Report Number: ICRR0022445

1. Project Data

Project ID	Project Name
P097985	IN: Integrated Coastal Zone Mgmt Project
Country	**Practice Area(Lead)**
India	Environment, Natural Resources & the Blue Economy

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IDA-47650,TF-91901	31-Dec-2015	178,929,383.50
Bank Approval Date	**Closing Date (Actual)**	
15-Jun-2010	30-Jun-2020	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	221,965,000.00	100,000.00
Revised Commitment	189,973,333.61	8,332.17
Actual	178,929,383.50	8,332.17

Prepared by	Reviewed by	ICR Review Coordinator	Group
Katharina Ferl	Maria Vanessa Corlazzoli	Christopher David Nelson	IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

According to the Project Appraisal Document (PAD) (p. 5) and the Financing Agreement of July 22, 2010 (p. 4) the two objectives of the project were to “assist the Recipient (The Government of India) in building national capacity for the implementation of comprehensive coastal management approach in the country, and piloting the integrated coastal zone management approach in the project states”.

Project states included Gujarat, Orissa and West Bengal, which were selected to represent both, the east and west coast of India. Selection was based on the state's different levels of development and Coastal Zone

Management (CZM) challenges. According to the ICR (p. 7) the selection process included extensive consultation among government ministries and was based on the range and significance of CZM issues local communities faced.

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

No

c. Will a split evaluation be undertaken?

No

d. Components

The project included four components:

Component one: National ICZM Capacity Building (appraisal estimate US$87.3 million, actual US$77.44 million): This component was to finance the following activities: i) mapping, delineation and demarcation of the hazard lines, and delineation of coastal sediment cells all along the mainland coast of India; ii) mapping, delineation and demarcation, as required, of the ecologically sensitive areas (ESAs), as well as along the mainland coast of India; iii) capacity building within the Ministry of Environment and Forests (MoEF), specifically within the secretariat for the National Coastal Zone Management Authority (NCZMA). Also, this component was to finance a nation-wide training program for ICZM; and iv) setting up and operationalization of the new National Center for Sustainable Coastal Management (NCSCM).

Component two: Piloting ICZM Approaches in Gujarat (appraisal estimate US$74.1 million, actual US$58.18 million): This component was to finance capacity building of the state level agencies and institutions, including preparation of an ICZM plan for the coastal sediment cell that includes the Gulf of Kachchh, and pilot investments. The pilot investments were to be designed to demonstrate integrated management of ecological, economic and social concerns in the Gulf of Kachchh (a stretch of 180 kilometers or 10 percent of the Gujarat coast, containing two of the world's largest refineries; two major ports and several smaller facilities accounting for 70 percent of India's import of crude oil; the largest of India's salt industries; several booming industrial and urban centers; India's first marine national park; significant parts of remaining coral reefs of the country, and important patches of protected forests).

Component three: Piloting ICZM Approaches in Odisha (appraisal estimate US$49.3 million, actual US$44.56 million): This component was to finance capacity building of the state level agencies and institutions. These institutions were to include the Forest and Environment Department (the secretariat for the Orissa SCZMA), the Orissa State Pollution Control Board (for monitoring and enforcing pollution control in the coastal areas), and the Chilika Development Authority (for species and wetland research). Investments were to focus on the stretches of Paradip-Dhamra and Gopalpur -Chilika due to their significant ecological and economic resources and were to include: a) conservation and protection of coastal resources including protection of olive ridley turtle and other aquatic wildlife, mangrove and shelterbelt plantation, conservation of archeological heritage (of which some serve as cyclone shelters), and a pilot activity in shoreline protection for the village of Pentha; b) environment and pollution management by completing the solid waste management system for the coastal town of Paradip to reduce pollution load on the coastal stretches known to be nesting habitats; and c) livelihood security of coastal communities

including allied farming improvement support in 60 fishing villages, support to fisher-people groups in developing small-scale and community-based tourism and industrial and marketing activities.

Component four: Piloting ICZM Approaches in West Bengal (appraisal estimate US$75.0 million, cost changed to US$53.98 million during Project Restructuring (2015), actual US$48.78 million): The component was to finance capacity building of state level agencies and institutions in West Bengal, including the preparation of an ICZM plan for the coastal sediment cells in the coastal areas. Investment activities were to include: a) conservation and protection of coastal resources including mangrove and coastal shelterbelt plantation; pilot works in shoreline protection for Digha beach and the southern end of Sagar Island; and rehabilitation of the marine aquarium at Digha; b) environment and pollution management by completing the sewerage system for Digha to prevent flow of sewage onto the sandy beach; cleaning and environmental improvement of the Digha beach, and solid waste management in Digha; improvement of the fish auction centre at Digha; and distribution of grid electricity on Sagar Island to replace diesel generation and prevent soil and water pollution; and c) livelihood security of coastal communities in Sagar Island including support to CBO coordinated livelihood improvement activities; afforestation-based livelihood improvement; promotion of local small-scale tourism and ecotourism activities; and provision of cyclone shelters in the coastal villages.

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

Project Cost: The project was estimated to cost US$285.7 million. Actual cost was US$228.9 million.

