPAs (table 2).

Table 2. Revised PDO Indicators and Achievements after Restructurings

Outcomes	Achievement of Outcome Indicators				Achievement
	Indicators	Baseline	Target (2019)	Actual Achieved	
Outcome 1: Strengthened monitoring and research capacity for producing evidence-based coastal ecosystem management information	1. Coral Reef Health Index operational and applied to sites (Number)	0	39	39	High
	2. Coastal ecosystems under continuous monitoring according to defined criteria (Hectares)	0	11,241,405	12,719,840	
	3. Coastal Ecosystems research papers published by LIPI and research grant recipients that meet the need for evidence-based resources management information (Number)	0	57	131	
Outcome 2: MPA management effectiveness improved	4. Target MPAs with blue-level management effectiveness score of at least 75 percent (Number)	0	4	4	High

Note: Indicators and targets include revisions after the second restructuring.

Outcome 1: Strengthened monitoring and research capacity for producing evidence-based coastal ecosystem management information

65. In keeping with the implicit "institutionalization" objective of the COREMAP-CTI, this outcome was delivered via activities that included (a) establishing technical manuals to guide monitoring activities, (b) establishing professional competency standards and accreditation programs registered with the Ministry of Manpower, (c) enhancing coastal monitoring data management and access systems, and (d) implementing a grant program to finance research on priority topics.

66. This outcome was measured via revised PDO Indicators 1, 2, and 3 (table 2). The targets of all three PDO-level indicators to measure this outcome were either fully achieved or surpassed. Other key results supported by the project that supported achievement of Outcome 1 include the 96 people (71 male, 25 female) who were certified to deliver the Indonesia National Work Competency Standards (*Standar Kompetensi Keria Nasional Indonesia*, SKKNI) training and accreditation programs, and 543 people (360 male, 183 female) who were trained and accredited to undertake surveys. Furthermore, the project awarded 20 scholarships for postgraduate training at international universities, constructed and equipped research infrastructure at six sites, established the Regional Training and Research Center for Marine Biodiversity and Ecosystem Health (RTRC–MarBEST) as a regional Intergovernmental Oceanographic Commission training center, trained 503 researchers in coastal ecosystem research techniques, and designed and launched a grants program in 2018 that disbursed IDR 32.2 billion (approximately US$2 million) to 60 research teams at academic institutions to address priority research themes (such as strengthening Indonesia's maritime policy, management of marine tourism, and control of environmental pollution in coastal areas). The grant program established a stakeholder consultation process to identify priority research questions and ensure that research outputs addressed stakeholder needs.

67. An impact evaluation study was conducted following completion of the postgraduate trainings at international universities and the various training activities, the key findings of which highlight the success of the strengthened capacity for ecosystem management: (a) a majority of graduates (74 percent) increased their skills and knowledge in coastal ecosystem management; (b) on return to their respective institutions, graduates increased their contribution to their unit's/institution's work performance by up to 35 percent, and increased individual performance by 61 percent; and (c) women, provincial government staff, staff with a master's or PhD degree, and younger participants comprised the majority of demographics that displayed improved performance on return to work following COREMAP-supported trainings.

68. During the course of the project, LIPI was appointed as the national authority for coral reef ecosystem data,[37] and, via project support, developed a number of tools and systems to strengthen institutional capacity for coral reef ecosystem monitoring, including a national long-term coastal monitoring plan (Grand Design Monitoring Ekosistem Pesisir Indonesia); three national assessment and reporting indexes (the Reef Health Index [RHI],[38] the Mangrove Health Index, and the Seagrass Ecosystem Quality Index); five technical manuals for coastal ecosystem monitoring (coral reefs, seagrass, mangroves, megabenthos,[39] and reef fish); an open platform for marine data and information integrated into the National Oceanographic Data Center[40]; eight subnational data nodes; and six national training and accreditation schemes (SKKNI) endorsed by the Ministry of Manpower.[41] These improvements in human resource capacity and monitoring tools have enabled an increase in the number of sites at which the RHI is applied from zero to 39 (PDO Indicator 1), and an increase in the total representative area under continuous monitoring from zero to 12,719,840 hectares (PDO Indicator 2).[42]

69. The achievement of outputs toward PDO Indicator 3 resulted in an increase in both the number and quality of research outputs, with the proportion of research outputs published in high-ranking international journals increasing over the duration of the project (see figures A7.6 and A7.7). The proportion of articles with the lead author affiliated with an Indonesian institute also increased. The project made a significant contribution to increased scientific output, with the 131 coastal ecosystem research papers financed by the project representing approximately 40 percent of the total publications with an Indonesian lead author during this period and exceeding the indicator target. The quality and robustness of evidence informing this indicator is high. The indicator (number of research outputs) is backed by documentary evidence. Furthermore, the increased number and quality of research outputs is corroborated by independent data obtained from bibliographic databases.

Outcome 2: Improved management effectiveness of existing and new marine protected areas

[37] LIPI (BRIN) was appointed as the national authority for coral reef ecosystem and seagrass data on December 22, 2015, through the Decree of Head of Geospatial Information Agency (*Badan Geospatial Indonesia*, BIG) No.54 of 2015.
[38] See figures A7.4 and A7.5 for evidence of healthy corals and fisheries observed during coastal ecosystem monitoring.
[39] Deep-sea megafauna.
[40] http://pusdata.oseanografi.lipi.go.id.
[41] 116/KEPMEN-KEMNAKER/2019 on Marine Biology Scientific Diving, 139/KEPMEN-KEMNAKER/2019 on Assessment of Coral Reef Status, 154/KEPMEN-KEMNAKER/2019 on Assessment of Coral Reef Fish Status, 179/KEPMEN-KEMNAKER/2019 on Assessment of Megabenthos Status, 185/KEPMEN-KEMNAKER/2019 on Assessment of Seagrass Status, and 227/KEPMEN-KEMNAKER/2019 on Assessment of Mangrove Status.
[42] The improvements in data management, data reporting, and data access procedures have enabled greater use of coral reef ecosystem data by third parties, with the number of external data requests increasing up to 58 per year and highlighting the utility of this information to provide evidence for secondary research. Data collected during monitoring activities informed the publication of important books on the status of Indonesian coral reefs and contributed to the global assessment of coral reef health.

70. This outcome, which benefited from the GEF incremental financing with grants from the GEF biodiversity and international waters focal areas, was measured via PDO Indicator 4, which met its end target of "four target MPAs with a Blue Level Management Effectiveness Score of at least 75 percent." Shortly after the restructuring, Indonesia upgraded the E-KKP3K scorecard to a new Evaluation Tool for Management of the Effectiveness of Conservation Areas in Indonesia (*Evaluasi Efektivitas Pengelolaan Kawasan Konservasi*, EVIKA). Whereas E-KKP3K evaluates management input, processes, and outputs, and ranks an MPA according to five levels (red, yellow, green, blue, and gold), EVIKA also considers an MPA's biophysical and socioeconomic outcomes and assigns an overall percentage rating, making the EVIKA a more robust and internationally benchmarkable MPA management effectiveness scorecard. The implementing agencies undertook a comparative analysis with MMAF to benchmark the new EVIKA scorings against the previous E-KKP3K scorings. An EVIKA score of 44.96 percent is consistent with the PDO target of 75 percent E-KKP3K blue level.

71. At the time of restructuring, all four target MPAs had achieved 100 percent E-KKP3K yellow status. With the resumption of GEF-financed activities as part of the 2019 restructuring, the project made a series of targeted investments[43] to address needs identified in MPA management plans and accelerate progress toward defined EVIKA scoring criteria. These included nine small tourism infrastructure developments (for example, hiking trails, jetties, information centers, manta sighting stations); four surveillance infrastructure developments (that is, watchtowers); legal establishment and operation of 23 Community Surveillance Groups; implementation of 21 priority actions identified in National Plans of Actions for endangered, threatened, and protected species (such as identification of migratory routes and trainings for handling stranded marine mammals); and implementation of 17 priority actions defined under provincial-level marine spatial plans (such as the development of online tools for implementation and monitoring of marine spatial plans, and rehabilitation of coastal ecosystems). These activities resulted in all four MPAs meeting and exceeding the project target of a 75 percent E-KKP3K blue rating. The ICR assesses the target of PDO Indicator 4 as fully achieved.

72. The ICR assesses the achievement of revised Outcomes 1 and 2 after restructuring as High, as all targets were either met or significantly exceeded (see Annex 1).

Justification of Overall Efficacy Rating

73. The overall efficacy is rated Modest against the original intended outcome, and High against the revised target outcomes following both restructurings as most targets at outcome and intermediate levels were exceeded at project closing (see Results Framework in Annex 1).

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Substantial

74. **Economic and financial analysis.** A cost-benefit analysis[44] was conducted to reassess the project's economic viability at project close, covering all project components. The analysis quantified key socioeconomic benefits including (a) increased fisheries production, (b) increased revenues from tourism activity, and (c) returns to research outputs and

[43] See figures A7.2 and A7.3 for pictorial evidence of examples.

[44] The analysis adopted a conceptual approach as the one used at project appraisal, with differences reflecting project changes to activities during restructuring, and the availability of updated analytical methods and data. The analysis used an approach consistent with the one used during the second restructuring.

increased productivity from training and education. A 30-year period of analysis was used to account for the long-term benefits expected to accrue from improved natural resources management and the slow rate of change in natural systems. The analysis—in line with the project's revised Theory of Change following the restructurings—assumes that improved ecosystem monitoring, and management has, or will, lead to healthier coral reef ecosystems. The analysis compared a with-project scenario, in which live coral cover is assumed to stay constant over the period of analysis, to a without-project scenario, in which coral cover is assumed to decline gradually. The key underlying assumption was that improved monitoring and scientific capacity (achieved under Components 1 and 2) would in the long term facilitate improved management effectiveness, which in combination with actions that directly contribute to management effectiveness (under Component 3), are expected to prevent reef degradation. Published non-market valuation studies provided the empirical basis for monetizing the estimates of avoided coral ecosystem losses. Education-related benefits from capacity building activities were further evaluated in terms of human capital improvements. Incremental benefits[45] of the GEF-financed Component 3 enabled monitoring and research activities (IBRD financed revised Components 1 and 2) to be translated into measurable outcomes (that is, improved MPA EVIKA rankings) on the globally significant coral reefs and ecosystems in the coral triangle. Annex 4 presents details of the analysis.

75. The project was confirmed to have net positive returns under a range of plausible assumptions, with economic internal rate of return (IRR) estimates ranging from 6.20 to 9.56. The project at close was estimated to have an overall benefit-to-cost ratio of 1.11:1.59, and a net present value of US$5.6 million to US$29.5 million, under plausible assumptions. Specifically, GEF-financed Component 3 was estimated at project closure to have a benefit-to-cost ratio of 2.85 and an IRR of 15.3 percent, indicating high efficiency in the use of the GEF grant. Importantly, these estimates do not include a range of benefits including carbon sequestration (for consistency with earlier analysis), which would likely increase values considerably (due to improved conservation of seagrasses and mangroves). Estimates are slightly higher than those determined at restructuring due to exceeded targets for training and timing of expenditure but reflect similar findings. Estimates are not comparable to those predicted at appraisal due to the restructuring.[46]

76. **Implementation efficiency.** All project activities were completed at costs below appraisal and restructuring estimates, mostly due to cost savings during implementation. Particularly, the onset of COVID-19 and associated travel restrictions resulted in cost savings, as travel costs that could have been incurred for implementation supervision were saved. Procurement and financial management performance was generally satisfactory (see section IV.B). The project achieved success despite the challenges experienced during implementation, which included (a) delays in the implementation of original Component 3 focusing on sustainable community-based enterprise development; (b) necessary changes in the PDO and associated indicators; and (c) changes in the implementation arrangements and implementation constraints imposed by the global COVID-19 pandemic shortly after the second project restructuring, including restrictions on travel and stakeholder meetings. The introduction of Law No. 23/2014,[47] particularly, caused some of the key issues that hampered implementation progress, including changes in the PDO and implementation arrangements. Therefore, extension of the project duration by three years was justified, and the project's achievements

[45] Biodiversity and international water benefits included (i) four new/existing protected areas under improved management; (ii) implementation of 21 priority conservation actions for endangered, threatened, and protected species (sharks, cetaceans, and manta-rays); (iii) marine spatial plans drafted for five districts that incorporated biodiversity and ecosystem services valuation and implementation of 17 priority actions defined under provincial level marine spatial plans; and (iv) registered community surveillance groups conducting regular surveillance patrols in target MPAs.

