



1. Project Data

Project ID P144726	Project Name National Cyclone Risk Mitigation Proj-II	
Country India	Practice Area(Lead) Urban, Resilience and Land	
L/C/TF Number(s) IDA-56930	Closing Date (Original) 15-Mar-2021	Total Project Cost (USD) 196,223,194.78
Bank Approval Date 28-May-2015	Closing Date (Actual) 14-Mar-2023	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	308,400,000.00	0.00
Revised Commitment	196,223,194.78	0.00
Actual	196,223,194.78	0.00

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2. Project Objectives and Components

a. Objectives

According to the Financing Agreement (FA, p.5) and the Project Appraisal Document (PAD, paragraph 23), the Project Development Objective (PDO) of this second National Cyclone Risk Mitigation Project was to reduce vulnerability to cyclone and other hydro-meteorological hazards of coastal communities in project States of Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal, and increase the capacity of these State entities to effectively plan for and respond to disasters.



For the analysis in this ICRR, the PDO statement will be parsed as follows:

- to reduce vulnerability to cyclone and other hydro-meteorological hazards of coastal communities in Project States
- to increase the capacity of the State entities to effectively plan for and respond to disasters.

This NCRMP II is a national project implemented by the National Disaster Management Authority (NDMA) together with the State Disaster Management Authorities (SDMAs) in six states – Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal.

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

Yes

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

No

c. Will a split evaluation be undertaken?

Yes

d. Components

1. **Early Warning Dissemination Systems** (US\$18.10 million, at appraisal; various restructurings reduced this amount first to US\$17.77 million; then to US\$17.56 million; then to US\$13.37 million; US\$12.1 million, actual). This component was to finance the expansion of the warning systems for coastal communities in Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal to enhance their emergency preparedness capacity. This component was to finance the installation of communication systems, siren towers, and disaster preparedness capacity of the implementing entities – the National Disaster Management Authority (NDMA) and existing state nodal agencies for disaster management such as the State Disaster Management Authorities (SDMAs) or Revenue/Relief Departments. The first restructuring reduced the allocation to US\$17.77 million because financing of activities for three of the original six target states – Gujarat, Maharashtra, and West Bengal – was dropped. These states were to continue to be covered by early warning dissemination under the ongoing work on the web-based Dynamic Composite Risk Atlas Decision Support System (DCRA-DSS) tool, in consultations with the India Meteorological Department (IMD), Indian National Centre for Ocean Information Services (INCOIS), State Disaster Management Authorities, and in the roll-out of the early warning application or app.
2. **Cyclone Risk Mitigation Infrastructure** (US\$314.8 million at appraisal; various restructurings reduced this amount first to US\$181.18 million, then to US\$170.98 million, then to US\$166.18 million; US\$227.9 million, actual). This component was to finance infrastructure investments such as multi-purpose emergency shelters (MPCS), upgrade roads, underground electrical cabling (UGEC), bridges, saline embankments, and bunds to improve access to emergency shelter and evacuation routes and protect critical infrastructure against cyclones and hydro- meteorological hazards. The first restructuring dropped some of the planned civil works – 75 MPCs; 11 bridges in Goa, Gujarat, and Karnataka; road works in Goa and Kerala; UGEC works in Gujarat, and saline embankment packages in Goa and Maharashtra because of continued procurement challenges.



3. **Technical Assistance (TA) for Multi-Hazard Risk Management** (US\$29.5 million at appraisal; various restructurings reduced this amount first to US\$13.33 million, then to US\$12.97 million, then to US\$8.74 million; US\$2.1 million, actual). This component was to finance TA to enhance the quality of information on multi-hazard risks for decision-making and to strengthen risk management of the National Disaster Management Authority (NDMA). This component was also to finance TA to improve understanding and institutional capacity across the coastal states. Restructuring cancelled one study – the preparatory consultancy for nine states to design a second phase of the National Seismic Risk Mitigation Project. This study was to be financed under the proposed *India Comprehensive National Earthquake Risk Mitigation Project (P174830)*.
4. **Project Management and Implementation Support** (US\$24.6 million at appraisal; various restructurings reduced this amount to US\$16.12 million, then to US\$15.89 million, then to US\$14.11 million; US\$13.3 million, actual). This component was to finance project management, operating costs for State Project Implementation Units (SPIUs), training, and consulting services for specialized activities.

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

Project Cost: The original total project cost was US\$ 308.40 million. The credit disbursed a total of US\$196.22 million. A total of US\$102 million was cancelled in succession (see **Dates** below): first for US\$80 million; second for US\$11 million, and third for US\$15 million.

Financing: The International Development Association (IDA) financed this project.

Borrower Contribution: The government committed to contribute US\$78.60 million and disbursed US\$59.2 million. The World Bank Task Team confirmed on January 15, 2025 that the government did not disburse any further contribution since the scope and targets were reduced with the government financing some of the planned activities.

Dates: The project was approved on May 28, 2015, became effective on November 9, 2015, with an original closing date of March 15, 2021. The Mid Term Review (MTR) was conducted on June 4, 2018. After the following level 2 restructurings, the closing date was extended by 24 months to close on March 14, 2023.

Restructurings:

- On February 17, 2021, to extend the closing date by 18 months from March 15, 2021 to September 15, 2022 because of the impact of COVID-19 and cancel US\$80 million because of the following factors that resulted in cost savings:
 - long-standing procurement challenges for investments under components A (the EWDS) and B (cyclone risk mitigating infrastructure) that slowed initial disbursement and proved infeasible;
 - currency-exchange gains;
 - dropped activities in components C (technical assistance for multi-hazard risk management) and D (project management and implementation support).
- On September 6, 2021, to revise the targets of the indicators in the results framework reflecting the revised cost allocation under the first project restructuring due to the COVID-19 pandemic, civil works implementation challenges, and potential impacts of seasonal cyclones required additional time. This was not considered a second restructuring, but a supplement to the first restructuring.



- On September 14, 2022, to extend the closing date by another six months from September 15, 2022 to March 14, 2023, cancel an additional US\$11.0 million reducing allocations across all four components, and revise the targets for the indicators of the results framework accordingly. The following factors justified this restructuring:
 - Cyclones Yaas and Tauktae slowed implementation in both the west and east coasts.
 - COVID-19 restrictions continued, supply chains were disrupted, labor shortages occurred, and resettlement actions caused delays.
 - Cost savings (lower than anticipated cost of works and materials) and contractual variations and lower than budgeted expenditures for training in disaster damages assessments led to unutilized funds.
 - **Revised** the targets of output and outcome indicators in the results framework due to readiness and procurement issues:
 - The following targets of the **output** indicators were revised –
 - “Number of multi-purpose cyclone and flood shelters completed” (from an original target of 340 to 262 to 261). One Multi-Purpose Cyclone Shelter was cancelled. The government decided to finance some shelters.
 - Number of sirens installed (from an original target of 750, revised to 200) due to procurement challenges and technological tower design advancements.
 - Roads rehabilitated, rural (from an original target of 310 km to 205 km)
 - Number of bridges completed (from an original target of 13 to 2)
 - Embankments rehabilitated (from an original target of 89 km to 30 km) because the government decided to finance the rehabilitation of other embankments.
 - Area protected by rehabilitated embankments (from an original target of 1,600 km² to 29 km²)
 - Kilometers of underground High Tension (HT) and Low Tension (LT) lines (from an original target of 280 km to 1,409 km)
 - The following targets of the **outcome** indicators were revised –
 - “Number of people with access to multi-purpose cyclone and flood shelters built or rehabilitated” (from an original target of 500,000 people to 295,050 to 294,300 people).
 - Proportion of vulnerable coastal population with access to emergency shelters (from an original target of 30 percent to 17 percent)
 - Results of the comprehensive multi-hazard risk financing strategy presented to and used by NDMA for policy making (original target did not include the presentation to and use of the results for policy making, but retained the target at Yes/No).
- On March 13, 2023 to amend the FA and cancel another US\$15.0 million of the credit because of cost savings from the following:
 - Extension of several works and consultancies beyond the project closing date and no longer funded by the project;
 - Exchange rate gains;
 - Lower than budgeted cost of works and materials under EWDS;
 - Dropped one consultancy under component C – the National Seismic Risk Mitigation Program preparatory consultancy for 9 States.



