No.

Ex-Post Evaluation Report of Japanese Technical Assistance Projects・Grant Aid Projects 2009 (Malawi, Morocco)

November 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

Mitsubishi UFJ Research & Consulting Co., Ltd.

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of Technical Cooperation projects that were mainly completed in fiscal year 2006. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

November 2010
Atsuro KURODA
Vice President
Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations, the English translation of the original Japanese version, shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this volume is posted on JICA's website.

JICA's comments may be added at the end of each report when the views held by the operations departments do not match those of the external evaluator.

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Evaluation conducted by:
Hajime Onishi, Mitsubishi UFJ Research & Consulting

1. Outline of the Project

Country: Republic of Malawi		**Project title:** The Project on Aquaculture Research & Technical Development of Malawian Indigenous Species
Issue/Sector: Fishery Sector		**Cooperation scheme:** Technical Cooperation Project
Division in charge: Fishery Development Team, Group III, Rural Development Dept.		**Total cost:** 892.54 million yen
Period of Cooperation	April 1999–May 2006 (including the extended period from May 2004 to May 2006)	**Partner Country's Implementing Organization:** Department of Fisheries, Ministry of Natural Resources and Environmental Affairs (at the commencement of the project, currently under the Ministry of Agriculture)
		Supporting Organization in Japan: Tokyo University of Fisheries (Tokyo University of Marine Science and Technology), Kochi University, etc.
Related Cooperation	The Research Project for Small-Scale Aquaculture of Malawian Indigenous Species The Master Plan Study on Aquaculture Development in Malawi Advisor on Aquaculture Development Planning	

1-1. Background of the Project

A landlocked country in southeastern Africa, Malawi, is known for its thriving inland fisheries. Since Malawians get some 70% of their animal protein from aquatic resources, Malawi's fishing industry plays an important role in the nation's dietary life. Meanwhile, since the 1990s, as a result of overfishing and drought, etc., fish catches in Lake Malawi, Lake Malombe and other large lakes have shown a declining trend. In addition to the concern over the depletion of aquatic resources in lakes, the deterioration of bio-habitats is also feared, as reflected in the total ban on the introduction of alien species in 1992, in order to protect species indigenous to Lake Malawi.

Under these conditions, aquaculture has begun to attract attention as an alternative solution to fishing in lakes. In response to a request made by the Government of Malawi, since 1996, JICA has implemented a "project-type" technical cooperation titled "The Research Project for Small-Scale Aquaculture of Malawian Indigenous Species". Given the attainment of initial goals, including the granting of basic fish-farming techniques, the improvement of the research environment, and the selection of fish species suitable for farming, in September 1997, the Government of Malawi requested a new technical cooperation project to develop fish-farming techniques.

1-2. Project Overview

(1) Overall Goal

To establish appropriate fish-farming techniques in Malawi

(2) Project Purpose

1. To establish seed production techniques for new aquaculture species
2. To establish appropriate fish-farming techniques for existing species

(3) Outputs

1.1 Reproductive ecology and spawning habits of new species are clarified.
1.2 Brood stock rearing techniques of new species are established.
1.3 Induced spawning and larvae rearing techniques for new species are established.
2.1 Appropriate species and farming methods for variable physical, technical and socio-economic conditions are clarified.
2.2 Constant seed production of the Clariid catfish is achieved.
2.3 Techniques developed at the NAC are verified at selected fish farms.

2.4 Farmer's willingness and interest in fish-farming is promoted.
3. Mechanism to continue activities that initiated by the project is established.

(4) Inputs (as of the Project's termination)

Japanese side:

Long-term Expert	14	**Equipment**	59.8 million Yen
Short-term Expert	13	**Local cost**	69.1 million yen (for April 1999 to March 2004), 16.5 million Malawi Kwacha (for May 2004 to May 2006)
Trainees received	24	**Others (Dispatching costs of study team, etc.)**	N/A

Moroccan Side:

Counterpart	21 in total	**Equipment**	Vehicle, Computer, Office equipment, etc.
Land and Facilities	Project Office and Utilities: Project site (34 ha.), Project office, Hatchery, etc.		
Local Cost	19.45 million Malawi Kwacha		

2. Evaluation Team

Members of Evaluation Team	Hajime Onishi Mitsubishi UFJ Research & Consulting Co., Ltd.	
Period of Evaluation	January 2010 – October 2010	**Type of Evaluation:** Ex-post

3. Project Performance

3-1. Performance of Project Purpose

The following comments are described in the terminal evaluation report: Technical and institutional capacity of National Aquaculture Center (NAC) has been strengthened. Although some restricted circumstances still exist, appropriate aquaculture method for existing aquaculture species has been newly established in Malawi.