[46] A comparison of financial analysis estimates was done, as shown in Annex 4 (table A4.1.) but is not a good metric of project efficiency against baseline expectations due to the changes in project design and, consequently, in the economic assessment methods used.

[47] Law No. 23/2014 shifts management authority over coastal waters (within 12 nautical miles of the coast) from districts to provinces. COREMAP originally focused on institutionalizing and strengthening decentralized coral reef management at the district level. Enactment of this law necessitated a change in project structure and institutional and financial arrangements to reflect the fact that decentralized coral reef management would now be under the purview of provincial governments.

within the challenging context are laudable. The cost-effective modality of implementation of the GEF-financed component in the form of grants to local organizations with the best on-the-ground knowledge, community access, and understanding, as opposed to actions by the central government through procurement, also facilitated incremental benefits of the contribution of the GEF grant to overall project efficiency.

77. The ICR assesses project efficiency as Substantial. The project extension did not have a serious effect on implementation efficiency.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

78. The split rating approach was applied (table 3), considering that the PDO and associated outcome indicators were revised. Applying the split rating methodology, the overall outcome rating is Satisfactory.

Table 3. Overall Outcome Split Rating Table

		Original Objectives and Targets	Revised Objectives after the Restructurings
Relevance of PDO		High	
Overall Efficacy		Modest	High
Efficacy of project outcomes	Outcome 1	Substantial	High
	Outcome 2	Substantial	High
	Outcome 3	Negligible	Not applicable
Efficiency		Substantial	
Outcome rating		Moderately Unsatisfactory (H + M + S)	Highly Satisfactory (H + H + S)
Numerical rating of outcome		3	6
Disbursement US$ Millions		20.62	34.87
Share of disbursement (percentage of total disbursed)		0.37 (37.2)	0.63 (63)
Weighted value of the outcome rating (share of disbursement X numerical outcome rating)		1.11	3.77
Overall outcome rating		(1.11 + 3.77 = 4.88 rounded up to 5.0) Satisfactory	

Note: The disbursement amount in the datasheet prior to restructuring (US$15.8 million) differs from the amount (US$20.62) used for overall outcome rating calculation because the amount of GEF funding (US$4.82 million) disbursed prior to restructuring was not reflected. Since the GEF funding is significant (17 percent of total), GEF funding was included to perform the overall outcome split rating more accurately both before and after restructuring.

E. OTHER OUTCOMES AND IMPACTS

Gender

79. The project included a dedicated gender indicator at entry. The ICR assesses this indicator as substantially achieved, with female participation in LPSP community organizations averaging 29 percent in 2016. While no gender indicator was retained post-restructuring, gender-disaggregated data were retained in indicator definitions and the Project Operations Manual. Under the SKKNI national training and accreditation program for coral reef ecosystem surveying, 26 percent of the trainers and 33 percent of surveyors accredited were female.

Institutional Strengthening

80. Institutional strengthening was a core objective of the project. Improvements in institutional capacity are reflected in the project's outputs and intermediate results, including six research infrastructure sites upgraded and equipped; 96 trainers and 543 alumni of a national training and accreditation program for coral reef ecosystem surveying; and a further 523 researchers trained in coastal ecosystems research techniques; and a suite of tools and standard operating procedures related to coastal ecosystem monitoring, research, and management. The successful impact of these improvements on institutional capacity are evidenced by the project meeting and, in many cases, exceeding, its PDO indicator targets.

Mobilizing Private Sector Financing

81. The project did not involve mobilizing private sector financing.

Poverty Reduction and Shared Prosperity

82. While the project included dedicated income and livelihood indicators prior to the first restructuring, delays in the implementation of activities to strengthen marine-based economies and the absence of any data time series for beneficiary household incomes make it challenging to attribute any trends in poverty and prosperity to the project. Following the first restructuring, the project focus shifted to institutionalizing the coastal ecosystem monitoring, research, and management framework, with no monitoring of the project's direct impacts on poverty and prosperity. Nonetheless, the project's interventions, including improvements in marine conservation area management and marine spatial plan implementation, as well as activities supporting ecotourism[48] under Component 3, are expected to deliver quantifiable socioeconomic benefits as described in the Efficiency section above (Section II.C).

Other Unintended Outcomes and Impacts

83. The project supported robust coastal ecosystem health monitoring to include seagrasses and mangroves, in addition to coral reefs. The process of developing a Reef Health Index facilitated the development and utilization of ecosystem health index tools for estimating the health of seagrasses (Seagrass Ecological Quality Index) and mangroves (Mangrove Health Index), including the development of MonMang, a mobile app used for mangrove monitoring. Development of monitoring indexes for these ecosystems is essential for climate adaptation and mitigation measures, improving biodiversity, and providing useful information to guide the development of livelihood activities with adequate climate change considerations.

84. COREMAP, including the COREMAP-CTI, contributed to global knowledge on Coral Reef Ecosystems Conservation.[49] The project also supported many studies with a positive impact at the national, regional, and local levels, within the public and scientific communities. For example, the project (a) supported the preparation of guidelines for management of sharks and rays,[50] (b) contributed to research on blue carbon in seagrasses, (c) contributed to marine debris management, and (d) contributed to the development of regional marine protected areas.

[48] The project supported ecotourism-related activities such as a manta sighting station, hiking track, ecotourism information centers, and training of tourist guides.

[49] The United Nations Status of Coral Reefs of the World 2020 Report benefited significantly from the monitoring data generated during the COREMAP-CTI, particularly Chapter Seven, which focused on Status and trends of coral reefs of the East Asian Seas regions.

[50] Two books, "Guidelines for the Preparation of Non-Detriment Findings (NDF) for Sharks in Indonesia," and "Guidelines for Determining Quotas for Shark Catching in Indonesia through Case Studies of Lanjaman Sharks *(Carcharhinus falciformis)*."

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

85. **Robust background analysis.** As the third and final phase of a long-term program of engagement, the project benefited from lessons learned under COREMAP Phase I and Phase II, and from lessons derived from other initiatives in Indonesia involving community empowerment and community participation in natural resources management and conservation. These lessons included the findings of detailed reviews of the previous phases by the World Bank's Operations Evaluation Department (OED) and the International Union for Conservation of Nature (IUCN). These lessons informed project design, including the project's focus on decentralizing resources and decision-making to the local level and positioning coral reef management as an integral aspect of community development.

86. **Strong alignment with priority needs.** Project objectives, components, and implementation arrangements aligned closely with country priorities, and are further indicative of the project's robust background analysis.

87. **Weaknesses in project design and the Theory of Change (ToC).** At appraisal, the PDO statement was multidimensional and poorly defined. The PDO aimed to "institutionalize the COREMAP approach of a viable, decentralized and integrated framework for sustainable management of coral reefs." The main stated objective was "institutionalization," but the qualifying adjectives of "viable," "decentralized," and "integrated" were not defined and there was no clear guidance on how these criteria should be evaluated. Furthermore, the project design included few activities and intermediate results related to the institutionalization objective. While some capacity building activities were planned in the form of trainings, other critical aspects of institutionalization were absent from the project design. Most notably, the project would have benefited from activities related to establishing the legal frameworks and financing—especially at the level of subnational governments—needed to maintain the COREMAP approach beyond the life of the project. These shortcomings in the PDO statement and ToC inhibited effective monitoring of progress toward the PDO.

88. **Risk assessment at entry and during restructuring.** Technical design risk could have been strengthened, especially to mitigate the risks associated with weaknesses in the project design/ToC and the adequacy of targets in the original Results Framework. The withdrawal of the MMAF as executing agency was difficult to predict given the strong commitment the MMAF displayed as EA of the previous phase (COREMAP II). Besides, the withdrawal was a political decision, based on the perspective of the leadership of MMAF during implementation.

89. **Insufficient focus on key objectives.** While the PDO aimed to "institutionalize" approaches that had been established and accelerated under Phase 1 and Phase 2, respectively, the project also introduced a significant new workstream in the form of sustainable marine enterprise development under Component 2. While these activities have clear implications for and alignment with national priorities for economic growth, they nonetheless represented an area of work with which the implementing units had limited institutional knowledge, experience, and capacity. The project design did not sufficiently address this shortfall in capacity, leading to implementation delays and a diminished focus on the core objective of locking in gains established over almost two decades by institutionalizing the COREMAP approach.

90. **Unrealistic indicator targets and poor alignment with activities.** At appraisal, several PDO Indicators were not supported by Intermediate Results or activities. While PDO Indicators 1 to 3 were strongly aligned with the PDO statement and Intermediate Results, PDO Indicator 4 "Income of COREMAP-CTI beneficiaries increased" and Indicator 5 "Female beneficiaries' participation" were not. While participation of female beneficiaries affected achievement of the PDO, this issue was not specifically addressed in the PAD, with no activities identified or costed to promote female participation,

and no guidance on how this outcome should be measured. Several indicators were ambitious and, arguably, unrealistic. The project targeted an increase in "improvement in coral reef status in at least 70 percent of project sites," yet did not incorporate any interventions with the potential to deliver statistically significant improvements in reef health under the project. Similarly, very ambitious rates of beneficiary income improvement (5 percent by Year 2, 15 percent by end-of-project) were targeted, without incorporating interventions with the potential to deliver these ambitious improvements.

B. KEY FACTORS DURING IMPLEMENTATION

Factors Subject to the Control of the Government and Implementing Entities

91. **Engagement of third parties via subgrants.** Component 2 implemented a demand-driven research grant program to engage universities and academic institutions in progress toward PDO Indicator 3, while Component 3 implemented a subgrant program to engage NGOs in progress toward PDO Indicator 4. Both grant programs brought additional capacity and capability to bear on achieving project objectives, and often resulted in efficiency gains.

92. **Incorporation of technical assistance and international standards of best practice at all stages of project implementation.** One example of this is the implementation of civil works supported by the project. Implementing agencies requested and incorporated technical assistance in the planning, design, construction, and review phases. In several cases, this resulted in the adoption of new ideas and approaches.

93. **Changed legal framework and subsequent project restructuring.** Law 23/2014 significantly altered the policy and legal framework within which the project operated, including transferring the mandate for coastal waters away from the district-level governments that the project had interfaced with to provincial levels of government. This change represented a significant shift away from the main assumptions and strategies of the project, inhibited progress of significant parts of the project, and ultimately contributed to the withdrawal of the MMAF as the project's main implementing agency. Not only did this undermine the institutionalization objectives of the project, but it also resulted in significant disruption and delays while the project was restructured, with a substantially altered set of activities, objectives, and implementation arrangements.

94. **Complex implementation arrangements.** Prior to the first restructuring, the project consisted of four national project implementation units, nine district implementation units, and four technical implementation units. The MMAF's project exit report highlights the challenges and complexities associated with maintaining coordination across this large number of institutions in often geographically disparate locations. Payment verification systems were particularly identified as a challenging issue.

95. **Insufficient PMU capacity.** The Project Management Unit (PMU) was housed within the MMAF before the first restructuring, and subsequently within LIPI. In both cases, key project roles and functions (for example, financial management, monitoring and evaluation, reporting) were taken on by government personnel in addition to their normal tasks and functions. This arrangement placed a considerable additional workload on personnel, and at times contributed to delays in key processes such as work planning and reporting.

Factors Subject to World Bank Control

96. **MTR.** The MTR conducted by the Government and the World Bank between October and December 2016 rated the project "Moderately Unsatisfactory." The recommendations following the MTR were significant in helping the borrower assess the status of the project and the need for a change in direction leading to a Level 1 project restructuring. The MTR identified, among others, that the project was behind schedule, and helped mitigate the effects of the internal

resolution by the MMAF to discontinue the project (see Section B, Significant Changes During Implementation). Other issues arising due to implementation delays such as with procurement (delay in hiring key consultants) and financial management (delay in submission of Interim Financial Reports, following up audit findings, and weak internal control) processes were mitigated with recommendations from the MTR.