Split Rating: A split rating of the outcome will be undertaken. The PDO remained unchanged throughout. Available resources were reduced. The scope narrowed. Targets were adjusted accordingly. According to the guidelines, when reduced financing narrows the scope, a split rating of the outcome would apply.

3. Relevance of Objectives

Rationale

Context: This project (NCRMP II) followed the first phase of NCRMP to reduce vulnerability in coastal communities and enhancing the capacity of state entities to plan and respond to disasters. India continues to rank among the top five most disaster-hit countries with an estimated annual economic loss of US\$9.8 billion from multiple natural disasters at appraisal. About 7,517 km of the country's coastline is exposed to 10 percent of the world's tropical cyclones. Vulnerability to cyclones and other hydro-meteorological hazards, particularly along the west coast, has escalated shown by an increased frequency of cyclone occurrences in the project states during the project period itself with 20 cyclones during 2019–2023, and 8 of them striking the west coast. This project was part of a phased approach to cover wide regions of the country in sequence. Phase I, approved in 2010, encompassed the states of Odisha and Andhra Pradesh. Phase II covered Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal. This second phase was to benefit about 560 million people under intensified and more frequent hydro-meteorological disasters.

National Plans: This project was highly relevant to the country's policy priorities in disaster risk reduction (DRR) and cyclone risk mitigation. The government adopted its National Disaster Management Plan in March 2015 consistent with the Sendai Framework for Disaster Risk Reduction (2015–2030) and the National Disaster Management Plan (NDMP), National Policy on Disaster Management (NPDM), and the National Action Plan on Climate Change (NAPCC). The PDO was relevant to the Prime Minister's ten-point disaster risk reduction agenda. The government acknowledged that early warning systems installed in the coastal states under this project helped alert coastal communities during the recent cyclones. Training, mock drills, and key roles in the maintenance and management of Cyclone Shelter Management & Maintenance Committees (CSMMCs) have also increased women's participation in disaster risk management. In 2021, the government's 15th Finance Commission created a window for states to finance disaster mitigation investments, informed by the experience from this project. This project is part of a national multi-hazard mitigation program of the NDMA to better understand hazards like seismic risk, floods, and landslides, to inform the design and establishment of a National Disaster Management communication network.

World Bank Country Partnership Framework: The PDO was relevant to the Country Partnership Framework (CPF) FY18-22. The World Bank's Performance Learning Review extended the CPF to remain effective until FY25. The PDO was relevant to achieving the objectives under CPF Focus Area 1: Promoting Resource-Efficient Growth, Objective 1.5: Improve disaster risk management.

World Bank Experience in the Sector and in the Country: The World Bank financed the first phase of this project (NCRMP I). That project developed the composite risk atlas to indicate the scale of cyclone risk of the west coast states. The World Bank has financed the NCRMP-I, the Odisha Cyclone Reconstruction Project, Tamil Nadu and Puducherry Coastal Disaster Risk Reduction Project, Bihar Kosi Flood Recovery Project, and the Uttarakhand Disaster Recovery Project. All these projects were designed to improve disaster risk management (DRM) capacity at the state and national levels. These projects financed



analytical work, equipment, training, establishing systems for better risk management such as forecasting, early warning systems, community-based DRM, multi-hazard risk assessments for planning, and decision support systems. During the preparation stage, the project was built on insights from the Coastal Disaster Risk Reduction Project (CDRRP), NCRMP I, and other regional coastal projects, particularly the EWDS units and the organizational structure and financing of CSMMCs. Gujarat's comprehensive needs assessment under the first phase of this project involved GIS-based risk analyses and community consultations. This served as a strong foundation for site selection and design of shelters for this project. Shelter designs and screening processes from both NCRMP projects have informed subsequent shelter projects in the states.

The PDO itself was appropriately expressed to address the development problem arising from increased incidence and intensity from hydro meteorological risks brought by climate change.

The relevance of objective is rated **High**. Approximately 14 percent of India's population reside in India's extensive coastline spanning 66 coastal districts. Fisheries and aquaculture along the coast employing over 6 million people and contribute 4 percent to the country's gross domestic product (GDP) annually. With the heightened vulnerabilities from climate change, the government is committed to proactive disaster risk reduction (DRR) as a strategic move away from a reactive, post-disaster response. The government is committed to fostering preparedness and resilience, especially across the coastal regions of India.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To reduce vulnerability to cyclone and other hydro-meteorological hazards of coastal communities in Project States

Rationale

Theory of Change: A Theory of Change (TOC) was not required at appraisal. One was prepared during the various restructurings using the inputs, outputs, and expected outcomes in the results framework (PAD, Annex 1). According to the TOC, investments such as installing communication systems, siren towers, roads, bridges, and embankments, would enhance the emergency preparedness capacity of the target coastal communities to respond to the increasing intensity and frequency of hydro-meteorological based disasters. The target coastal communities were in Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal. This component was to finance EWDS systems managed by the National Disaster Management Authority (NDMA), and by the existing state nodal agencies for disaster management such as the State Disaster Management Authorities (SDMAs) or Revenue/Relief Departments.



Inputs: were training, technical assistance, and financing of the investments to expand the warning systems for coastal communities in Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal.

Outputs: were to be the constructed bridges, rehabilitated embankments, the length of underground cabling achieved, and rehabilitated rural roads. Rural roads, described as rural access, feeder, market, agricultural, irrigation, forestry, or community roads, were functionally classified below trunk or primary, secondary or link roads, or tertiary roads. Rural roads connect small urban centers/towns/settlements of less than 2,000 to 5,000 people to each other or to higher classes of road, market towns and urban centers.

Outcomes: were to be the reduced vulnerability to cyclone and other hydro-meteorological hazards of coastal communities in the target state expressed as a proportion of the coastal population who can now be reached by the early warning system; have access to emergency shelters; and the increase in the area benefiting from rehabilitated or constructed embankments.

