The People's Republic of Bangladesh

FY2024 Ex-Post Evaluation Report of Japanese Grant Aid Project

"The Project for Improvement of Rescue Capacities in the Coastal and Inland Waters"

External Evaluator: MIURA Masako, Fortience Consulting Inc.

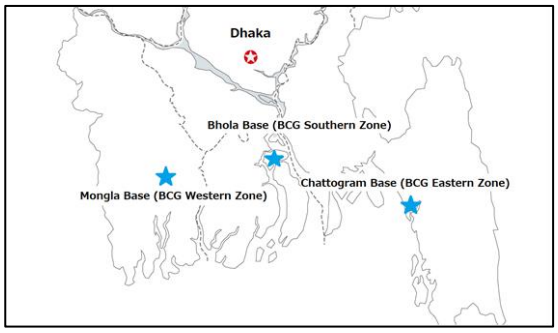
0. Summary

This project was implemented to strengthen the capabilities on immediate search and rescue operation to cope with maritime/river accidents and natural disasters by improvement of vessels and equipment of the Bangladesh Coast Guard (hereafter referred to as "BCG"), thereby contributing to reduction damages by vessel accidents and natural disasters in coastal and inland waters of the People's Republic of Bangladesh (hereafter referred to as "Bangladesh").

This project is consistent with Bangladesh's national development policies and development needs, as well as Japan's ODA policy. Although there was no external coherence based on coordination with other donors, internal coherence with a JICA project was confirmed. Therefore, its relevance and coherence are high. Savings were generated through bidding processes related to the procurement of the provided vessels, and outputs increased as equipment not included in the original plan was procured using these savings; however, the total project cost, including the additional procurement, remained within the planned budget. On the other hand, the project period exceeded the original plan by eight months and surpassed the planned period. Therefore, efficiency of the project is high. With regard to quantitative effects, all four indicators were achieved, and although some issues were identified with respect to qualitative effects, it was confirmed that a certain level of outcomes has been demonstrated. The provided vessels have been used not only for responding to natural disasters and vessel accidents, recovery of spilled oil, and safety management through daily patrol operations, but also for disaster response outside the areas under BCG's jurisdiction. In addition, it was confirmed that they have been used to respond to the medical needs of residents in remote islands and char areas. This project has achieved its objectives. Therefore, effectiveness and impacts of the project are high. Although here are slight issues been observed in the aspect of policy/system due to the lack of a clear outlook for the formulation of the next development plan at the time of the ex-post evaluation, there are no issues on institutional/organizational, technical, financial, and environmental and social aspects including the current status of operation and maintenance, and preventative measures to risks. Therefore, sustainability of the project effects is high.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Locations
(Source: created by the external evaluator)

Photo1: The 20m rescue boat (rear) and the 10m rescue boat (front) provided under this project
(Source: Photo taken by the external evaluator)

1.1 Background

Bangladesh is located in one of the world's largest deltas, where about 90% of the land is low-lying land at an elevation of 10m or less, and about 7% of the country is covered by water, and water transportation in inland river areas is widely used. In particular, the southern part of the country has more than three times the concentration of inland waterway traffic as the northern part, and there have been many serious vessel accidents such as sinkings and oil spills, mainly due to overloading, collisions, and rough weather. Bangladesh is also vulnerable to natural disasters, such as cyclones and frequent accidents in coastal areas.

The BCG, under the Ministry of Home Affairs, is mainly responsible for lifesaving operations in the coastal and inland river areas, and is engaged in rescue operations due to vessel accidents and natural disasters. The BCG planned to establish 30 Coastal Disaster Management Centres nationwide, each co-located with existing bases and equipped with facilities for providing first aid and temporary shelter to rescued persons. By deploying one or two small rescue boats to the BCG's small outposts aligned with each centre, they aimed to develop a rapid and efficient rescue and relief system. However, the number of deployed rescue boats has been limited to 23, which were provided by Japan in 1988, and their performance has deteriorated after nearly 30 years of use, resulting in many cases where rescue operations have been delayed due to the time required to reach the accident site. To address the ongoing increase in vessel accidents caused by growing congestion in inland waterways, as well as the rising number of natural disasters attributable to climate change, the urgent expansion of rescue boats had become a pressing need.

Under these circumstances, the Government of Bangladesh has requested the JICA to provide the BCG with rescue boats to expand its capacities for rescue and response to emergency situations.

1.2 Project Outline

The objective of this project is to strengthen BCG's capabilities on search and rescue operation

to cope with maritime/river accidents and natural disasters by improvement of vessels and equipment of BCG, thereby contributing to reduction damages by maritime/river accidents and natural disasters in coastal and inland waters of Bangladesh.

<Grant Aid Project>

Grant Limit / Actual Grant Amount	2,729 million yen / 2,719 million yen
Exchange of Notes Date / Grant Agreement Date	August 2018 / August 2018
Executing Agency	Bangladesh Coast Guard (BCG)
Project Completion	February 2022
Target Area	Dhaka Zone, West Zone, South Zone, East Zone
Main Contractor(s)	・ Builder (20m rescue boat): Japan Marine United Corporation ・ Contractor (10m rescue boat): Marubeni Protechs Corporation
Main Consultant(s)	Shipbuilding Research Centre of Japan
Preparatory Survey	July 2017 - February 2018
Related Projects	[Technical Cooperation Projects] ・ The Project for Capacity Development of Management for Sustainable Water Related Infrastructure (August 2013 - October 2017) ・ Research Project on Disaster Prevention/Mitigation Measures against Floods and Storm Surges (Science and Technology Research Partnership for Sustainable Development (SATREPS)) (April 2014 - March 2019) ・ Knowledge Co-Creation Program in the Field of Maritime Safety and Security [Grant Aid] ・ The Project for the Improvement of the Meteorological Radar System at Cox's Bazar and Khepupara (Phase 1) (July 2005)

