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Maharashtra Sustainable Coastal Protection And Management

**Maharashtra Maritime Board
Home Department
Government of Maharashtra**



Maharashtra coastline comprises seven coastal districts, such as Sindhudurg, Ratnagiri, Raigad, Mumbai, suburban Mumbai, Thane, and Palghar, and supports a large population and economic activities.

- Climate change impacts are resulting in **increased risk of coastal erosion** and damage to coastal infrastructure and economic activities.
- About **24% of the 740 km coast is eroding**.

Sustainable Coastal Protection and Management Investment Program (2010-2020)

- Loan support from the Asian Development Bank
- Executing agency and Implementing agency Maharashtra Maritime Board

Key Objectives

- I. Sustainable management and use of the coastal environment;
- II. Address the immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions;
- III. Enhance the capacities of institutions for effective shoreline management and development.



NATURE-BASED SOLUTION

- ❑ Provides a sustainable, long-term, environmentally friendly solution to mitigate erosion and enhance the resilience of the coastal site for future generations.
- ❑ Implementation of soft engineering sand dunes is an effective, economical and Nature-Based Solution to combat erosion.
- ❑ Plantation of Native vegetation on the dunes and its maintenance will promote biodiversity.

Before



NATURE BASED SOLUTION- BHATYE, DIST-RATNAGIRI(TRANCHE-1)

- ❑ Dune Construction at Bhatye, Ratnagiri, was completed in May 2019 under the Sustainable Coastal Protection and Management Investment Program
- ❑ Implementation of soft engineering sand dunes is an effective, economical and Nature-Based Solution to combat erosion.
- ❑ The Nature-Based Solution in the form of Beach Nourishment survived despite several cyclones since its construction.

