Japanese ODA Loan

Ex-ante evaluation paper

1. Project name

Country name: The Republic of Indonesia

Project: Bali Beach Conservation Project (Phase 2)

Loan agreement: March 30, 2017

Loan amount: 9,855 million yen

Borrower: The Government of the Republic of Indonesia

2. Background and Necessity of the Project

(1) Development Record (Current State) and Challenges of the Beach Conservation Sector in Indonesia

Indonesia is the largest island nation in the world, with the total length of its coastline reaching 99,000 km, and it is facing beach erosion in many places. Especially on Bali Island, where approx. 66% of its coastal area is used for tourism, there have been serious problems of deterioration of the coastal environment and landscape, and a negative impact on the coral reef ecosystem. These problems include beach erosion and disappearance of sand beaches due to the excavation of river sand for use as construction material, coral excavation, disorderly construction and sand beach renovation, in addition to expanded beach use accompanying the rapid tourism development seen since the 1970s. In recent years there has also been concern about the influence of a sea level rise and storm waves accompanying climate change on beach erosion and sand beach disappearance. Beach conservation is a pressing task also for the protection of assets in the hinterland of beaches and coastal disaster prevention to ensure the safety of resident areas. Because the beaches of Bali Island are used not only for tourism but also for recreation, religious rites and local residents' livelihoods, special consideration for the landscape and environment is required when implementing a beach conservation project. Therefore, a combination of shoreline maintenance and optimum structures is appropriate for sand beach conservation and restoration as a method against beach erosion in Bali, which is a world-famous tourist destination. Meanwhile, beach improvement in Indonesia basically consists simply of seawalls, groins and other structures intended for protection, which makes it technically difficult to consider optimum plans combining beach nourishment and seacoast structures precisely designed based on analyses of drift sand and coastal landform changes. It is not common in Indonesia to design and implement beach nourishment/conservation projects based on adaptive management methods that include PDCA (Plan-Do-Check-Action) cycles necessary for operation and management (O&M) consisting of thorough beach monitoring that is especially needed after beach nourishment, evaluation/analysis, consideration of countermeasures and implementation. Technical challenges have surfaced, including a lack of knowledge and experience in adaptive management methods. There are also other challenges including an insufficient O&M system to maintain beaches in a good condition and public-private role sharing in O&M, as exemplified by insufficient management of local beach erosion and existing structures, deterioration of the beach environment due to insufficient beach cleaning, construction of illegal structures on beaches, and rampant relocation of walking trails.

(2) Development Policy for the Beach Conservation Sector in Indonesia and the Priority of the Project

The government of Indonesia announced a maritime power vision with a priority policy of well-balanced development of maritime infrastructure, maritime trade and promotion of inland marine transportation. In its National Medium Term Development Plan (RPJMN 2015–2019) shoreline destruction in Bali is recognized as a challenge, and enduring beach management of structures and non-structures in combination is adopted as the policy direction. Strategic Plan 2015–2019 of the Ministry of Public Works and Housing positions beach conservation as one of the priority sectors and the country is implementing coastal disaster prevention projects through beach erosion countermeasures. Furthermore, medium-term plan 2014–2018, formulated by the government of Bali province, sets 750m-long beach nourishment in 5 years as a priority program to address beach erosion, while Spatial Planning of the Province of Bali 2009–2029 (Bali Provincial Regulation No.16 for the year 2009) has chosen beach erosion prevention as a part of its development policy.

(3) Japan and JICA's Policy and Operation in the Beach Conservation Sector

The Project is positioned in two priority areas of Japan's Country Assistance Policy for the Republic of Indonesia (April 2012): "assistance for further economic growth" and "assistance for the enhancement of the capacity to address issues of the Asian region and international society." JICA's Country Analysis Paper for Indonesia (March 2012) also states that JICA will assist the country's efforts to address climate change and carry out the assistance as cross-cutting cooperation in order to promote climate change

mitigation and adaptation measures. The Project is consistent with the policy and analysis.

In the Bali Beach Conservation Project (Japanese ODA Loan) (hereinafter referred to as "Phase 1") JICA has implemented beach nourishment, construction of new structures including offshore breakwaters, groins, submerged breakwaters and seawalls, removal of existing structures, and coral replanting and other beach conservation projects in Sanur, Kuta and Nusa Dua beaches in the south part of Bali Island. We have also reinforced the huge rock on which Tanah Lot Temple, one of the six major temples of the island and a precious cultural heritage site, stands. The rock was directly exposed to outer sea waves capable of causing the temple to collapse. In the Project, erosion countermeasures with consideration of the landscape were implemented, including installation of artificial reeves and tetrapods, removal of existing tetrapods, and artificial rock construction. Phase 1 contributed to the improvement of the living environment of local residents and promotion of the tourism industry.