	・ The Project for the Improvement of the Meteorological Radar System at Cox's Bazar and Khepupara (Phase 2) (June 2006) ・ The Project for the Establishment of the Meteorological Radar System at Moulvibazar (June 2007) ・ The Project for Improvement of Meteorological Radar System in Dhaka and Rangpur (June 2015) [Other International Organizations, Aid Agencies, etc.] ・ The U.S. government - Provision of high-speed patrol boats (2009-2013) - Support for the establishment of "Coastal Disaster Management Centres" under the "Humanitarian Assistance Project" (2015) ・ World Bank - Bangladesh Urban Resilience Project (2015-2023)

2. Outline of the Evaluation Study

2.1 External Evaluator

MIURA Masako, Fortience Consulting Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October, 2024 - February, 2026

Duration of the Field Study: January 27, 2025 - February 13, 2025, May 25, 2025 - May 30, 2025

3. Results of the Evaluation (Overall Rating: A[1])

3.1 Relevance/Coherence (Rating: ③[2])

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Bangladesh

At the time of the ex-ante evaluation, Bangladesh's national development plan -*the Seventh Five Year Plan (2016/17-2020/21)* -identified "a sustainable development pathway that is resilient to disaster and climate change" as one of its key themes and positioned disaster response as a priority issue. In the latest national development plan at the time of the ex-post evaluation—*the Eighth Five Year Plan (July 2020-June 2025)*—, lessons learned from *the Seventh Five Year Plan* include

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[2] ④: Very High, ③: High, ②: Moderately Low, ①: Low

the importance of providing resource support so that service providers can perform their duties effectively during disasters. In addition, one of the plans up to 2025 is to "incorporate best practices and technology in Disaster Management of Bangladesh from around the world."

Furthermore, in February 2020 the Government of Bangladesh formulated *the National Oil and Chemical Spill Contingency Plan (NOSCOP)*, which clarifies response measures and institutional arrangements in the event of oil spills and other related incidents. BCG, the executing agency of this project, is listed as one of the agencies responsible for responding to oil and chemical spills.

This project aimed to strengthen Bangladesh's capacity to respond to natural disasters and vessel accidents through the introduction of vessels manufactured using Japanese technology. Accordingly, it can be concluded that the project is consistent with the country's development policies at both the ex-ante and ex-post evaluation stages.

3.1.1.2 Consistency with the Development Needs of Bangladesh

At the time of the ex-ante evaluation, the following two development needs were identified.

- Inland waterway transport is widely used. In particular, in the southern region (the Dhaka-Khulna corridor), inland water transport is more than three times as concentrated as in the northern region (the Dhaka-Sylhet corridor), and serious vessel accidents, such as sinkings and oil spills, occur frequently, mainly due to overloading, collisions, and rough weather.
- The number of rescue boats in service is limited to only 23 vessels donated by Japan in 1988. Owing to long-term use and the resulting deterioration in performance, it often takes a long time to reach accident sites, leading to frequent delays in rescue operations.

From the start of the project in 2018 through the time of the ex-post evaluation in 2024, natural disasters, mainly cyclones and floods, and vessel accidents have occurred every year. In the areas under the jurisdiction of the BCG, during the project implementation period, from 2018 to 2021, natural disasters resulted in 111 fatalities, while 389 people were rescued by the BCG. After project completion, from 2022 to 2024, the number of fatalities due to natural disasters was 96, and the number of people rescued by the BCG increased to 834. With regard to vessel accidents in the same areas, there were 93 fatalities during the project implementation period, from 2018 to 2021, and the BCG rescued 534 people. After project completion, from 2022 to 2024, fatalities from vessel accidents totalled 86, and the number of people rescued by the BCG was to 685.

Both at the time of the ex-ante evaluation and at the time of the ex-post evaluation, natural disasters and vessel accidents have continued to occur, resulting in a large number of fatalities and affected persons, as well as many rescue operations conducted by the BCG. There is a substantial need for rescue operations, and the relevance between this project and the identified development needs is high.

3.1.1.3 Appropriateness of the Project Plan and Approach (Describe, if applicable.)

In this project, because the manufacture and delivery of the rescue boats were awarded through bidding at a cost lower than initially planned, a remaining balance was generated, and two additional outputs were added (see "3.2.1 Project Outputs"). It was confirmed that these changes were made following consultations among the executing agency, the implementing consultants, and JICA. In addition, taking into account the aforementioned changes to the project plan and the impacts of the COVID-19 pandemic, the project period was extended, i.e., the extension of the deadline for contract performance with the executing agency (see "3.2.2 Project Inputs"). It was confirmed that this extension was implemented based on a request from the executing agency to JICA.

Furthermore, based on lessons learned from past similar projects, it was reported at the time of the ex-ante evaluation that the project was planned after confirming, through the preparatory survey, that a personnel training and education system was in place at a BCG-dedicated training centre, the facilities and personnel necessary for operation and maintenance were assigned within the BCG, and the budget required for operation and maintenance could be secured, in order to avoid a situation in which the equipment provided would not be adequately operated or maintained and therefore not utilized in the event of vessel accidents or natural disasters. Through this ex-post evaluation, it was confirmed that all of these aspects based on the aforementioned lessons were appropriately addressed (see "3.4 Sustainability").

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

At the time of the ex-ante evaluation, *the Country Analysis Paper for the People's Republic of Bangladesh (June 2012)* positioned "overcoming social vulnerability" as one of its priority areas and stated that support would be provided for disaster risk reduction and climate change countermeasures. In addition, *the JICA Country Analysis Paper for the People's Republic of Bangladesh (April 2013)* identified support for maritime transport and inland water transport, as well as disaster risk reduction and climate change measures, as priority issues. This project was consistent with these policies and analyses.