Critical Assumptions: The following critical assumptions if realized were to enhance the achievement of this objective: (i) the implementing agencies and their project implementation units have sufficient staff and adequate capacity; (ii) the states have adequate budget for operations and maintenance (O&M) of the investments made; (iii) relevant government departments utilize the analytical work to design and execute additional projects; (iv) disaster management authorities – NDMA, SDMAs, and DDMAAs – incorporate risk identification studies in their future projects; (v) government agencies utilize the established institutional mechanisms beyond the project period; and (vi) skilled personnel and equipment are available to the government beyond the project period.

Overall, the TOC constructed during the restructurings and informed the project at completion was adequate to establish that inputs led to outputs and expected outcomes. However, the expected outcomes missed some indicators that would have attributed the completed activities to reducing the vulnerability of the coastal areas.

OUTPUTS: One output **exceeded** the original target while for the others, the original targets were not achieved:

- 1,409 km of high- and low-tension lines were moved underground **exceeding** the original target of 280 km. Goa completed 315 km, Maharashtra 621.5 km, West Bengal 472.5 km. The reason for this vast overachievement was that the target states increased their demand for underground electric cables (UGEC) to reduce power related accidents or the need to replace above ground structures following hydro-meteorological events. The World Bank Task team added on January 15, 2025 that the original target was revised to correspond to the results of a detailed survey and the target states aiming to increase the targeting of the more vulnerable households.

The following targets were **not achieved**:

- 193 sirens were installed in Goa (37), Kerala (126) and Karnataka (30) as part of the Remote Public Alert Communication Systems (RPACs), not achieving the original target of 750 due to procurement challenges, and advancements in technological design. These technological advancements in the design of siren towers integrated with the web-based Dynamic Composite Risk Atlas (web-DCRA) tool, broadened the targeted coastal population covered to compensate for the reduced number of siren towers.



- 260 multipurpose cyclone and flood shelters were completed in five states (Goa (11), Gujarat (76) Karnataka (10), Kerala (17), and West Bengal (146), except for Maharashtra not achieving the original target of 340 shelters. In some cases, the government financed some of the shelters that were originally part of the project. The various multi-purpose uses of the shelters included evacuation centers for marginalized scheduled tribe communities and those who lived in kutchas, shelter livestock, COVID-19 care centers during the pandemic, schools, or fire stations.
- 205 km of rural roads in Gujarat and Karnataka were rehabilitated, not achieving the original target of 310 km. The completed roads improved access to the multi-purpose cyclone shelters (MPCSs) to facilitate evacuation.
- 2 bridges were completed in Karnataka, not achieving the original target of 13. Procurement issues and readiness to implement led to reduced outputs. Restructuring reduced the targets (see below) because the investments would not be completed within the project period.
- 30 km of saline embankments were rehabilitated, not achieving the original target of 90 km of saline embankments in Karnataka, Maharashtra, and Goa. In some cases, the government financed some of the targeted embankments.
- 29 km² was protected by embankments in Maharashtra (17.22 km²) and Karnataka (11.78 km²), not achieving the original (provisional) target of 1,600 km². The government financed some embankments and reduced the corresponding area protected by the project-financed embankments. Restructuring reduced the number of target cities from six to three due to procurement issues and readiness to implement that reduced the target area to be protected.

OUTCOMES: One outcome target was **achieved**:

- 75 percent of the targeted coastal population were covered by the early warning and dissemination system (EWDS), achieving the original target of 75 percent. EWDS was completed in Goa, Kerala, and Karnataka. According to the ICR, after the Biparjoy cyclone in Gujarat, EWDS reached 100 percent coverage of the target population.

The following target outcome indicators were **not achieved**.

- 293,550 people accessed the multipurpose cyclone and flood shelters built or rehabilitated, not achieving the original target of 500,000 people. This was originally reported as an intermediate results or output indicator.
- 17 percent of the coastal population now had access to emergency shelters, not achieving the original target of 30 percent.

The following outcome was not reported nor included in the results framework and had no target - avoided damages or incidence of electrical accidents reduced after cabling was moved underground.

Overall, the efficacy of the project to achieve this objective is rated **Modest** given the partial achievement of the outcomes.

Rating
Modest



OBJECTIVE 1 REVISION 1

Revised Objective

The objective was not revised. Targets of output and outcome indicators were reduced except for one indicator (length of high- and low-tension lines that were moved underground).

Revised Rationale

Revised TOC. The TOC was not revised as the restructuring did not affect the TOC.

Revised Inputs: The cancellation of a total of US\$108 million or more than a third of the original commitment reduced available funds. Targets of outputs and outcome indicators were reduced accordingly.

Revised Outputs: were to be the reduced number of infrastructure investments related to the early warning systems covering 3 rather than 6 target states. Gujarat, Maharashtra, and West Bengal were dropped because the proposed investments in these states were no longer feasible to be completed within the project timeline. Investments in four of the six states were identified during implementation rather than at appraisal. The “Remote Public Alarm and Communication System or R-PACS” was changed to “sirens” in the September 2021 restructuring due to procurement challenges, improved tower designs, and technological advancements. MPCS and embankment activities initially planned under the project were later funded by the government’s ongoing schemes.

Revised Outcomes: The indicators were unchanged. The targets were reduced to match the reduced inputs and outputs.

Revised Critical Assumptions: Unchanged.

Overall, the TOC adequately supported the causal relations between the reduced inputs, the adjusted outputs, and the expected outcomes.

REVISED OUTPUTS: One target for an output indicator was **exceeded**.

- 1,409 km of high- and low-tension lines were moved underground, **exceeding** the revised target of 1,286 km. The findings of the baseline Benefit, Monitoring, and Evaluation (BME) study showed that the underground cabling works existed in only 1.1 percent of urban clusters in selected project cities. The sampled clusters in Karnataka, Kerala, West Bengal, and Maharashtra had no such infrastructure. Goa completed 315 km, Maharashtra 621.5 km, and West Bengal 472.5 km in locations with high tourist footfall and serving the coastal households, lifeline infrastructure and economic infrastructure such as hotels, shops, and fishing centers. These sites faced heavy damages from damaged poles, wires, and conductors in previous cyclones before the cabling moved underground. There is no data on avoided damages after cabling was moved underground. There is no data on avoided damages after cabling was moved underground.

The rest of the output targets **substantially**, or **fully achieved** the revised targets:

- 260 multi-purpose cyclone and flood shelters were completed, achieving the revised target of 261. One Multi-Purpose Cyclone Shelter was cancelled. These buildings were built according to code,



considered the needs of women and persons with disabilities. These shelters were used as evacuation centers during the cyclones and as COVID-19 care centers during the pandemic.

- 193 sirens were installed in the following states: Goa, Karnataka, and Kerala, achieving the revised target of 200. Also included were towers designed to withstand winds with speed of up to 250 kmph. These sirens were installed at the MPCSSs, district and block emergency operation centers (EOCs), fish landing centers, and telecom towers.
- 205 km of rural roads were rehabilitated, achieving the revised target of 205 km. The completed roads improved access to the shelters.
- 2 bridges in Karnataka were completed, achieving the revised target of 2.
- 30 km of embankments were rehabilitated, achieving the revised target of 30 km.
- 29 km² was protected by rehabilitated embankments, achieving the revised target of 29 km².