Financing: The project was to be financed by a Bank credit in the amount of US$221.9 million of which US$178.9 million was disbursed. Also, the project was to be financed by a Trust Fund in the amount of US$100,000 of which US$8,332 was disbursed.

Borrower Contribution: The Borrower was to contribute US$63.7 million. Actual contribution was US$50.0 million.

Dates: The project was restructured five times:

- On December 16, 2015 the project was restructured to: i) revise three out of the four PDO indicators to provide more clarity and focus on achieving tangible results; ii) add three intermediate outcome indicators; iii) extend the project's closing date from December 31, 2015 to December 29, 2017 to allow for the completion of project activities; iv) change in components and costs due to revised cost estimates due to excess bid premiums, and cost escalations in Indian Rupee currency; and v) reallocate between disbursement categories.
- On December 21, 2017 the project was restructured to: i) change the project's closing date from December 29, 2017 to December 29, 2018 to complete activities that took longer than planned such as mapping the hazard line, preparing the ICZM plan for West Bengal through NSCM and initiate the preparation of the follow-on project ("Enhancing Coastal and Ocean Resource Efficiency Multiphase Programmatic Approach" – P167804).
- On December 21, 2018 the project's closing date was extended from December 29, 2018 to March 31, 2020 to: i) allow the Bank team to identify with the Ministry of Environment, Forest and Climate Change (MoEFCC), the Society of Integrated Coastal Management (SICOM), and other relevant implementing agencies opportunities to scale up initiatives to enhance the livelihood security and

resilience of coastal village communities; and ii) reallocate credit proceeds among disbursement categories.

- On March 25, 2020 the project was restructured to: i) cancel savings in the amount of US$32 million due to a significant devaluation of the rupee; and ii) reallocate between disbursement categories.
- On May 9, 2020 the project was restructured to change the closing date from March 31, 2020 to June 30, 2020 to complete activities amid constraints resulting from the Covid-19 pandemic.

The original closing date of the project was December 31, 2015. The actual closing date was June 30, 2020. In total, the duration of the project was expanded by 54 months.

3. Relevance of Objectives

Rationale

According to the PAD (p. 1) India has a coastline of about 7,500 kilometers (less than 0.25 percent of the world's coastline), which, at the time of appraisal, was home to about 63 million people (11 percent of the global population living in low elevation coastal areas). The coast also includes some of the biggest and most dense cities and urban areas such as Mumbai, Kolkata, Chennai, Kochi and Visakhapatnam. Sustainable management of the coastal zone has been critical for India's economic growth due to its rich and diverse eco-system including large mangroves and major stocks of corals, fish and marine mammals. Also, the coast has a potential for future ocean thermal energy and locates substantial placer mineral and heavy metal deposits and several cultural and archeological sites. Also, a significant share of infrastructure such as maritime facilities, petroleum industries, and import based industries are located at the coast. At the time of appraisal, about one million people were employed in the coastal fishing area and about 1.2 million in the post-harvest fishery sector.

However, the PAD (p. 1) stated that despite its ecological and economic importance, the coast had not been sufficiently protected. Rapid urban industrialization, maritime transport, marine fishing, tourism, coastal and sea bed mining, offshore oil and natural gas production, aquaculture, and the recent establishment of special economic zones led to a significant increase in demand for infrastructure, resulting in the over-exploitation of natural resources. Over the last five decades, 34 percent of mangroves were destroyed, almost all coral areas were endangered, marine fish stocks declined, and several types of fish disappeared negatively impacting the livelihoods of the local population and sustained economic growth. However, according to the PAD (p. 2) diverse stakeholders have been competing for coastal and marine resources. Furthermore, unplanned but competitive economic activities have resulted in conflicts among stakeholders, misuse, abuse and overuse of resources resulting in the degradation of ecosystems with some coastal landscapes entirely destroyed by commercial aquaculture. Given this problem the GoI issued in 2005 the National Environment Policy, and the Swaminathan Committee report, which envisioned reforming the regulatory framework for integrated management of coastal and marine areas and developing the institutional arrangements, capacity and adequate knowledge systems to enable the desired shift to ICZM approaches. The objective of the project was in line with the government's 12th Five Year Plan (2012-17) which focused on inclusive growth of coastal communities and conservation of marine resources as well as India's three year action agenda (2017-20) which aimed to develop a policy and regulatory framework to enhance sustainable tourism and foster growth in coastal areas, establishing scientific

capacity to support disaster and climate-resilient development, enhancing livelihood opportunities for low-income coastal communities and promoting science based decision making on ICZM.

The objective of the project was aligned with the three pillars of the Bank's Country Strategy for India (FY09-12) which aimed to achieve rapid and inclusive growth; ensure sustainable development and increase the effectiveness of service delivery. Also, the objective supported all three focus areas of the Bank's most recent Country Partnership Framework (FY18-22) which aims to: i) promote resource-efficient growth; ii) enhance competitiveness and enable job creation; and iii) invest in human capital.

According to the ICR (p. 7) the Bank was asked to support the government in piloting the ICZM approach, given the Bank's ability to mobilize international expertise, proven experience and knowledge of ICZM, and financial resources.