3.1.2.2 Internal Coherence

At the time of the ex-ante evaluation, no coordination or collaboration with other JICA projects was envisaged. During the implementation period of this project, there was no collaboration with other JICA projects implemented in Bangladesh. However, two officers from the BCG participated in the FY2021 session of JICA's Knowledge Co-Creation Program in the maritime safety and security sector, the Maritime Law Enforcement Policy Program, which was conducted in Japan. In addition to addressing piracy and irregular migration and smuggling, the training

program provided opportunities to learn, from both theoretical and practical perspectives, about responses to maritime disasters and environmental protection.

Through this ex-post evaluation, it was confirmed that after returning to Bangladesh, the two officers who participated in the training organized multiple briefing sessions and study meetings within the BCG to share their knowledge on disaster response, environmental protection, and related programs, thereby contributing to capacity building of BCG personnel. Although this was not envisaged at the time of the ex-ante evaluation, it can be considered that a certain degree of synergy was generated in terms of capacity development related to disaster response and environmental protection.

3.1.2.3 External Coherence

At the planning stage, the relevance with the following projects implemented by other donors was mentioned.

- Under the Humanitarian Assistance Program (2015), the United States supported the establishment of 30 “Coastal Disaster Management Centres” operated by the BCG to assist local residents during disasters. The rescue boats to be provided under this project were expected to be used for the rapid transportation of affected people to these centres.
- Under the Bangladesh Urban Resilience Project (2015-2023), the World Bank planned to provide urban disaster-response firefighting and rescue boats to the Fire Service and Civil Defence.

Through this ex-post evaluation, it was confirmed that in 2017 the U.S. government established a boat operation and maintenance facility at Chattogram Base, a major hub of the East Zone, which is one of the areas under BCG’s jurisdiction, and that this facility is used for the operation and maintenance of small vessels, including the 10m type rescue boats provided by JICA under this project. In this respect, a certain degree of relevance was observed. However, with regard to this project and the two projects mentioned above, no concrete coordination or collaboration, including consultations with the U.S. government or the World Bank, both of which were providing support in the same sector during the project period, was undertaken.

This project is consistent with Bangladesh’s national development policies and development needs, and it was confirmed that there were no issues with the project plan or approach. The project is also consistent with Japan’s development cooperation policy. While external coherence based on concrete coordination or collaboration with other donors was not confirmed, internal coherence with the other JICA project implemented during the same period was confirmed.

Therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

The planned outputs and actual achievements of this project are as shown in Table 1.

Table 1 Planned and actual outputs

Plan	Actual
Procured equipment	
・ 20m type rescue boats: up to four vessels (equipped with oil spill response equipment such as oil booms, oil skimmers, and oil absorbent materials) ・ 10m type rescue boats: up to twenty vessels	・ 20m type rescue boats: four vessels (equipped with oil pollution prevention equipment) *added 18 sets of oil pollution prevention equipment, bringing the total procurement to 22 sets ・ 10m type rescue boats: twenty vessels *added 20 sets of canopy equipment
Consulting services	
Detailed design, bidding assistance, and procurement management	Implemented as a plan

Source: Developed by the external evaluator based on the Project Monitoring Report (PMR)

The BCG oversees the coastal and inland waters under its jurisdiction by dividing them into four zones: the Dhaka Zone, West Zone, South Zone, and East Zone. The 20m type rescue boats are deployed to Pagla Station (Dhaka Zone), Mongla Base (West Zone), Bhola Base (South Zone), and Chattogram Base (East Zone), respectively. The 10m type rescue boats are frequently reassigned among bases. As of the time of the field research for this ex-post evaluation, from January to February 2025, four boats were deployed in the Dhaka Zone, seven in the West Zone, seven in the South Zone, and two in the East Zone. As part of the procurement process for the 20m type rescue boats, an operational training program was originally planned to be conducted in Japan; however, due to the COVID-19 pandemic, it was implemented online instead of in person. In addition, as part of the procurement process for both the 20m and 10m type rescue boats, spare parts, approximately three years' supply, were delivered together with the vessels.

As shown in Table 1, oil pollution prevention equipment and canopy sets were added beyond the original plan. The reasons for each change are as follows.

- Addition of oil pollution prevention equipment (June 2021):
  Vessel accidents leading to oil spills, which could not have been anticipated based on the data available at the time of the ex-ante evaluation in 2016, increased sharply from 2017 onward. In response to the growing need for environmental pollution prevention measures, in addition to the four units originally planned, oil pollution prevention equipment was deployed at 18 locations where 10m type rescue boats are scheduled to be stationed. This established a system enabling the deployment of oil pollution prevention equipment within two hours of an accident.
- Addition of canopy sets (March 2021):
  Given Bangladesh's high levels of rainfall, canopy sets were introduced in order to protect persons being rescued on board from rain and direct sunlight.

Of the 22 units of oil pollution prevention equipment, four units were installed as originally planned on the four 20m type rescue boats, while the remaining 18 units were deployed across the four zones under BCG's jurisdiction and at Agrajattra Base, which serves as a training center for BCG personnel. The canopy sets were installed on 20 units of the 10m rescue boats, respectively.

Photo2: The provided oil pollution prevention equipment (Source: the external evaluator)

Photo3: 10m type rescue boats equipped with a canopy (Source: the external evaluator)

3.2.2 Project Inputs

3.2.2.1 Project Cost

Table 2 shows the planned and actual project costs.

Table 2 Planned and actual project cost

	Plan	Actual	Actual/Plan
Total project cost	2,731million JPY	2,721 million JPY	99.6%
Japanese side	2,729million JPY	2,719 million JPY	99.6%
Bangladesh side	2 million JPY	2 million JPY	100%

Source: Developed by the external evaluator based on the Project Monitoring Report (PMR)

In this project, the vessels initially planned for procurement were awarded at prices lower than the estimated costs, resulting in savings (bid price differences). In addition, as described in "3.2.2 Inputs," the operational training was changed to an online format, and therefore expenses related to travel for BCG personnel and on-site training were not incurred and became additional savings. These savings were used for the following purposes.