REVISED OUTCOMES: The following targets of the outcome indicators were **substantially or fully achieved**:

- 293,550 people accessed the multipurpose cyclone and flood shelters built or rehabilitated, very nearly achieving the revised target of 295,050 people was later further reduced to 294,300 people.
- According to the Benefit, Monitoring, and Evaluation (BME) survey at closing, all cluster respondents found the roads to be extremely useful in enabling movement of people during flooding and other emergencies. Previously existing roads used to be inundated and unpassable during the monsoons. Survey respondents from coastal villages in Gujarat reported using these roads to evacuate to MPCSSs during cyclone Tauktae. Karnataka coastal villagers reported that the newly constructed roads were their only connection to the highways and reduced their travel time to reach services.
- 17 percent of the coastal population got access to emergency shelters, achieving the revised target of 17 percent.

The ICR also reported the following outcomes. These were not part of the results framework and hence, had no target values:

- The rehabilitated saline embankments in Maharashtra led to an increase in overall productivity of protected paddies from 40,000 to 100,000 million tons (clarified by the World Bank task team on January 15, 2025 that this covered only the project period) and protected 4,192 families from floods. The government of Karnataka financed on its own an additional 74 km of saline embankments using the design from this project.
- Kerala used the EWDS to strengthen state/district/taluka emergency operation centers and integrated it with the Kerala Warnings, Crisis, and Hazards Management (KWaCHaM) system, a composite emergency preparedness and response system, to enhance early warning capabilities and crisis response across the state of Kerala. This framework system disseminated knowledge, issued warnings, monitored developing crisis, and ensured a response network. A taluka is an administrative subdivision of a district, or a group of villages and towns organized for administrative purposes.
- The three states that were dropped from receiving sirens were nevertheless covered by the alert system by integrating the web-based Dynamic Composite Risk Atlas (DCRA) and Decision Support System (DSS) for cyclone risk mitigation and response planning into the installed sirens. The project-financed sirens with the web-DCRA tool could reach 30 million to 165 million people.
- By March 2023, the project covered 45 percent of the targeted coastal population. The government used the existing National Disaster Alert Portal SACHET (mobile application) and Common Alerting



Protocol (CAP). The World Bank team confirmed on January 15, 2025 that the project-financed web-DCRA mobile app was not released. These combined systems demonstrated effectiveness during recent cyclones. CAP alerts reached 100 percent of affected populations during Cyclones Biparjoy and Remal. The web-DCRA tool tracked Cyclone Biparjoy in June 2023.

The following outcome was reported but not included in the results framework and had no target value - Shelter designs and screening processes from both NCRMP Phase I and Phase II have informed subsequent shelter projects in both coastal and non-coastal states as clarified by the World Bank team on January 15, 2025.

The achievement of this objective is rated Substantial with moderate shortcomings.

Revised Rating

Substantial

OBJECTIVE 2

Objective

To increase the capacity of the State entities to effectively plan for and respond to disasters.

Rationale

Theory of Change (TOC): The project was not required to prepare a TOC at the time of appraisal. One was prepared during the various restructurings informed by the causal relations established between the outputs and expected outcomes of the results framework.

Inputs: were to be the financing of training and technical studies designed to enhance the capacity of the National Disaster Management Authority (NDMA); existing state nodal agencies for disaster management such as the State Disaster Management Authorities (SDMAs) or Revenue/Relief Departments to respond to hydro-meteorological induced disasters.

Outputs: were to be the training sessions to be delivered including reports and various studies presented to the national and state agencies. These outputs were to form part of policy to enhance capacity of state entities to plan and respond to disasters.

Outcomes: were to be the increased capacity of the state entities to effectively plan for and respond to disasters in project states by outlining investment plans informed by the results of the studies. The indicators used in this TOC, however, were at the intermediate rather than at outcome level. There was no evidence that specific policies from the reports were adopted by the agencies to indicate an increase capacity to plan and respond to disasters.

Critical Assumptions: The same critical assumptions above also applied here.

The TOC was a reasonable presentation of the links established between inputs, outputs and expected outcomes. Missing, however, were other outcome level indicators that could have measured relevant project



results at outcome level. Completing and presenting the reports are insufficient measurements to demonstrate increased capacity to plan for and respond to disasters.

OUTPUTS: One target output was **exceeded**:

- 9 training modules on disaster damage assessment were delivered, exceeding the original target of 8. The participants were state officials from various departments such as Health, Education, Panchayati Raj Institutions, Urban Local Bodies and Rural Development, First Aid, Search and Rescue, Shelter Management, and Early Warning and Communication.
 - Over 24,000 state government officials and 37,486 community representatives were trained on various disaster preparedness techniques including first aid, search and rescue, and shelter management through 1,457 shelter-level trainings. No targets were reported.
 - The training sessions across sectors have been rated quite or particularly useful in terms of content and effectiveness, by over 9 out of 10 trainees in Goa, Gujarat, Kerala, and West Bengal.
 - Respondents from West Bengal stated examples of using the skills acquired during Cyclone Yaas for rescue of two children from drowning in the river at the time of Durga Puja and for responding to a snake-bite situation
 - Respondents from Karnataka cited using the skills during the Madikeri floods of 2021. The project also delivered nine modules of trainings (compared to a target of eight modules)
 - 198 multi-hazard risk assessment for selected areas including 31 research articles, 14 risk information platforms, and 44 databases on hazard, vulnerability, and risk from 50 different agencies were completed. The expanse of data included 18 different hazards, climate change impact on hazards in the 2050s scenario, 15 infrastructure/asset classes, agriculture assets, and exposure data for populations for all Indian states and UTs. (The original target was that these risk assessments were conducted).
 - Probabilistic risk model for selected areas were completed. State officials were trained on the operation of the tool and a manual was prepared (the original target was that probabilistic risk models were completed). The probabilistic risk maps depicted cyclone risks and vulnerabilities along India's coastlines and provided an interactive map viewer for detailed visualization as part of the web-DCRA-DSS tool that was developed. NDMA launched this during the NDMA formation day in September 2022.
 - Physical structural assessment of lifeline infrastructure was completed (the original target was that the assessments were completed). The vulnerability assessment of critical infrastructure in eight high seismic risk prone States was prepared for the proposed US\$700 million National Seismic Risk Mitigation Project.
 - Hydro-meteorological Resilience Action Plans were completed for 6 cities – Panjim, Goa; Kochi, Kerala; Porbandar, Gujarat; Mangaluru, Karnataka; Ratnagiri, Maharashtra; and Bidhannagar, West Bengal (The original target was that these plans were completed. The World Bank task team confirmed on January 15, 2025 that the target was 6). The plans were developed by assessing seven hydro-meteorological hazards, exposure risks, and vulnerability of urban assets and communities to guide decision makers in improving the cities' resilience and reduce risks to hydro-met hazards under changing climate scenarios. The study recommended structural and non-structural measures, emphasized the need for detailed feasibility studies, engineering plans, nature-based solutions of the recommended measures.