Rating
High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1
Objective
To assist the government of India in building national capacity for implementation of comprehensive coastal management approach in the country:

Rationale
Theory of Change: The project's theory of change envisioned that project activities such as establishing the National Center for Coastal Zone Management, demarcating hazard line, sediment cells, and ecologically sensitive areas (ESAs) were to result in outputs such as the National Center for Coastal Zone Management being established and functioning, mainland coastline being mapped and coastal sediment cells, hazard lines, ESA and critically vulnerable areas being delineated. In addition, project activities such as developing knowledge products for ICZM and supporting MoEF's medium-term capacity building plan, and training of coastal zone managers from all states were to result in outputs such as knowledge products and science-based guidelines being prepared for ICZM plans and MoEF capacity building plan being implemented and training of coastal zone managers being conducted. These outputs were to result in the project's objective of national capacity for integrated coastal management approach being built.

The project made the following assumptions: i) timely flow of funds and hiring of adequate quality staff; ii) coordination among central, state and local agencies; iii) participation of local stakeholder groups; iv) National Center for Coastal Zone Management adequately staffed and sustainable. These assumptions seem adequate.

The theory of change of the objective and how key activities and outputs were to lead to the extended outcomes was sound. However, all PDO indicators included in the original Results Framework lacked clarity

and were not sufficiently specific such as the original PDO 1 " Existence of an appropriate national institutional structure for guiding and coordinating implementation of ICZM approaches" which did not provide a definition of "appropriate".

PDO Part 1: Building national capacity for implementation of a comprehensive coastal management approach in the country:

Outputs:

- The number of skilled staff in ICZM planning and implementation at the national level increased from 10 staff in 2010 to 117 skilled staff at the National Center for Sustainable Coastal Management (NCSCM) and SICOM, surpassing the original target of 66 staff and the revised target of 75 staff (target achieved). In addition, the project established laboratories along with coastal pollution monitoring vessels with modern instruments for analysis. Furthermore, the project supported capacity building of staff to facilitate regular and real-time monitoring of physical, chemical and biological parameters of sea/river water. As a result, the Odisha State Pollution Control Board (OSPCB) was able to monitor 169 kilometers of coastal stretch and monitored and assessed oil spills, mass fish killings in coastal areas, and furnishing health status reports of the Gahirmatha-Bhitarkanika stretch to the global conservation team of the International Union for Conservation of Nature (IUCN). Furthermore, the scientific capacity was enhanced for the Chilika Development Authority (CDA-Odisha) and Gujarat Ecological Education and Research Foundation (GEER-Gujarat) for coastal and marine ecological monitoring and conservation.
- Knowledge and planning base in integrated coastal zone management was established according to defined criteria. ICZM plan preparation guidelines were prepared by NSCM in 2014, which were used to prepare ICZM plans for the pilot states of Gujarat, Odisha, and West Bengal as directed by SICOM. The guidelines were updated and revised in 2020 based on the recent ICZM plan preparation experience of NCSCM in West Bengal. Also, knowledge-base to facilitate sustainable development included: i) database for the entire Indian coast for coastal, marine biodiversity network: High Tide Line (HTL), Low Tide Line (LTL), Hazard line, sediment cells, 11 types of eco-sensitive areas (ESAs), Critically Vulnerable Coastal Areas (CVCAs) were prepared; ii) National Greenhouse Gas (GHG) emission database: an assessment of GHG net emissions (unit measures CO2 equivalents) from all mangrove and sea grass ecosystems along the mainland coast and the islands of India was conducted to assess natural and human-induced stress on these ecosystems; iii) delineation of baseline coastal sediment cell as a benchmark with coastal maps was completed; iv) futuristic research framework with the output delivered on Offshore Renewable Energy potential assessment including computing the potential for Offshore Wind energy along the coast of India; v) Coastal Cumulative EIA methodology – a five step process aiming to improve management planning as input to the adaptive management process and CEIA guidelines were developed (an input for the preparation of an ICZM framework).
- 5,500 kilometers of mainland coastline were mapped and delineated in terms of coastal sediment cell, hazard line and ecologically sensitive areas, achieving the target of 5,500 kilometers (Target 5,500, Target achieved).
- 15 skilled staff are working on ICZM planning and implementation in Gujarat State, not achieving the original target of 17 staff and the revised target of 20 staff.

- 109 research papers were peer-reviewed and published in internationally acclaimed publications, surpassing the original target of 10 ICZM knowledge outputs and the revised target of 13 ICZM knowledge outputs. Furthermore, three databases for baseline planning documents were established, achieving the target of three databases. Also, several knowledge products were established: i) coastal, marine biodiversity network; ii) coastal sediment cell delineation with coastal erosion maps; and iii) ICZM guidelines.

