



## 1. Project Data

<b>Project ID</b> P154847	<b>Project Name</b> Andhra Pradesh Disaster Recovery Project	
<b>Country</b> India	<b>Practice Area(Lead)</b> Urban, Resilience and Land	
<b>L/C/TF Number(s)</b> IDA-56940	<b>Closing Date (Original)</b> 30-Sep-2020	<b>Total Project Cost (USD)</b> 141,369,325.84
<b>Bank Approval Date</b> 17-Jun-2015	<b>Closing Date (Actual)</b> 31-Mar-2022	
	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment	250,000,000.00	0.00
Revised Commitment	141,369,325.84	0.00
Actual	141,369,325.84	0.00

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## 2. Project Objectives and Components

### a. Objectives

According to the Project Appraisal Document (PAD) (p. viii) and the Financing Agreement of July 16, 2015 (p. 4) the objective of the project was “to restore, improve, and enhance resilience of public services, environmental facilities, and livelihoods in targeted communities, and to enhance the capacity of state entities to respond promptly and effectively to an eligible crisis or emergency”.

For the sake of the analysis of achievements, the PDO will be parsed as follows: i) to restore, improve, and enhance resilience of public services in targeted communities; ii) to restore, improve, and enhance resilience



of environmental facilities in targeted communities; iii) to restore, improve, and enhance resilience of livelihoods in targeted communities; and iv) to enhance capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.

**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**

The project had seven components. For several components the actual costs were significantly lower than the planned costs due to cancellations (see section 2e for more details).

**Component 1: Resilient electrical network (appraisal estimate US\$120.0 million, actual US\$85.5 million).** This component was to finance laying the electrical network of Visakhapatnam City underground (UG) to enhance the city's resilience to the impact of cyclones and other disasters. Approximately 700 kilometers of network lines were to be converted to an UG cable network from the beach road and towards the landside. Also, this component was to finance laying high-speed data/voice transmission cables across Visakhapatnam City. This component was to be implemented by Andhra Pradesh Eastern Power Distribution Company Ltd. (APEPDCL). The ICR did not state how the underground electrical network would be made resilient in case of a potential earthquake.

**Component 2: Restoration of connectivity and shelter infrastructure (appraisal estimate US\$105.0 million, actual US\$83.6 million).** This component was to finance two sub-components:

Sub-component 2.1: Restoration of rural roads and cyclone shelters: This sub-component was to finance permanent restoration, reconstruction, strengthening and widening of about 800 kilometers of damaged Rural Roads including cross-drainage structures, following the Indian Roads Congress (IRC), Ministry of Rural Development (MoRD) and Prime Minister's Gram Sadak Yojana (PMGSY) standards. It was also to include repair of old cyclone shelters with friendly design features for the elderly, women, and children.

Sub-component 2.2: Restoration of major district roads (MDR): This sub-component was to finance permanent restoration, reconstruction, strengthening and widening of about 250 kilometers of damaged MDRs including cross-drainage structures, following the IRC and Ministry of Road Transport and Highways (MoRTH) standards.

**Component 3: Restoration and protection of the beach front (appraisal estimate US\$65.0 million, actual US\$1.9 million).** This component was to finance two sub-components:



Sub-component 3.1: Shore protection works: This sub-component was to finance appropriate solutions for the protection of the shore taking into account the potential impact on the coastal environment (including any sensitive habitats).

Sub-component 3.2: Beach front restoration: This sub-component was to finance enhancement of urban public spaces, including parks, and upgrading the beach front. This was to include creation of pedestrian walkways, street furniture, street lighting, public toilets, parking arrangements and landscaping along the beach front. The component was also to support rehabilitation of key damaged urban infrastructure including drainage and sewage treatment plants, selected historic buildings and landmarks, and coastal city roads.

**Component 4: Restoration of environmental services and facilities and livelihood support (appraisal estimate US\$20.0 million, actual US\$7.0 million).** This component was to finance two sub-components:

Sub-component 4.1: Restoration of environmental services and facilities: This sub-component was to finance the restoration of damaged environmental services and facilities including: a) the Indira Gandhi Zoological Park and b) the Eco Tourism Park at Kambalakonda Wildlife Sanctuary.

Sub-component 4.2: Livelihoods support: This sub-component was to support livelihood restoration for coastal families, including vulnerable, poor and women headed households, by reviving/improving mangroves in critical patches and support nurseries that would supply saplings for farm forestry and for creation of shelter belts/wind breaks.

**Component 5: Capacity building and technical support for disaster risk management (appraisal estimate US\$35.0 million, actual US\$16.4 million).** This component was to finance two sub-components:

Sub-component 5.1: Capacity augmentation for disaster management: This sub-component was to finance the following activities: i) strengthening the state's disaster response systems and mechanisms as well as the capacity of the Andhra Pradesh State Disaster Management Authority (APSDMA) in performing its core functions by setting up the State Advisory Committee, State Resource Centre for Disaster Management; ii) curriculum development and updating on disaster risk reduction for schools and governmental training institutions; and iii) establishing a Community-Based Disaster Risk Management (CBDRM) program to entail periodic mock drills, awareness programs, etc. to help communities better utilize risk mitigation infrastructure as well as respond better to any disaster event.