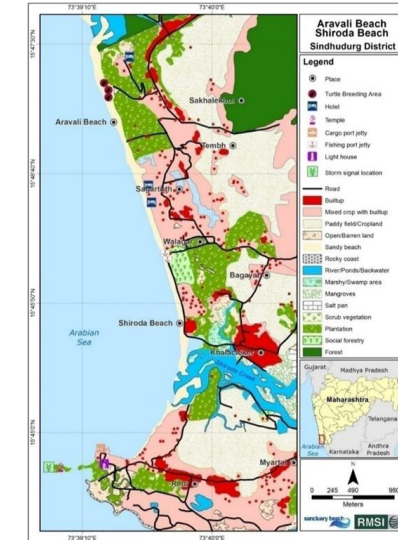
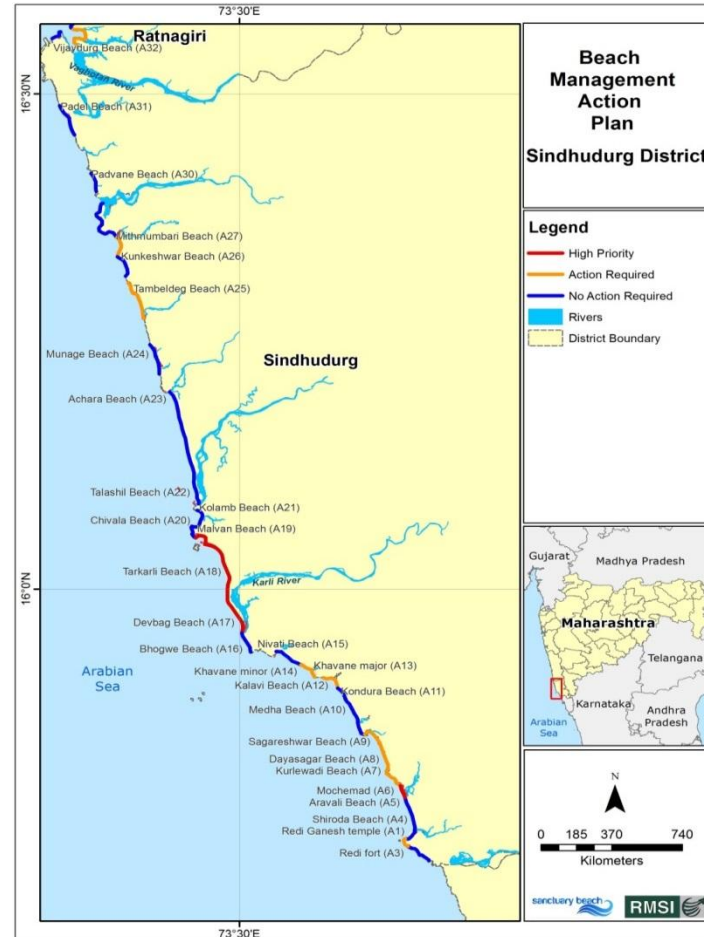
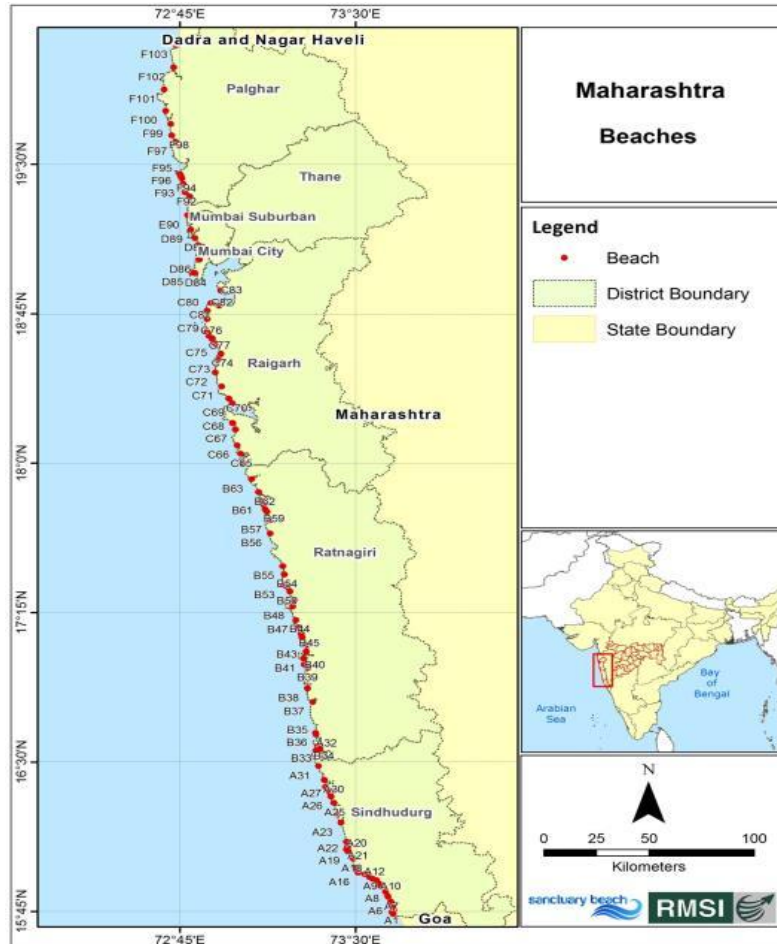
After



Every beach in Maharashtra was visited and documented, rather than considering larger regions only

Developed Action Plans for Individual Beaches

Presented to each of the Coastal District Collectors along with GPs and Community.



NIRMAL SAGAR TAT ABHIYAAN (NSTA)

Community projects with unique activities



OBJECTIVES

- ☐ Protect, manage and sustain the shoreline
- ☐ Cleanliness of sea beaches by efficient garbage disposal
- ☐ Water sports activities
- ☐ Tourism Friendliness
- ☐ Eco-friendly energy like Solar, Bio-Gas, Wind etc.
- ☐ Beach Safety
- ☐ Skill development
- ☐ Conservation and Development of Mangroves