3-2. Achievement related to Overall Goal

The following comments are described in the terminal evaluation report: The project objectives are mostly achieved. Seed production techniques for new aquaculture species are largely established on the ground that the project has produced seed of four new species with approximately 70% of survival rate. In addition, since the productivity of Tilapia as existing aquaculture species shows an increasing trend, the second objective of the project has been achieved.

3-3. Follow-up of the Recommendations by Terminal Evaluation Study

The following recommendations were described in the terminal evaluation report: i) To refine rearing techniques for existing aquaculture species with less input using locally available manure for small-holder farmers, ii) to improve dissemination and transfer of knowledge generated by the project, iii) to enhance active collaboration with other organizations engaged in aquaculture related research (especially technical development, including those related to Chambo Restoration Strategic Plan), iv) to establish self-revenue generation system for necessary activities in NAC, and maintain at least the current level human resources, and v) to commence consultation by the Governments of Malawi and Japan on the framework of further assistance.

As to the recommendation-i) and ii), these were dealt with to a certain extent during the project's extended period from 2004 to 2006 and various NGOs and international organizations are coordinating their efforts to address the recommendation-iii). Regarding the recommendation-iv), only limited methods are available for raising funds, thus no effective measures have been established, and the NAC is facing the problem of staff drain. Regarding the last recommendation, the "Master Plan Study on Aquaculture Development in Malawi" and a follow-up expert dispatch were implemented by JICA, and policy recommendations utilizing the project outputs were made.

4. Results of Evaluation

4-1. Summary of Rating Results

Overall Rating: C

Relevance: a
Effectiveness: b
Efficiency: b
Sustainability: b

4-2. Summary of Evaluation Results

(1) Relevance

Consistency with the national development policy, etc.: At the time the project was planned in 1999, "poverty reduction", "food security", etc. were designated as goals in Malawi Vision 2020. In connection to this, the Malawian government set up as one of its priority strategies for achieving these objectives a plan for the "Short- and Mid-Term Development and Growth of Small-Scale Agriculture". While there is no specific mention of fish-farming techniques in Malawi Vision 2020, the purpose of the project, "developing appropriate fish-farming techniques", ultimately leads to the improvement of the livelihood and nourishment of poor farmers by disseminating knowledge regarding self-sufficient fish-farming and to improved techniques for raising freshwater fish—the Malawian people's main source of animal protein. Thus, there is a certain consistency between the objectives of Malawi Vision 2020 and those of the project. At the time of project completion in 2006, "poverty reduction", "food security", and "improvement in nutrition" continued to be regarded as goals in the Malawi Growth and Development Strategy (MGDS 2006/07–2010/11). Consequently, there was no significant change in the direction of the country's policy. Therefore, a certain degree of consistency between the ultimate objectives of the country policy and the goals of the project is ensured.

Consistency with the development strategies, etc., of the fisheries sector: At the time of the 1999 plan, in the Fisheries Management and Fish-Farming Policy (formulated in 1999), "promotion of investment in aquaculture in rural areas" and "development of new fisheries resources" was regarded as a priority issue. These objectives are therefore consistent with the overall goal and project purposes. On the other hand, under the Presidential Initiative on Aquaculture Development (PIAD) 2006–2011 which was formulated in 2006, a complete change took place from the policy of "developing and disseminating self-sufficient fish-farming by small-holder farmers", which had been the main focus of the government's sector policy up to then, to the policy of disseminating commercial fish-farming techniques on pilot farms, for example. The thrust of these activities is a policy change from one stressing self-sufficient fish-farming toward one stressing commercial fish-farming. As such, a slight discrepancy is beginning to appear between these activities being undertaken at the initiative of President Mutharika and those carried out under the project.

Regarding the relevance with Japan's ODA Policy, both at the time of planning in 1999 and upon conclusion in 2006, Japan set out to "increase food production" and "increase food security" as priority areas in its assistance to Malawi. While there is no specific description of inland water fisheries, as stated earlier, the overall goal of the project ultimately lead to the improvement of the living standard and nutrition of poor farmers in Malawi. Therefore, the direction of the Japanese government is consistent with that of the project to a certain extent.