The HmRAP web portal include all the digital elevation models, digital terrain models, maps and submitted to NDMA to be hosted in the National Informatics Center (NIC) cloud at IMD.

OUTCOMES:

- A national multi-hazard risk assessment and risk information sharing platform was completed. This included risk assessment strategies for four states – Uttarakhand, Odisha, Kerala, and Gujarat. These states established a database of economic and financial disaster-induced losses and catastrophic risk profiles. The risk assessment strategy included an analysis of the national institutional context for risk financing and state specific disaster financing mechanism. One homogenous platform contained all publicly available risk information from these state entities. This platform included a review of an existing inventory of risk assessment studies, research articles, information platforms and databases on hazard, vulnerability, and risk. The risk platform can generate risk profile reports dynamically at user-selected resolutions (state, district, sub-district, and city levels) for investment planning. All the reports were presented to the Ministry of Finance. The vulnerability assessment informed the development of a web-based Dynamic Composite Risk Atlas – Decision Support System (web-DCRA-DSS tool).
- A Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS) was completed.

Overall, the efficacy of the project to achieve this objective is rated Substantial with moderate shortcomings. There was lack of evidence to support that the reported outcomes provided evidence of an increase in capacity of the targeted **six** state entities to plan and respond to disasters. For example, the adoption of budgets indicating that disaster resilient investments were to be implemented following the recommendations made under the vulnerability assessment and the financing strategy would have been useful.

Rating

Substantial

OBJECTIVE 2 REVISION 1

Revised Objective

The objective was unchanged.

Revised Rationale

Revised Theory of Change: The TOC remained unchanged.

Revised Inputs: Cancelled funds led to reduced financing of training and technical studies.

Revised Outputs: One study was dropped – a planned second phase of the study to design a National Seismic Risk Mitigation Project and carried over to the proposed World Bank-financed India Comprehensive National Earthquake Risk Mitigation Project (P174830).

Revised Outcomes: were unchanged.



Revised Critical Assumptions: Unchanged.

Revised OUTPUTS:

- A study was dropped, reducing the number of studies from three to two - the Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS) study, and the vulnerability assessment.
- Several deliverables under the risk financing strategy were to be approved after closing because these were still being contracted at the time of the ICR. The World Bank task team clarified on January 15, 2025 that the government financed all the outputs after the project closed and were no longer part of the project outputs.
- Achievements for the original outputs reported above remained valid here.

Revised OUTCOMES:

- The vulnerability assessment informed the development of a web-based Dynamic Composite Risk Atlas – Decision Support System (web-DCRA-DSS tool) as targeted.
- The completed Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS) led the 15th Finance Commission to include state-specific risk financing strategies, ex-ante financing mechanisms, and centrally allocated disaster funds as instruments available to the states for disaster risk management. The target was that these completed strategy and assessment were to identify policy recommendations to enhance the capacity of the state entities to plan and respond to disasters. The state specific mechanisms for disaster risk management were offered as evidence of enhanced capacity to plan and respond to disasters. This indicator is intermediate at best. Evidence of enhanced capacity would have been the states budgets showing disaster resilient infrastructure investments to reduce hydro-meteorological risks. The outcome indicator did not provide a clear causal link to achieving the objective based on the inputs and expected outputs.

The ICR also reported the following outcomes that were not part of the results framework and hence, had no indicators or target values:

- NDMA undertook a study to analyze the disaster risk management in eight selected countries of Australia, Canada, Germany, Indonesia, Japan, the Philippines, Türkiye, and the United States. The study was to highlight good practices in risk-informed planning that would strengthen coastal Indian states' capacity to plan and respond to disasters. According to the World Bank task team on January 15, 2025, the results of the study were used to inform the architecture of NDMA's disaster management institutions.
- The web-DCRA tool was launched on NDMA formation day, September 28, 2022, and in use for pre-event planning and active cyclone response. The World Bank task team confirmed it was highlighted during the January 14, 2025 150th Foundation Day of India Meteorological Department, Ministry of Earth Sciences as the impact based forecast (IBF) tool. Probabilistic risk assessment maps depicted cyclone risks and vulnerabilities along the coast. The web-DCRA tool provides a granular risk assessment, location-specific cyclonic wind speeds and inundation levels due to storm surge, cyclone-induced rainfall, and riverine flood and the average annual losses. An interactive map provided detailed visualization. State officials continue to be trained on a rolling basis, according to the World Bank task team on January 15, 2025, on the operation of the tool. The tool is used for (i) planning of mitigation investments, (ii) site selection and design of infrastructure investments, (iii) and real-time response and recovery planning. The system was used during Cyclone Amphan (pilot phase) and



other cyclones. States used information for evacuation planning, resource allocation for the National Disaster Response Force (NDRF), State Disaster Response Force (SDRF), Fire and Emergency services, and community volunteers/task forces for real-time response in cyclones such as Biparjoy. Cyclone Biparjoy had zero casualties in the project area. The tool’s accurate simulations of wind speeds and storm surge heights, capacity to map flood inundation, vital informed emergency management. The TOC did not include outcome indicators that would have shown the causal link between the tools developed and the enhanced capacity of the state entities to plan and respond to disasters.

Overall, the **revised** efficacy of the project to achieve this objective is rated **Substantial with moderate shortcomings**. The two completed studies substantially achieved the target. These studies informed the state specific mechanisms available to the states for disaster risk management, including making available disaster risk mitigation financing. This indicates the outputs contributed to achieving the expected outcomes and substantially contributed to achieving the objective. However, the lack of indicators on state policies adopted and use of the available financing point to a moderate shortcoming in achieving the objective.

Revised Rating
Substantial

OVERALL EFFICACY

Rationale

The overall efficacy of the project to achieve the objectives using the original target indicators is rated **Modest**. The overall efficacy of the project to achieve the first original objective is rated Modest. Not all the targets of the outcome indicators were achieved. Restructuring led to funds being cancelled, reduced scope because three of the six target states were dropped. However, these same states were to continue to be part of the early warning system supported by the project. The indicators to support the achievement of the outcome of the second objective – increased capacity of the original six target states to plan and respond to disasters could also have been strengthened as discussed above.

Overall Efficacy Rating
Modest

Primary Reason
Low achievement

OVERALL EFFICACY REVISION 1

Overall Efficacy Revision 1 Rationale

The overall efficacy of the project to achieve the objectives using the revised target indicators is rated **Substantial** with moderate shortcomings. Some additional indicators could have strengthened the causal link between the outputs and expected outcomes relative to state capacity to plan and respond to disasters.



Overall Efficacy Revision 1 Rating

Substantial

5. Efficiency

Economic Efficiency: At appraisal, a cost benefit analysis was conducted for the multi-purpose cyclone shelters. The PAD only used lives saved during disasters expressed as the value of statistical lives (VSL). The value of statistical life is an estimate of the financial value society places on reducing the average number of deaths by one or how much society is willing to pay to reduce the risk of death. Benefits from the multipurpose use of these shelters were not valued and not included in the analysis. The discount rate used was 12 percent. The net present value (NPV) was estimated at US\$79 million, and the estimated internal rate of return (IRR) was 18 percent. Benefits from roads and bridges, bunds, and underground cables were not quantified or considered at appraisal (PAD, paragraphs 28-29).