Maharashtra Sustainable Climate Resilient Coastal Protection Management Project

On-going ADB Loan Project

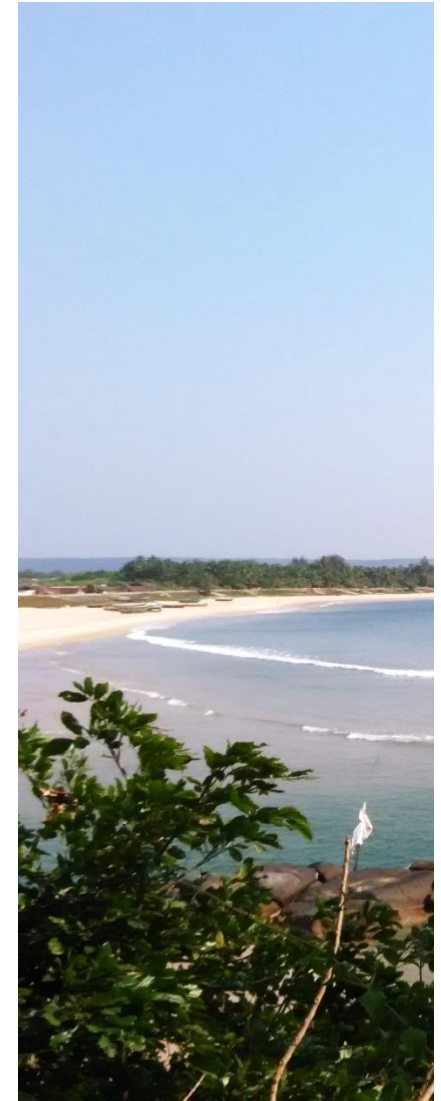
Output 1: Implementation of Climate-resilient coastal protection measures

- Addresses **coastal climate vulnerabilities, reducing coastal erosion** by introducing a range of integrated measures for priority sub-projects.
- Building the **climate resilience** of selected shorelines using **nature-based solutions** (NbS)

Output 2: Capacity for sustainable, climate-resilient and integrated shoreline protection

Enhance state capacity for sustainable integrated shoreline planning and management through:

- Establishing and operationalising a **Coastal Infrastructures Management Unit** (CIMU) into the core operation of MMB.
- Upgrading **Coastal Management Information System** (CMIS)
- Updating **Shore Line Management Plan** (SMP) for all five coastal districts and preparing a consolidated state-wide long-term coastal management and protection plan.
- Supporting **livelihood activities** and community participation in shoreline management with strong participation of women and disadvantaged groups.



Maharashtra Sustainable Climate Resilient Coastal Protection Management Project

OUTPUT - 1



1

Riverbank Protection along Karli River work at Devbag,
Dist. - Sindhudurg

2

Construction of Offshore Reef at Ganpatipule,
Dist. - Ratnagiri

3

Dune Nourishment work at Kashid, Dist. - Raigad

4

Nature-Based Solutions (NbS), - dunes, beach nourishment,
and plantations – to be implemented for around 20 km at
various locations.