97. **World Bank Implementation Support and Responsiveness to Challenges.** The World Bank team was responsive to changing priorities and client needs and showed flexibility in adjusting the project design, which included significant changes in the PDO, the outcomes and Results Framework, and the implementation arrangements. Implementation support was conducted regularly. However, during the COVID-19 pandemic, implementation support was limited to virtual implementation support missions.

98. **Turnover within the World Bank Task Team.** The project experienced significant task team changes during implementation. A constantly changing Task Team leadership (six different task team leaderships) was a consequence of the project's extension beyond the originally planned completion date. However, the task team was supported by proper documentation and handover of project status to ensure continuous high-quality implementation support.

Factors Outside the Control of Government and Implementing Entities

99. **The COVID-19 pandemic.** The COVID-19 global pandemic placed constraints on project implementation, including restrictions on travel and stakeholder meetings. The pandemic occurred shortly after the second project restructuring, at a time when on-the-ground activities in target MPAs were being designed and initiated. This resulted in some delays in implementation.

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

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

M&E Design

100. The PDO at appraisal was broad and ambitious. While the outcomes were defined, the outcome indicators were not specific enough to match the ambitious goal to "institutionalize" the COREMAP approach. Furthermore, the associated PDO indicators were mostly qualitative, without adequately confirmed baselines. Therefore, the associated Results Framework was not measurable, making it difficult to achieve in a realistic and timely manner. Baselines were not established prior to effectiveness, and instead relied on data obtained during the first year of implementation, without adequately addressing potential delays in data acquisition or quality of data. The project's ToC was similarly not well defined and did not clearly identify interventions with the potential to deliver the targeted increases in, for example, beneficiary income or reef health.

101. The M&E framework was substantially improved at restructuring, with three clearly defined, specific, and realistic objectives (monitoring, research, and management of coastal ecosystems) supported by measurable PDO and intermediate results level indicators. An example is the "destructive fishing reduced" PDO indicator, which did not include a clear measure of achievement of target. This indicator was revised to "registered Community Surveillance Groups (POKMASWAS) that are carrying out regular surveillance patrols in target MPA areas" with a defined target (number = 18), which was then exceeded at project closure. The post-restructuring M&E framework was also very closely aligned with targets and metrics defined in GoI's policy and regulations, enabling these regulatory frameworks to define

measuring and documentation needs in case of any discrepancy. The improved M&E framework following restructuring enabled the project to exceed targets defined in the revised Results Framework.

M&E Implementation

102. Routine monitoring was carried out by the PMU. A comprehensive Management Information System was maintained, including metrics, and supporting documentation for all Intermediate Results and PDO Indicators. The project MTR identified several lessons learned and proposed actions to keep the project on track, which were actioned through subsequent restructurings. Post-restructuring implementation progressed relatively smoothly, despite implementation challenges resulting from the global COVID-19 pandemic and is reflected in the high quality of periodic implementation status reports (ISRs) and periodic progress reports prepared by the PMU. As per GEF obligations, the mandated GEF Tracking tools were prepared and submitted both at the MTR and at completion to track the progress of the GEF-specific interventions.

M&E Utilization

103. While the M&E indicators defined at appraisal were highly useful in theory, the lack of any established baseline or metrics that would be comparable outside the project limited their application. Post-restructuring findings were well articulated, numeric, and compatible with measures beyond the project, including measures such as EVIKA that are adopted by the GoI. Findings are highly relevant for similar projects in the region, including the recently approved World Bank-supported Oceans of Prosperity – LAUTRA project (P173391).

Justification of Overall Rating of Quality of M&E

104. The ICR assessed the quality of M&E as Modest given the significant shortcomings in the M&E design. However, measures were taken at restructuring to address these challenges and adjust M&E systems accordingly. Therefore, it was possible to measure project outcomes effectively.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

105. **Environmental and Social Safeguards Compliance.** The overall compliance with safeguard policies was Satisfactory. The project was classified as Category B (Partial Assessment). In line with OP 4.01: Environmental Assessment, an Environmental and Social Impact Assessment and related documents were prepared and disclosed on the websites of the MMAF and COREMAP on July 26, 2013, and at the World Bank InfoShop on July 25, 2013. OP 4.04: Natural Habitats was triggered by project activities that supported enhancement of the management effectiveness of MPAs, which were mainly positive, and were addressed through Environmental and Social Management Plans. Environmental management and mitigation plans were established for all infrastructure works. Impacts associated with access restriction to natural habitats were mitigated in the Land Acquisition and Resettlement Policy Framework. OP 4.10: Indigenous Peoples Policy was triggered. Screening for the presence of indigenous people in project sites was undertaken and documented. An Indigenous Peoples Planning Framework was used to mitigate adverse impacts and to ensure that Indigenous Peoples and Ethnic Minorities benefited from the project. OP 4.12: Involuntary Resettlement was triggered. The project involved no significant land acquisition or resettlement. No major environmental and social issues, or instances of noncompliance, were reported during project implementation. Transparent competitive processes were established for the selection of grantees and scholarship candidates to minimize the potential for complaints. On-the-ground management interventions occurred within defined protected area boundaries and were aligned with established regulatory frameworks. A Grievance Redress Mechanism was set up to capture and document any stakeholder complaints and enable mitigating actions to be developed. No formal complaints were reported during project implementation.

106. **Financial Management.** Due to restructuring, the project experienced delays and challenges with respect to financial management, verification of payments, and slow response in resolving audit findings. Steps were taken to strengthen financial management capacity and to obtain refunds for expenses not eligible for project financing, among which were intensive financial management training for and mentoring of project staff and close monitoring of follow-up status of ineligible expenditures refunds. Audit reports and Interim Financial Reports were submitted regularly; however, the first audit of the project after restructuring was delayed.

107. **Procurement.** Procurement arrangements prior to restructuring were challenging as procurement was decentralized to the districts, causing delay and complexity in procurement processes. Post-restructuring, procurement arrangements were centralized, coupled with close monitoring by project staff, leading to better procurement processes. All procurement activities were updated regularly in the Systematic Tracking of Exchanges in Procurement (STEP) tool.

C. BANK PERFORMANCE

Quality at Entry

108. The project was the culmination of a major World Bank investment into Indonesia's coastal management over approximately 16 years and remained relevant and aligned with GoI policies and institutional priorities. During preparation, the project benefited from a robust analysis of actions to be taken to scale up the COREMAP approach, and the World Bank's competitive advantage as the GoI's primary counterpart on marine conservation issues, as explained in the context section. The World Bank built on lessons learned during previous phases and from other initiatives in Indonesia that focused on community empowerment and the sustainable use of natural resources for livelihood activities. The World Bank also supported the PMU to establish strong institutional arrangements, including in the form of a national steering committee and a technical committee, to maintain coordination across the numerous implementing agencies and identified key risks with mitigating actions implemented. Nevertheless, quality at entry had shortcomings, as described in previous sections. Given the risks identified at appraisal, more could have been done, particularly to strengthen M&E at entry and to establish a more specific, realistic, measurable, and timebound Results Framework and ToC to address the primary goal of the project, which is the institutionalization of a decentralized approach to coral reef ecosystems management, in line with the original PDO.

Quality of Supervision

109. The quality of supervision was excellent given the context, particularly as the World Bank successfully navigated two restructurings, major changes in implementation arrangements, and the COVID-19 pandemic. The World Bank was proactive in supervising the implementation of the project despite the high turnover of project Task Team Leadership and the project team. Supervision increased considerably following the first restructuring, with a mix of local and Washington, DC-based staff providing critical inputs and assistance to the project. Formal biannual missions were followed by detailed and comprehensive reports with accompanying action points. The value of this supervision became particularly apparent following the MTR, which led to the first restructuring and transformed the project from moderately unsatisfactory to satisfactory. The restructured project, with the World Bank's high-quality implementation support, successfully navigated threats to implementation progress (such as lockdowns that prevented field visits to carry out coastal ecosystem monitoring) and disbursement rates arising from the COVID-19 global pandemic. During the second restructuring, high-quality implementation support was also responsible for the significant increase in the indicator target values for the majority of the PDO and intermediate indicators that were agreed at the first restructuring, without an impact on the project's budget.[51] This ensured that the project exceeded its intended objectives, thereby increasing its impact. The

[51] See comment section of indicators as reflected in the results framework (Annex 1).

successful progress and project results have established a strong foundation for dialogue with the GoI for subsequent World Bank operations to further support the management of Indonesia's marine and coastal natural capital at ecosystem scales.

Justification of Overall Rating of Bank Performance

110. World Bank performance is assessed as Satisfactory. There were some shortcomings in quality at entry as described above, and actions were taken to resolve these. The quality of supervision was commendable, including navigating challenges associated with the two restructurings, major changes in implementation arrangements, and constraints imposed by the COVID-19 pandemic. The project's successful progress has been instrumental in paving the way for a dialogue with the GoI on a new World Bank operation[52] to build on and expand the scope of COREMAP.

D. RISK TO DEVELOPMENT OUTCOME

111. The contributions of the project to the monitoring, research, and management of Indonesia's coral reef ecosystems are highly aligned with national priorities and policy and regulatory frameworks, including the EVIKA MPA scorecard and the national index established for assessing the health of coral reef, mangrove, and seagrass ecosystems. Key tools and approaches have been institutionalized, including via the development of national training and accreditation programs (SKKNI) for key personnel. However, a key risk to the PDO is the sustainability of the revised Outcome 1 "Strengthened monitoring and research capacity for producing evidence-based coastal management information." Given that sustained monitoring is crucial to institutionalization of the COREMAP approach, regular updating of research and monitoring data remains important for informing policy decisions on coastal ecosystems management. Since the project closed, BRIN has not continued the national monitoring activities due to lack of budgetary allocations. Currently, coastal monitoring is being conducted by MPA managers under the MMAF and by provincial governments with the tools and instruments developed by BRIN under COREMAP, leaving the sustainability of the outcome a concern. Anecdotal information obtained during engagement on the ICR revealed that the MMAF intends to take on the annual budgetary mandate to mitigate the risk of lack of funding for coastal ecosystems monitoring, although the extent of MMAF budgetary allocations for coastal ecosystems monitoring is unclear.

V. LESSONS AND RECOMMENDATIONS

112. **The success of the COREMAP-CTI project benefited from the long-term engagement to initiate, accelerate, and institutionalize a community-centered approach to coastal ecosystem resource management.** The long-term engagement resulted in two critical outcomes, among others. First, it increased institutional capacity to manage coastal ecosystems through a strengthened policy and regulatory framework (through multiple policies and regulations to strengthen coastal management and prohibition of destructive fishing practices), and strengthened government institutions (the government created the MMAF after the COREMAP APL began, LIPI's role to conduct ecosystem monitoring research was enhanced with deepened capacity building, and the government developed the tools for monitoring the effectiveness of MPA management and the tools to monitor the health of important coastal ecosystems, that is, coral reefs, seagrasses, and mangroves). Second, the long-term engagement facilitated collaborative and community-based management of coastal ecosystems by involving district and community institutions in line with the

[52] Formal discussions between the World Bank and the GoI (MMAF as main counterpart) for the Oceans for Prosperity – LAUTRA project (P173391) began in 2020 while COREMAP-CTI was being implemented. The project was approved by the World Bank Board on March 23, 2023, with the PDO to enhance the sustainable management of select marine protected areas and coral reef fisheries and improve access to economic opportunities for local communities in target areas.

overall objective of decentralizing the management of coral reefs and associated coastal ecosystems.

