

## Ex-Ante Evaluation

### 1. Name of the Project

Country: Kingdom of Morocco

Project: Oceanographic and Fishery Research Vessel Construction Project

Loan Agreement: January 16, 2017

Loan Amount : 5,371 million Yen

Borrower: Institut National de Recherche Halieutique (INRH)

### 2. Background and Necessity of the Project

#### (1) Current State and Issues of the Fisheries Sector in Morocco

Because of the cold Canary Current and upwelling, the water area along the Atlantic Ocean in the Kingdom of Morocco is an excellent location for fishing that has many different kinds of marine life, such as octopus and sardine (their catch of octopus, a bottom-dweller, is the world's second largest and Japan imports more octopus from Morocco than from any other country). Because the fisheries sector accounts for about 3% of GDP and about 4.5% of the total exports, the fisheries are a valuable source for the country's acquisition of foreign currency. In addition, the fisheries sector is important also from the viewpoint of job creation. About 170,000 workers are engaged in the sector and about 500,000 workers are engaged in fishery-related processing industries. In this decade, the world's consumption of marine products has constantly increased in terms of quantity and monetary amount, and domestic consumption shows a high increase of 8% annually. Therefore, the fisheries sector is expected to continue to grow.

Since 2000, however, climate change and ocean pollution have both had a great impact on the ecological system, including fisheries resources, resulting in increasing fluctuations in the annual catch. Because these fluctuations influence the fishery workers' lives, it is necessary for the Morocco Government to immediately improve the quality of oceanographic and fishery research in order to manage their fisheries resources sustainably and appropriately.

Responding to this, the Institut National de Recherche Halieutique (hereinafter, "INRH") has carried out research using existing vessels which were provided by grant aid. However, these vessels have become decrepit and are small, limiting INRH's research capacity.

In addition, because INRH has insufficient capacity to create a system to evaluate resources through the use of scientific data into which is integrated the relationship between the environment and creatures regarding their adaptation to

climate change (evaluation of resources based on the ecosystem), and conduct deep-sea research on the sustainable development and use of deep-sea shrimps, whose market price is high, it is necessary for INRH to improve their research capacity to develop the fisheries industry.

(2) Development Policies for the Fisheries Sector in Morocco and the Priority of the Project

In this situation, the Morocco Government's Ministry of Agriculture and Fisheries formulated Plan Halieutis in 2009. This is a plan to modernize fisheries by 2020 and sets up three pillars: (1) sustainable use of resources; (2) improved quality of marine products; and (3) strengthening competitiveness through improvement of added values. In addition, at the 22nd UN Framework Convention on Climate Change held in Morocco in 2016, the Morocco Government announced the "Blue Belt Initiative," a policy related to marine climate change measures, which specifies three main measures for reducing and keeping up with climate change: (1) strengthening coastal monitoring; (2) sustainable fisheries; and (3) sustainable aquaculture. Moreover, in order to carry out Plan Halieutis, INRH plans to immediately collect and analyze the data required for fisheries resources management measures and provide information on the results, formulate a "strategic development plan" (2015 – 2017), prioritize strengthening the research function in marine and fisheries resources, and procure an oceanographic and fishery research vessel. Morocco is also an international base for research on marine and fisheries resources. For example, since the establishment of the Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic (1991), the country has served as the Chair of the International Research Department. From this viewpoint also, the procurement of a new research vessel is highly significant.

Given this background, the Morocco Government requested the Japanese Government to provide support for the "Oceanographic and Fishery Research Vessel Construction Project" (hereinafter, the "Project") (STEP request, 2014).

(3) Japan and JICA's Policy and Operations in the Fisheries Sector

According to the Country Assistance Policy for the Kingdom of Morocco (May 2012), Japan has specified "Strengthening of economic competitiveness and sustainable economic growth" as a priority assistance field. In this field, JICA defines the "Agriculture and Fisheries Promotion Program" as a program to be strengthened. In addition, JICA specified "Agricultural and Fisheries Industries" as a priority field in its country analysis paper for Morocco (November 2014) and analyzed that "Japan will continue to provide all-Japan support based on

high-level fisheries technologies that can only be provided by Japan.” This Project is consistent with the policy and the analysis.

Japan has provided grant aid for fisheries in many cases (22 cases in total). In relation to this Project, Japan provided two fishery research vessels under the “Fisheries Promotion Plan” (1985; see Note 1) and the “Fishery Research Vessel Construction Plan” (1999; see Note 2) and one fishery training vessel in the “Fishery Training Vessel Construction Plan” (1994; Note 3). Japan has also provided technical cooperation in several cases. As part of the recent “Capacity Development of Fisheries Resource Monitoring for Sustainable Management of Small Pelagic Resources in the Kingdom of Morocco” (2010 – 2015), Japan provided support to the fisheries sector through various schemes, such as efforts to improve research and analysis methods, and efforts to strengthen resource evaluation and research capacity.

In addition, the Japanese and Morocco Governments have built a friendly relationship. For example, Morocco has stably permitted the entry of Japanese tuna long liners for more than 30 years under the “Japan-Morocco Fisheries Agreement” enforced in 1985 and has supported Japan’s views at various fisheries-related international meetings.

(Note 1) Charif Al Idrissi: international gross tonnage of 397

(Note 2) Al Amir Moulay Abdallah: international gross tonnage of 297

(Note 3) Al Hassani: international gross tonnage of 620

(4) Other Donors’ Activity

The European Union has carried out the following: navigation for marine and scientific research; investigation, evaluation and classification of coastal resources; and monitoring of fishing (2014 to 2017).

(5) Necessary of the Project

Because the Project aims to construct a new oceanographic and fishery research vessel to promote improvement of the ability to manage fisheries resources, thereby contributing to the sustainable development of the fisheries industry, it not only conforms to Japan’s cooperation policy and diplomatic policies but also supplements the results of cooperation in the past.