About the development needs, at the time, the project ended in 2006, the sharp decline in reserves of fish species with high edible value was recognized. Thus, there continues to be a need for the research and development of new sources of nourishment through the development of aquaculture.

To sum up, this project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

(2) Effectiveness

Regarding Project Purpose 1, "To establish seed production techniques for a new aquaculture species," the common manual on the seed production of the four new species was prepared by March 2004, and the seed production of Ntchila and Thamba was successfully achieved. However, these four species were excluded from the candidate species for extension activities to be conducted at the later stage, mainly

because of economic reasons, whereas breeding techniques were developed at the laboratory level.

In order to measure the extent to which Project Purposes 1 was achieved, the indicator of "the survival rate involved in the seed production of new aquaculture species" was established in advance. However, no clear data related to this indicator was obtained in this survey. In the terminal evaluation, it is concluded that, as of 2004, "the survival rate of four new aquaculture species up to the juvenile stage was around 70%, and the counterparts were now able to collect eggs, hatch them, and raise them to the larvae/juvenile stage. Therefore, seed production techniques for the new aquaculture species have been nearly established." On the other hand, the biggest technical challenge in seed production is "how to provide fodder to larvae fish at the initial stage in the feeding process and nurture them to fingerlings." In short, the challenge is how to raise the survival rate from larvae to fingerlings. If the survival rate of 70% in the terminal evaluation report should be about that of juvenile, it seems that the size of the survival rate of juveniles is not quite appropriate for evaluating the quality of seed production techniques. In short, while the seed production techniques for two out of four targeted species were established to some extent with regard to Project Purpose 1, it can be concluded that Purpose 1 was only partially achieved because i) the above two species were removed from the project component of the later stage, and ii) there is the issue about how to interpret the survival rate which is the criterion for judging the extent to which a seed production technique is considered established.

Regarding Project Purpose 2, "To establish appropriate fish-farming techniques for existing species (Tilapia and the Clariid catfish)," in tandem with the dissemination of fish-farming techniques, technique development tests and on-farm research were continued at selected fish farms during the period of extension from 2004 to 2006. As presentation of successful cases, tours of selected fish farms were conducted, and a total of six workshops (Open Field Days) were held during the extended period from 2004 to 2006. According to the terminal evaluation report, as of 2004, the NAC had received a total of approximately 80 inquiries. From the foregoing, it can be concluded that the motivation of small-holder farmers to convert to fish-farming has been heightened in a convincing way through implementation of the project.

In order to measure the extent to which Project Purposes 2 was achieved, the indicator of "the increase in production volume among selected fish farms" was also established. According to the terminal evaluation, as of 2004, it was confirmed that the production volume of Tilapia increased at 11 out of the 12 farms selected for the project. Thus, Project Purposes 2 is judged to have been achieved.

In summary, the project has somewhat achieved its objectives, therefore its effectiveness is fair.

(3) Efficiency

The amount of inputs of the Japanese side was nearly as planned. As for the input amount by the Malawian side, for the period from 1999 to 2004, the number of counterparts almost doubled, ultimately enabling the Malawian side to secure more inputs than originally planned. There was almost no problem with the timing of the inputs and project cost. Conversely, as to the period of cooperation, the extension of the project period created a gap between the planning period (five years from 1999 to 2004) and the actual period (seven years from 1999 to 2006). The decision to extend the project period two years was reached on the basis of outputs achieved from 1999 to 2004 and for the purpose of: (1) continuing the on-farm research, and (2) disseminating fish-farming techniques among selected farmers. Although the period was extended to make sure outputs were spread, the dissemination of fish-farming techniques among selected farmers was materially included in the initial action scope, so that by 2004, a certain amount of outputs was expected. In light of these facts, the efficient implementation of the project was disturbed to some extent, as an afterthought.

Therefore, period of cooperation are not so appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is fair.

(4) Impact

The social impact assessment survey, which conducted on both the fish farms that were selected and not selected in the project, revealed that interest in aquaculture among farmers in the vicinity of the selected fish farms was motivated via the project, thus paving the way for their participation in fish-farming. More concretely, a survey concerning the period when ordinary farmers participated in fish-farming found that more than 90% of respondents began participating in fish-farming after 2004, suggesting that the extended period of the project (2004–2006) contributed significantly in changing farmer's behavior. Also, the

social impact assessment survey revealed that through participation in the project, fish-farming came to be regarded as an important new source of income, thereby contributing to the presumed diversification of farmer income.