113. **The extensive engagement brought about by the long-term approach is an excellent example of how to facilitate changes in community behavior toward conservation of important coastal ecosystems.** Starting with Phase I of the COREMAP APL, the program's use of an award-winning[53] suite of communication activities (TV and radio programs, spots, media outreach, education materials, events, community meetings, and workshops) contributed to awareness raising, thereby creating a positive attitude of the public and coastal communities toward coral reefs. In relevant provinces, education on the importance of coral reefs and associated coastal ecosystems was added to the academic curriculum of elementary and secondary schools. Multiple impact surveys revealed that higher exposure to COREMAP communication activities and materials resulted in behavior change toward coastal ecosystems. This behavioral change continued to improve throughout the APL, leading to the establishment of community surveillance units that monitored destructive fishing activities, and communities taking responsibility for their use of coastal resources, as observed in the COREMAP-CTI. Yet, COREMAP could have benefited from activities related to establishing long-term operational financing to ensure the legacy of the COREMAP approach beyond the lifespan of the project (such as MPA management financing, continued coastal ecosystem monitoring, and incentivizing of Community Surveillance Groups to continue monitoring for destructive fishing activities). The government recognizes this need and has prioritized the establishment of a blue finance regulatory framework and potentially an instrument to support the financing of MPA management and the livelihoods of coastal communities, including in previous COREMAP sites. These needs will be addressed in the World Bank's recently approved US$210 million Oceans for Prosperity – LAUTRA Project (P13391).

114. **The COREMAP APL provided an excellent example of leveraging developmental partner financing to scale up impacts and of working together with partner organizations for a strong development outcome.** Combined financing from the Bank and donor partners – the Asian Development Bank (ADB), the Australian Agency for International Development (AusAID), and the World Bank in COREMAP I; from the ADB and World Bank in COREMAP II; and from the ADB and World Bank at entry of COREMAP-CTI – was integral to COREMAP's success, as the World Bank-financed activities were replicated with financing from the ADB and AusAID in other parts of Indonesia. The GEF financing was also leveraged from two focal areas: biodiversity and international waters to strengthen management effectiveness of four MPAs in eastern Indonesia. Knowledge exchange for project implementation was also fostered during the implementation of the COREMAP APL through joint MTR missions; joint implementation support missions where possible among the GoI, ADB, and World Bank; and exchange of aides-mémoire among developmental partners.

115. **Flexibility in project design and modalities coupled with integration between top-down and bottom-up approaches are critical for project success.** At appraisal, the project design had a strong focus on bottom-up approaches in the form of community- and district-level management, and on top-down approaches at the ministerial level. While this design was reflective of governance structures at the time, it nonetheless did not sufficiently address issues of capacity, policy, and governance frameworks to integrate these two ends of the spectrum. Consequently, the 2014 shift in coastal resource authority from district to provincial levels of government represented a significant shift in focus for the project. In hindsight, it is apparent that a more integrated design would have meant that provincial-level interventions would have already been underway and would have enabled the project to reallocate effort and focus more readily. To address this issue, future operations should identify the host country systems and governance structures that link planned top-down and bottom-up interventions (in this project, this would have been the role of the provincial governments) and ensure that project interventions address constraints all along this continuum.

[53] The quality of the COREMAP public communication/awareness program was officially recognized when it won the Gold Quill Award from the International Association of Business Communicators in 2002.

116. **An integrated project design can improve monitoring and evaluation and maximize development impact.** In the current project, insufficient linkages were established between, for example, the enterprise development outcomes and the MPA management effectiveness outcomes, which may have contributed to the slow implementation of Component 3: Strengthening a Sustainable Marine-based Economy. Similarly, while the project made good progress on both advancing the implementation of coral reef ecosystem monitoring and enhancing MPA management effectiveness, a more integrated approach to planning and implementing these activities could have enabled counterfactuals to be established and provided greater opportunity to test and evaluate different approaches. Integrated planning and implementation become particularly important when multiple agencies are involved, as was the case in the current project, with LIPI implementing reef monitoring activities, and the MMAF (pre-restructuring) and BAPPENAS (post-restructuring) implementing MPA strengthening activities.

117. **Subgrant financing mechanisms are an effective implementation tool.** The project invested considerable time and resources in designing subgrant programs, including developing detailed criteria for evaluating and selecting proposals and identifying subgrant project objectives. These mechanisms enabled the project to leverage additional resources, capacity, and capabilities from universities, academic institutions, NGOs, and community organizations. Moreover, the subgrant mechanisms proved to be an effective tool to align these third-party capabilities with government priorities and targets. Funding mechanisms via subgrants allowed for smooth project implementation at the community level and provided more opportunities for community involvement in the project. Use of subgrantees also provided an avenue to boost the capacity of local NGOs in the management of coastal and marine ecosystems and resources. Future projects should consider similar mechanisms to enhance stakeholder engagement, augment project capacity, and align stakeholder capabilities with project objectives.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Strengthen monitoring and research capacity for producing evidence-based coastal ecosystem mgmt info

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Sites at which Indonesia's new Coral Reef Health Index is applied	Number	0.00 30-Jun-2017	31.00 30-Jun-2017	39.00 31-Dec-2018	39.00 30-Jun-2022

Comments (achievements against targets):
The Coral Reef Health Index (RHI) provides a practical approach that links field data to an intuitive interpretation for management. The RHI is determined based on three parameters: (i) coral cover, (ii) potential for coral recovery (indicated by algae cover), and (iii) total reef fish biomass. Indicator targets were increased during 2019 restructuring.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Coastal ecosystems area under continuous monitoring according to defined criteria	Hectare(Ha)	0.00 30-Jun-2017	9,235,028.00 30-Jun-2017	11,241,404.00 31-Dec-2018	12,719,840.00 30-Jun-2022

Comments (achievements against targets):
Indicator targets were increased as part of 2019 restructuring. Data source: http://crmis.oseanografi.lipi.go.id/crmis

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Coastal ecosystems scientific research papers published by BRIN and research grant recipients that meet the need for evidence-based resources management information	Number	0.00 30-Jun-2017	38.00 30-Jun-2017	57.00 31-Dec-2018	131.00 21-Apr-2022

Comments (achievements against targets):
The project implemented a grants program to support Demand Driven Research, which proved to be more productive that anticipated. The success of this program contributed to the target being exceeded. Targets were increased during 2019 restructuring.

Objective/Outcome: Improved management effectiveness of existing and new marine protected areas (MPA)

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Target MPAs with a Blue Level Management Effectiveness Score of at least 75 percent.	Number	0.00 31-Dec-2018	4.00 31-Dec-2018		4.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added following the 2019 restructuring. The MMAF moved from scoring MPAs using the EKKP3K system (on which this indicator is based) to the new EVIKA system. Assessment of scoring under both systems in 2019 indicates that 75 percent under EKKP3K is equal to around 45 percent under EVIKA. Following the EVIKA system, the project met the set target.

A.2 Intermediate Results Indicators

Component: Support for Demand-Driven Coastal Ecosystems Research

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Researchers trained by BRIN in coastal ecosystems research techniques	Number	0.00 30-Jun-2017	240.00 30-Jun-2017	340.00 31-Dec-2018	503.00 21-Apr-2022

Comments (achievements against targets):
Extension of project closing date (2019 restructuring) allowed for an increase in the indicator's targets. The competency trainings developed by the project and the training of trainers' approach implemented by the project also contributed to this indicator being exceeded, with strong demand among stakeholders for training.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Demand-driven coastal	Number	0.00	20.00	30.00	60.00

ecosystems research grants awarded by BRIN		30-Jun-2017	30-Jun-2017	31-Dec-2018	21-Apr-2022

Comments (achievements against targets):
The Demand Driven Research program received more interest from applicants than anticipated, and time invested in developing a robust process for application review and selection enabled applications to be processed more quickly than anticipated, contributing to excess achievement of this indicator. Indicator targets were increased during the 2019 restructuring.

Component: Institutional Strengthening for Coastal Ecosystems Monitoring

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Coastal ecosystems monitoring surveys completed	Number	16.00 30-Jun-2017	93.00 30-Jun-2017	78.00 31-Dec-2018	78.00 21-Apr-2022

Comments (achievements against targets):
The indicator's end target was decreased following the 2019 restructuring. The reduction in number of surveys was in part due to the development of revised monitoring protocols and the Reef Health Index, which considered representative sampling and the number of surveys per site required.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Specific coastal ecosystems	Number	0.00	5.00		6.00

schemes for which BRIN is accredited as the national certification entity.		30-Jun-2017	30-Jun-2017		21-Apr-2022

Comments (achievements against targets):
BRIN (*Lembaga Sertifikasi Profesi Pusat Penelitian Oseanografi LIPI*) obtained accreditation from the National Agency for Professional Certification *(Badan Nasional Sertifikasi Profesi, BNSP)* through the **Decree of Head of BNSP Number KEP.0832/BNSP/VIII/2017**, to become the Indonesian Professional Certification Agency for coastal ecosystems monitoring (license number BNSP-LSP-858-ID). The accreditation ensured that BRIN met the technical and legal requirements to become a certification agency for coastal ecosystem assessors/surveyors (related to the next indicator). BRIN's accreditation was secured for six ecosystem schemes (exceeding the original target of five): i) assessment of coral reef condition; ii) Assessment of biodiversity of coral reef fish; iii) Assessment of mega-benthos condition; iv) assessment of mangrove conditions; v) assessment of seagrass condition; vi: scientific diving. http://lsp-p2o.oseanografi.lipi.go.id/profil/sejarah-lsp-p2o-lipi

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Assessors and surveyors certified in coastal ecosystems monitoring by BRIN	Number	0.00 30-Jun-2017	250.00 30-Jun-2017	500.00 31-Dec-2018	639.00 21-Apr-2022

Comments (achievements against targets):
The number of assessor and surveyors certified by BRIN in coastal ecosystem monitoring for the six schemes above, which includes personnel from within BRIN and outside of BRIN (government agencies, universities). The target was exceeded, in part due to the success of competency placement test development and the training of trainers' approach adopted by the project, combined with strong demand for this training from stakeholders.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Sub-national assesment centers established by BRIN	Number	0.00 30-Jun-2017	7.00 30-Jun-2017	10.00 31-Dec-2018	11.00 21-Apr-2022

Comments (achievements against targets):
The original target was increased following the 2019 restructuring. This indicator demonstrated the establishment of national network of 10 assessment centers within existing BRIN's partner institutions (i.e., universities) linked to district and provincial coastal ecosystem monitoring programs under the Government's Marine Affairs and Fisheries Agencies, which directly contributes to the strengthening of coastal ecosystem monitoring capacity at the sub-national level. The revised target was exceeded as a consequence of strong commitment from partner institutions which enabled the competency placement tests to develop quickly, as well as strong demand for training provision among stakeholders.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Technical staff awarded Masters Degree Scholarships in coastal ecosystems monitoring and management	Number	0.00 31-Dec-2018	20.00 31-Dec-2018		20.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added as part of the 2019 restructuring. Due to the time required for scholars to apply for and complete a program of post-graduate study, the project did not attempt to exceed the target despite the project extension.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Sub-national data nodes within existing institutions established by BRIN	Number	0.00 30-Jun-2017	8.00 30-Jun-2017		8.00 30-Jun-2022

Comments (achievements against targets):
This indicator reflected that BRIN had successfully established eight official coastal ecosystem data-entry point (data nodes) within partner institutions (universities) at the sub-national level which are connected to BRIN's central coastal ecosystem database.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
BRIN coastal monitoring and research infrastructure assets upgraded	Number	0.00 30-Jun-2017	7.00 19-Nov-2021		6.00 21-Apr-2022

Comments (achievements against targets):
The target was not met because the government cancelled the use of loan funds for the upgrade of infrastructure in one site (Bitung Research Station) due to change in priorities which led to downgrade of the status of the Bitung facility from a technical implementing unit to a field research station. The proposed funds for the upgrade were reallocated with the World Bank's consent and a no-objection letter was issued by the World Bank to reflect this change. Infrastructure upgrade in all other sites were completed.