Sub-component 5.2: Technical support for risk reduction and response preparedness: This sub-component was to finance the following activities: i) preparing a vulnerability analysis of the cities and model various risks for effective mitigation planning and disaster response preparedness in consultation with community representatives and by applying local knowledge; ii) carrying out an in-depth assessment of the government of Andhra Pradesh (GoAP)'s Apathbandhu Insurance scheme (Accident Insurance Scheme for Below Poverty Line families), agriculture risk insurance, social safety nets and other such risk transfer mechanisms and develop recommendations for establishing an integrated program for risk transfer with emphasis on vulnerable populations; and iii) updating the design guidelines for infrastructure in several key departments by evolving better design standards that factor in the expected peak wind speeds and rainfalls, including material specifications for the infrastructure in coastal region.



**Component 6: Project implementation support (appraisal estimate US\$26.0 million, actual US\$13.5 million).** This component was to finance establishing and operating the Project Management Unit (PMU) and the Project Implementation Units (PIUs).

**Component 7: Contingency emergency response (zero million):** This component was to draw resources from the unallocated expenditure category and/or allow the government to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component was also to be used to channel additional funds becoming available as a result of an emergency.

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

**Project Cost:** The project was estimated to cost US\$370.0 million. Actual cost was US\$207.9 million.

**Financing:** The project was to be financed by a Bank credit in the amount of US\$250.0 million of which US\$141.4 million disbursed.

**Borrower Contribution:** The Borrower was to contribute US\$120.0 million of which US\$66.5 million materialized.

**Dates:** The project was restructured six times (all level two):

- On October 18, 2019, the project was restructured to: i) cancel US\$21.83 million of the Bank financing; ii) drop the activity to repair of multi-purpose cyclone shelters (sub-component 2.1), due to delays in conducting the vulnerability assessment of cyclone shelters; iii) drop the activity of shore protection works (sub-component 3.1) due to delays in paying the consulting firm who developed the preliminary report on the conceptual solutions for the shore protection; iv) drop the activity on DRM in school curriculum (sub-component 5.1) since the activity had been financed by Save the Children; and v) cancel US\$5.32 million in administrative costs due to initial cost sharing as a result of the State Project Implementation Unit (SPIU) for NCRMP acting as the Project Management Unit (PMU) for the project.
- On December 2, 2019, the project was restructured to: i) cancel US\$26.79 million of the Bank financing due to implementation delays; ii) cancel restoration of 120 kms of rural roads and improvements to 31 kms (sub-component 2.1 and 2.2); iii) cancel funds allocated to the restoration and redevelopment works for Thenneti Park beach and Bheemli, Visakhapatnam (sub-component 3.2); iv) cancel Redevelopment of Zoo and Kambalakonda Eco Park in Visakhapatnam (sub-component 4.1); v) surrender cost savings of around US\$1 million from the livelihoods sub-component (sub-component 4.2); and vi) surrender cost savings of around US\$7 million in administrative costs.
- On September 29, 2020, the project was restructured to i) cancel US\$28.88 millions of uncommitted financing; ii) extend the closing date by six months to March 31, 2021 to allow for the implementation of activities delayed due to the COVID-19 pandemic; and iii) adopt the Results Framework to reflect the revised scope as reduced across the last two restructurings and this restructuring.
- On March 30, 2021, the project was restructured to extend the closing date by six months from March 31, 2021, to September 31, 2021, to allow for the implementation of activities which were delayed due to COVID-19 related lockdown and delays in payments of contractors and service providers.



- On September 30, 2021, the project was restructured to extend the closing date by six months from September 31, 2021, to March 31, 2022, to allow for the implementation of activities which were delayed due to COVID-19 related lockdown and slow progress due to nonpayment of pending bills to contractors and service providers.
- On March 28, 2022, the project was restructured to cancel US\$15 million due to the government's commitment to use its own financing to complete remaining works beyond the project's closing date.

### 3. Relevance of Objectives

#### Rationale

According to the PAD (p. 1) India was highly vulnerable to a variety of natural hazards, especially earthquakes, floods, droughts, cyclones, and landslides. About 60 percent of India's land mass was vulnerable to earthquakes, 12 percent to floods and 15 percent to landslides. 5,700 km of India's 7,516 km of coastline was prone to cyclones of various degrees of intensity. About 40 percent of the total population lived within 100 km of the coastline potentially being affected.

Andhra Pradesh, on the eastern coast of the country, faced high vulnerability to disasters and experienced repeated cyclones, floods, and occasional droughts. For example, in October 2014, Cyclone Hudhud affected 9.2 million people, 300 villages experiencing heavy damage, resulting in an estimated cost of reconstruction of US\$2.16 billion, with the power infrastructure, road sector, environmental facilities, and livelihoods requiring most support. Coastal erosion was another problem the state faced, affecting about 440 kilometers of its 974-kilometer coast.

After several large disasters in the early 2000s, the government of India enacted the disaster management act in 2005. The act mandated the establishment of a national disaster management authority, state disaster management authorities, and district disaster management authorities.