According to the interview with governmental officers and beneficiaries related to the project, it can be anticipated that the following positive impacts become evident.

- ✓ Changes in the image of fish-farming: As a result of the massive expansion of various NAC facilities triggered by the execution of the project and previous projects, expectations rose for fish-farming among farmers in the vicinity of Domasi, where the NAC is located. Particularly, it is believed that "the desire of small-holder farmers to participate in fish-farming was greatly motivated." Many people said: "Before the project was implemented, the image that farmers had of fish-farming was akin to 'fish-keeping' (merely keeping fish in ponds), but after implementation, their image changed to 'fish production' (raising fingerlings to adult fish)."
- ✓ Collaboration with and contribution to the FAO project: On the premise that it would be able to use the research output of the project related to the fish-farming techniques used for cultivating the Clariid catfish, the FAO implemented the "Small-Scale/Semi-Industrial Aquaculture Promotion Project". In 2009, some 250,000 Clariid catfish seedlings were produced.

(5) Sustainability

With respect to fisheries sector policy, the current Mutharika government is striving to effect a conversion from "improving poor farmer livelihoods by disseminating self-supporting fish-farming techniques", as advanced by the previous administration, in order to "promote the fishery products industry by, among others, developing commercial fish-farming and contributing to economic growth", through the preparation of PIAD and others. The present government's policy direction seems to be slightly different from the project purposes.

On the financial front, with the aforementioned policy conversion as a remote cause, the budget of both the DOF and NAC has tended to increase, and the FY2010 budget grew 2.4-fold over the previous year. Improving the livelihood of poor farmers by continuing to promote self-supporting aquaculture is expected to be stressed as one of the basic policies of the Ministry of Agriculture and the DOF. However, it should be more paid attention to, under the circumstances of more focus on promoting Malawi's fish industry through the development of commercial fish farming, whether the budget appropriation will continue to improve for NAC in the years ahead.

On the technology front, no major problem has risen as of now, but the trend toward staff reduction observed since 2005 poses a critical risk that will have a decisive influence on efforts to ensure sustainability. Thus, unless radical measures for preventing staff drain are taken going forward, the fish-farming techniques established in the project will be of no use. In this sense, it is preferable as a timely measure to address this issue that NAC launched a process to recruit one staff member.

On the system front, the dissemination of fish-farming techniques related to self-supporting fish-farming, which was one of the outputs of the project, is fraught with problems regarding the capacity of District Fishery Officer (DFO) under the local government (District Assembly) and demarcation between NAC and DFO. Due to this, at present, systematic activities are not being undertaken, which causes concern about the lack of continuous and effective dissemination activities in the days to come.

Thus, some problems have been observed in the structural aspects of the executing agency, and the continuity of the project effects is fair.

4-3. Conclusions

Basically, there are no problems with project content and its consistency with the country's policy. Some of the project purposes had been achieved by 2006 when the project ended. The project period is the issue in terms of the efficient implementation of the project, and some apprehensions remain regarding the sustainability of institutional and operational aspects. On the other hand, however, many positive impacts have been generated, and dramatic improvement in financial stability can be expected as a result of sharp increases in the size of the budget.

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

4-4. Recommendations

Recommendations to the Executing Agency

Recommendation-1

Regarding the important outputs of the project, there is a lack of PR and advocacy activities by the DOF and NAC. Particularly, with regard to the three groundbreaking perspectives that were obtained in the project—(1) the relationship between the depth of the aquaculture pond and the degree of fish-rearing, (2) the superiority of the mono-sex culture method, and (3) fertilizer application techniques that use fertilizing methods appropriate to the needs of fish farmers—although the first one has spread to all of Malawi, the other two have spread only through the districts of Zomba and Chingali (the target areas of the project). Thus, immediate dissemination of these perceptions is desired.

Recommendation-2

In order to realize the above recommendations, first, those concerned with the dissemination of fish-farming techniques, including the DFO, agricultural improvement disseminators, and the NAC, should begin carrying out their dissemination activities in a systematic manner. Taking the present situation of sufficient budget appropriation as an opportunity, the building of a concrete implementation structure for promoting dissemination activities should be started. For example, the existing Research Extension Forum could be held more often, in order to begin deliberation on the strengthening of the implementation structure.