Component: Management of priority coastal ecosystems

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Small ecotourism infrastructure assets, built in target MPA areas, as per MPA management plans.	Number	0.00 31-Dec-2018	8.00 31-Dec-2018		9.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added following the 2019 restructuring. Due to the time required for scholars to apply for and complete a program of post-graduate study, the project did not attempt to exceed the target despite the project extension.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Registered community surveillance groups (POKMASWAS) that are carrying out regular surveillance patrols in target MPA areas.	Number	0.00 31-Dec-2018	18.00 31-Dec-2018		22.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added following the 2019 restructuring. Strong interest among community groups for this support, combined with a well-developed process for training, strengthening, and registering POKMASWAS groups contributed to this indicator being exceeded.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Provincial ICZM action plan activities implemented in and around target MPA areas.	Number	0.00 31-Dec-2018	14.00 31-Dec-2018		17.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added following the 2019 restructuring. Component 3 successfully developed and implemented a sub-grant program to leverage capacity and capabilities of partner organizations working on the ground and sought opportunities to align and integrate ICZM action plan activities and MPA strengthening activities. These contributed to the indicator being exceeded.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of management activities from MMAF's National Plans of Action that have been implemented for Sharks, Cetaceans, and Manta-Rays in target MPA areas.	Number	0.00 31-Dec-2018	9.00 31-Dec-2018		21.00 21-Apr-2022

Comments (achievements against targets):
This indicator was added following the 2019 restructuring. Component 3 successfully developed and implemented a sub-grant program to leverage capacity and capabilities of partner organizations working on the ground and sought opportunities to align and integrate NPOA activities and MPA strengthening activities. These contributed to the indicator being exceeded.

B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: Strengthen monitoring and research capacity for producing evidence-based coastal ecosystem management info	
Outcome Indicators	1. Sites at which Indonesia's new Coral Reef Health Index is applied 2. Coastal ecosystems area under continuous monitoring according to defined criteria 3. Coastal ecosystems scientific research papers published by BRIN and research grant recipients that meet the need for evidence-based resources management information
Intermediate Results Indicators	1. Researchers trained by BRIN in coastal ecosystems research techniques 2. Demand-driven coastal ecosystems research grants awarded by BRIN 3. Coastal ecosystems monitoring surveys completed 4. Specific coastal ecosystem schemes for which BRIN is accredited as the national certification entity 5. Assessors and surveyors certified in coastal ecosystems monitoring by BRIN 6. Subnational assessment centers established by BRIN 7. Technical staff awarded master's degree scholarships in coastal ecosystems monitoring and management 8. Subnational data nodes within existing institutions established by BRIN 9. BRIN coastal monitoring and research infrastructure assets upgraded
Key Outputs by Component (Linked to achievement of Objective/Outcome 1)	1. Coastal ecosystem monitoring surveys completed in 78 sites, and the Coral Reef Health Index developed by the project was applied to 39 sites 2. In total, 12,719,840 hectares of coastal ecosystems were continuously monitored 3. LIPI also established 11 subnational assessment centers and 8 subnational data nodes to adequately store ecosystem monitoring data 4. 639 (128 percent of target) assessors and surveyors were certified in coastal ecosystem monitoring by LIPI 5. 20 master's degree scholarships awarded in coastal ecosystems monitoring and management 6. 503 researchers (154 percent of target) trained in coastal ecosystems research techniques 7. 60 demand-driven coastal ecosystems research grants awarded

	8. Outputs further improved the number of coastal ecosystem research outputs to the extent that 131 (230 percent of target) peer-reviewed scientific research papers were published during the COREMAP-CTI
Objective/Outcome 2: Improved management effectiveness of existing and new marine protected areas (MPA)	
Outcome Indicators	1. Target MPAs with blue level management effectiveness score of at least 75 percent
Intermediate Results Indicators	1. Small ecotourism infrastructure assets, built in target MPA areas, per MPA management plans 2. Registered Community Surveillance Groups (POKMASWAS) carrying out regular surveillance patrols in target MPA areas 3. Provincial integrated coastal zone management (ICZM) action plan activities implemented in and around target MPA areas 4. Number of management activities from MMAF's National Plans of Action that have been implemented for sharks, *cetaceans*, and manta rays in target MPA areas
Key Outputs by Component (Linked to achievement of Objective/Outcome 2)	1. Improvement of MPA management effectiveness in four MPAs to a score of at least 75 percent 2. Development of small ecotourism infrastructure assets in target MPA areas following MPA management plans 3. 22 Community Surveillance Groups (POKMASWAS) established and conducted regular (3 times a week) ecosystem surveillance patrols in target MPAs 4. 21 management activities (233 percent of target) from the National Plan of Action for the conservation of sharks, cetaceans, and manta rays in target MPA areas 5. 17 integrated coastal zone management action plan activities (121 percent of target) were implemented in and around target MPA areas

Note: Cetaceans are aquatic mammals that include whales, dolphins, and porpoises.

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Harideep Singh	Task Team Leader
Enggar Prasetyaningsih	Procurement Specialist
Christina I. Donna	Financial Management Specialist
Juan Martinez	Social Specialist
Ninin Kania Dewi	Social Specialist
Cary Anne Cadman	Environmental Specialist
Dennie Stenly Mamonto	Social Specialist
Krisnan Pitradjaja Isomartana	Environmental Specialist
Supervision/ICR	
Ina Pranoto, Cary Anne Cadman	Task Team Leader(s) (2014–2017)
Ann Jeannette Glauber	Task Team Leader (2017–2019)
Dinesh Aryal	Task Team Leader (2019)
Andre Rodrigues de Aquino, David James Kaczan	Task Team Leader(s) (2019–2021)
Ambroise Basile Irenee Brenier	Task Team Leader (2021 until project closing)
Andy Chandra Firdana	Procurement Specialist
Angelia Nurwihapsari	Procurement Specialist
Christina I. Donna	Financial Management Specialist
Ninin Kania Dewi	Social Specialist
Nikola Ille	Environmental Specialist
Tini Gumartini	Environmental Specialist
Sandra Buana Sari	Team Member
Andrew Hewing Harvey	Senior Fisheries Consultant/ICR Co-Author

Annye Frida Meilani Simbolon	Social Specialist
Adeyemi David Aromokeye	Environmental Specialist/ICR Main Author
Yadranka Farita	Natural Resources Management Specialist

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY12	10.596	57,006.83
FY13	23.450	153,844.17
FY14	29.080	161,059.12
FY15	1.425	7,165.47
FY16	3.350	18,032.74
FY17	0	0.00
Total	**67.90**	**397,108.33**
Supervision/ICR		
FY12	0	295.00
FY14	1.638	15,341.30
FY15	23.047	75,802.03
FY16	19.163	67,250.88
FY17	21.744	131,706.11
FY18	18.400	117,859.68
FY19	27.349	164,594.59
FY20	24.812	147,496.42
FY21	28.758	144,439.41
FY22	21.991	129,022.74
FY23	14.056	69,702.60
Total	**200.96**	**1,063,510.76**

ANNEX 3. PROJECT COST BY COMPONENT

Table A3.1. Project Cost by Component

Components	Amount at Approval IBRD + GEF (US$M)	Amount at 2017 Restructuring IBRD (US$M)	Amount at 2019 Restructuring IBRD + GEF (US$M)	Actual at Project Closing (US$M)	Percentage of Approval (%)
Component 1	14.93	14.26	28.12	27.53	97.9
Component 2	15.19	13.09	16.39	16.36	99.8
Component 3	22.12	15.79	9.07	8.57	94.5
Project Management	5.14	4.24	3.80	2.19	57.6
Total	**57.38**	**47.38**	**57.38**	**54.65**	**95.00**

Note: Given the significant changes the project underwent along the two restructurings, calculation of actual project efficiency (percentage) at project closing used the Actual cost per component as at the 2019 restructuring. Given the several activity cancellations and change of executing agency, it was challenging for BRIN to accurately document exact expenses from IBRD and GEF financing per component. Therefore, the expenses were estimated per cost category. At the 2019 restructuring, all GEF-financed activities were reallocated to Component 3. Hence, Component 3 actuals at project closing reflect the amounts spent on project activities using GEF financing. GEF-financed amounts expended for project management were combined with IBRD-financed project management costs. The actuals at project closing do not reflect any discrepancies with World Bank disbursement records and amounts, as reflected in the ICR Data Sheet.

Table A3.2. Allocation of IBRD and GEF Funding throughout the COREMAP-CTI Project Life, including Pre- and Post-restructuring

Original COREMAP-CTI Design (per PAD)		Revised COREMAP-CTI Design (per June 2017 Restructuring)		Proposed COREMAP-CTI Design (per 2019 Restructuring)				
Project Design	Cost Allocation IBRD + GEF[a] (US$ million)	Project Design	Cost Allocation IBRD only (US$ million)	Project Design[b]	Cost Allocation IBRD + GEF (US$ million)	Allocation of Remaining Funds (US$ million)		
						IBRD	GEF	Total
Component 1: Institutional Strengthening for Decentralized Coral Reef Management	14.93	Component 1: Institutional Strengthening for Coastal Ecosystems Monitoring	14.26	Component 1: Institutional Strengthening for Coastal Ecosystem Monitoring	28.12	19.56	0	19.56
Component 2: Development of Ecosystem-based Resources Management	15.19	Component 2: Support for Demand-driven Coastal Ecosystems Research	13.09	Component 2: Support for Demand-driven Coastal Ecosystems Research	16.39	4.73	0	4.73
Component 3: Strengthening Sustainable Marine-based Economy	22.12	Component 3: Strengthening Institutional Systems for Coastal Ecosystems Monitoring and Research	15.79	Component 3: Management of Priority Coastal Ecosystems	9.07	0	6.22	6.22
Component 4: Project Management, Coordination, and Learning	5.14	Component 4: Project Management	4.24	Component 4: Project Management	3.80	2.45[c]	0	2.45
Total	**57.38**	**Total**	**47.38**	**Total**	**57.38**	26.74	6.22	32.96

Note: a. At approval, the total cost allocation included US$5.7 million of counterpart funding, which is not reflected here. At the 2017 Restructuring, US$342 million of the counterpart funding had been spent and US$2.28 cancelled. b. As described in section II (d), the proposed implementation arrangements for the 2019 restructuring are as follows: Components 1, 2, and 4, which are entirely IBRD-financed, will remain under implementation by LIPI, except for Subcomponent 1.2. (scholarships), which will be implemented by the Center for Planners Development, Education, and Training (CPDET) under the Ministry of National Development Planning (BAPPENAS); and Component 3, which is entirely GEF-financed, will be implemented only by ICCTF-BAPPENAS. c. Included US$0.41 million for contingencies.

ANNEX 4. EFFICIENCY ANALYSIS

1. A cost-benefit analysis was conducted to reassess the project's economic viability at time of Close. The analysis has adopted a similar conceptual approach to that used at appraisal, with differences reflecting changes to activities during restructuring, and the availability of updated analytical methods and data. The analysis uses an approach consistent with the one used during the second restructuring, with minor differences reflecting outcomes known at Close and final project costs.

2. The analysis quantified key socioeconomic benefits during and beyond the project period. These include (i) increased fisheries production for local consumption and subsistence, (ii) increased high-value fisheries production for live export markets, (iii) increased revenues from tourism activity, (iv) returns to demand-driven research outputs, and (v) increased productivity from human capital increases associated with training and education.[54] A 30-year period of analysis was used to account for the long-term benefits expected to accrue from improved natural resources management and the slow rate of change in natural systems. Projections of long-term management costs (beyond project expenditures) were incorporated (assumed to be around 20 percent of annual average project costs). A discount rate of 5.6 percent was used.[55]

3. The analysis assumes that improved ecosystems monitoring, and management has led or will lead to healthier coral reef ecosystems. The analysis compares a with-project scenario, in which live coral cover is assumed to stay constant over the period of analysis, to a without-project scenario, in which coral cover is assumed to decline at an annual rate of 0.5 percent.[56] The key underlying assumption is that improved monitoring and scientific capacity (Components 1 and 2) will in the long-term facilitate improved management effectiveness,[57] which in combination with actions that directly contribute to management effectiveness (Component 3), are expected to prevent reef degradation and live coral loss. Component 3 activities are assumed to improve ecosystem outcomes in the four target MPAs, while Component 1 and 2 activities are assumed to improve outcomes across Indonesia. To be conservative, only partial (5 to 15 percent) avoided ecosystems loss is attributed to Component 1 and 2 activities (equivalent to an avoided 0.03 to 0.08 percent annual loss).[58]

4. Published non-market valuation studies provide the empirical basis for estimates. For all benefits, per-unit area calculations of live coral cover value are assumed to scale proportionally with assumed avoided coral cover loss. Fisheries per-unit area productivity and value are derived from analytical work underpinning the first phase of COREMAP.[59] Key fisheries parameters and assumptions include (1) reef productivity of 10 tonnes annually for local consumption valued at US$1.33 per kilogram, (2) reef productivity of 0.5 tonnes annually for live export fish at a price of US$5.50 per kilogram, and (3) that this biomass is harvestable (that is, there are spillovers from MPAs). Productivity values are at the low end of

[54] Additional benefits often associated with coral reef restoration and protection were not quantified due to data limitations, including storm damage protection, biodiversity conservation, and carbon sequestration in marine ecosystems. These could be expected to considerably increase overall benefits.