Outcomes:

- The National and State Level Coastal Zone Management Authorities (NCZMA and SCZMAs) were established and are functional to support coastal zone management at the national level and coastal states level, achieving the target of institutional structure at national and state level supportive of integrated coastal zone management being established according to defined criteria.
- The National Center for Sustainable Coastal Management (NCSCM) was established to be responsible for coastal and marine area research and management. The Society of Integrated Coastal Management (SICOM) was established within the Ministry of Environment, Forest and Climate Change (MoEFCC) in order to provide national guidance and coordination of Integrated Coastal Zone Management Plans (ICZMPs) in all coastal states and union territories (UTs) of India. The target of establishing national and state level technical capacity for ICZM planning was achieved. SICOM organized 17 training programs for government departments, Non Governmental Organizations (NGOs) and ICZM academicians.
- The plan for institutional structure at National and State level supporting integrated coastal zone management was not prepared and submitted to the government for approval, not achieving the target.
- An ICZM plan for Gulf of Kachchh was prepared, reviewed, finalized and approved by the government of Gujarat, achieving the target.
- BISAG started a School of Integrated Coastal Zone Management to train students and government officials.
- NCSCM has collaborated with 15 consortia and more than 11 institutions from India's coastal states

Efficacy of the first objective is rated high given its achievement in institutional reform as demonstrated through the establishment of critical agencies to support coastal zone management at the national level and coastal states level. Also, several knowledge products were developed to inform decision making.

Rating
High

OBJECTIVE 2
Objective
Piloting the integrated coastal zone management approach in states of Gujarat, Orissa and West Bengal. Integrated Costal Zone Management:

Rationale

Piloting the integrated coastal zone management approach in states of Gujarat, Orissa and West Bengal. Integrated Costal Zone Management was defined as “a process to promote security of life and livelihood of the coastal communities, and to protect the ecosystems that sustain productivity of the coastal areas while promoting sustainable development”.

Theory of Change: The project’s theory of change envisioned that project activities such as preparing ICZM plans for selected coastal stretches in three states and implementation of pilot investments across three states including: a) conservation and protection of coastal resources; b) environment and pollution management; and c) livelihood security of coastal communities were to result in project outputs such as: a) shoreline protection strengthened; b) environmental and pollution management strengthened; and c) livelihood security strengthened. These outputs were to result in the project’s objective of integrated coastal zone management approach being piloted in Gujarat, Orissa, and West Bengal.

The theory of change of the objective and how key activities and outputs were to lead to the extended outcomes was sound. All PDO indicators included in the original Results Framework were unclear and and lacked specificity such as the original PDO 3 “Number of pilot ICZM activities demonstrating cross-sectoral and spatial integration completed”.

Outputs:

- 17 skilled staff are working on ICZM planning and implementation in Odisha State, surpassing the original target of 16 staff but not achieving the revised target of 20 staff.
- Five pilot investment projects were implemented in Gujarat, not achieving the original target of seven projects and the revised target of six projects.
- 19,503 hectares of area under mangroves was restored or re/afforested, surpassing the target of 12,000 hectare. Out of this area 16,000 hectares were re/afforested surpassing the target of 12,000 hectares.
- 196 kilometers of coastline and freshwater were brought under biodiversity protection, not achieving the target of 400 kilometers.
- 71 metric tons of industrial and municipal waste disposal capacity was created under the project, not achieving the target of 80 metric tons.
- ICZM plans for Paradip-Dhamra and Gopalpur-Chilika were prepared using the designed participatory process and were submitted to approval by the government of Odisha, achieving the target.
- An ICZM plan for West Bengal Coast was prepared (using a designed participatory process) and was submitted for approval by the government of West Benegal, achieving the target of doing so.
- Eight technical positions were approved for ICZM planning and implementation in West Benegal State, not achieving the original target of 17 skilled staff and the revised target of 15 skilled staff.
- Nine pilot investment projects were implemented in Odisha, surpassing the original target of eight investment projects and not achieving the revised target of 10 investment projects. Activities included: a) building capacity in the Odisha Pollution Control Board and the Chilika Development Authority; b) development of monitoring and surveillance infrastructure and capacity enhancement of wildlife and forest division including research facilities in five locations. Also, turtle and crocodile hatcheries were established; c) conservation of six out of eight coastal archeological and heritage sites; e) building shoreline protection at Pentha village; f) constructing 14 multi-purpose cyclone shelters, achieving the target of 14 cyclone shelters; g) building mangrove plantation; h) establishing 600 self-help groups to provide support alternative income opportunities during the annual fishing ban; i) establishing eco-tourism involving coastal communities through eco-development committees at five coastal sits along

Chilika; j) the planned integrated solid waste management facility in Paradeep municipality was not implemented.

- 10 pilot investment projects were implemented in West Bengal State, surpassing the original target of nine pilot investment projects and the revised target of ten projects. Pilot investment projects included the following: a) building capacity at Calcutta University and Institute of Environmental Studies and Wetland Management; b) establishing sewerage and storm water drainage system in Digha; e) installing beach infrastructure at Digha beach and rehabilitation of more than 1,272 hawkers to regularize vending zones; f) distributing grid electricity in Sagar island, resulting in schools and colleges to operate computer and science labs and surgical facilities were installed in island hospital; g) constructing 24 (out of 25 targeted) multi-purpose shelters; h) creating eco-tourism infrastructure in Sagar island; i) improving livelihood opportunities for Sagar island communities through forming community organizations; and j) restoring and augmenting the Marina Aquarium and Research Center (MARC) in Digha