4-5. Lessons Learned

Timely revision of the PDM in response to changes in the direction of the project

Regarding the target groups of the project, at the start of the project, two types were envisaged: “small-holder fish farms” and “partly commercial fish farms”. However, in 2004, the decision was made to exclude “some commercial fish farms” from the target group. As has been noted, this decision significantly altered the direction of the project. At the time this decision was made, adjustments and corrections (such as the elimination of “partly commercial fish farms” from PDM, for example) should have been made to the PDM, and then the details of new objectives and activities should have been fully notified to those concerned, including the Malawian counterparts.

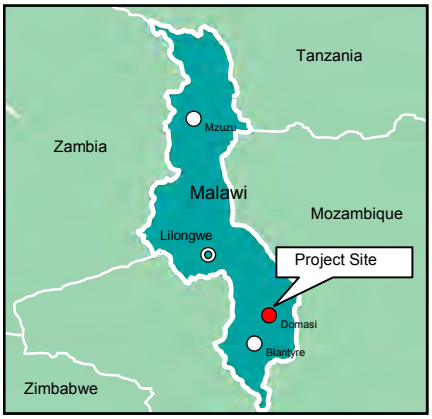
Republic of Malawi

Ex-Post Evaluation of Japanese Technical Cooperation Project

"The Project on Aquaculture Research & Technical Development of Malawian Indigenous Species"

External Evaluator:
Hajime Onishi, Mitsubishi UFJ Research & Consulting

1. Project Description



Project Locations

Fish Pond in National Aquaculture Center (NAC)

1.1 Background

Malawi, a landlocked country in southeastern Africa, has a population of 13 million (as of 2010) and an area equivalent to the combined area of Hokkaido and Kyushu in Japan. Abo ut a fifth of the land is taken up by lakes and marshes; thus, the country is known for its thriving inland fisheries. Since Malawians get some 70% of their animal protein from aquatic resources, Malawi's fishing industry plays an important role in the nation's dietary life.

Meanwhile, since the 1990s, as a result of overfishing and drought, etc., fish catches in Lake Malawi, Lake Malombe, Lake Chilwa, and other large lakes have shown a declining trend. In addition to the concern over the depletion of aquatic resources in lakes, the deterioration of bio-habitats is also feared, as reflected in the total ban on the introduction of alien species in 1992, in order to protect species indigenous to Lake Malawi.

Under these conditions, aquaculture has begun to attract attention as an alternative solution to fishing in lakes. In response to a request made by the Government of Malawi, since 1996, JICA has implemented a "project-type" technical cooperation titled "The Research Project for Small-Scale Aquaculture of Malawian Indigenous Species". Given the attainment of initial goals, including the granting of basic fish-farming techniques, the improvement of the research environment, and the selection of fish species suitable for

farming, in September 1997, based on the output achieved in the research project, the Government of Malawi requested a new technical cooperation project to develop fish-farming techniques.

1.2 Project Outline

Overall Goal	To establish appropriate fish-farming techniques in Malawi
Project Objective	1. To establish seed production techniques for new aquaculture species 2. To establish appropriate fish-farming techniques for existing species
Outputs	1.1 Reproductive ecology and spawning habits of new species are clarified. 1.2 Brood stock rearing techniques of new species are established. 1.3 Induced spawning and larvae rearing techniques for new species are established. 2.1 Appropriate species and farming methods for variable physical, technical and socio-economic conditions are clarified. 2.2 Constant seed production of the Clariid catfish is achieved. 2.3 Techniques developed at the NAC are verified at selected fish farms. 2.4 Farmer's willingness and interest in fish-farming is promoted. 3. Mechanism to continue activities that initiated by the project is established.
Inputs	Japanese Side: 1. Experts: 27 experts in total For Long-Term: 14 experts, For Short-Term: 13 experts 2. Trainees received: 22 trainees 3. Trainees for Third-Country Training Programs: 2 trainees (Dispatched to the Philippines) 4. Equipment: 59.8 million yen (for April 1999 to March 2004) 5. Local Cost: 69.1 million yen (for April 1999 to March 2004), 16.5 million Malawi Kwacha (for May 2004 to May 2006) 6. Others (incl. dispatch of related missions): N/A Malawian Side: 1. 21 Counterparts in total 2. Equipment: Vehicle, Computer, Office equipment, etc. 3. Land and Facilities, Project Office and Utilities: Project site (34 ha.), Project office, Hatchery, etc.