- Addition of canopy sets (20 sets): JPY 70 million
- Addition of oil pollution prevention equipment (18 units): JPY 183 million
- Costs arising from delays in training implementation and the handover of the 20m type rescue boats, including operation and maintenance costs, shipbuilding insurance premiums, additional maritime transportation costs, and expenses related to online training

Including these additional items, all activities were implemented within the originally planned total project cost. Expenditure for the originally planned project components amounted to JPY 2,466 million, calculated by deducting JPY 70 million for canopy sets and JPY 183 million for oil pollution prevention equipment from the Japanese side's actual project cost of JPY 2,719

million. This represents 90% of the planned amount of JPY 2,729 million. On the Bangladesh side, both the planned and actual expenditures were JPY 2 million, representing 100% of the planned amount. Consequently, the total project cost for the originally planned components amounted to JPY 2,468 million (JPY 2,466 million from the Japanese side plus JPY 2 million from the Bangladesh side), which corresponds to 91% of the planned amount, remaining within the plan (100% or less).

3.2.2.2 Project Period

The planned and actual project periods are as follows.

- Planned: March 2018 (signing of the Grant Agreement) to May 2020[3] (2 years and 3 months; 27 months)
- Actual: August 2018 (signing of the Grant Agreement) to February 2022 (3 years and 7 months; 43 months)

With regard to the extension of the project period, the following three main reasons were identified.

- Delay in project commencement procedures by the executing agency
  After the signing of the Grant Agreement, the detailed design phase started in September 2018, approximately five months later than originally planned. According to the executing agency, this delay was due to the time required for ministerial-level approval procedures on the Government of Bangladesh side.
- Delay in the implementation of operational training due to the pandemic of COVID-19
  Operational training was originally scheduled to be conducted in Japan around autumn 2020, using the completed 20m type rescue boats prior to shipment. However, due to the spread of COVID-19 from early 2020, officials of the executing agency were unable to travel to Japan. As a result, the training was eventually conducted online in November 2022. The 20m type rescue boats had originally been scheduled for handover around the end of April 2021; however, as shipment was postponed pending the completion of the training, and rescheduling of the transportation plan was also required, shipment was ultimately delayed by eight months, with the vessels arriving in Bangladesh in December 2021.
- Delay in procurement of components due to the pandemic of COVID-19
  For the additional 18 units of oil pollution prevention equipment, delays in component procurement occurred due to the impact of COVID-19. Although delivery had been scheduled for December 2021, the equipment was ultimately delivered in February 2022.

Although the project period was extended by 16 months compared with the original plan, it was

[3] At the time of the ex-ante evaluation, project completion was defined as the "commencement of operation of the rescue boats."

confirmed that the delay was largely attributable to the postponement of training due to COVID-19 and the resulting delay in the shipment of the 20m type rescue boats. As the shipment delay amounted to eight months, this period was regarded as being attributable to the impact of COVID-19 and was therefore deducted from the project period. Accordingly, the adjusted project period amounts to 35 months, calculated by deducting eight months from the actual 43 months. As this corresponds to 129.6% of the planned period, the actual project period exceeded the plan (over 125% and up to 150%).

While the outputs increased and the project cost remained within the planned budget, the project period exceeded the original plan by eight months and exceeded the planned period.

Therefore, efficiency of the project is high.

3.3 Effectiveness and Impacts[4] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Table 3 shows the baseline values, target values, and actual values for the quantitative effects of this project.

Table 3 Target and actual values of the operational and effect indicators

Indicators (Unit)	Baseline Value (Actual Value in 2017)	Target Value (2023) (3 Years after Completion)	Actual Value		
			2022	2023	2024
Total accommodatable number of rescued persons (number of persons)	230	520	349	531	524
required time to arrive at site *1 (minutes)	60	10m boat：40	60	60	60
		20m boat：24	40-60	40-60	24-60
Seaworthiness *2 (operable conditions)	Less than 2	10m boat: Less than 3	Less than 3	Less than 3	Less than 3
		20m boat: Less than 4	Less than 4	Less than 4	Less than 4
Oil-water separation capacity (㎥/hour/boat)	0	Approx. 9㎥	Approx. 9	Approx.9	Approx.9

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency
*1 Assumed distance to site: 10 nautical miles
*2 Beaufort Scale 2: Wave height 0.1 m - 0.5 m, Beaufort Scale 3 : Wave height 0.5 m - 1.25 m, Beaufort Scale 4 : Wave height 1.25 m - 2.5 m

All four operational indicators were achieved, and it can be said that the expected quantitative effects have generally achieved. Regarding the “Required time to arrive at site,” although the required time varies depending on wind, rain, and wave conditions, it was confirmed that, in light

[4] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

of the standard cruising speed of the provided vessels, arrival within the set target value is fully achievable under calm weather conditions; therefore, this indicator is also considered to have been achieved.

3.3.1.2 Qualitative Effects (Other Effects)

The following two qualitative effects were envisaged.

(1) Protection of the natural environment and resources of marine and river areas through the rapid prevention of the spread of oil discharged into seas and waterways and its recovery

(2) Improvement of safety in river transportation

With regard to the above two qualitative effects, as no indicators had been established to measure the effects, the status of achievement was confirmed through information collected from the executing agency.

Regarding (1), it was confirmed that in the event of accidents involving oil spills, such as oil tanker accidents, the 20m type rescue boats and oil pollution prevention equipment provided under this project have been used to prevent the spread of oil and to conduct recovery operations. The record of oil recovery operations conducted by the 20m type rescue boats after project completion is shown in Table 4.