[55] 5.6 percent is approximately twice the long-term (20-year) GDP per capita growth rate for Indonesia, in line with World Bank Group Discounting Procedures. See World Bank (2016), "Discounting Costs and Benefits in Economic Analysis of World Bank Projects."

[56] Live coral cover loss of approximately 1 percent occurred between 1983 and 2003, and 2 percent between 1997 and 2003, across the coral triangle. See Bruno, J. and Selig, E. 2007. "Regional Decline of Coral Cover in the Indo-Pacific: Timing, Extent, and Subregional Comparisons." *PLoS ONE* 2 (8).

[57] The impact of improved monitoring and scientific capacity (Components 1 and 2) is thus based on assumed indirect benefits. These activities support improved management but do not contribute directly to improved reef condition (hence, the 5 to 15 percent attribution adjustment).

[58] Note the implicit (conservative) assumption that monitoring, and research have no benefits outside of Indonesia's MPA network. However, it is likely that data and research will benefit reefs under a range of management regimes, and may also support expansion of improved management, suggesting benefits greater than those estimated here.

[59] Cesar, H. 1996. "Economic analysis of Indonesia's coral reefs." Environment Department Working Paper.

the range used in the original analysis. Tourism values are derived from a published spatially explicit model[60] of tourist visits and reef-related expenditure in non-urban, coastal areas. The study's resulting Indonesia average (US$78,000 km/yr) is applied to the Raja Ampat locations. A much lower value of (US$900 km/yr) is applied to the less-developed Sawu Sea location.[61]

5. Education-related benefits from capacity building activities are further evaluated in terms of human capital improvements. Values were calculated for the scholarships for master's degrees (Subcomponent 1.2) and for capacity building through accreditation and short training courses (Subcomponent 1.3). Analysis of economic returns to education and training draws on a well-developed literature linking wage increases to education, including in low- and middle-income developing countries. The full benefit of education is assumed to be reflected in private wages.[62] An average return to education of 10.7 percent is applied based on available studies for Indonesia.[63] Estimates are based on student and trainee numbers at time of Project close. Economic benefits of the demand-driven research grants (Component 2) are difficult to quantify given the diffuse nature of benefits from research and development. Published estimates of returns to research[64] were reviewed, and a 20 percent rate of return (one of the lowest published rates) was applied over eight years.

6. The analysis found net positive returns under a range of assumptions, with economic internal rates of return (IRR) estimates ranging from 6.20 to 9.56. The Project at close was estimated to have an overall benefit-cost ratio of 1.35, an IRR of 8.02 percent, and a net present value of US$17.5 million, under the midrange assumption of a 10 percent attribution of Component 1 and 2 activities to avoided ecosystem loss. These estimates do not include a range of benefits including carbon sequestration (for consistency with earlier analysis), which would likely increase values considerably (due to improved conservation of seagrasses and mangroves). Estimates are slightly higher than those determined at restructuring due to exceeded targets regarding training and timing of expenditure but reflect similar findings. Estimates are lower than those made at appraisal; however, a very different Project design pre-restructuring and a more limited economic analysis at appraisal mean that these estimates are not comparable.

7. The GEF-financed revised Component 3 complemented activities financed by IBRD under the revised Components 1 and 2, providing incremental global benefits relating to the GEF biodiversity and international waters focal areas. Biodiversity and international water benefits included (i) four new/existing protected areas under improved management; (ii) implementation of 21 priority conservation actions for endangered, threatened, and protected species (sharks, cetaceans, and manta-rays); (iii) marine spatial plans drafted for five districts that incorporated biodiversity and

[60] Spalding, M., et al. 2017. "Mapping the global value and distribution of coral reef tourism." *Marine Policy* 82: 104–113. This study accounts for the heterogeneity of expenditure across regions to arrive at a national average which, unlike many estimates, does not misallocate high-value case study values to remote reefs.

[61] We use the low-end value of the range presented for tourism and recreation value (US$900 $km^{-2}\,yr^{-1}$ to US$148,000 $km^{-2}\,yr^{-1}$) in Burke, L. et al. (2004), *Reefs at risk in Southeast Asia*, "Chapter 6: The economic loss associated with coral reef degradation."

[62] Initial wages are assumed at US$1,000 per month for midlevel technical staff, growing at a rate equal to the long-term per capita economic growth rate of 2.8 percent. Given the public orientation of public service employment (by definition), valuing human capital on this basis is thus conservative.

[63] An average of the midrange estimates from four relevant studies was applied. These studies are Sohn, K. (2013), "Monetary and Nonmonetary Returns to Education in Indonesia," *Developing Economies* 51 (1): 34–59; Duflo, E. (2001), "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," *The American Economic Review* 91 (4): 795–813; Comola, M., and L. de Mello (2010), "Educational Attainment and Selection into the Labour Market: The Determinants of Employment and Earnings in Indonesia," Paris School of Economics Working Paper No. 2010-06; and Purnastuti, L. (2015), "The returns to education in Indonesia: Post reform estimates," *The Journal of Developing Areas* 49 (3): 183–204. Note that returns to education estimations may be affected by unobservable variable bias. For example, talent, which cannot be observed (or controlled for), may drive both education attainment and wage earning. At least two of these studies use instrumental variables to alleviate this bias and find little difference with their direct estimates.

[64] Georghiou, L. (2015). "The value of research." Policy Paper by the Research, Innovation, and Science Policy Experts (RISE). European Commission.

ecosystem services valuation and implementation of 17 priority actions defined under provincial level marine spatial plans; and (iv) registered community surveillance groups conducting regular surveillance patrols in target MPAs. Furthermore, while the IBRD loan financed monitoring and research (revised Components 1 and 2), the GEF grant enabled these to be translated into measurable outcomes (that is, improved MPA EVIKA rankings) on globally significant coral reefs and ecosystems in the coral triangle. As part of the broader economic and financial analysis, the benefit-to-cost ratio of 2.85 and the IRR of 15.3 percent specific to the GEF-financed Component 3 as a value add based on the method described above (see paragraphs 3–4) indicate a high efficiency in the use of the GEF grant.

Table A4.1. Benefit-cost Ratios, Internal Rates of Return, and Net Present Values

Assessed at appraisal. Note: Different Project design prior to major restructuring (and assessment methods); not comparable.			
Benefit-cost ratio		n.a.	
Internal rate of return (percent)		15.6%	
Net present value (US$ 2017)		n.a.	
	Assumed contribution of research and monitoring to improved management of Indonesia MPAs		
	5 percent	10 percent	15 percent
Assessed at Project close			
Benefit-cost ratio	1.14	1.38	1.63
Internal rate of return (percent)	6.72%	8.48%	9.99%
Net present value (US$ 2017)	6,729,937	18,682,678	30,678,572
Assessed at second restructuring (Project design consistent with design at close)			
Benefit-cost ratio	1.11	1.35	1.59
Internal rate of return (percent)	6.20%	8.02%	9.56%
Net present value (US$ 2017)	5,602,996	17,555,737	29,551,631

Note: 5.6 percent discounting. n.a. = not applicable.

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

Summary of the Borrower ICR Document Submitted to the World Bank in June 2022

1. The COREMAP was established in 1998 to fully support ecosystem monitoring and complementary projects that could boost coastal ecosystem conservation. The COREMAP-CTI was designed with three phases: (a) Initiation; (b) Acceleration; and (c) Institutionalization. The purpose of the Borrower ICR[65] is to provide a comprehensive assessment of the COREMAP-CTI performance financed by the World Bank, including problems and issues faced by the Project Implementing Agency during the implementation of COREMAP-CTI from 2017 to 2022.

2. Key achievements of COREMAP-CTI were observed in a series of activities that include marine ecosystems observation, education, and scientific research, and the launch of Indonesia's outer islands expeditions results. These activities are also included in the Government of Indonesia's development program targets. The implementation of this program involved a variety of higher education institutions across various regions in Indonesia and empowered both senior and junior researchers. Key outcomes are summarized per component in subsequent paragraphs.

3. First, Component 1 - *Institutional Strengthening for Coastal Ecosystems Monitoring.* The RHM activity applied the Coral Reef Health Index at 39 monitoring sites and placed an area totaling 12,719,840 ha under continuous monitoring. The project conducted a cumulative total of 78 coastal ecosystem monitoring surveys, including 22 surveys in 2021. BRIN achieved accreditation by National Agency for Professional Certification (BNSP) as the national certification entity for six coastal ecosystem schemes, exceeding the overall target of five schemes. A total of 13 assessment centers for training and certification of surveyors and assessors (*Tempat Uji Kompetensi,* TUKs) were established (with the issuance of the TUK Establishment Decree), exceeding the end-project target. A cumulative of 639 surveyors and assessors were certified, exceeding the end-project target. A total of 20 technical staffs were awarded master's degree scholarship in coastal ecosystems monitoring and management. Additional short training courses have been delivered to 85 participants from agencies including BAPPENAS, MMAF, and regional marine and fishery agency, on topics related to marine spatial planning, sustainable fisheries management, and bio-economics. Construction of six new laboratory and marine stations were also completed.

4. Second, Component 2 - *Support for Demand-Driven Coastal Ecosystems Research.* Demand-driven research grants were allocated in 2022 for a cumulative 60 grants in total. A total of 131 scientific research papers were published throughout COREMAP. There was a significant increase in international journal publications between 2021-2022 (36 publications) compared to 20 international journal publications prior to 2021. A cumulative of 523 researchers received training in coastal ecosystems research techniques, therefore exceeding end-project target. Eight sub-national data nodes for storing coastal ecosystems data were completed, meeting the end-project target.

5. Third, Component 3 - *Management of Priority Coastal Ecosystems.* Progress in activities includes:
Sub-component 3.1. *Management effectiveness of marine conservation areas and conservation of threatened species:* (a) Nine eco-tourism infrastructure assets are completed' (b) An additional 5 infrastructures were built by the project to support fisheries and livelihood were completed in 2021; (c) A total of 21 activities supporting the National Action Plan for Cetaceans, Sharks, and Rays have been implemented including genetic sampling and satellite tagging of cetaceans; manta ray population assessment; socialization, awareness, and education workshops; feasibility study on development of species-based tourism; and conducting training on handling method for stranded marine mammals.

[65] The Borrower ICR Document only included activities following the 2017 Restructuring as BRIN was not the implementing agency prior to restructuring.

Sub-component 3.2. *Integrated Coastal Zone Management, ICZM:* Seventeen activities from the West Papua ICZM Action Plan were completed or fully underway, including: capacity building training for community surveillance; mangrove ecosystem rehabilitation; diving certification for MPA managers; district decrees for protection of tenurial systems for indigenous community groups; capacity building for *Masyarakat Hukum Adat* (MHA) sustainable management of marine and coastal resources; and socialization, awareness, and education workshops.

Sub-component 3.2. *Community stewardship of coastal resources:* Twenty-two community surveillance groups (POKMASWAS) in West Papua and Savu Sea have been officially registered and conducted regular patrols since April 2021 with one additional POKMASWAS registered and waiting for decree letter, therefore exceeding the end-project target of 18 operational groups.

6. The Borrower ICR also included the following key recommendations to maintain sustainability of the COREMAP outcomes including: (a) Given the lack of regional ocean boundaries, upscale of the monitoring activities to regional levels (Southeast Asia or Coral Triangle area) will be essential. The regional level monitoring should use the standard monitoring framework (monitoring and data analysis method, as well as human resources capacity); (b) Data and information from research and monitoring of coastal ecosystems should be integrated with the National Scientific Repository as a National Ocean Data Center so that it can be widely utilized by various stakeholders; (c) LIPI, as the data trustee for seagrass and coral reef ecosystems should maintain availability of coastal ecosystems data. This will allow for continuous monitoring beyond COREMAP-CTI and provide the rationale for budget allocation for monitoring and maintenance of coastal ecosystem data center and data nodes servers; (d) Baseline data are important to properly assess project impacts. COREMAP-CTI during the design could have collected baseline on IUU fishing activities in the target MPAs and included that in the design of the result framework to enable comparison of interventions during implementation.