The objective of the project supported the government's efforts to strengthen effective disaster management. Also, the objective of the project was in line with the government's 2015 Sendai Framework for Disaster Risk Reduction (2015-2030), the National Disaster Management Plan (2016), and 2022 Strategy for New India @75, which is aiming to provide access to affordable, reliable, sustainable, and modern energy for all and increasing the coverage and quality of roads. The objective of the project was also in line with the Bank's most recent Country Partnership Framework (FY18-22) and objective 1.5 "improve disaster risk management", objective 1.2 "improve livability and sustainability of cities", and objective 2.3 "improve connectivity and logistics".

The project's objectives are adequately addressing the development constraint India was facing in this area.

The project experienced significant downscaling which was a result of design and implementation constraints rather than decreased relevance. Therefore, the relevance of the objective is rated **High**.



## Rating

High

### 4. Achievement of Objectives (Efficacy)

#### OBJECTIVE 1

##### Objective

To restore, improve, and enhance resilience of public services in targeted communities.

##### Rationale

**Theory of Change:** The project's theory of change envisioned that project inputs/activities such as laying the power distribution system of Visakhapatnam City underground, restoring, reconstructing, and widening 800 kilometers of damaged rural roads and 250 kilometers of major district roads (MDR), as well as repairing damaged cyclone shelters with more user-friendly features for vulnerable populations were to result in outputs such as the power distribution lines being laid underground, rural roads, cyclone shelters and MDR being rehabilitated. These outputs were to result in the outcome of restored, improved and enhanced resilience of public services in targeted communities. The project's theory of change and its logical chain was clear and convincing. The project's theory of change assumed that laying the power distribution system underground, restoring, reconstructing rural roads, MDRs and cyclone shelters would make them more resilient to future cyclones. However, the ICR did not state how the project went about this.

**The project made the following assumptions:** i) setting up of qualified Project Implementation Units (PIUs) and commissioning of consultants would not face any delays; ii) the government of Andhra Pradesh would allocate sufficient human and financial resources to regularly maintain the physical investments made under the project; iii) the government agencies and stakeholders will utilize the analytical work to design and execute future projects; iv) government of Andhra Pradesh would stay committed to pursuing the resilience agenda.

##### Outputs:

- 882.94 kilometers of distribution lines were constructed or rehabilitated, exceeding the original target of 700 kilometers.
- 563,19 kilometers of rural roads were rehabilitated, **not achieving** the original target of 800 kilometers.
- 250,76 kilometers of non-rural roads were rehabilitated, achieving the original target of 250 kilometers.
- 80,529 electric consumer accounts were covered by the underground cable network, **not achieving** the original target of 300,000 accounts. Fewer consumer accounts were reached than originally planned despite the increase in the scale of the UG power works due to an overestimation of the number of consumer accounts at appraisal.
- Zero shelters were rehabilitated, **not achieving** the target of 25 shelters. This indicator was dropped during the restructuring.



### Outcomes:

- 505,000 people (of which 255,400 were female) had access to restored and improve rural roads, **not achieving** original target of 1.75 million people (of which 870.000 female). However, 2,509,153 people had access to restored and improved rural roads and MDRs. The original target also included access to restored and improved shelters. Even though the activity was dropped, the PDO indicator was not revised accordingly and still included shelters.

There were no other indicators in the Results Framework related to this sub-objective apart from the number of beneficiaries. Number of beneficiaries is a mandatory indicator for the World Bank's corporate scorecard, but it is not sufficient on its own to measure the achievement of the expected outcomes under this objective.

While it is plausible that the two achieved outputs may contribute to restoring, improving, and enhancing resilience of public services, there are no relevant indicators to measure the achievement of this objective beyond number of beneficiaries. Also, while the project measured restoration and improvement of public services, it did not define, or measure resilience. This objective is rated **Modest** due to lack of evidence of achievement at outcome level.

### Rating

Modest

## OBJECTIVE 1 REVISION 1

### Revised Objective

To restore, improve, and enhance resilience of public services in targeted communities.

### Revised Rationale

The objective, or the project's theory of change for this objective were not revised during the September 2020 restructuring but the targets of several indicators were revised.

### Outputs:

- 80,529 electric consumer accounts were covered by the underground cable network, achieving the revised target of 80,000 accounts.
- 882.94 kilometers of distribution lines were constructed or rehabilitated, **not achieving** the revised target of 1,345 kilometers.
- 563,19 kilometers of rural roads were rehabilitated, almost achieving the target of 568 kilometers.

### Outcomes:

- 505,000 people (of which 255,400 were female) had access to restored and improve rural roads, **not achieving** the revised target of 2.5 million (of which 1.3 million female). However, 2,509,153 people had access to restored and improved rural roads and MDRs.



There were no other indicators at outcome level for this objective in the Results Framework. While number of beneficiaries is a mandatory indicator for the World Bank's corporate scorecard, it is not sufficient on its own to measure the achievement of the expected outcomes under this objective.

Since the project was able to achieve the target of two out of three output indicators, it is plausible that the project may contribute to restoring, improving, and enhancing resilience of public services, this was however not measured or reported on.

### **Revised Rating** Modest

## **OBJECTIVE 2**

### **Objective**

To restore, improve, and enhance resilience of environmental facilities in targeted communities.