RIVERBANK PROTECTION ALONG KARLI RIVER AT DEVBAG DIST-SINDHUDURG

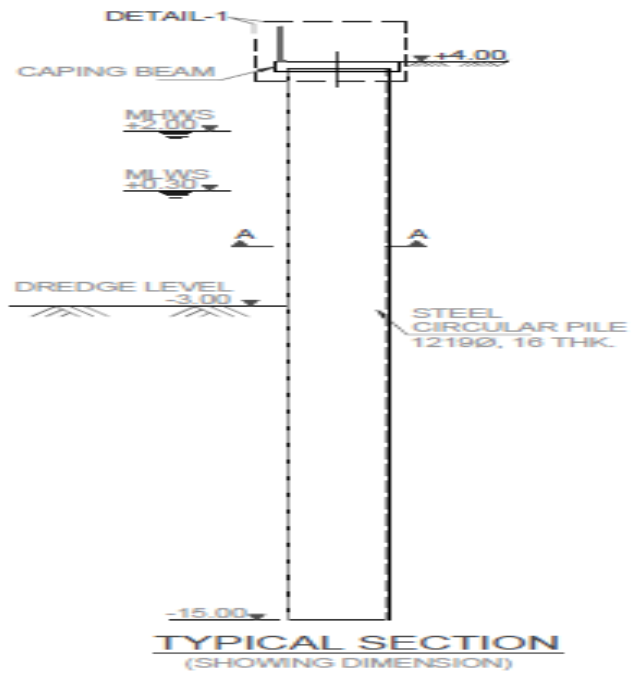
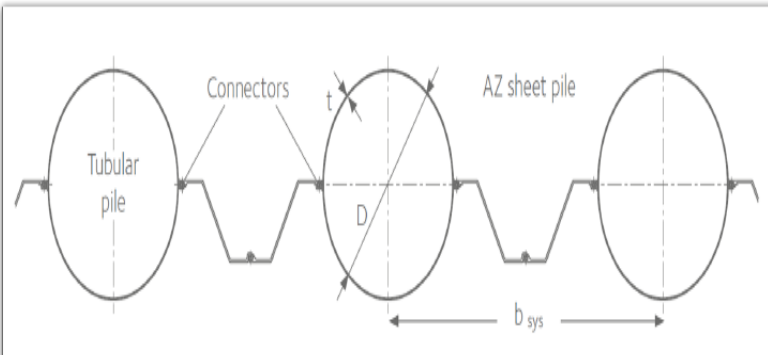
Components of the Project

- ☐ Protection of the riverbank using a composite cantilever sheet pile wall
- ☐ Restoration of the eroded riverbank with dredged sand from the Karli River Channel,

Benefits

- ☐ Protection and stabilisation of the riverbank
- ☐ Flood-reduction
- ☐ Beneficial use of dredged sand
- ☐ Enhanced navigational safety for vessels.





Elevation and Cross section



Representation Image of Combi wall (Tubular & AZ)

CONSTRUCTION OF OFFSHORE REEF AT GANPATIPULE, DIST-RATNAGIRI

Components of the Project

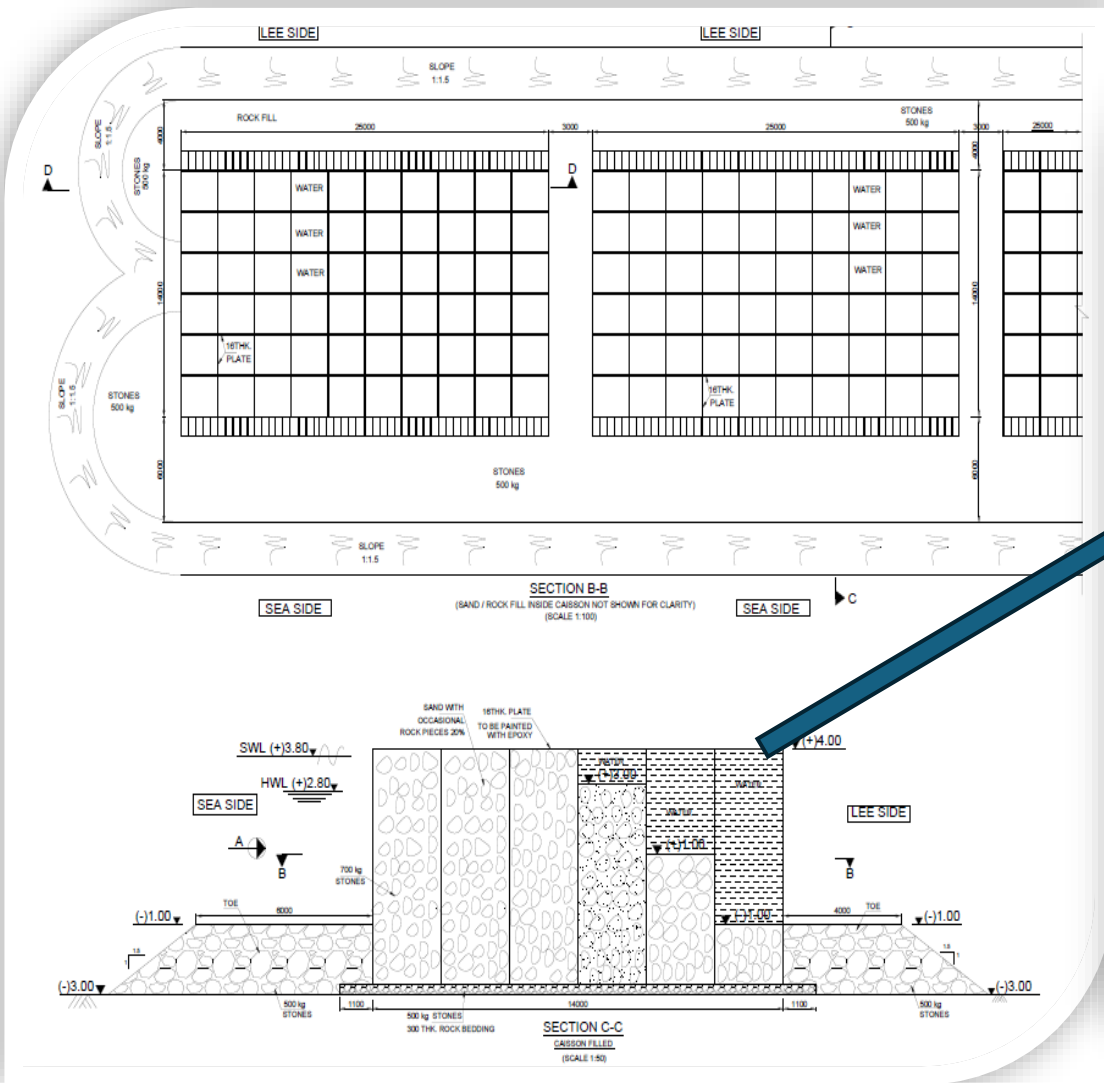
- ❑ Construction of an offshore reef using steel caissons with a founding level at 3 m depth below CD, 300 m offshore
- ❑ Beach Nourishment with sand from the river entrance, to create a salient in front of the temple.