ICZM pilot activities were carried out, achieving the target. Activities included: a) Coastal conservation and protection pilots such as: i) mangrove plantation totaling 199.41 square kilometers in Gujarat, Odisha, and West Bengal; ii) infrastructure and research facilities established for coastal wildlife protection (including wildlife hatcheries, research and conservation centers in Gujarat and Odisha and Laboratory facilities for Gujarat and Odisha Pollution Control Boards); iii) multipurpose cyclone shelters (14 shelters in Odisha and 24 in West Bengal), which benefitted 151,701 vulnerable persons during five cyclones; iv) technology demonstration via geo-tube embankment for protection from coastal erosion in Odisha benefitting 41,222 vulnerable people during weather disaster events; and v) demonstration of transplantation and regeneration of degraded coral reefs in an area of 1050 square meters in the Gulf of Kachchh (Gujarat) using experimental and innovative methodology; b) pollution abatement pilots include: i) sewerage system consisting of piped network and treatment plant with capacity to service about one million people (71 million liters per day) with recycling potential for 60 million liters per day of treated water in the coastal city of Jamnagar (Gujarat). While the project funded around US$ 10.6 million Jamnagar sewage treatment plant (STP), the risk of financing was assumed by the operator for the 15-year duration as part of the Design-Build-Operate-Transfer (DBOT) contract. Under the terms of the contract, the operator can sell treated water to industries to maintain the treatment plant and pay an annual royalty of US$ 0.27 million) to Jamnagar Municipal Corporation during the contract period. In turn, the demonstration of this first of its kind STP DBOT informed Gujarat's adoption of industry requirements for water re-use and conservation. ii) solid waste management for coastal town of Paradeep (Odisha) was not implemented but appropriate land and access for a treatment and disposal facility was facilitated; iii) 100 percent household electrification to minimize diesel generators in Sagar island (West Bengal) benefitting 206,844 residents and numerous local enterprises; iv) SICOM implemented Beach Environment and Aesthetic Management System (BEAMS) providing infrastructure facilities, pollution abatement & safety/surveillance services for pilot beaches of India.

Outcomes:

- A survey showed that 94 percent of visitors to Digha were satisfied with the new infrastructure and facilities.
- A survey of 638 self-help groups involving 2,912 households showed that they were able to generate income of about US$2.17 million involving an investment of US$0.62 million;
- The restoration and augmentation of the MARC resulted in an increase of visitors from 9,130 people in 2014/15 to 376,758 visitors in 2018/19. According to the Bank team (February 12, 2021) tourist visits from 2014 onwards were attributable to project activities, as MARC (which is not close to the Digha

Beach, the most important tourist spot in the region) became an important tourist destination with its upgrading under the project.

- The 100 percent electrification of Sagar Island in West Bengal benefitted 206,844 persons and visiting pilgrims. Also, the hospital's rate of successful deliveries increased to 84 percent. According to the Bank team (February 12, 2021) the hospital / institutional delivery rate in Sagar Island was zero, as it was away from the mainland and had no electricity until the project.
- The development of eco-tourism infrastructure and opportunities increased tourist arrivals by 20 to 25 percent. According to the Bank team (February 12, 2020) ecotourism was first initiated in the project areas under the project. Hence, all increases in ecotourists can be attributed to project activities.
- Beaches improved under the project and eight in seven coastal states were awarded international blue flag certification.
- The project benefitted 17.8 million beneficiaries, surpassing the target of 11.0 million beneficiaries. 48.2 percent of the beneficiaries were female, not achieving the target of 51 percent female beneficiaries.

In terms of conservation and protection of coastal resources the project was able to restore or re/afforest large areas of mangroves and bring almost 200 kilometers of coastline and freshwater under biodiversity protection. Furthermore, the project was able to improve beaches resulting in the awarding of the international blue flag certification.

In terms of environment and pollution management the project was not able to achieve the target for the creation of industrial and municipal waste disposal capacity.

The project was able to achieve substantial outcomes for the livelihood security of coastal communities. For example, the development of eco-tourism infrastructure and opportunities increased the number of tourists in the area.

Taking everything together, the achievement of the second objective was Substantial.

Rating
Substantial

OVERALL EFFICACY

Rationale
The achievement of the first objective was High given the achievements in regards to its achievement in institutional reform and the development of knowledge products. The achievement of the second objective was Substantial. While there is evidence that the project was able to improve conservation and protection of

coastal resources and improve livelihood security of coastal communities, the project did not achieve the target for improving environment and pollution management.

Taking everything together, the project's overall efficacy rating is Substantial.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Analysis in the PAD:

Economic efficiency:

The PAD (p. 19) included benefit-cost analysis. The project's total cost was estimated to be US$285.67 million with long-term recurrent costs of US$17 million. Revenue streams related to targeted investments were identified at the state-level at US$31 million annually. The project's minimum financial internal rate of return (FIRR) was calculated at 4.8 percent. The FIRR was low since it did not include other induced revenues such investments can enable. The Economic Internal Rate of Return (EIRR) was calculated at 20.2 percent.

The PAD conducted an economic analysis for the following activities:

Capacity-building investments: It was suggested that these institutional investments were to protect coastal values of about US$400,000 annually for each kilometer of coastline affected, translating into US$2.1 billion annually for peninsular India as a whole; even if only one percent of this value were to be captured under the project, the EIRR on the institutional investment was to be about 20 percent.