Table 4 Oil recovery performance by 20m type rescue boats (2022-2024)

	RB2001*	**RB2002**	**RB2003**	**RB2004**
2022				
Number of operations	2	1	3	4
Amount recovered (㎥)	8	7	12	12
2023				
Number of operations	4	1	2	2
Amount recovered (㎥)	28	7	18	10
2024				
Number of operations	3	2	1	3
Amount recovered (㎥)	15	10	7	9

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency
* RB2001-RB2004 are the individual identification numbers of the four 20m type rescue boats

Although oil spill recovery has been carried out, issues related to oil recovery were also identified through this ex-post evaluation. When oil pollution prevention equipment was used in response to an oil tanker accident that occurred near Mongla Base in December 2024, high waves caused the oil boom to float above the water surface, allowing oil to pass underneath the boom. As a result, only about 35% of the spilled oil could be recovered. Such incidents have not been observed at other bases, nor have they occurred at Mongla Base during other periods.

Personnel at Mongla Base explained that heavier oil booms than those provided under this project would be more effective. However, BCG Headquarters stated that while it is aware of such incidents, given that no oil recovery had been possible at all prior to the implementation of this project, the project's outcomes have materialized. In addition, as similar incidents have not

occurred in other areas, BCG has no plans at present to procure new oil booms. While the situation does not require urgent action, it is considered important, in order to further enhance oil recovery capacity, to verify the effectiveness of the currently deployed oil pollution prevention equipment according to season and weather conditions and to examine the need for additional equipment procurement as necessary (see "4.2.1 Recommendations to the Executing Agency").

According to the project's implementation consultant, when the specifications of the oil pollution prevention equipment were discussed with the BCG, there was an option to procure marine-use oil booms for bases close to the sea and river-use oil booms for other locations[5]. However, at the request of the BCG, all equipment was procured as river-use oil booms. Given that the specifications considered suitable differ between marine and river environments, and that discussions on specifications were conducted between the executing agency and the implementation consultant, it would have been preferable for more careful and detailed verification to have been undertaken at the time of equipment procurement, taking into account the areas and seasons in which the equipment would be used (see "4.3 Lessons Learned").

With regard to (2), it was confirmed that while the 20m type rescue boats are mainly used to respond to natural disasters and vessel accidents, the 10m type rescue boats are used not only for such responses but also for routine patrol operations. Patrol operations are conducted for purposes such as managing river traffic safety, ensuring the safety of fishing workers and riverside residents, and enforcing against illegal activities, including illegal fishing, drug smuggling, and illegal entry. Many of the 10m type rescue boats are used almost daily. Through this project, the development of vessels that can be used for patrol operations and can also be rapidly deployed in emergencies was confirmed to have contributed to the improvement of safety in river transportation.

3.3.2 Impacts

3.3.2.1 Intended Impacts

In light of the project objective, it is inferred that the intended impact was to contribute to the reduction of damage caused by vessel accidents and natural disasters in coastal and inland waters. Table 5 shows the occurrence of natural disasters since 2022, the records of utilization of the rescue boats provided under this project, and the number of victims rescued.

Table 5 Operational records in natural disasters and number of persons rescued (2022-2024)

Unit: number of persons

	2022		2023		2024	
ID Number	**Number of operating days**	**Number of persons rescued**	**Number of operating days**	**Number of persons rescued**	**Number of operating days**	**Number of persons rescued**
20m type rescue boats						
2001	5	3	6	2	14	5
2002	3	1	3	15	12	21

[5] The marine-type specification is designed to withstand higher waves than the river-type specification.

2003	4	2	3	6	5	4
2004	2	1	4	2	6	2
10m type rescue boats						
1001	5	8	5	2	10	3
1002	5	2	10	3	14	7
1003	7	11	6	1	15	1
1004	3	1	3	5	2	2
1005	4	2	4	7	3	3
1006	2	2	4	6	2	1
1007	3	1	2	7	3	7
1008	5	4	3	8	5	14
1009	5	2	7	23	5	21
1010	2	3	4	13	5	11
1011	4	21	5	1	14	8
1012	5	11	6	2	9	6
1013	3	9	10	1	15	3
1014	6	17	9	1	15	4
1015	5	2	1	1	3	2
1016	2	2	2	1	3	3
1017	3	1	5	11	2	1
1018	6	2	2	2	2	2
1019	3	1	4	3	3	1
1020	5	3	4	2	4	2

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency

In addition, Table 6 shows the occurrence of vessel accidents since 2022, the records of utilization of the rescue boats provided under this project, and the number of victims rescued.

Table 6 Operational records in vessel accidents and number of persons rescued (2022-2024)

Unit: number of persons

	2022		2023		2024	
ID Number	**Number of operating days**	**Number of persons rescued**	**Number of operating days**	**Number of persons rescued**	**Number of operating days**	**Number of persons rescued**
20m type rescue boats						
2001	5	1	7	2	3	1
2002	5	2	7	13	4	8
2003	15	16	15	24	22	14
2004	2	1	2	1	5	2
10m type rescue boats						
1001	5	1	9	1	5	2
1002	2	1	12	1	7	2
1003	10	2	5	1	4	1
1004	25	15	22	12	6	13
1005	30	18	16	22	5	3
1006	26	12	25	17	11	9
1007	2	1	2	2	1	2
1008	5	3	4	7	3	1
1009	4	1	3	8	2	3
1010	3	1	5	6	4	2
1011	4	1	3	2	9	1
1012	7	2	8	1	3	1
1013	3	1	7	5	4	2
1014	5	1	3	2	6	1
1015	3	1	2	1	1	1
1016	10	5	12	16	16	19
1017	15	8	16	20	7	11
1018	25	6	11	25	3	1
1019	11	4	14	8	6	13
1020	4	1	2	1	2	3

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency

As shown in Tables 5 and 6, both the 20m type rescue boats and the 10m type rescue boats have been used every year to respond to natural disasters and vessel accidents, and many victims have been rescued by these vessels. In addition, the 20m type rescue boats have also been used for the recovery of spilled oil (see Table 4 for records of the use of oil spill response equipment and oil pollution prevention equipment). Through this ex-post evaluation, it was also confirmed that the 10m type rescue boats were used in 2023 and 2024 for the rescue of victims and the distribution of relief supplies in response to natural disasters, mainly floods, that occurred outside the areas under the jurisdiction of the BCG (e.g., Sylhet District), indicating that they have been utilized for disaster response across Bangladesh. Furthermore, as described in "3.3.1.2 Qualitative Effects (Other Effects)," the 10m type rescue boats are also used for traffic safety management through daily patrol operations. Based on these records, it is considered that the use of the equipment provided under this project has contributed to the reduction of damage caused by vessel accidents and natural disasters.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

This project was classified as Category C, as it was considered, based on *JICA Guidelines for the Confirmation of Environmental and Social Consideration (April 2010)*, that undesirable impacts on the environment would be minimal. In the PMR, no particular environmental impacts were reported. In addition, the ex-post evaluation confirmed that while the project has contributed to the protection of the surrounding environment, particularly World Heritage mangrove forests, through the prevention of oil pollution, no negative environmental impacts have been observed.