(4) Other Donors' Activities

None in particular in the beach conservation sector.

(5) Necessity of the Project

The Project is consistent with the assistance policy/analysis of Japan and JICA as well as the public policy and development challenges of the Government of Indonesia. The Project, through assistance pertaining to beach nourishment, construction/repair of seawalls, and coastal O&M by relevant agencies, will contribute to sustained beach management, coastal disaster prevention through alleviation of coastal erosion damage, promotion of tourism, growth of the local economy and adaptation to climate change. It is also believed to contribute to SDGs Goal 8 (promotion of sustainable tourism), Goal 11 (resilience to disasters) and Goal 13 (climate action). Based on the above, assistance for the implementation of the Project is of high necessity.

3. Project Description

(1) Project Objectives

The objective of the Project is to achieve sustained beach management and disaster risk reduction t by coastal restoration and conservation plans such as sand nourishment, structural measures, and support for beach maintenance and management activity, thereby contributing to promote tourism sector, regional economic development, and adaptation for climate change in Bali Island.

(2) Project Site / Target Area

Eastern and southern part of Bali province

(3) Project Components

1) Candidasa coast (Engineering works)
   - (i) sand nourishment (341,960 m^3)
   - (ii) provision of sand for Stockpile (100,000 m^3)
   - (iii) permeable type gently sloped revetment
   - (iv) renovation of existing T-type groins and construction of new T-type groins
   - (v) removal of existing off-shore breakwaters
   - (vi) installation of public facilities (walkway, tourist information centers, security guards' stations, public toilets, beach gazebo, outdoor lights, arbors, etc.)
   - (vii) reef flat relocation

2) Kuta, Legian and Seminyak beaches (Engineering works)

   Northern Kuta, Legian and Seminyak beaches
   - (i) sand nourishment (280,300 m^3)
   - (ii) installation of public facilities (walkway, public toilets, beach gazebo, outdoor lights, arbors, etc.)

   Southern Kuta beach
   1) sand re- nourishment (280,000 m^3)
   2) modificationof existing off-shore breakwater
   3) construction of new groins

3) Nusa Dua and Tanjung Benoa Beaches (civil engineering works) and equipment improvement for the beach technology research center
   - (i) sand re-nourishment (25,400 m^3)
   - (ii) construction of new groins and off-shore breakwaters (Note)
   - (iii) wave absorbing equipment, wave characteristic measurement equipment and wave measurement equipment

Note: The need for new structures mentioned in (2) above may change at the stage of detailed design.

4) Consulting service

Detailed design, bidding assistance, construction supervision and advice pertaining to beach O&M (including supervision pertaining to monitoring and evaluation), support making beach conservation plan.

(4) Estimated project cost

11.788 billion yen (Loan Amount: 9.855 billion yen)

(5) Schedule

March 2017 to December 2023 (total of 82 months) Project completion is defined as when the facilities are officially provided (December 2022) (the date when the facilities are delivered after completion inspection by the executing agency and the contractor).

(6) Project Implementation Structure

1) Borrower: The Government of the Republic of Indonesia

2) Executing agency: Directorate General of Water Resources, Ministry of Public Works and Housing (DGWR))

3) O&M structure

Bali River Basin Administration Office (Balai Wilayah Sungai Bali-Penida (BWS-BP)) of the Directorate General of Water Resources, Ministry of Public Works, and the Housing and Coordination Team for Beach Management (TKMPP).

(7) Environmental and Social Consideration/Poverty Reduction/Social Development

1) Environmental and Social Consideration

(i) Category: B

(ii) Reason for categorization

The Project is deemed to have minimal adverse impact on the environment as specified in the JICA Guidelines for Environmental and Social Considerations (issued April 2010) considering the characteristics of the sector, the project and the region.

(iii) Environmental permission and authorization:

The environment assessment (AMDAL) report pertaining to the Project was approved by the Environmental Agency of Bali Province in December 2016.

(iv) Anti-Pollution Measures:

The domestic standards of Indonesia on air and water quality, noise, waste and other impacts will be met by taking measures such as water sprinkling at construction sites, use of low emission vehicles/equipment, regular maintenance, leachate treatment, restriction of working hours and adequate treatment of waste during the construction work. Dredging and beach nourishment, in particular, will be implemented in line with the domestic legal system of the country. Screens to prevent diffusion of pollutants will be installed in order to control the turbidity of sea water at dredging and beach nourishment locations.

(v) Natural environmental consideration:

The project does not include any national parks or other areas susceptible to impact. Direct impact on coral is not assumed or the project does not cover areas with direct impact on coral.