At closing, a cost benefit analysis was conducted for the capital investments under cyclone risk mitigation infrastructure or 89 percent of the total project costs. These included multi-purpose cyclone shelters, roads and bridges, embankments and bunds, and underground cabling. For roads, only the general benefits of smooth and faster traffic were quantified. Roads facilitated evacuation and transporting emergency and relief supplies during disasters and access to markets the rest of the year. The protection of agricultural crops allowing for multiple crop cultivation throughout the year and properties from saline water intrusion was the main benefits of saline embankments and bunds. Only the likely benefits of multiple rice crops were considered. Benefits for the underground cabling included the avoided damages from cyclones and subsequent repair costs for the electrical distribution system. Avoided loss of productivity and comfort to the residents was not included in the quantitative measures of the economic efficiency. The analysis used a 10 percent discount rate. The net present value (NPV) of the overall investments was estimated to be US\$155.9 million with an estimated internal rate of return (IRR) of 22.3 percent and a benefit-cost ratio (BCR) of 1.9.

No comparison of the economic efficiency at appraisal and completion could be made for the overall investments in cyclone risk mitigation investments because different discount rates applied to investments in shelters - 12 percent at appraisal and 10 percent at closing.

Administrative and Operational Efficiency: Project procurement challenges, limited implementation capacity at the state levels, and the COVID-19 pandemic led to implementation delays. The project period was extended for a total of 24 months. Procurement (see Section 10 Other Issues below) was challenging with delays in design and tendering that led to investments that could not be completed even in the extended project period. Some investments were appraised during implementation and posed procurement challenges. Restructuring dropped three of the original six states. Delayed decision-making and internal approvals by some states adversely impacted the project implementation. Implementation efficiency varied across implementing agencies in participating states – some experienced a high rate of staff turnover; some experienced seven cyclones during the project period; some went through delays in approving technical designs and financial claims. However, the central project management unit at the National Disaster Management Authority ensured continuity. Corrective measures were adopted. Design support for mitigation investments were enhanced. Infeasible investments were cancelled. Project management costs were low – US\$24.6 million at appraisal, which was reduced to US\$13.3 million at project completion – with some states maintaining lean teams at the SPIUs and collaborated effectively with the implementing agencies.



Efficiency is rated Substantial with moderate shortcomings from procurement issues. US\$108 million (or 25 percent) of the original US\$308 million committed to the project was cancelled even as the project period was extended by 24 months.

Efficiency Rating

Substantial

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

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

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

6. Outcome

	Original	After Restructuring
Relevance of Objective	High	
Efficacy to Achieve Objectives		
Obj 1 - to reduce vulnerability to hydro-meteorological	Modest	Substantial
Obj 2 - to increase capacity of the State entities to effectively plan and respond to disasters	Substantial	Substantial
Overall Efficacy	Modest	Substantial
Efficiency	Substantial	Substantial
Overall Outcome	Moderately Unsatisfactory	Satisfactory
Outcome Rating Value	3	5
Amount Disbursed (in US\$ millions)	148.76	47.44
Disbursement rate	148.76/196.2	47.44/196.2
Weight Value	0.76	0.24
Total Weights	0.76*3 = 2.3	0.24*5 = 1.2
Overall Outcome Rating	3.5 = 4	Moderately Satisfactory

a. **Outcome Rating**
Moderately Satisfactory

7. Risk to Development Outcome



The following pose risks to the development outcomes:

- **Technical risks:** This is a moderate risk. The web-based DCRA DSS and the overall early warning system rely on the implemented innovative technology and systems. Installed software require periodic updates.
- **Financial risks:** This is a moderate risk. The adequacy of the corpus fund dedicated to O&M of MPCS is critical for longevity of the infrastructure. Established mechanisms may lack sustainable financing and hinder the maintenance of infrastructure. To address this risk, the government created a window for states to finance disaster mitigation investments, informed by the experience from this project.
- **Risk of reduced government ownership or political commitment.** This is a moderate risk. Political changes could lead to shifts in policy priorities. Governmental and stakeholders' commitment may reduce over time affecting the sustainability of project benefits.
- **Economic risks.** This is a moderate risk. Economic fluctuations may influence the availability of funds for necessary upgrades and maintenance of the investments completed under the project. Inflation and the rising costs of materials and labor may not be fully anticipated in budgeting for the O&M needs of the project after closing.
- **Social risks.** This is a moderate risk. Community institutions have been initiated in this project and stakeholder engagement may wane over time. To mitigate this risk, the states may need to continue engaging these community institutions during emergencies and encourage them to participate when there is no emergency in using and maintaining the facilities they oversee.
- **Environmental risks and of exposure to natural disasters:** This is a high risk. The United Nations ranks India as having an extremely high mortality rate risk due to extreme vulnerability and exposure to multiple natural disasters. Most cities are exposed to multiple hazards: a study of 144 Indian cities noted that 120 cities were at risk from flooding, 52 from landslides, and 40 from earthquakes. With sea level rise, most of India's largest cities (Mumbai, Chennai, Kolkata) were at risk of storm surges and damaging floods. Unexpected severe weather events could result in damage that exceeds available funds.

8. Assessment of Bank Performance

a. Quality-at-Entry

The World Bank team designed this project to support the country's plan to reduce disaster risk at its coastal regions. The technical, financial, and economic aspects focused on capacity building of the participating states and investing in disaster resilient infrastructure to enhance response and resilience to hydro-meteorological events. This project was the second phase of the first World Bank-funded project in India exclusively focusing on ex-ante disaster risk mitigation. The World Bank team replicated the design of the preceding project, identified the coastal communities in the target states as primary beneficiaries to benefit from cyclone risk mitigation infrastructure and early warning systems, and focused on increasing state level DRM capacity. The World Bank team designed the project informed by the following lessons from the preceding phase, other disaster risk management projects in India, and international practice: (i) increasing investments in disaster risk mitigation – both physical infrastructure (emergency cyclone shelters, access routes) and in improved EWDSs – may reduce casualties; (ii) GIS-based risk analyses



together with community consultations could form a more comprehensive needs assessment to strengthen the criteria for site selection and design of investments such as shelters; (iii) engaging communities to adopt a long-term strategy for operating and maintaining could help sustain these assets in states with highly recurrent natural hazards. assets such as having especially in. For example, Odisha established Cyclone Shelter Management & Maintenance Committees (CSM & MCs) for each shelter as dedicated implementation/ management unit with clear roles for its staff to work on both on-going and emergency projects; and (iv) adopting a strong disaster response mechanism to save lives and livelihoods by refocusing efforts away from response – rebuilding infrastructure – to adaptation and preparedness by investing in disaster resilient water and flood management, enhancing capacities of affected communities, boosting early warning communication systems, etc.