In addition, because under the Special Terms for Economic Partnership (STEP), the use of Japanese technology can be expected (shipbuilding technology for ensuring a 10-knot acoustic survey using diesel engine propulsion), it is highly necessary to support the implementation of the Project.

### 3. Project Description

#### (1) Project Objective

The objective of the Project is to strengthen INRH's scientific research capabilities based on the ecosystem approach and the monitoring of the marine environment and fisheries resources, by constructing a new oceanographic and fishery research vessel in conformity with the "Plan Halieutis (Fisheries Sector Development Plan)" of the Government of the Kingdom of Morocco, in order to contribute to the sustainable management of the fisheries resources in Morocco.

#### (2) Project Site/Target Area

The whole country of Morocco

#### (3) Project Components

- 1) Construction of a new oceanographic and fishery research vessel (including returning the vessel to Morocco and training the crew; international gross tonnage of about 1,170)
- 2) Consulting services (bidding assistance, construction supervision)

#### (4) Estimated Project Cost

6,876 million yen (loan amount: 5,371 million yen)

#### (5) Schedule

Scheduled between January 2017 and January 2022 (61 months in total). The project will be regarded as being completed at the time of the final delivery after the end of the one-year guarantee term from the actual delivery.

#### (6) Project Implementation Structure

- 1) Borrower: Institut National de Recherche Halieutique (INRH)
- 2) Guarantor: The Government of the Kingdom of Morocco
- 3) Executing Agency : Institut National de Recherche Halieutique (INRH)
- 4) Operation and Maintenance System

The owner of the vessel will be INRH. Before the Project is carried out, a project executing unit will be established to supervise the implementation of the Project. The maintenance will be carried out by the Supply and Logistics Division of INRH's Research Support Department.

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

##### 1) Environmental and Social Consideration

① Category: C

② Reason for Categorization: According to the JICA Guidelines for Environmental

and Social Considerations (promulgated in April 2010), it can be judged that the unfavorable impact of the Project on the environment is minimal

- 2) Promotion of Poverty Reduction: None in particular
- 3) Promotion of Social Development: Women account for about 30% of the total number of researchers at INRH. Because female researchers work on the existing research vessels and are also expected to be active on the new research vessel, the new vessel has been designed with due consideration for gender and the Project has been classified as a gender-integrated project.

(8) Collaboration with Other Donors: None in particular

(9) Other Important Issues

As a STEP project, the Project is expected to use Japanese technology. The Japanese “shipbuilding technology for ensuring a 10-knot acoustic survey using diesel engine propulsion” controls underwater radiation noise and uses diesel engine propulsion to make it possible to carry out difficult acoustic surveys. Japan has superiority in this technology. Diesel engine propulsion requires a low initial investment and has low maintenance costs, and has been used for vessels provided by grant aid in the past. INRH is proficient in the use of this technology.

#### 4. Target Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicators	Baseline (Actual value in 2015)	Target (2024) [Expected value 2 years after project completion]
Number of survey navigation days per year (days/year)	-	145
Pelagic resources: Distance of 4-cycle acoustic surveys (miles/ year)	-	9,000
Demersal resources: Number of times bottom trawling (times/ year)	-	80
Increased species sustainably managed: Number of species for which the number of reports on stock assessment is updated (species) (octopus, squid, 5 pelagic species (sardine, big-eyed herring, anchovy, horse mackerel, Spanish mackerel))	-	3 or more
Information to fishermen/ aquaculturist: Number of marine environmental map (Distribution maps for water temperature / salinity/ chlorophyll etc.)	-	1

(2) Qualitative Effects: ① improvement of research capacity related to the fisheries industry; ② prevention of exhaustion of fisheries resources; and ③ early discovery and restraint of marine pollution.

(3) Internal Rate of Return

Based on the conditions indicated below, the Economic Internal Rate of Return (EIRR) of this Project is 22.3%. The Financial Internal Rate of Return (FIRR) has not been calculated because the Project is not expected to produce profits.

[EIRR]

Cost: Project cost (excluding tax), operation and maintenance costs (excluding tax)

Benefit: Stabilization of catches

Project Life: 30 years

## 5. External Factors and Risk Control

None in particular

## 6. Lessons Learned from Past Projects

(1) Lessons from Similar Projects

According to the ex-post evaluation of the “Fishery Research Vessel Construction Plan” (1999 E/N), a grant aid to the Kingdom of Morocco, it was found that some research equipment could not be handled sufficiently, which provided the lesson that “when equipment which requires high-level skill is provided, it is important to also provide support, including technical support, such as training in handling the equipment.”

(2) Use of the lesson for this Project

In this project, high-level research equipment that requires proficiency is planned to be introduced, including ecosystem research equipment. Training of the research vessel crew in Japan (at a shipyard) and local training of researchers (dispatch of engineers from the manufacturer) will be included in the contract in order to strengthen both the handling capacity and the research capacity.

## 7. Plan for Future Evaluation

(1) Indicators to be Used

- 1) Number of survey navigation days per year (days/year)
- 2) Pelagic resources: Distance of 4-cycle acoustic survey (miles/ year)
- 3) Demersal resources: Number of bottom trawling (times/ year)
- 4) Number of species for which the report on stock assessment is updated (once a year) (① octopus; ② squid; ③ 5 pelagic species (sardine, big-eyed herring,

anchovy, horse mackerel, Spanish mackerel))

- 5) Number of marine environmental maps (distribution maps for water temperature/salinity/chlorophyll etc.) (marine resources)
- 6) Economic Internal Rate of Return (EIRR) (%)

(2) Timing

2 years after project completion