(vi) Socio-environmental consideration:

The Project does not require involuntary land acquisition or resettlement. Donation of land (up to 6.12 ha) by approx. 50 owners of properties including restaurants and accommodation facilities on Candidasa Beach is planned, but no serious loss or impact on livelihoods is anticipated because relocation is made within the land of the respective owners. For the voluntary donation of land, informed consent and right of choice by the affected people are confirmed, while no particular opposition to the project was found in stakeholder discussions pertaining to the Project.

(vii) Other/monitoring:

In the Project, the contractors and BWS-BP will monitor the air and water quality, noise/vibration and waste during the construction work. After commencing service, BWS-BP will monitor water quality, sand beach erosion, impact on coral, and other aspects. The progress of land donation will be monitored by BWS-BP before the construction work.

2) Promotion of Poverty Reduction: None in particular

3) Promotion of Social Development

(i) Gender Perspective

Based on the results of discussions with the executing agency, we plan to install toilets with gender consideration and encourage women to participate and deliver opinions at focus group discussions during residents' meetings.

(ii) Measure for Infectious Diseases Including HIV/AIDS

It is made mandatory to include items concerning HIV/AIDS in tender documents and the contractor is responsible to provide measures against HIV/AIDs for construction workers of the Project.

(iii) Participatory Development

A characteristic of the civic society of Bali Island is that not only administrative units but also village communities based on traditional division have strong authority. Because this has a major impact on coastal management covered by the Project, it is important to meet the community's needs and have residents' participate in beach O&M activities. We plan to promote the participation of residents/citizens through activities, public relations and environmental education activities by the TKMPP of each regency.

(iv) Consideration for People with Disabilities

Consideration will be given to accessibility for people with diverse needs, including people with disabilities. Facilities intended for use by residents and tourists, such as walking trails and public toilets, will be designed barrier-free including such aspects as elimination of difference in level, single-gender, and multiple-purpose toilets.

(8) Collaboration with Other Schemes and Donors

None in particular

4. Target Outcomes

(1) Quantitative Effects

Performance Indicators

Indicators	Baseline (2012)	Target (2024) [2 years after completion of the project]
Rate of sand flow ・ Candidasa and Kuta ・ Legian, Seminyak, Nusa Dua and Tanjung Benoa	Note 1	Less than 10%(Note 2) (Note 3) Less than 15%(Note 2) (Note 3)
Erosion prevention of the land by the revetment (Periodic site investigation in Candidasa)	Erosion intruded into the land at some area	Erosion would be completely prevented by the revetment

(Note 1) Monitoring of sand flow will be started from detail design (D/D) stage.

(Note 2) Target year is two years after completion of the Project. The sand volume of beach fill by the Project in each project site is taken as 100%.

(Note 3) Target values for Nusa Dua and Tanjung Benoa beaches may be changed because the rate of sand flow will vary depending on the need for new groins and off-shore breakwaters at the time of D/D stage.

(2) Qualitative effects

Reduction on the frequency of wave overtopping by the revetment in Candidasa beach, contribution to tourism promotion and economic growth on Bali Island, and adaptation to climate change.

(3) Internal Rate of Return

Economic Internal Rate of Return (EIRR) of the Project is 19.05 % based on the following assumption.

[EIRR]

- Cost: cost of project (tax excluded), O&M cost
- Benefit: Prevention of land loss due to beach erosion, increase in willingness to pay for beach use, and increase in income from tourism in the project area
- Project life: 30 years

5. External Factors and Risk Control

None in particular

6. Evaluation of Similar Projects and Lessons Learned from Past Projects

(1) Evaluation of Similar Projects

From Phase 1 we have learned: the need for the development and thorough management of indicators and data concerning the effect of beach conservation projects and beach erosion damage; the importance of prior discussions and consensus formation on storage, and of continuing to input sand for beach nourishment and; the need for regular monitoring. It is also pointed out that there is a need to define responsibilities and roles of TKMPP and build capacity for TKMPP and BWS-BP to understand and implement adaptive management.

(2) Lessons Learned from Past Projects:

The Project will give advice on beach O&M through consulting services for sustained beach maintenance and production/maintenance of the project effect. We will also strengthen the activities and systems of the TKMPP of each regency, and provide supervision and advice for the formulation and implementation of beach management plans using adaptive management in order to promote the understanding of beach management based on adaptive management methods. In addition, we plan to build up implementation capacity to ensure continued optimal beach management based on data by helping BWS-BP, who is responsible for policy study and the implementation of beach O&M, to improve its ability to evaluate and analyze beach monitoring results and accumulated data.

7. Plan for Future Evaluation

(1) Indicators to be Used in Future Evaluations:

1) Yield of beach nourishment sand (%)
2) Erosion prevention with seawalls
3) Economic Internal Rate of Return (EIRR) (%)

(2) Timing for Next Evaluation: Two years after completion of the project