Pilot investments: The project was to invest US$131 million at the state level to address local priorities relating to conservation and protection of coastal resources, environment and pollution management, and community livelihood interventions.

a. Investments for conservation and protection of coastal resources: Approximately US$36 million in such investments were to achieve an FIRR of 8.8 percent and EIRR of 20.9 percent.
b. Investments for environment and pollution management: To improve pollution management and public health, US$49 million of interventions were to contribute to the distribution of grid electricity, completion of sewerage systems, sanitation and solid waste management. These investments were treated as cost-of-service utilities; stand-alone analyses of tariffs showed that the projects were cost-effective in generating an FIRR of 10.0 percent. The EIRR as considerably higher (21 percent), as there remains an unmet demand for power in rural India; health benefits from improved water quality and sanitation were also to generate incremental value to households.
c. Community livelihood activities: About US$39 million in community livelihood investments were expected to generate an FIRR of 10.7 percent and an EIRR of 20.5 percent.

Economic Analysis in the ICR: The ICR (p. 19) conducted an ex-post benefit-cost analysis which used disburse rather than estimated costs and analyzed four types of benefits generated from the pilot activities: a) conservation and protection of coastal resources; b) environmental and pollution management; c) livelihood security for coastal communities; and d) carbo emission averted. The analysis used three discount rates (4 percent, 6 percent, and 10 percent), three lifespans (20, 20, and 30 years), and with and without accounting for carbon sequestration benefits. When carbon benefits were excluded from the analysis, using a discount rate of 10 percent over 30 years reached a Net Present Value (NPV) of US$303 million, an EIRR of 32 percent and a Present Value of Benefit over Cost Ratio (PVBCR) of 4.1 (versus an EIRR of 20.2 percent in the ex-ante benefit-cost analysis). If the analysis takes the global carbon benefits as a result from this project into account, the analysis calculated an NPV at US$472 million, an EIRR at 41 percent and a PVBCR of 5.8.

These analyses indicate that the project was a worthwhile investment.

Operational efficiency:

Due to the depreciation of the rupee, allocations for components 2,3, and 4 were reduced. Some of the savings were used for additional MSME-based livelihood activities in Gujarat, SICOM's BEAMS initiative and to prepare the ENCORE MPA. A total of US$32 million was cancelled during the project restructuring in March 2020. In total, the project's implementation period was extended by 4.5 years to allow for the completion of project activities, which were delayed to financial management and procurement issues.

Taking everything together, the project's efficiency is rated Substantial.

Efficiency Rating

Substantial

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

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	20.20	0 ☑ Not Applicable
ICR Estimate	✓	32.00	0 ☑ Not Applicable

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

6. Outcome

Relevance of objective was rated High since it supported all three focus areas of the Bank's CPF at appraisal (FY09-12) and most recent CPF (FY18-22). Efficacy of the first objective was High and efficacy of the second objective was rated Substantial, resulting in an overall efficacy rating of Substantial. Finally, Efficiency was rated substantial resulting in an overall outcome rating of Satisfactory.

a. Outcome Rating
Satisfactory

7. Risk to Development Outcome

The risks to the development outcome can be classified into the following broad categories:

Political/ government commitment: The government remains committed to the project's objective. Also, the government continues to collaborate with the Bank through a new project ("Enhancing Coastal and Ocean Resource Efficiency project"), which focuses on scaling up adoption of ICZM across all coastal states and union territory and will build on outcomes achieved under this project such as the various maps and databases. According to the ICR (p. 30) political commitment for ICZM is also gaining support at the local and state level. The government defined the ICZM approach in its National Coastal Mission under the National Action Plan on Climate Change as key for its strategy to adapt to climate change and rising sea levels. Furthermore, the Federation of Indian Chambers of Commerce and Industry released The Blue Economy Vision 2025 which states the Blue Economy as key driver for growth.

Financing: According to the ICR (p. 30) the project put in place operation and maintenance plans with contingency arrangements for infrastructure investments implemented under the project for periods during and after disasters. Also, costs for maintaining small infrastructure projects have been added to the local government registries. Large environmental infrastructure project such as the Sewage Treatment Plant in Jamanagar are being financed by public-private partnerships, which support operation and maintenance. Furthermore, livelihood interventions and self-help groups are being supported by government programs to ensure their sustainability.

8. Assessment of Bank Performance

a. Quality-at-Entry
According to the ICR (p. 28) the project built on lessons from previous multiple sector investments in India. The Bank team (February 12, 2021) stated that these lessons included; i) to ensure a successful implementation and sustainability, capacity building projects need strong demonstration of improvements in environmental quality; ii) project impacts are achieved only if the institutional capacity created is put

into practice; iii) project impacts are linked to the leverage and ability to influence environmental protection and bring about actions.

The Bank collaborated with the government, state governments, coastal communities, and other critical stakeholders to have a clear understanding of institutional arrangements. The ICR (p. 23) stated that beneficiaries were identified through a participatory rural appraisal to increase the chance that the project would meet the target to directly benefit coastal communities and women. The project design was simple and integrated capacity building, scientific research, and pilot activities. However, the interlinking project activities presented a challenge in case any single activity experienced a delay, it could negatively impact the implementation of any other activity.