The World Bank team adapted the results framework from the preceding project to integrate lessons learned and refocused the PDO of the previous phase to emphasize the outcome of the participating states' enhanced capacity to plan and respond to disasters. The World Bank team identified mitigating measures to address potential safeguard issues. Project Implementation Units (PIUs) were established. Preparatory documents, safeguards instruments, financial management and procurement manuals, and a first 18-month Procurement Plan were in place. However, the World Bank team did not identify adequate outcome indicators in its results framework to strengthen the causal link between the outputs and the expected outcomes relative to enhanced capacity of the target states to plan and respond to disasters. (see Section 9 M&E below).

Overall, the quality of Bank supervision at entry is rated **Moderately Satisfactory**. The Bank team incorporated lessons learned from the first phase of this project and other similar disaster risk reduction projects in the country and global experience to improve design. The Bank team focused on boosting capacity at the state level to ensure sustainability of the interventions. However, the Bank team did not adequately capture the link between the outputs and the expected outcomes relative to the enhanced capacity of the states to plan and respond to disasters. The Bank team also did not adequately assess the implementation and capacity risks.

Quality-at-Entry Rating Moderately Satisfactory

b. Quality of supervision

The World Bank team conducted 16 supervision missions over the eight-year implementation period, including virtual ones during the pandemic. The team was staffed with the appropriate experts and were mostly in-country staff, with some international staff, and experienced technical consultants to support the government. The team participated in the Project Steering Committee (PSC) meetings and conducted frequent field visits and additional technical missions as needed. The team suggested corrective measures and identified challenges in ISRs and Aide Memoires. The team addressed the initial staffing delays by adding meetings and technical missions for on-ground assistance. The Bank team addressed frequent PMU staff changes by accelerating procurement approval processes. Differing capacities of the states slowed project implementation. Sectoral experts assisted in conducting training where the PMU and SPIUs faced capacity gaps. NCRMP I and NCRMP II overlapped in implementation. The PSC meetings were conducted at the same time so that older participant states shared knowledge with newcomers on how to



implement World Bank-financed projects. The Bank team ensured that the PMU played a strong coordinating role to fill variations in governance, political structure, and processes of the project states.

The team conducted the Mid Term Review (MTR) in 2018 and aided the PMU and SPIUs formulate an action plan to resolve procurement issues that delayed implementation. However, the government request to cancel infeasible investments and revise the indicators in the results framework took over two years after the MTR further delaying the improvements. The team used restructurings to achieve the PDO with reduced resources and reduced number of participating states. The pandemic and subsequent lockdowns paused project activities, but the World Bank team implemented virtual monitoring, and extended timelines to address urgent pandemic-related needs. The states were affected by cyclones during implementation and had to shift to response delaying the implementation of building resilience.

The Bank team did not sufficiently address the shortcomings in the RF and M&E system during the restructurings.

Overall, the quality of Bank team supervision is rated **Satisfactory with moderate shortcomings**. Periodic trainings could have replaced demand driven training, especially in procurement where staff changes, new SPIUs lacking familiarity with World Bank processes, could have exchanged experience with the SPIUs who were more familiar with these processes (see Section 10 Other Issues, Procurement below). Many challenges beyond the control of both the World Bank and the country and their participating states - such as COVID-19 pandemic, the numerous cyclones that strained the capacity of the target states - were addressed through restructurings, cancelled funds, and reallocation of resources within the framework of the original project design, to achieve the PDO.

The overall Bank performance at entry is rated **Moderately Satisfactory**, and at supervision **Satisfactory** with minor shortcomings. The overall Bank performance is rated **Moderately Satisfactory**.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The Theory of Change, first formulated during the restructurings, provided a reasonable causal link between the outputs from the activities and expected outcomes of the PDO. The PDO was well formulated and captured the investments made to reduce vulnerability to hydro-meteorological events and the expected enhanced capacity of the participating states to plan, respond, and reduce their risks to recurring hazards. The M&E design relied on a management information system (MIS) initiated under NCRMP I but did not consider the six target states. The indicators in the results framework encompassed a considerable scope of the interventions proposed but did not capture all outcomes. The intermediate results indicators adequately captured the contribution of the activities and investment outputs toward contributing to



outcomes. However, the outcome of enhanced capacity of state entities to effectively plan and respond to disasters itself was less appropriately defined and appeared to have been limited to “presenting” reports rather than aiming at an overall improved capacity to effectively plan for and respond to disasters. For example, the ICR notes that none of the outcome indicator quantified the utilization of knowledge created or measured to what extent they were integrated into standard operating procedures or frameworks of key institutions. Furthermore, no indicators measured or tracked the rate at which authorities or institutions have implemented recommendations. Baseline data was to be collected during implementation as part of the Baseline, Monitoring, and Evaluation (BME) study to help establish more realistic targets during restructuring. Another shortcoming of the results framework was the lack of state specific outcome indicators.

b. M&E Implementation

The NDMA implemented the earlier M&E system as designed during phase 1 of the project. The NDMA PMU relied on emails, Excel files, and updated presentations for M&E arrangements. Some states, such as West Bengal, developed an MIS for its use but this was not replicated by the other states. A Benefit, Monitoring, and Evaluation study (BME) study was conducted to establish the baselines, to facilitate appropriate targets. Since this was conducted during implementation, results of the study were to inform more realistic targets at midterm and establish achievable targets of outcome indicators at closing. However, the study was perception-based only. A cost-benefit analysis of the different investments was to be part of the BME but was not completed in time. The project did not use a technology-based advanced MIS to monitor each participating state in different stages of preparation and implementation. The identified indicators in the results framework adequately monitored progress toward achieving the PDO, although not all relevant outcome indicators were included in the results framework as noted above. The SPIUs and PMU, the PSCs, and Project Oversight Committees (POCs), formed by key department heads, regularly monitored progress but not beyond the output levels. Datasets in the web-DCRA-DSS or other risk assessment studies conducted under the project have not yet been used to produce other useful baseline studies. The BME study provided the project outcomes through a midterm survey conducted in April 2022 and an end-term survey conducted in March 2023. The BME study conducted discussions with 20 focus groups, interviews with 2,000 households, and 50 key informants who identified qualitative outcomes. Most of the households information collected centered around their perceptions about the project activities rather than quantitatively monitoring and evaluating the actual outputs and outcomes according to the results framework.

Other outcomes such as the increase in agricultural productivity because these rehabilitated embankments protected a wider area from saline intrusion or avoided damages in loss of lives or property because of disaster risk reduction related infrastructure investments were not identified as outcomes. These were not monitored.

c. M&E Utilization

The World Bank team used the progress reports submitted by the PMU and the PIUs to inform the mission discussions, Aide Memoires, ISRs, and the restructuring papers. Management also used the progress reports regularly monitored by SPIUs to measure progress against the outputs in the results framework. The information monitored was made public. The PMU sought asset utilization reports from SPIUs following cyclones or disasters to inform mid-course corrections, such as in the O&M



arrangements of the shelters. However, there were no state-specific asset utilization and this lack limited the use of such reports. The ICR reported that the potential for cross-learning among experienced and new states, was not fully exploited. the M&E data were utilized in an effective manner to track progress, monitor project activities, and record results against the PDO.