Borrower Verbatim Comments to the World Bank ICR

7. The 25-year journey of COREMAP and COREMAP-CTI has resulted in significant outputs, outcomes, and impacts—impacts felt not only by program implementers and the scientific community, but also by local and national stakeholders and communities. COREMAP-CTI implementation was coordinated by the National Research and Innovation Agency (BRIN) as the Project Management Office (PMO) established in the Research Center for Oceanography (RCO). Since the second amendment of the agreement in 2019, the Project Implementing Unit (PIU) has consisted of the RCO; the Indonesia Climate Change Trust Fund (ICCTF) under the Ministry of National Development Planning (BAPPENAS); and the Center for Planners Development, Education, and Training (CPDET) under BAPPENAS).

8. The merger of research institutions into the National Research and Innovation Agency (BRIN) brought about structural shifts in the institutions, including the Research Center of Oceanography (LIPI). As of October 1, 2021, the RCO has been known as the Research Center of Oceanography (RCO) under the Research Organization of Earth Sciences and Maritime (OR KM) BRIN. This restructuring had an impact on the changed budget allocation to be followed under the centralized BRIN mechanism. Therefore, these changes required a rather long process and needed more time to adjust to the mechanism.

9. Another problem faced in 2020 was the outbreak of the COVID-19 pandemic, which severely affected how the program was carried out, especially programs that need on-site activities, such as the Reef Health Monitoring. While some activities can be implemented using virtual platforms, others (such as fieldwork) had to be postponed, thus reducing the risk of infection. However, there were activities that could not be postponed, such as construction of COREMAP-CTI infrastructure. To reduce the infection risk, the team had to follow the mitigation plan and health protocols enforced by the Ministry of Health. The situation of COVID-19 in Indonesia improved considerably in 2021, which allowed the team to carry out the remaining program activities, which complied with health protocol and safety precautions.

10. Until the end of the project on June 30, 2022, the Project made good progress toward achieving, and in several cases exceeding, its targeted objectives, with implementation and disbursement proceeding well, at US$44.26 million, or 93.4 percent under the Loan, and US$9.97 million, or 99.7 percent under the Grant. During COREMAP-CTI activities, there were several significant impacts on the management of Indonesia's coastal and marine areas. The impact is expected to provide a lesson for similar activities in the future. In brief, COREMAP-CTI became the enabler of a nationwide effort to regularly monitor coastal ecosystems using a standardized method. The data and results of these activities were used to initiate and support the MPA acceleration program. COREMPA-CTI has helped the Indonesian government toward achieving the targeted 30,000,000 hectares of marine conservation area by 2030. The implementation of coastal ecosystems monitoring through partnership with local universities also saw positive impacts. This activity has contributed to the improvement of the local partner's monitoring capacity.

11. The monitoring activities allow knowledge and skills transfer of the students and lecturers involved. COREMAP and COREMAP-CTI have also produced significant science-based outputs related to monitoring of coastal ecosystems, such as (1) a Reef Health Index; (2) a mobile app for mangrove monitoring and a Mangrove Health Index; (3) a Seagrass Ecological Quality Index (SEQI); (4) nationwide seagrass carbon stock and sequestration data; (5) marine debris data for marine debris management (National Plan of Action); and (6) recommendations for the Convention on International Trade in Endangered Species (CITES). The coastal monitoring data also contributed to the Status of Coral Reefs of the World, which is a joint project led by the Global Coral Reef Monitoring Network, International Coral Reef Initiative, Australian Government, and Australian Institute of Marine Science.

12. In addition, the Regional Training and Research Center for Marine Biodiversity and Ecosystem Health (RTRC–MarBEST) and Lembaga Sertifikasi Profesi (LSP; Professional Certification Institute) RCO-LIPI (now LSP RCO-BRIN), established as part of COREMAP-CTI activities, has also had an impact on the capacity development of human resources on a national and regional scale. LSP RCO-BRIN, which was initially established to fulfill the internal requirement for a certified monitoring survey and assessor (top-down), received positive responses from external institutions. Until the end of 2021, in collaboration with 12 universities across Indonesia, LSP has certified 639 assessors and surveyors from various organizations. Some universities even intended to use the national standards (SKKNI) licensed to the LSP to fulfill their academic requirement for their students, in the form of a diploma companion certificate specifically in the field of coastal ecosystems monitoring (bottom-up). This initiative was implemented via the creation of Transformation for Indonesian Justice (Transformasi untuk Keadilan Indonesia, TUK) in partnership with universities.

13. We suggest that coastal monitoring management is best carried out by institutions that are officially responsible for monitoring coastal ecosystems. The priority of coastal monitoring management should be coastal ecosystems within Marine Protected Areas and involve trained surveyors. The monitoring should use standard methods and procedures that have been developed during COREMAP-CTI. Integrated data management for the coastal monitoring is also needed. BRIN has a data platform, the National Scientific Repository, as a National Ocean Data Center, that can be used for the data management.

ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

1. Project Appraisal Document (2014)
2. Loan Agreement (2014)
3. Project Agreement (2014)
4. Project Restructuring Paper (2017)
5. Project Restructuring Paper (2019)
6. Implementation Status and Results Reports (16 ISRS in total)
7. World Bank Aide-Mémoire during Implementation Missions
8. Interim Financial Reports
9. Project Audit Documents
10. PMU Progress Reports
11. Government Implementation Completion Report and Annexes (2022)
12. Government COREMAP Legacy Report
13. Safeguards and ESF instruments

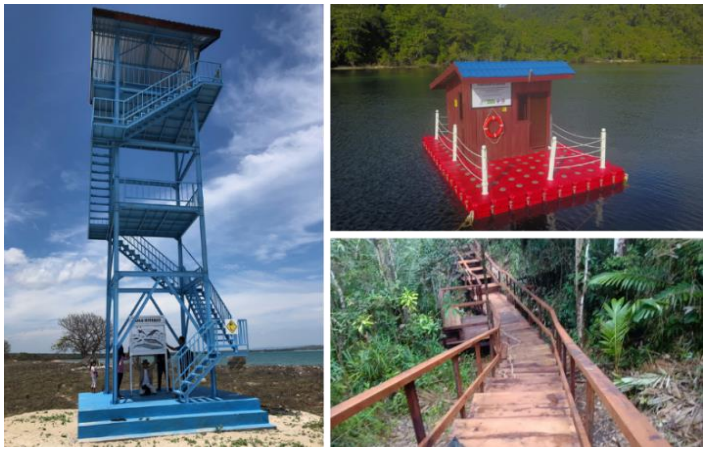
ANNEX 7. SELECTED PROJECT ACHIEVEMENTS

The photos presented in this section (figures A7.1 – A7.5) were taken from the publicly accesible Borrower ICR[66] prepared by the executing agency of the restructured COREMAP-CTI project. The figures A7.6 and A7.7 were produced to interpret the results of strengthened monitoring and research capacity.

Figure A7.1. The National Oceanographic Research Integrated Laboratory (Laterio) Building in Ancol, Jakarta

Note: One of the six Coastal monitoring and research infrastructure assets built to strengthen coastal ecosystems research under the COREMAP-CTI.

Figure A7.2. Coastal Monitoring Infrastructure Built by Subgrantees



Note: Left: Cetacean sighting tower, Naikean. Upper right: Manta Sighting Station, Meosarar. Lower right: Hiking track to jelly fish lake, Misool.

Figure A7.3. Village Infrastructure Built by Subgrantees to Promote Coastal Ecosystem Monitoring, Research, and Livelihoods

Note: Upper left and right: the exterior and interior of the Information Center in Oesina Kupang, which is being used as a tourism beach site. Lower right: Information Center in Yelu, Misool. Lower left: Information Center in Small Meosarar.

Figure A7.4. Example of Healthy Corals and Fisheries Observed during Coastal Ecosystem Monitoring of Reef-based Fisheries

Note: (Top) Carnivorous fish found at the monitoring sites (left to right): *Plectorhinchus chaetodonoides*, *Lutjanus decussatus*, *Cephalopholis cyanostigma*. (Bottom) Herbivorous fish found at the monitoring sites (left to right): *Scarus ghobban*, *Scarus rivulatus*, *Siganus virgatus*. (Documented by Risandi Dwirama Putra and Muin Sinaga of BRIN).

[66] BRIN and ICCTF (2022). Implementation Completion Report of COREMAP - CTI 2017-2022. https://www.icctf.or.id/wp-content/uploads/2023/03/IBRD8336-ID_Implementation-Completion-Report_COREMAP-CTI-World-Bank-2017-2022.pdf

Figure A7.5. Documentation of Coral Reef Survey and Monitoring in one of the Sites at which the Coral Reef Index Was Applied

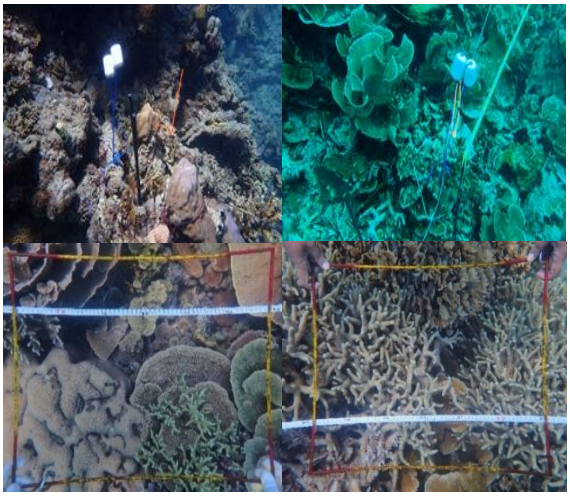
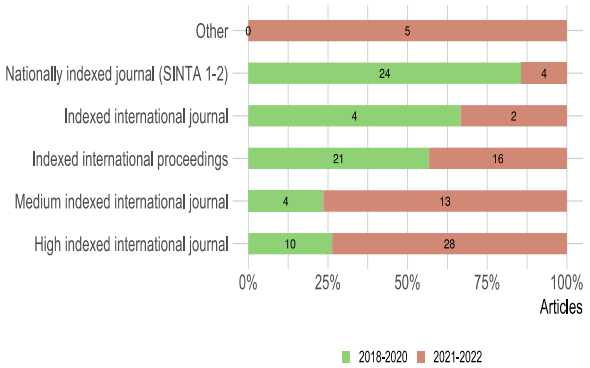
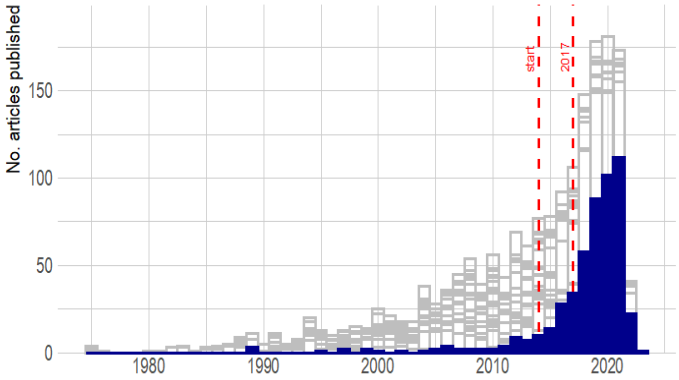


Figure A7.6. Proportion of Research Outputs Published in Different Categories of Publication during First (2018–2020) and Second (2020–2022) Round of Research Grants



Note: Figures A7.6 and A7.7 reflect the impact of strengthened monitoring and research capacity for producing evidence - based coastal ecosystem management information. SINTA = Indonesia Science and Technology Index.

Figure A7.7. Number of Peer-reviewed Articles Published each Year on Coral Reefs in Indonesia



Note: Blue bars indicate articles where the first author is affiliated with an Indonesian institution. Figures A7.6 and A7.7 show an increase in both number and quality of research outputs, with the proportion of research outputs published in high-ranking international journals increasing over the project duration.