According to the PAD (p. 16) the Bank team identified the following risks to project implementation: i) reputational risk due to the project's wide range of stakeholders and the need to ensure transparency in interactions at many levels; ii) implementation capacity and sustainability risk related to weak implementation capacity of staff, hiring constraints resulting in implementation delays; and iii) systematic misuse/misappropriation of funds.

The ICR (p. 24) stated that the project included several mitigation measures such as ensuring transparency in implementation through access to legal recourses for vulnerable people in case of dissatisfaction with the project's grievance redress mechanism. The risk of implementation capacity and sustainability was addressed through setting up the National Project Management Unit (NPMU) and State Project Management Units (SPMUs) as independent entities to facilitate implementation efficiency and flow of funds. Also, the two entities' capacity was strengthened through the provision of training programs in specific technical areas such as financial management and procurement. However, mitigation measures for financial management and procurement were not sufficient since the project experienced several implementation delays related to these areas (see section 10b for more details).

The project's M&E had several shortcomings such as the initial targets not being sufficiently specific and ambitious resulting in the need to revise the Results Framework during the first project restructuring in December 2015. Also, the project design did not sufficiently sequence activities and due to the interlink of project activities under such an integrated approach (the completion of one activity affected other activities) resulted in implementation delays. As a result, the time to achieve the PDO needed to be extended by 4.5 years.

Quality-at-Entry Rating
Moderately Satisfactory

b. Quality of supervision
According to the ICR (p. 29) the Bank conducted in total 20 bi-annual implementation supervision missions including field visits and multi-stakeholder discussions. Also, the Bank enabled south-to-south knowledge exchange visits between states to allow officials to learn from international experience in ICZM. The Bank team assessed implementation progress regularly and restructured the project five times to address institutional, fund flow, and procurement challenges. The Bank team conducted an independent review and assessment mission in 2014 when implementation progress slowed down. According to the ICR (p. 24) reasons for implementation delays were lack of staff at the NPMU and hazard line mapping delays as a

result of difficulties in obtaining government security clearances for aerial photography. Also, procurement delays for innovative ICZM private-public partnership activities and delayed/insufficient budget allocations for the SPMUs.

The project benefitted from only having two Task Team Leaders (TTLs) throughout project implementation, which allowed for consistency. The project underwent five restructuring processes.

However, the project experienced implementation delays due to a lack of procurement staff and sufficient capacity to oversee the procurement of many small, medium and large contracts. These issues resulted in delays in contract execution and payment. According to the Bank team (February 12, 2021) the Bank addressed these issues through preparing and implementing a separate *community procurement manual* (in addition to the project-procurement manual) and conducting regular training for staff to ensure continuity.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design
The project's theory of change and how key activities and outputs were to lead to the extended outcomes was sound. According to the PAD (p. 14) the project developed a Monitoring, Evaluation and Learning (ME&L) framework which aimed to facilitate: a) results and outcome-based management; b) learning and process enhancement (through participatory methods, beneficiary satisfaction surveys, and independent technical financial and social audits); and c) impact evaluation. The ME&L framework was designed to align with the existing government systems to avoid information overload. An operation unit including a ME&L specialist and staff within the NPMU were to be responsible for the project's M&E activities. Quarterly progress reports were to be generated by NPMU based on inputs from the three states and its own MIS system for tracking progress of the national component. In addition, the NPMU and SPMUs were to prepare respective annual action plans detailing the achievements and lessons learned in the previous year, and proposed implementation plan and budget for the following year.

The project's objective was not sufficiently specified. All indicators had targets. The project conducted a Baseline for indicators, when appropriate. However, all PDO indicators included in the original Results Framework lacked clarity and were not sufficiently specific resulting in the need to revise them during the first project restructuring. The selected intermediate outcome indicators were adequate to capture the contribution of the project's activities and outputs such as the intermediate outcome indicator on the size of hectares of mangroves restored/reforested.

b. M&E Implementation

As stated above, the project's Results Framework was revised during the first restructuring in December 2015 to revise all PDO indicators to make them more specific and measurable.

According to the ICR (p. 26) the NPMU collected regularly reports on physical and financial progress from SPMUs (which received updates from the PEAs). Also, the Bank team undertook regular field visits, verified documents, and carried out multi-stakeholder consultations to verify such information and data.

The ICR (p. 26) stated that the project would have benefitted from conducting a third-party impact evaluation at mid-term and collecting data for all subsidiary activities in a centralized and systematic way using predetermined and validated data collection formats.

According to the Bank team (February 12, 2021) all the indicators were continuously measured and reported for the duration of the project. The Results Framework was restructured to further granulate and make the respective indicators more measurable and specific. Measurements were carried out based on sub-indicators and reports were reviewed during each supervision mission. The Bank team stated that the M&E implementation followed a bottom-up approach, and was embedded with the NPMU, with dedicated resources allocated to ensure continuous M&E. Furthermore, the data was found to be of good quality. However, the project's M&E functions were limited to the project duration.

c. M&E Utilization

According to the Bank team (February 12, 2021) the M&E supported documenting cumulative progress made in the project, identifying outstanding issues and agreeing on next steps. Thus, M&E outputs were used towards continuous adjustment and improving of the various sub-components of the project, including capacity-building programs, learning and exchange programs, delivery of livelihood programs, and inclusion of a broader set of socio-economic and ecological issues to be addressed by the project.