### **Rationale**

**Theory of Change:** The project's theory of change envisioned that project inputs/activities in Visakhapatnam City such as investments in various infrastructure construction and restoration activities would lead to outputs such as restored and reconstructed urban public spaces in line with international standards. These outputs were expected to lead to outcomes such as a protected shore and restored, improved and enhanced resilience of environmental facilities. The Theory of Change is logical and convincing and has no significant underlying assumptions.

### **Outputs:**

- The target of three kilometers of beachfront being restored was **not achieved**.
- The target of two environmental services and facilities being restored and improved was **not achieved**.

### **Outcomes:**

- The target of 1,730,000 people having access to restored and improved beachfront was **not achieved**.
- The target of 1,730,000 people with access to restored and improved environmental services/facilities was **not achieved**.

None of the output and outcome targets was achieved, therefore, the achievement of this objective is rated **Negligible**.

### **Rating** Negligible





## **OBJECTIVE 2 REVISION 1**

### **Revised Objective**

To restore, improve, and enhance resilience of environmental facilities in targeted communities.

### **Revised Rationale**

The objective and the theory of change were not modified during the September 2020 restructuring. However, the PDO indicator on number of people with access to restored and improved beachfront was dropped and a new PDO indicator on preparatory work for beachfront improvement and restoration was introduced. Also, three intermediate outcome indicators were dropped, and three new intermediate outcome indicators were introduced.

The following indicators and targets were added during the restructuring.

### **Outputs:**

- Preparatory work for beachfront improvement and restoration was completed, achieving the revised target.
- Procurement and design for Ramakrishna Beach restoration was completed, achieving the revised target.
- Designs for Eco Park and Zoo were completed, achieving the revised target.

### **Outcomes:**

The revised Results Framework did not include indicators at the outcome level to demonstrate the achievement of restoring, improving, and enhancing resilience of environmental facilities. The project did not improve the resilience of environmental facilities and services as originally envisioned but supported some related preparatory work as introduced in the restructuring. As a result, achievement of this objective is rated **Modest**.

### **Revised Rating**

Modest

## **OBJECTIVE 3**

### **Objective**

To restore, improve, and enhance resilience of livelihoods in targeted communities.

### **Rationale**

**Theory of Change:** The project's theory of change envisioned that project inputs/activities such as rehabilitating 60 damaged nurseries and developing four modern nurseries, restoring/creating shelterbelts along the coast and regenerating critical patches of mangroves along the coast (all activities implemented in the four affected districts) were to result in outputs such as rehabilitated nurseries and modern nurseries being developed. The expected outcomes from these outputs were stated to be restored, improved, and enhanced resilience of livelihoods in targeted communities, which is a bit of a logical leap in the theory of



change. While restored and newly constructed nurseries may be one element contributing to restored, improved, and enhanced resilience, in itself it is not sufficient to achieve the expected outcomes.

**Outputs:**

- The original target of 60 nurseries being established/restored was **not achieved**.

**Outcomes:**

The original Results Framework did not include any outcome indicator to measure the achievement of this objective.

Due to the lack of output and outcome indicators and the lack of achievement of the target of the only output indicator, achievement is **Negligible**.

**Rating**

Negligible

**OBJECTIVE 3 REVISION 1**

**Revised Objective**

To restore, improve, and enhance resilience of livelihoods in targeted communities.

**Revised Rationale**

The objective, or the project's theory of change for this objective were not revised during the September 2020 restructuring but several indicator and targets were modified.

**Outputs:**

All these indicators were added during the September 2020 restructuring.

- A total of 57.33 million commercially viable saplings with an emphasis on native livelihood generating species were raised in 167 existing nursery sites and distributed to farmers and villagers, covering an estimated 39,300 hectares. The revised target of 57.73 million was almost achieved.
- 135 hectares of mangroves were restored, achieving the revised target of 135 hectares.
- 898 hectares of shelterbelt plantation were established, exceeding the revised target of 811 hectares.
- 316 kilometers of roadside Avenue plantation of native cyclone resistant species were established, almost achieving the revised target of 320 kilometers.

**Outcomes:**

- 925,585 workdays of the targeted group of beneficiaries were generated to provide improved livelihood support, exceeding the target of 638,000. 487,079 beneficiaries were female, exceeding the



target of 335,700. These workdays corresponded to a total wage of US\$3,469,323 paid by the project for work in planting and maintaining shelterbelts, mangroves, and nurseries.

The provision of temporary work is not an adequate and sufficient indicator to measure restored, improved, and enhanced resilience of livelihoods. Also, resilience is not being defined and measured and no other outcomes are being reported. However, given the outputs achieved, it is plausible that they may contribute to the achievement of restored, improved, and enhanced resilience of livelihoods modestly.

## **Revised Rating**

Modest

## **OBJECTIVE 4**

### **Objective**

To enhance capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.

### **Rationale**

**Theory of Change:** The project's theory of change envisioned that project input/activities such as setting up the State Advisory Committee and State Resource Center for Disaster Management, equipping key response agencies with better search and rescue equipment as well as establishing a Community Based Disaster Risk Management (CBDRM), conduct a risk assessment and vulnerability analysis were to result in outputs such as the State Advisory Committee and State Resource Center being set up, key response agencies being equipped and staff being trained, curriculum being developed, and the CBDRM program being established. These outputs were to result in the outcome of enhanced capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.