ANNEX 8. COREMAP Adaptable Program Loan, Key Achievements, and Lessons from Previous Phases

Overall Objective of the COREMAP APL

1. The overall goal of the program is to protect, rehabilitate, and achieve sustainable use of coral reefs and associated ecosystems in Indonesia, which will in turn enhance the welfare of coastal communities.

2. Phased Approach. The Adaptable Program Loan for COREMAP was designed to run in three phases:

i. Phase I (COREMAP I) was designed as a three-year "Initiation Phase" to test and develop viable community-based management systems in pilot sites (actual implementation duration was extended to July 2004).

ii. Phase II (COREMAP II) was designed as a six-year "Acceleration Phase" to strengthen and expand community-based management systems to other sites. This phase commenced in 2005 due to the extension of Phase I and closed in December 2011.

iii. Phase III (COREMAP-CTI) was designed to run as a six-year "Institutionalization Phase" to ensure institutional sustainability of program activities. Implementation of Phase III commenced in 2014 and closed in June 2022.

COREMAP I

3. PDO. The objective of COREMAP I was to establish a viable framework for a national coral reef management system in Indonesia. COREMAP I was consistent with the Country Assistance Strategy at the time, which prioritized sustainable resource management, with the broad objectives of the World Bank's Environment Strategy to protect environmental commons. It was consistent with the Country Assistance Strategy in three dimensions in that it focuses on (i) poverty alleviation, (ii) improved governance, and (iii) support to decentralized resource management.

4. Components. The project components of COREMAP I included the following:

i. **Program and strategy management.** Designed to establish the foundation for COREMAP. Outputs included (i) policy and strategic framework of the program, (ii) strengthened legal framework for coral reef management in Indonesia, (iii) project management and assessment of lessons learned, and (iv) independent evaluation of COREMAP I and preparation of COREMAP II.

ii. **Public awareness.** Activities included provision of services workshops, publications, awareness materials, surveys, and awards toward (i) a national multimedia awareness campaign, (ii) regional campaigns in COREMAP I pilot sites, and (iii) public relations and dissemination of guidelines.

iii. **Monitoring, control, and surveillance (MCS).** Designed to target curbing destructive practices on coral reefs. Activities included technical assistance, surveillance equipment procurement, studies, surveillance operations, and workshops all in support of (i) a national surveillance and enforcement unit, (ii) surveillance and enforcement operations at target project sites, and (iii) surveillance training.

iv. **Community-based management.** Designed to improve the condition of coral reef ecosystems in two pilot sites through design, implementation, and monitoring of reef management plans by local communities.

5. Implementation. As at the time, the MMAF was nonexistent, LIPI, which was the national entity responsible for research and monitoring of coastal ecosystems, served as the implementation agency. For smooth implementation at the provincial and district level, a Task Force (*Pokja*) was organized chaired by Indonesia's Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah*, BAPPEDA), with technical units within the task force. All components fostered sustainable management of coral reef ecosystems through a legal and policy framework, public awareness to change destructive behavior affecting the sustainability of reef ecosystems, surveillance, and enforcement to add additional incentives to discourage destructive behavior; and

promotion of community responsibility for activities affecting local coral reefs. In addition to the activities financed by the World Bank, the Asian Development Bank (ADB) and the Australian Agency for International Development Aid (AusAid) financed two other components: (i) research and monitoring, and (ii) training and institutional strengthening, both of which were integral to the success of COREMAP I. In addition, while the World Bank financed community-based management in two sites, the ADB and AusAid financed community-based management in two additional sites.

6. Achievements of COREMAP I. The PDO indicators for COREMAP I were intended to act as triggers for the subsequent Phase II. The triggers were met to the extent that a second phase was warranted. The following outcomes highlight the success of COREMAP I:

i. **Outcome 1. Strengthened legal and regulatory framework in support of implementation of community-based coral reef management,** such as (i) contribution toward the Ministerial Decree "concerning general guidelines for coral reef management," which was issued in September 2004; (ii) seven draft regulations that informed the revised MMAF Fisheries Act and the Coastal and Marine Resources Management Act; (iii) a district law (*Peraturan Daerah*) on "management of marine and coastal resources in Kabupaten Selayar" defining permitted and prohibited activities and setting penalties (enacted in December 2003); (iv) formulated draft regulations that led to the district law (*Peraturan Daerah* No. 17) on "the utilization of the conservation area in Taka Bone Rate National Park," which legalized the zoning of the national marine park for coordinating monitoring, control, and surveillance (MCS) activities for the park; and (v) promotion of the draft district law, submitted to the District legislature for approval, on the "management of Land, Coastal and Marine Resources in Biak Timur and Padaido" to institutionalize local rules and customs for marine resource management in the communities.

ii. **Outcome 2. Improved institutional capacity to enable expansion of COREMAP.** Provincial and district level working groups (*Pokja*) set up during implementation of COREMAP I facilitated the establishment of COREMAP II.

iii. **Outcome 3. Compliance rates, which is the number of patrol days without violation/total patrol days, increased by 10 percent in pilot sites, following introduction of the MCS system.** The project achieved a very high level of community involvement in coral reef resource management, resulting in a significant reduction in illegal and destructive fishing, which is the main anthropogenic stressor to Indonesia's coral reefs, and in coral mining in most of the pilot sites by more than 50 percent.

iv. **Outcome 4. Community-based management pilots evaluated as workable models for scalability of impact in two pilot sites,** and lessons of experience incorporated into the design of Phase II.

v. **Outcome 5. National and local campaigns launched in COREMAP I** included a series of national TV programs, pamphlets, mobile displays, production of a popular song, radio programs, teacher kits and training, a coral reef education curriculum developed for school classrooms, and a coral reef ambassador program for youth education. All of these resulted in a positive impact on behavior. Impact surveys revealed that 45 percent of people surveyed were attending community meetings on marine resource management compared to 25 percent before the campaigns. In addition, 64 percent of respondents knew about COREMAP compared to 3 percent at the beginning, and 39 percent of fishermen with low to medium COREMAP exposure reported using reef-friendly gear compared to 46 percent with high exposure.

7. Key Lessons Learned from COREMAP I. Key lessons learned during COREMAP I include:

i. A synergized approach to implementation support between the World Bank and other developmental partners. The project launch, the Mid-term Review, and four of the 10 implementation supervision missions were conducted jointly with the ADB. In addition, AusAID joined three missions and was invited to all kickoff and wrap-up meetings and copied on all aides-mémoires. This facilitated knowledge exchange that ensured activities financed by the different developmental partners were not duplicated but were complementary, to ensure achievement of overall program objectives.

ii. Communities should be the focus of coral reef ecosystem and fisheries management activities as collaboration is better than enforcement. Coral reef management benefits significantly from a decentralized approach to resource management, with communities at the center of management activities.

iii. Strengthening legal and regulatory frameworks is important for coral reef and fisheries management as COREMAP I identified areas to strengthen and proposed regulations to do so.

iv. MPAs require long-term funding and institutional commitment from donors and governments.

8. COREMAP I Outcome rating. Both the ICR and the Independent Evaluation Group rated the outcome Satisfactory.

COREMAP PHASE II

9. PDO. The objective was to enhance the welfare of coastal communities through the establishment of viable coral reef management systems consisting of a program aimed at empowering and supporting coastal communities to comanage, in a sustainable manner, the use of coral reefs and associated ecosystem resources. The project design incorporated the lessons learned in COREMAP I, as well as lessons that contributed to the original design of the Adaptable Program Loan.

10. Components. The following components were implemented during COREMAP II:

i. **Institutional strengthening.** The component helped strengthen government institutional responsiveness to meet the needs of coastal communities in support of collaborative management of marine reserves and other MPAs through technical assistance, human resource development, and legal input to support decentralization in managing coral reefs.

ii. **Community-based and collaborative management.** The component supported the empowerment of all coastal communities, and institutions throughout the seven program districts through legal means codifying community management plans along with technical and financial assistance, to sustainably comanage coral reefs and associated ecosystems. The project aimed to replace short-term exploitative practices with the tools and knowledge to generate more sustained benefit flows from better management practices to manage extensive and biodiverse coral reef ecosystems in a cost-effective and sustainable way.

iii. **Public awareness, education, and Sea Partnership.** The objective of the component to increase societal awareness of the benefits of coral reef ecosystem conservation and sustainable use, leading to behavioral change, continued in this phase. Key activities included media dissemination of coral reef advocacy information, education programs that included coral reef education in formal primary and secondary education curriculums, program district teacher training, and national reef education events for children and youth together with a Sea Partnership

program for secondary, university, graduate scholarship, and post-education placement to support program activities and expansion of existing practical field training programs to support village-based activities.

11. Implementation. In line with the recent establishment of a national ministry to oversee marine and fisheries affairs, the MMAF was the primary implementing agency at the national level, with support from two other implementing partners: LIPI and the Directorate General of Forest Protection and Nature Conservation at the Ministry of Forestry. Implementation was further supported by strong regional coordination with five provinces and seven districts.

12. Achievements of COREMAP II. The second phase of the COREMAP APL achieved the following outcomes:

i. **Outcome 1 – Management and Empowerment.** The project established decentralized (implemented in 358 villages across eastern Indonesia) coral reef co-management systems, including establishment of community-implemented MPAs (no-take zones[67]) in all seven project districts. Collaborative management plans were developed in all 358 project villages by local community groups in partnership with local governments, thereby meeting the goals of establishing fully protected, collaboratively managed, and decentralized reef management systems. The decentralized approach, in line with national policy reforms to empower local governments to create enabling conditions for sustainable and equitable economic development in remote locations, was a great hallmark of the project. For example, 75 percent of survey respondents felt that healthy coral reefs were key to their lives. The level of population awareness of benefits of coral reef conservation was 86 percent higher compared with populations outside target districts.

ii. Outcome 2 – Biophysical improvements. There was a measurable 15 percent increase (baseline of 7.5 percent) in live coral cover in most reef sites designated as no-take zones (450,000 hectares) supported by the project, a trend observed in six of seven project districts. Some of the project efforts that contributed to this outcome included reporting of illegal fishing (destructive fishing declined by 60 percent across project locations), strong collaborative MCS efforts including community training, formation of community groups (*Pokmas*), training for fisheries inspectors and coordination workshops, and establishment of a radio system to support enforcement activities. Some of the biophysical improvements included enhanced productivity and biodiversity in no-take zones and a return of rarer species that had not been present in recent years. The ICR, however, noted that it was challenging to maintain the community institutions created by the project to promote a decentralized approach to coral reef management.

iii. Outcome 3 – Socioeconomic improvements and poverty reduction. The project also increased community welfare. COREMAP II reported an increase in the income of beneficiaries by an average of 20 percent and access to better community-based infrastructure for target beneficiaries. Eighty percent of respondents in a beneficiary survey conducted in 25 villages felt that the project was beneficial.

13. Key lessons learned from COREMAP II. The following key lessons were highlighted in the COREMAP II ICR:

i. There were challenges with the monitoring and evaluation (M&E) design and measurements of targets in the COREMAP II Results Framework. A key recommendation therefore was for the following phase (COREMAP-CTI) to select indicators that accurately reflect project objectives and are measurable, and to employ M&E methods that

[67] No-take zones are marine protected areas where fishing, mining, drilling, or other extractive activities are prohibited with the aim of allowing marine life such as fishes to grow to a large, healthy size without disturbance.

allow for continuous feedback on project performance and discrimination of project effects (that is, allow attribution of outcomes to the project). The ICR also advised that the project design of the COREMAP-CTI must realistically incorporate logistical and financial capacity factors that may present challenges in the field.

ii. The ICR highlighted that supporting organizational structure and reinforcing institutional arrangements at all government levels and strong ownership by local stakeholders are key to decentralized collaborative management.

iii. Alternative income-generating activities must be accompanied with adequate technical and financial support.

iv. Awareness raising and education can be a low risk, cost-effective way to strengthen support and ownership of project objectives and improve outcomes, albeit implemented with sufficient time as behavioral change requires time.

14. Outcome rating of COREMAP II. The COREMAP Phase II outcome was rated Moderately Satisfactory by both the ICR and the Independent Evaluation Group. This was due to conceptual and practical limitations identified in some indicators intended to demonstrate project outcomes, and to concern over the sustainability of some of the conservation and alternative income generation activities.