The overall Quality of M&E is rated Modest.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

Environmental Safeguards: The project was assigned a Category “A” under the World Bank’s environmental safeguards. The following safeguard policies were triggered: Operational Policy (OP)4.01 on Environmental Assessment, OP4.04 on Natural Habitats, and OP4.11 on Physical Cultural Resources. The ICR reported that compliance with environmental safeguards was Moderately Satisfactory but did not describe the compliance rating for each policy. The World Bank’s Operations Portal noted Moderately Satisfactory compliance for OP4.01, Satisfactory compliance for OP4.04 and for OP4.11. The project prepared an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF). The environmental impacts were associated with the construction of buildings, roads, bridges, underground electrical cabling (UGEC), and repairs of the existing embankment, installation of towers and poles for mounting alert sirens. Impacts on vegetation, drainage, air quality, noise levels, and occupational health and safety were anticipated. An Environmental and Social Impact Assessment (ESIA) was conducted for subprojects with potential adverse impacts. Before commencement of civil works, the PIUs obtained regulatory approvals including coastal regulation zone clearances and required preparation of subproject Environmental Management Plans (EMPs) in bidding documents. Site restoration was implemented after the construction phase. Regular third-party independent audits were conducted and found no significant negative environmental and social (E&S) impacts were found. The first phase of this project (NCRMP I) provided groundwork for environmental safeguards that applied to this project. Nonetheless, safeguards standards needed to accommodate the unique environmental contexts of different states. According to the ICR, the PIUs conducted subproject assessments using screening forms. Environmentally and socially appropriate site selection avoided adverse impacts. The project did not result in removal of physical cultural resources nor affect critical ecosystems (ICR, paragraph 58).

Social Safeguards: The project triggered OP/BP 4.12 Involuntary Resettlement. The expected social impacts included temporary livelihood disturbances associated with the construction and a modest loss of land. The ICR did not report on compliance, but the World Bank’s Operations Portal indicated Moderately Satisfactory compliance. The SPIUs implemented the civil works in accordance with the Indigenous People’s Instrument and Operational Policy 4.12 of the World Bank. Though the project coastal population included some population of Scheduled Tribes (STs), the project activities did not result in any adverse impact on the STs. No grievances were received during implementation. The project did not result in involuntary resettlement. In Maharashtra, land was acquired from 28 households for saline embankment construction. The PIU prepared a Resettlement Action Plan (RAP) and compensated the affected households in accordance with the prevailing laws on land acquisition. The RAPs were prepared, and



Memoranda of Understanding (MOU) were signed between the state governments and the affected households. According to the PIU, the minor grievances were received and resolved at the field level.

b. Fiduciary Compliance

Financial Management: The financial management adopted for this project followed those implemented under the first phase of the project. Substantial fiduciary risk was noted because of the participation of target states. Not all participating states were familiar with World Bank financial management policies. The Project Management Unit (PMU) and the State Project Implementation Units (SPIUs) hired FM specialists. However, delayed fund flows persisted and complicated financial management compliance. The FM Manual called for financial flows to be managed through World Bank reimbursements after the PMU submitted interim unaudited financial reports (IUFs). Some IUFs reported discrepancies in expenditures because component-wise investments were not detailed, and they called for improved granular financial reporting. Inadequate or delayed staffing in the FM department posed additional challenges. Audits were frequently delayed. In some cases, these were of low quality. Such audits raised questions about financial transparency, which affected the project’s credibility. The World Bank team confirmed in January 16, 2025 that qualified opinions were satisfactorily resolved. Continuous adjustments in FM practices were adopted and improvements implemented.

Procurement: The project’s procurement processes complied with the World Bank’s guidelines (ICR, paragraph 62). Challenges marked implementation. The internal clearance-related delays affected payments to contractors and consultants. The PMU at NDMA did not ensure timely procurement and contract management interventions. The implementing agency did not have a dedicated team to oversee progress and tackle obstacles. Both the PMU and SPIUs did not monitor payments in a timely manner. The World Bank task team clarified in January 15, 2025 that there were slippages although not across all states and not throughout the project period. Procurement officials changed. Over time, these processes improved as the PMU and SPIUs gained experience and complied with World Bank policies.

c. Unintended impacts (Positive or Negative)

d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	



Quality of M&E	Modest	Modest
Quality of ICR	---	Substantial

12. Lessons

The project operations offered the following lessons:

- **If standardized templates are customized for each participating target state, this may contribute to attributing how the risk from cyclones and other hydro-meteorological hazards are reduced in each state.** In this project, project investments highlighted the effective response to Cyclones Amphan and Yaas. The investments adhered to standardized disaster resilient design principles. Quality construction complied with the latest codes and World Bank guidelines. The MPCS design created standardized templates that allowed customization to meet specific needs of each state. The designs of these investments underwent rigorous quality audits. High quality components formed part of the final structures.
- **If planning for O&M, realistic expectations are important considerations.** In this project, community institutions, such as the CSMMC fostered ownership and encouraged vigilant maintenance and repair of the infrastructure. Adequate budgeting would fund long-term maintenance and provide for arising unexpected repair costs following extreme weather events.
- **Shelters used for other purposes benefit the community.** In this project, the shelters were used for other functions after disasters. Communities embraced its use beyond during emergency, to serve as hubs for community gatherings, educational programs, and delivering community health services.
- **A formal knowledge exchange platform may facilitate the spread of best practices and innovative solutions to reduce vulnerabilities.** In this project, all agencies including SPIUs, the supervision consultant, and PMU began collaborating during the inception stage. However, the national, state, and local agencies did not formalize channels where they could share knowledge and best practices among the states. Regular workshops, webinars, and collaborative platforms could help facilitate the exchange of information, share experiences of what works, and replicate innovative solutions such as conducting periodic mock drills and awareness campaigns, visual aids and translation during training. These aids could facilitate timely response, overcome language barriers, and promote better understanding in reducing vulnerabilities.
- **A programmatic approach for DRM projects may facilitate progressive achievement of DRM related objectives.** In this project, design was built on the outcomes achieved under the first phase, acknowledging the knowledge accumulated from the preceding phase. Enhancing institutional capabilities demonstrated the continuing benefits of utilizing existing frameworks. For example, as NCRMP I implementation was ending, this phase was starting. Conducting combined Phases I and II PSC meetings because of the programmatic nature of the approach to DRM facilitated knowledge sharing and strengthened institutional relationships. Newly participating states benefited from the more experienced ones on complying with the policies of World Bank-financed projects. The longer-term engagement



fostered by a programmatic approach leads to a realistic achievement of DRM related objectives.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The quality of the ICR is rated **Substantial**. The ICR provided a detailed overview of the project, and the TOC provided a clear narrative that justified the ratings. The narrative focused on results. The report was internally consistent and followed the OPCS guidelines. The annexes provided additional information to bolster the results. The explanations in Annex 1 under the results framework were useful. The ICR is candid, acknowledging the shortcomings of adopting the M&E system in place for the first phase of the project, the lack of better indicators to reflect the outcomes achieved and, the missed opportunities in improving the design of capacity building interventions during the restructurings. Lessons were clear, useful, and based on the evidence from the ICR with recommended areas for improvement. Quality of the ICR is hence rated Substantial.

a. Quality of ICR Rating

Substantial