Benefits

- ❑ Prevent erosion and damage to infrastructure
- ❑ Protect tourism activities in the area and the Temple complex.
- ❑ Protect the livelihood of the traders in the project area.
- ❑ Favourable impacts on employment and economic activities



Steel Caisson Reef



Elevation of the Steel Caisson

Sample Image of a Steel Caisson

Maharashtra Sustainable Climate Resilient Coastal Protection Management Project

OUTPUT - 2



1

Establish and Operationalise the Coastal Infrastructure Management Unit (CIMU)

2

Upgrade the Coastal Management Information System (CMIS)

3

Update the Shoreline Management Plan (SMP)

4

Consolidated State-wide long-term Coastal Management and Protection Plan (CMPP)

5

Support Livelihood activities and Community Participation in Shoreline Management

Maharashtra Sustainable Climate Resilient Coastal Protection Management Project

COASTAL MANAGEMENT INFORMATION SYSTEM (CMIS)

Collection and processing of Spatial and Non-Spatial coastal data

Publishing and promoting the use of coastal data within Ports department and by other stakeholders

Conducting issue based Coastal Research

The Coastal Infrastructure Management Unit (CIMU) will be responsible for Coastal Management Information system (CMIS)

COASTAL INFRASTRUCTURE MANAGEMENT UNIT (CIMU)

WORKING RELATIONSHIP

National Guidelines and Regulations

Integrated Coastal Zone Management / CRZ Zone Management/CRZ

State Policies

Environmental, Industrial, Shipping, Fishery, Tourism, Forestry and Community

Local Needs and Priorities

District Administration, ZPs, GPs, ULBs, Communities

- ❑ Consultations with the coastal communities, focusing on women's groups, to understand their needs and collect baseline information.
- ❑ Prepare a GESI inclusive livelihood plan, including institutional and implementation arrangements, cost estimate, monitoring and reporting, and draft grant documents.
- ❑ Generate conceptual plans of sub-projects based on investment plans of stakeholders departments, Fisheries and Tourism, and communities' requirements.
- ❑ Coordinate with state skill and livelihood missions for the identification and promotion of livelihood opportunities for women and women SHGs

Thank you