2) Resettlement and Land Acquisition

No resettlement of residents or land acquisition occurred in association with this project.

3) Gender Equality

At the time of the ex-ante evaluation, it was confirmed by the executing agency that there were no female staff assigned as vessel crew members and that there were no plans to appoint them in the future. In light of this, the project was classified as a "Gender Informed" project, which is outside the scope of gender mainstreaming.

As of the time of the ex-post evaluation, while female staff members are employed at BCG Headquarters to handle general administrative duties, there are still no female vessel crew members. Although the possibility of assigning female crew members in the future is being considered, there is no concrete plan in place.

4) Marginalized People, Social Systems and Norms, People's Well-being and Human Rights

In coastal and inland water areas of Bangladesh, medical facilities are often not available on remote islands and char (sandbar) areas, and residents in these areas do not have sufficient access to medical services. Through this ex-post evaluation, it was confirmed that when the BCG receives requests to transport sick persons or victims of accidents from remote islands, char areas, or other distant locations within its jurisdiction, it conducts rescue operations using BCG-owned vessels, including 10m type rescue boats, and provides support for transportation to medical facilities in urban areas.

With regard to quantitative effects, all four indicators were achieved. Although some issues were identified with respect to qualitative effects, it was confirmed that a certain level of outcomes has been demonstrated. Both the 20m type rescue boats and the 10m type rescue boats are used not only for responding to natural disasters and vessel accidents, but the 20m type rescue boats are also used for the recovery of spilled oil, while the 10m type rescue boats are utilized for safety management through daily patrol operations and for disaster response outside the areas under BCG's jurisdiction. In addition, it was confirmed that the 10m type rescue boats are also used to respond to the medical needs of residents in remote islands and char areas. Based on the above, it is concluded that the implementation of this project has generally produced effects as planned and this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ③)

3.4.1 Policy and System

This project is consistent with Bangladesh's development policy in effect at the time of the ex-post evaluation, namely *the Eighth Five-Year Plan (July 2020-June 2025)* (see "3.1.1.1 Consistency with Development Policy"). The coverage period of this plan has already elapsed, and in 2024, a draft of *the Ninth Five-Year Plan* was prepared under the previous administration; however, the formulation of this plan was suspended due to political changes. As of the time of the ex-post evaluation, there was no clear outlook for the formulation of the next development plan, and while it is inferred that the current *Eighth Five-Year Plan* will remain in effect until a new development plan is formulated, the medium- to long-term policy direction regarding disaster response could not be confirmed.

Based on the above, it is considered that there are some issues from the policy and institutional perspectives with regard to the sustainability of the outcomes achieved by this project.

3.4.2 Institutional/Organizational Aspect

The executing agency, the BCG, is an organization under the Ministry of Home Affairs and is responsible for safety management in coastal and inland waters. It is headquartered in Dhaka and

conducts its operations nationwide through four zonal headquarters.

At the time of the preparatory survey in 2017, the BCG had a total of 132 officers, including 31 vessel crew members, and 2,270 other staff, including 732 vessel crew members. As of 2025, the BCG has 195 officers and 3,739 other staff, for a total of 3,934 personnel. The number of personnel has increased significantly compared with the time of the preparatory survey and has continued to show an upward trend even when compared with 2022, after project completion (see Table 7).

Table 7 Trends in the number of BCG personnel (2022-2025)

Unit: number of personnel

Categories		2022	2023	2024	2025
Headquarters	Officers	42	48	41	41
	Others	212	222	220	231
South Zone	Officers	13	18	15	15
	Others	562	777	646	641
West Zone	Officers	50	52	52	51
	Others	1002	1011	1008	955
East Zone	Officers	53	55	55	56
	Others	1126	1123	1293	1291
Dhaka Zone	Officers	13	15	17	21
	Others	338	473	416	463
Agrajattra Base	Officers	12	10	12	11
	Others	153	170	156	158

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency

In the latest organizational structure chart (Figure 1), there are no changes to the overall structure; however, compared with the organizational chart at the time of the preparatory survey, two departments - the Intelligence Department and the IT & Communication Department - have been added under the Deputy Director General. In addition, the number of bases has increased in each zone.