The theory of change makes several assumptions such as that the purchase of equipment will result in capacity built that is able to respond promptly and effectively to an eligible crisis or emergency. However, this is not necessarily the case and staff need to also be trained in the use and maintenance of the equipment. Furthermore, there is a need to ensure that there is continuous funding after project closure to maintain the capacity built and allow maintenance to take place. Also, while preparing detailed vulnerability analysis of the cities and modeling various risks for effective disaster risk mitigation planning, response and preparedness can be useful activities, the project did not include any activities that would transform these analyses into actions.

### **Outputs:**

- Communication and search and rescue equipment were provided to the state disaster response force, achieving the original target.
- Guidelines for buildings and public infrastructure were updated, achieving the original target.
- A disaster risk assessment was conducted, achieving the original target. The risk assessment analyzed the impacts of different hazards on the state's-built environment and provided high-resolution risk information at the Mandal and village level for hydro-meteorological, geophysical, and industrial hazards for the state. As part of the assessment an integrated operational forecasting



system (IOFS) was set up to provide real time forecast of cyclone, flood, and other extreme weather events to users.

- An urban disaster risk vulnerability analysis was completed, achieving the original target of doing so.

### **Outcomes:**

In total, the project benefitted 37.52 million people of which 18.39 were female, surpassing the target of 2.50 million beneficiaries (with 1.22 million being female).

While number of beneficiaries is a mandatory indicator for the WB corporate scorecard, it is not sufficient on its own to measure the achievement of the expected outcomes under this objective.

Since the project was able to achieve the targets of all three output indicators, it is plausible that it may contribute to enhancing the capacity of state entities to respond promptly and effectively to an eligible crisis or emergency Substantially.

### **Rating**

Substantial

## **OBJECTIVE 4 REVISION 1**

### **Revised Objective**

To enhance capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.

### **Revised Rationale**

The objective, or the project's theory of change for this objective were not revised during the September 2020 restructuring but several indicator and targets were modified. The original PDO indicator was revised and repositioned as an intermediate outcome indicator, one new PDO indicator and two intermediate outcome indicators were added.

### **Outputs:**

- Integrated emergency management solutions were established and are operational, achieving the target.
- An integrated public alert and warning system (AP-ALERT) (a state-wide mass alerting system) was set up with the capability to deliver cell broadcast-based geo-targeted alerts to the public in real time, achieving the target.
- Two systems in place to enhance State's capacity to manage disasters, achieving the target of two systems. These systems included the Andhra Pradesh Critical Operations, Strategic Management and Incident Management (APCOSMIC) to aggregate all preparedness and response information from the State Emergency Operation Center (SEOC), multiple district emergency operation centers, and Mandal (sub-district) emergency operation centers. APCOSMIC disseminates automated meteorological warnings to all entities concerned. The geo-spatial laboratory was developed to process geo-political data and provide real-time scientific support to emergency service agencies. The



State Disaster Management Authority was equipped with geo-spatial laboratory for Geographic Information System (GIS) mapping analysis of emergency situations, achieving the target.

**Outcomes:**

The project did not include any indicators to assess the achievements on the outcome level. However, the project was able to achieve all three output targets. It is plausible that the project would contribute to enhance capacity of state entities to respond promptly and effectively to an eligible crisis or emergency Substantially.

**Revised Rating**

Substantial

**OVERALL EFFICACY**

**Rationale**

Achievement of the first objective (to restore, improve and enhance resilience of public services in targeted communities) was Modest.

Achievement of the second objective (to restore, improve, and enhance resilience of environmental facilities in targeted communities) was Negligible.

Achievement of the third objective (restore, improve, and enhance resilience of livelihoods in targeted communities) was Negligible.

Achievement of the fourth objective (enhance capacity of the state entities to respond promptly and effectively to an eligible crisis or emergency) was Substantial.

As a result, the overall efficacy was **Modest**.

**Overall Efficacy Rating**

Modest

**Primary Reason**

Low achievement

**OVERALL EFFICACY REVISION 1**

**Overall Efficacy Revision 1 Rationale**

Achievement of the first objective (to restore, improve and enhance resilience of public services in targeted communities) was Modest.

Achievement of the second objective (to restore, improve, and enhance resilience of environmental facilities in targeted communities) was Modest.



Achievement of the third objective (restore, improve, and enhance resilience of livelihoods in targeted communities) was Modest.

Achievement of the fourth objective (enhance capacity of the state entities to respond promptly and effectively to an eligible crisis or emergency) was Substantial.

As a result, the overall efficacy was **Modest**.

**Overall Efficacy Revision 1 Rating**  
Modest

**Primary Reason**  
Low achievement

## 5. Efficiency

**Economic efficiency.** Both, the PAD and the ICR conducted an Economic analysis. The PAD (p. 59) provided an analysis for the following sub-components: i) resilient electrical network consisting of 700 kilometers of underground cable; ii) restoration of 800 kilometers of rural roads; iii) restoration of 250 kilometers of major district roads; and iv) restoration of 25 cyclone shelters.