For example, the M&E results and subsequent discussions with the coastal communities in Odisha showed that the impact of livelihood interventions on household incomes was limited. A key factor was the need for credit by poor households who borrowed money from private money lenders at exorbitant interest rates. After multi-stakeholder discussions, the project set up a Revolving Fund that addressed the credit needs of the community at reasonable interest rates and the incomes of the households experienced a commensurate rise.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was qualified as category A and triggered the Bank's safeguard policies OP/BP 4.01 (Environmental Assessment), OP/BP 4.10 (Indigenous People), OP/BP 4.40 (Natural Habitats), OP/BP 4.11 (Physical Cultural Resources), and OP/BP 4.12 (Involuntary Resettlement). The project prepared an

Environmental and Social Impact Assessment (ESIA), which was reviewed, approved and disclosed. Also, the project prepared Environment and Social Management Plans (EMPs) for all potential environmental and social issues and impacts related to project activities. The ICR (p. 27) stated that the project complied with all safeguard policies.

According to the ICR (p. 28) the project developed a solid redress grievance system, which provided legal support for vulnerable people in case they were dissatisfied with the project's grievance redress mechanism.

b. Fiduciary Compliance

Financial Management:

According to the ICR (p. 28) the project complied with the Bank's reporting, auditing policies and standards and did not encounter any financial management related issues. The flow of funds between the different government entities (NPMU, SPMUs, and PEAs) worked smoothly. Also, the project's unaudited Interim Financial Reports were submitted to the Bank on a regular basis and were adequate. The project's external auditor provided timely and unqualified opinions.

Procurement:

The ICR (p. 28) stated that the project complied with the Bank's procurement rules and updated and published procurement plans on a regular basis. However, the project experienced implementation delays due to a lack of procurement staff and sufficient capacity to oversee the procurement of many small, medium and large contracts. These issues resulted in delays in contract execution and payment. According to the Bank team (February 12, 2021) the Bank addressed these issues through preparing and implementing a separate *community procurement manual* (in addition to the project-procurement manual) and conducting regular training for staff to ensure continuity.

c. Unintended impacts (Positive or Negative)

According to the ICR (p. 21) the project was able to reach women through its capacity building programs, which encouraged higher levels of participation from women experts and officials. Women were presented at all organizational levels. In addition, at the community level, women formed SHGs to focus specifically on alternative livelihoods that met their requirements. Furthermore, the project enabled government agencies and regulatory bodies to improve their performance in regard to CZM. They were able to improve their knowledge, skills, and approaches, which they developed under the project in their daily activities.

According to the ICR (p. 22) the project was also able to attract private-sector interest through the implementation of state-level ICZM demonstration investments. For example, the project provided US$10.6 million for the Jamnagar sewage treatment plant (STP). However, the risk of financing was taken by the operator for the 15-year duration as part of the Design-Build-Operate-Transfer (DBOT) contract which defined that the operator can sell treated water to industries to maintain the treatment plant and pay an annual royalty of US$0.27 million to Jamnagar Municipal Cooperation during the contract period. In turn,

the demonstration of this first time STP DBOT informed Gujarat's adoption of industry requirements for water reuse and conservation.

Furthermore, the project was able to achieve outcomes that had not been envisioned during project preparation. The NCM was established under the government's National Action Plan on Climate Change (NAPCC) and ICZM is being recognized as a key approach for climate-resilient development policies and initiatives. Finally, the project was included in India's NDC for the Framework Convention on Climate Change in 2015 and the government of Gujarat developed a policy for reuse of treated wastewater based on the Jamnagar STP funded by the project.

d. Other

NA

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Moderately Satisfactory	Shortcomings in the project's results framework and lack of sequencing of activities resulting in implementation delays.
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR (p. 31-32) included the following lessons learned:

- **Adopting a flexible and participatory approach is critical when the development issues are multi-sectoral and require cooperation from several stakeholders at different levels.** This project was flexible and innovative when attracting private-sector interest through the implementation of state-level ICZM demonstration investments. While the project funded the approximately US$ 10.6 million of the Jamnagar sewage treatment plant, the risk of financing was assumed by the operator for the 15-year duration as part of the Design-Build-Operate-Transfer (DBOT) contract.
- **For ensuring system-wide and policy-level changes it is critical for development projects and programs to provide sufficient resources and allow for engagement, support and collaboration with and between decision-makers, technical experts and civil society.** This project was able to generate scientific knowledge to support the

development of policies and the planning, designing, implementing and managing of project activities and foster engagement and collaboration between different stakeholders.

- **An integrated approach, with a regional and comprehensive outlook that goes beyond administrative boundaries, agencies or sector is critical for ensuring overall development and sustainability.** This project demonstrated that sustainable, scientific management of coastal resources can increase the income of local communities and businesses.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR provided an adequate overview of project preparation and implementation, was internally consistent, was sufficiently outcome driven and the evidence presented was adequate. The ICR included a traditional economic analysis and useful lessons learned that can be applied to other projects in this area. The ICR was outcome driven but did not sufficiently specify if the outcomes can be solely attributed to project activities. Overall, the quality of the ICR was rated Substantial.

a. Quality of ICR Rating

Substantial