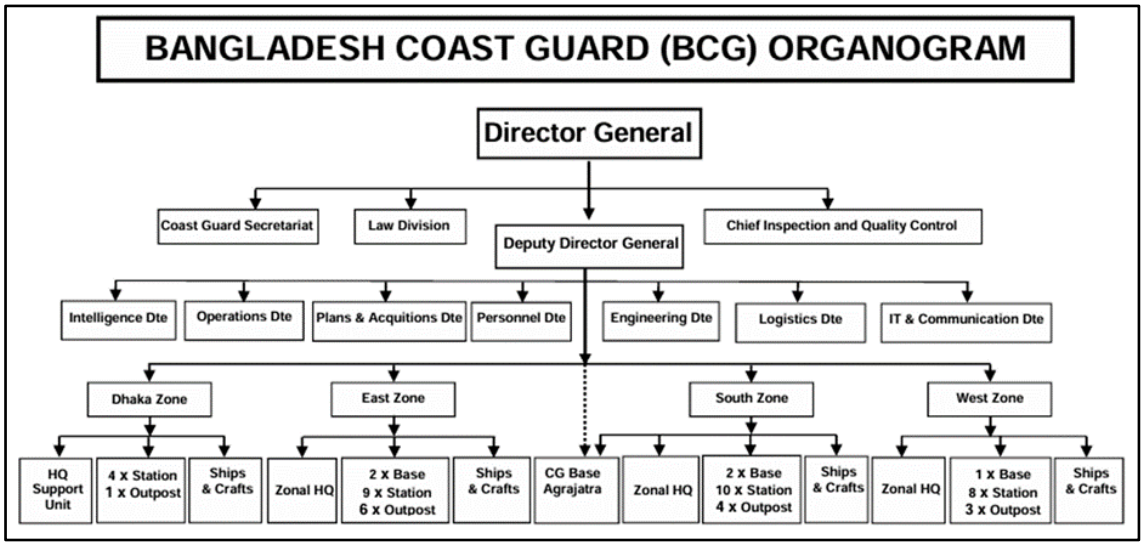


Figure 1 The Organogram of the BCG

Source: Provided by the executing agency

Under the circumstances of the increase in the number of departments and bases in each zone, as well as the rise in crimes such as smuggling and illegal entry, the number of personnel has been increasing. In light of this trend, it is considered that there are no particular issues with regard to the sustainability of outcomes related to maritime traffic safety and environmental protection achieved through the use of the rescue boats by these personnel.

3.4.3 Technical Aspect

As the BCG is a relatively new organization, it was reported at the time of the preparatory survey that most of its personnel were seconded from the navy. It was also envisaged that, in the future, the BCG would recruit its own personnel and provide training independently. However, as of the time of the ex-post evaluation, it was confirmed that all officers and vessel crew members are still seconded from the navy and that no independent recruitment by the BCG has been conducted, although some independently recruited staff are employed in administrative and general affairs positions. While it was reported at the time of the preparatory survey that the BCG would recruit its own vessel crew members, this would require amendments to the relevant laws. In light of the fact that governance by an interim administration was in place at the time of the ex-post evaluation, there was no clear prospect for such legal amendments to be made.

Although the BCG has not conducted independent recruitment of vessel crew members, a training center exclusively for BCG personnel has been established at Agrajattra Base in the South Zone, where 15 training courses were offered as of the time of the ex-post evaluation. Among these, the Basic Orientation Course is mandatory for all BCG personnel, while other courses are attended by personnel recommended by their respective postings. At this center, training is also provided on the operation of various vessels, including the 20m type rescue boats and 10m type rescue boats provided under this project, and personnel who have completed these trainings share the training content with other staff at their assigned posts. In addition, two units of oil pollution prevention equipment provided under this project have been deployed at the center and are used in the “Oil Pollution Response and Equipment Orientation Course.” At the four bases where the 20m type rescue boats are deployed, demonstration drills using oil pollution prevention equipment are conducted on a monthly basis to promote awareness of the operation of the 20m type rescue boats and the use of the oil pollution prevention equipment. Furthermore, in the wheelhouses of both the 10m type rescue boats and the 20m type rescue boats, reference materials summarizing particularly important points from the operation manuals provided under this project are installed.

In addition, even after project completion, BCG personnel have been dispatched to JICA’s Knowledge Co-Creation programs in the maritime safety and security sector in Japan, with one participant in FY2022 for search and rescue and environmental disaster prevention, one participant in FY2023 for maritime security policy program, and three participants in FY2024 for

maritime security policy program, maritime law enforcement, and search and rescue and environmental disaster prevention, thereby contributing to the enhancement of technical skills and knowledge.

Based on the above, it can be said that the sustainability of the outcomes achieved by this project from a technical perspective is high.

3.4.4 Financial Aspect

At the time of the preparatory survey, it was reported that BCG's overall budget had been increasing on an annual basis, and it was confirmed at the time of the ex-post evaluation that the same trend continued (see Table 8).

Table 8 Trends in BCG's overall budget (FY2021/2022-FY2023/2024)

Unit: 1,000 Bangladesh Taka

Name of Items	FY2021 / 2022	FY2022 / 2023	FY2023 / 2024
Overall budgets	6,600,000	7,144,100	7,840,200
Budgets for Ship's procurement	1,319,200	1,090,000	949,000
Budgets for Ship's fuel	555,000	581,590	720,000
Budgets for Ship's maintenance (including docking)	320,000	320,000	320,000
Budgets for procurement and maintenance of communication facilities	15,000	220,000	165,000

Source: Developed by the external evaluator based on the response to the questionnaire from the executing agency

As the overall organizational budget has been increasing on a continuous basis and budgets for fuel, maintenance, training, and other items are secured, it can be said that the sustainability of the outcomes achieved by this project from a financial perspective is high.

3.4.5 Environmental and Social Aspect

Through this ex-post evaluation, no negative environmental or social impacts, nor the potential for such impacts to occur in the future, were identified with regard to the outcomes achieved by this project.

3.4.6 Preventative Measures to Risks

At the time of the ex-ante evaluation, no particular risks were anticipated, and no noteworthy risks have been identified after project completion.

3.4.7 Status of Operation and Maintenance

Maintenance staff are assigned at each base where the rescue boats are deployed, and routine maintenance is conducted on a daily basis. In addition to rapid maintenance after each operation, maintenance and inspections are carried out at the respective bases based on operating hours, at intervals of 50, 100, 150, 200, and 250 hours. In addition to daily maintenance, the following

measures are taken in the event of malfunctions or breakdowns.