The PAD defined the following benefits:

- i. Resilient electrical network: Reduction of infrastructure and social costs imposed by thunderstorms, storm surges, and flooding.
- i. Restoration of rural and major district roads: Commercial, education, and health benefits. An economic analysis for the project was not feasible due to time constraint. The PAD relied on the analysis of similar rural roads projects undertaken under PMGSY Second Rural Roads Project.
- ii. Restoration of cyclone shelters: Number of human lives saved by shelters and other ancillary benefits from non-emergency use of the shelters rest of the year.

The PAD (p. 61)'s economic analysis derived the following results:

- Resilient electrical network: The annual expected restoration cost of electricity pole alone in cyclone prone areas was US\$1.69. With life of 60 years and a discount rate of 10%, this amounted to a present value of about US\$16.85.
- Restoration of rural roads: Internal Rate of Return (IRR) of 12.5% (cost share 45%)
- Restoration of cyclone shelters: IRR of 15.0% (cost share 12%)
- Restoration of major district roads (MDR): IRR of 29.6% (45%)

The overall IRR for these three sub-components was 20.1%

The PAD's analysis indicated that the project was a worthwhile investment.



The ICR (p. 23) conducted an economic analysis on the two main components (component 1 “resilient electrical network” and component 2 “restoration of connectivity and shelter infrastructure”), which accounted for 81% of the total project costs. The analyses applied a discount rate of 5% and 10%.

Under component 1 the IRR was calculated at -4.5 % with a Net Present Value (NPV) in the range of US\$-47.4 and US\$-47.4 million. The Benefit-Cost-Ratio (BCR) was calculated to be between 0.3 and 0.4. The analysis for component 1 indicated that this component was not a worthwhile investment.

Under component 2 the IRR for the restoration of rural roads was calculated at 16.6 %, with the NPV ranging between US\$11.8 million and US\$34.7 million. The BCR was estimated to be between 1.4 and 1.9. For the rehabilitation of MDR, the IRR was calculated at 88.2% with the NPV ranging from US\$130.2 million and US\$244.7 million. The BCR ranged between 5.3 and 7.4.

The ICR aggregated the economic indicators using the share of final costs of each component as weights to obtain the overall measures of the project’s economic efficiency. The IRR of the project was estimated at 23.8 percent with a NPV ranging from US\$94.6 million and US\$232 million. The BCR ranged between 1.8 and 2.5. Due to cost savings in the rehabilitation of MDRs, the outcomes of the economic analysis were more favorable in the economic analysis of the ICR.

These analyses indicate that the project was a worthwhile investment.

**Operational efficiency:**

The project’s implementation period was extended three times to a total of 18 months and financing in the amount of US\$92.5 million was cancelled (37% of the total Bank financing). The project experienced implementation delays as a result of flow of funds bottlenecks, weak capacity at implementing agencies, and COVID-19 related lockdowns. While all this indicates an inefficient use of resources, the project’s management costs at closing were much lower than estimated at appraisal (actual 6.5% vs estimated 10%) indicating operational efficiency.

Despite the significant administrative weaknesses, the economic analysis showed high BCRs. As a result, the rating is **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	✓	20.10	90.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	23.80	0 <input type="checkbox"/> Not Applicable



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

## 6. Outcome

<i>Rating Dimension</i>	<i>Original Targets</i>	<i>Revised Targets</i>
<b>Relevance of the Objective</b>	High	
<b>Efficacy</b>		
Objective 1	Modest	Modest
Objective 2	Negligible	Modest
Objective 3	Negligible	Modest
Objective 4	Substantial	Substantial
<b>Overall Efficacy</b>	<b>Modest</b>	<b>Modest</b>
<b>Efficiency</b>	Substantial	
<b>Outcome Rating</b>	Moderately Unsatisfactory	Moderately Unsatisfactory
<b>Outcome Rating Value</b>	3	3
<b>Amount Disbursed (US\$ million)</b>	97.58m	43,79m
<b>Disbursement (%)</b>	69.03%	30.97%
<b>Weight Value</b>	2.07	0.93
<b>Total weights</b>	3	
<b>Overall Outcome Rating</b>	Moderately Unsatisfactory	

- a. **Outcome Rating**  
Moderately Unsatisfactory

## 7. Risk to Development Outcome

The risks to development outcomes can be broadly classified into the following categories:

**Government commitment/financing:** According to the ICR (p. 34) there is no follow-on operation by the Bank. The infrastructure built and rehabilitated under the project does not have an assigned budget for operation & maintenance, which puts the sustainability of these investments at risk.

**Technical/financial:** The project introduced physical infrastructure and technological solutions for the state's disaster response systems and mechanisms. However, it is not clear if there is sufficient budget and staff to continuously utilize and maintain these assets. Finally, the project developed several disaster risk management systems which are currently functioning. However, it is not clear if there is a budget in case the hardware and software need updating, and the peripherals get put off.

## 8. Assessment of Bank Performance





### **a. Quality-at-Entry**

The project was prepared within four months given its emergency nature. The project design was informed by the Joint Rapid Needs Assessment, which the Bank and the Asian Development Bank (ADB) conducted together in December 2014.

According to the ICR (p. 33) the project was built on lessons learned from the National Cyclone Risk Mitigation Project and other operations across the country and around the world. These lessons learned emphasized the importance of strengthening state capacities for DRM as a critical element for ensuring the sustainability of project interventions, the effectiveness of introducing complementary investments in building preparedness on top of the urgently needed disaster reconstruction work to maximize development outcomes in the long-term as well as the importance of enhancing communities' capacities for disaster response and preparedness in an effective DRM mechanism.

According to the PAD (p. 11) the Bank team identified relevant risks including different levels of fiduciary and safeguard capacity and limited experience with externally funded project among the implementing departments. Mitigation measures included providing additional resources and training to the implementing agencies' staff as well as allocating external resources specifically to manage and address: i) social and environmental safeguard issues; ii) ensure community participation in design and implementation; iii) capacity augmentation towards planning, designing and managing construction; and iv) procurement and financial management. However, the mitigation measures were insufficient resulting in implementation delays. Also, the Bank team did not identify the risk around the flow of funds related to delayed payments to contractors, also resulting in delays and cancelation of several activities. Furthermore, the Bank team did not identify the risk of the national launch of the goods and services tax (GST). The roll out of the GST impacted high-value contracts (about one third of the 28 procurement packages for MDR works and for UG cabling works) and resulted in disputes between the contractors and the government of Andhra Pradesh with regard to computation of GST amounts. In addition, according to the ICR (p. 33) the project design paid insufficient attention to minimize identified gender gaps. Finally, the project scope was overly ambitious resulting in the cancellation of several activities (in the total amount of US\$92.5 million).

The project's Results Framework had several significant shortcomings (see section 9a for more details).

#### **Quality-at-Entry Rating**

Moderately Unsatisfactory

### **b. Quality of supervision**

According to the ICR (p. 33) the Bank team conducted supervision missions in-person, virtual and hybrid on a bi-annual basis. The team consisted of local and international staff with appropriate expertise. The Bank team produced Aide Memoirs and 14 Implementation Status Reports (ISRs) highlighting implementation bottlenecks for management's attention. The ICR (p. 33) stated the reporting had quality issues and reported inconsistencies in regard to ratings, progress, and results.

The Bank team provided procurement and financial management trainings in addition to operational and technical support to government counterparts. Also, the Bank team restructured the project six times to



reduce the project scope (to drop activities that could not be implemented within the project's timeframe). According to the ICR (p. 34) the Bank did not provide sufficient technical support to the counterpart to ensure timely submission of an official request for appropriate restructuring support. Despite the numerous restructurings, implementation issues persisted. The Bank team modified the Results Framework, but the modifications did not enhance the project's measurability of results and outcomes. Also, the Results Framework was not used to assess implementation progress until five years into project implementation (given a total implementation period of seven years). As a result, M&E utilization to identify implementation bottlenecks and inform decision making was limited.

### **Quality of Supervision Rating**

Moderately Unsatisfactory

### **Overall Bank Performance Rating**

Moderately Unsatisfactory

## **9. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The objective of the project was complex and included four different outcomes. The selected PDO indicators did not encompass all outcomes of the PDO statement such as for outcome 3 "to restore, improve, and enhance resilience of environmental facilities". Also, the PAD did not define the terms "restore, improve, and enhance resilience" making an assessment of the achievement challenging. The project's theory of change and how key activities and outputs were to lead to the outcomes were not soundly reflected in the Results Framework. For example, the Results Framework lacked a PDO indicator to measure "enhanced resilience". Furthermore, the PDO indicators to measure outcome 1 "to restore, improve, and enhance resilience of public services" only measured the work on rural roads but not on major district roads. The original PDO indicator measuring outcome 4 "to enhance capacity of state entities to respond promptly and effectively to an eligible crisis or emergency" measured an output ("urban disaster risk analysis completed") instead of an outcome. Finally, the beneficiaries of the original PDO indicator ("number of people with access to restored and improved environmental services/facilities") for outcome 2 were defined as the population living in Visakhapatnam or vicinity and did not take into account the substantial number of visitors/tourists from other areas even though it was mentioned in the PAD that this was the case.

The PMU was to be responsible for the project's M&E activities.

### **b. M&E Implementation**

In September 2020 the Results Framework was revised as follows: i) two PDO indicators ("number of beneficiaries with improved Livelihood support (of which female)" and "number of systems in place to enhance State's capacity to manage disasters enhanced") as well as six intermediate outcome indicators were added; ii) the targets of PDO and intermediate outcome indicators ("number of electric consumer accounts connected with the underground cable network" and "roads rehabilitated") were decreased; iii)



targets of PDO indicator “number of people with access to restored and improved Rural roads and shelters (of which female)” was increased; and iv) two PDO indicators and four intermediate outcome indicators were revised.

However, despite these substantial modifications, the Results Framework still had several shortcomings: i) no indicator to measure “enhanced resilience” was added; ii) the PDO indicator measuring the number of direct project beneficiaries was not more accurately defined; iii) beneficiaries of rehabilitated major district roads (MDRs) were not included in the PDO indicator measuring outcome 1; iv) no modifications to PDO indicators were made to reflect the cancellation of work on shelters; v) the PDO indicator measuring outcome 2 “environmental facilities” was replaced by an indicator measuring an output rather than an outcome “Preparatory work for beachfront improvement and restoration completed”. Also, the Results Framework was only revised on the project’s original closing date, five years into implementation.