- When parts replacement is required, spare parts are used if available; if spare parts are not in stock, new parts are procured (the spare parts provided by JICA together with each vessel, equivalent to approximately three years' supply, have already been largely used). When procurement of parts is required, an application is submitted from the base to the BCG Headquarters, and after review by the Headquarters, the actual procurement procedures are carried out. As procurement is generally from overseas, replacement of parts takes several months.
- In cases of malfunctions that cannot be handled at the base level, the vessels are sent to maintenance facilities for repair. The status of maintenance facilities by zone is as follows.
  - Dhaka Zone: At present, no malfunctions requiring specialized repair of the provided rescue boats have occurred. A BCG dockyard is scheduled to be completed near Pagla Station in June 2026, and once completed, both 10m type and 20m type rescue boats will be able to be repaired there.
  - South Zone: There is a plan to construct a dockyard, but it has not yet been concretized. Currently, if a malfunction occurs, repairs are requested at naval maintenance facilities in Chattogram City. It is also possible to outsource repairs to nearby private repair facilities.
  - West Zone: In 2025, a BCG vessel maintenance facility was completed at Mongla Port, enabling repairs of 10m type rescue boats at this facility. Repairs of 20m type rescue boats are handled at the nearby Khulna Shipyard or related naval facilities.
  - East Zone: Both 10m type and 20m type rescue boats can be handled at naval-related facilities in Chattogram City. In addition, a boat maintenance facility established by the U.S. government is located in Chattogram City, where maintenance of 10m type rescue boats can also be carried out.

As of the time of the field research for this ex-post evaluation from January to February 2025, malfunctions or defects had occurred in one of the four 20m type rescue boats and three of the twenty 10m type rescue boats; however, it was confirmed that appropriate measures, such as parts replacement and arrangements for repairs, were being taken in all cases.

Facilities for the maintenance and repair of the provided rescue boats have been identified and secured, and daily maintenance and repair responses are being carried out appropriately. Therefore, the sustainability of the outcomes achieved by this project from the aspect of operation and maintenance is high.

Based on the above, although there are slight issues been observed in the aspect of policy/system due to the lack of a clear outlook for the formulation of the next development plan at the time of the ex-post evaluation, there are no issues on institutional/organizational, technical, financial, and

environmental and social aspects including the current status of operation and maintenance, and preventative measures to risks. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to strengthen the capabilities on immediate search and rescue operation to cope with vessel accidents and natural disasters by improvement of vessels and equipment of BCG, thereby contributing to reduction damages by vessel accidents and natural disasters in coastal and inland waters of Bangladesh.

This project is consistent with Bangladesh's national development policies and development needs, as well as Japan's ODA policy. Although there was no external coherence based on coordination with other donors, internal coherence with a JICA project was confirmed. Therefore, its relevance and coherence are high. Savings were generated through bidding processes related to the procurement of the provided vessels, and outputs increased as equipment not included in the original plan was procured using these savings; however, the total project cost, including the additional procurement, remained within the planned budget. On the other hand, the project period exceeded the original plan by eight months and surpassed the planned period. Therefore, efficiency of the project is high. With regard to quantitative effects, all four indicators were achieved, and although some issues were identified with respect to qualitative effects, it was confirmed that a certain level of outcomes has been demonstrated. The provided vessels have been used not only for responding to natural disasters and vessel accidents, recovery of spilled oil, and safety management through daily patrol operations, but also for disaster response outside the areas under BCG's jurisdiction. In addition, it was confirmed that they have been used to respond to the medical needs of residents in remote islands and char areas. This project has achieved its objectives. Therefore, effectiveness and impacts of the project are high. Although here are slight issues been observed in the aspect of policy/system due to the lack of a clear outlook for the formulation of the next development plan at the time of the ex-post evaluation, there are no issues on institutional/organizational, technical, financial, and environmental and social aspects including the current status of operation and maintenance, and preventative measures to risks. Therefore, sustainability of the project effects is high.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It was reported that when oil pollution prevention equipment was used in response to an oil tanker accident that occurred near the Mongla Base in December 2024, only about 35% of the spilled oil could be recovered (see "3.3.1.2 Qualitative Effects (Other Effects)"). As rivers in this

area experience periods of high waves, the oil boom floated above the water surface due to wave conditions, preventing sufficient oil recovery. This suggests that, depending on the area and season of use, marine-use oil booms that can cope with higher waves may be more effective than the river-use oil booms provided under this project. Although oil recovery was carried out without problems in other zones and in accidents that occurred at different times in the Western Zone, in light of the possibility that similar incidents may occur in the future, it is expected that the effectiveness of the oil booms provided under this project will be verified and that consideration will be given, as necessary, to the deployment of marine-use oil booms as well.

In Bangladesh, *the NOSCOP* was formulated in February 2020 to clarify response measures and frameworks in the event of oil spill accidents. As oil recovery by the BCG is positioned as one of the key measures under *the NOSCOP*, enhancing the effectiveness of oil pollution prevention equipment could also constitute an important measure for the implementation of *the NOSCOP*. Since *the NOSCOP* is scheduled to be reviewed every five years, it is recommended that, in line with the future revision schedule of *the NOSCOP*, surveys be conducted on the effectiveness of the current oil booms in coordination with relevant agencies involved in *the NOSCOP* implementation, and that the need for procuring marine-use oil booms according to region and season be re-examined.

4.3 Lessons Learned

Verification of specifications of procured equipment

The specifications of each vessel and piece of equipment provided under this project were determined through repeated discussions between the executing agency and the implementation consultant. With regard to the oil booms for oil pollution prevention, discussions were also held on whether to adopt river-use or marine-use specifications. Based on the executing agency's view that river-use oil booms would be sufficient, all 22 sets were procured as river-use oil booms. However, actual use in accident responses suggested that, depending on the region and season, marine-use oil booms might have been more effective (see "4.2 Recommendations"). When providing multiple sets of equipment, it is important to carefully examine and verify, with reference to examples from other countries, whether all equipment should have the same specifications or whether equipment with different specifications should be included in consideration of the characteristics of the areas where they will be deployed and used.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None.

5.2 Additionality

None

(End)