According to the ICR (p. 31) the PMU only developed a Management Information System (MIS) two years into implementation, which was not used by all Project Implementation Units (PIU) as planned, resulting in information asymmetry. After the revision of the Results Framework the PMU started to use the Results Framework to assess implementation progress. Progress reports were updated every two weeks. The project experienced delays in the submission of the mid-term completion reports and most reports had quality issues.

### **c. M&E Utilization**

According to the ICR (p. 31) the project’s progress reports were used to inform the Bank’s decision making. However, since the Results Framework was not used to assess implementation progress until five years into project implementation (given a total implementation period of seven years), M&E utilization was limited.

### **M&E Quality Rating**

Modest

## **10. Other Issues**

### **a. Safeguards**

The project was classified as category A and triggered the following safeguards: OP/BP 4.04 (Natural Habitats), OP/BP 4.36 (Forests), OP/BP 4.09 (Pest Management), OP/BP 4.10 (Indigenous People), OP/BP 4.11 (Physical Cultural Resources), and OP/BP 4.12 (Involuntary Resettlement). The project prepared an Environmental and Social Management Framework (ESMF) including a Resettlement Policy Framework (RPF), and an Indigenous People Management Framework (IPMF). Also, the project prepared Resettlement Action Plans (RAPs), Abbreviated Resettlement Action Plans (ARAPs), Environmental Management Plans (EMPs), and an Indigenous Peoples Management Framework (IPMF).

According to the ICR (p. 32) safeguard compliance was inadequate. In 2021, two workers died during UG cable laying works which were performed without appropriate Standard Operating Procedures (SOPs). A third-party safety audit found that certain SOPs were not being followed at the project sites and other SOPs



were not adequate. The Bank team also noted lack of coordinated supervision by the PIU, contractors, and third-party project management firm.

The project established a Grievance Redress Mechanism (GRM) at the villages, districts, and state level. Also, an online portal was developed to receive and address grievances. According to the ICR (p. 32) all grievances were addressed by project closure.

**b. Fiduciary Compliance**

**Procurement.** According to the ICR (p. 32) the project conducted a procurement capacity assessment for all implementing agencies using the Procurement Risk Assessment and Management. The project implemented different risk mitigation measures such as providing trainings on Bank procurement procedures, conducting regular supervision support and monitoring as well as using the e-procurement platform. The project benefitted from the PMU’s experience with the Bank’s procurement guidelines and procedures. Also, the procurement plans were updated and published in a timely manner. The ICR (p. 32) stated that the project experienced initial procurement related delays at the PIU level due to staffing issues.

**Financial Management.** According to the ICR (p. 32) the project complied with the Bank’s financial management guidelines and procedures. During project appraisal the Bank conducted a financial management capacity assessment of the PIUs, identifying lack of experience with Bank funded projects and multiplicity of implementing agencies as risks. The Bank provided financial management training to mitigate these risks. The project experienced several financial management related delays due to insufficient financial management staffing at the PMU resulting in delays in reporting requirements. Also, due to delays in the appointment of the project’s internal auditor (until April 2019) by the PMU, the project experienced delays in the submission of internal audits and Interim Unaudited Financial Reports and annual audits to the Bank. Furthermore, the project experienced delays in the release of funds from the GoAP’s finance department to the central payment system resulting in late payments of contractors.

**c. Unintended impacts (Positive or Negative)**

NA

**d. Other**

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**11. Ratings**

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Unsatisfactory	Moderately Unsatisfactory	



Bank Performance	Moderately Unsatisfactory	Moderately Unsatisfactory
Quality of M&E	Modest	Modest
Quality of ICR	---	Substantial

## 12. Lessons

The ICR (p. 34-35) provided several lessons learned, which were adapted by IEG:

- **If the project’s implementing unit is also the entity for emergency response, then the likelihood of insufficient capacity to implement the project while at the same time be able to respond to emergencies increases.** During the implementation of this project, the state faced cyclones and other emergencies resulting in lack of capacity for project implementation resulting in implementation delays and cancellation of activities.
- **Expanding the risk spectrum analysis during preparation allows to also develop mitigation measures for low risks.** In this project, several unexpected risks materialized such as the government of Andhra Pradesh having funds flow issues, the nation-wide launch of the goods and services tax (GST), and the COVID-19 pandemic, all resulting in major implementation bottlenecks.
- **For projects with a large number of contracts, comprehensive and strategic procurement planning allows for timely supply of goods and services that are essential for project implementation.** In this project, the target for rural roads had to be decreased due to higher than initially expected construction costs. Also, the project faced the challenge of attracting contractors for small and geographically dispersed works in remote areas.

## 13. Assessment Recommended?

No

## 14. Comments on Quality of ICR

The ICR provided a good overview of project preparation and implementation, was internally consistent, adequately critical, and sufficiently outcome driven. The ICR provided an adequate Economic analysis and included lessons learned that can be useful for future implementation of similar projects in this area. Also, the ICR provided sufficient information in critical areas such as M&E, procurement, and financial management. Taking everything together, the quality of the ICR was **Substantial**.



**a. Quality of ICR Rating**  
Substantial