	4. Local Cost: 19.45 million Malawi Kwacha (as a supplemental budget for expenses of the project)
Total Cost	892.54 million yen
Period of Cooperation	April 1999–May 2006 (including the extended period from May 2004 to May 2006)
Executing Agency	Department of Fisheries, Ministry of Natural Resources and Environmental Affairs (at the commencement of the project, currently under the Ministry of Agriculture)
Cooperation Agency in Japan	Tokyo University of Fisheries, Kochi University, etc.
Related Projects	The Research Project for Small-Scale Aquaculture of Malawian Indigenous Species (Apr.1996 to Mar.1999) The Master Plan Study on Aquaculture Development in Malawi (Dec.2002 to Jul.2005) Advisor on Aquaculture Development Planning (2007 to 2009)

1.3 Outline of the Terminal Evaluation[1]

1.3.1 Achievement of Overall Goal

Technical and institutional capacity of National Aquaculture Center (NAC) has been strengthened. Although some restricted circumstances still exist, appropriate aquaculture method for existing aquaculture species has been newly established in Malawi. The project has significantly contributed to enhance the willingness of small-holder farmers located in the vicinity of selected farmers[2], thus proving the great possibility of dissemination of aquaculture in small-holder farmers in Malawi.

1.3.2 Achievement of Project Objective

It is judged that the project objectives are mostly achieved. Seed production techniques for new aquaculture species are largely established on the ground that the project has produced seed of four new species with approximately 70% of survival rate. In addition, since the productivity of Tilapia as existing aquaculture species shows an increasing trend, the second objective of the project has been achieved.

1.3.3 Recommendations

Three recommendations for the period up to 2004 (the original completion year of the project) and two recommendations for the period after 2004 were provided.

[1] In the terminal evaluation, the extended period from 2004 to 2006 was not included in its evaluation although this post evaluation study covers all the project period including the extended one. Here, the results of terminal evaluation only for the original period from 1999 to 2004 are described.

[2] For details on selected farmers, see Section 3.2.1.6.

For the remaining period up to 2004

- The project should refine rearing techniques for existing aquaculture species that can yield acceptance production with less input using locally available manure for small-holder farmers.
- The project should improve dissemination and transfer of knowledge generated by the project widely to the small-holder farmers and aquaculture related institutions.
- The project should enhance active collaboration with other organizations engaged in aquaculture related research and technical development, including those related to Chambo Restoration Strategic Plan.

For the period after 2004

- The government of Malawi should establish self-revenue generation system for necessary activities in NAC, and maintain at least the current level human resources.
- Both governments of Malawi and Japan should immediately commence consultation on the framework of further assistance based on the project results for aquaculture development and improvement of livelihood of the small-holder farmers.

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Onishi (Mitsubishi UFJ Research & Consulting Co., Ltd.)

2.2 Duration of Evaluation Study

The following study was conducted for the ex-post evaluation.

Duration of the Study: January 2010–November 2010

Duration of the Field Study: April 25, 2010–May 9, 2010, July 22, 2010–July 30, 2010

2.3 Constraints during the Evaluation Study

The existence of a report prepared by long- and short-term experts dispatched to Malawi from April 1999 to March 2004, that is, during the term of the project, could neither be ascertained nor obtained for this evaluation. Consequently, information regarding the same period was based on four sources: operating guidance reports, (2) terminal evaluation reports, (3) interviews with Malawian counterparts, and (4) interviews with those on the Japanese side[3,4].

[3] In this post evaluation study, i) interviews with government officials (including Malawian counterparts), ii) site investigation (including interviews with farmers at both Domasi and Chingale districts as the target region of the project), iii) beneficiary survey (implemented through a face-to-face interview) are conducted.

[4] The details of the beneficiary survey are as follows:

- Sampling method: Two-stage stratified random sampling
- Number of Samples: 110 samples in total (74 for direct beneficiaries (selected farmers of the project), 25 for indirect beneficiary farmers, 5 for fish farmers who are irrelevant to the project, and 6 for

3. Results of the Evaluation (Overall Rating: C)

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Malawi

(1) Consistency with the national policy

At the time the project was planned in 1999, "poverty reduction", "food security", "sustainable growth", and the "reduction of the disparity between the rich and the poor" were designated as goals in Malawi Vision 2020. In connection to this, the Malawian government set up as one of its priority strategies for achieving these objectives a plan for the "Short- and Mid-Term Development and Growth of Small-Scale Agriculture". While there is no specific mention of fish-farming techniques in Malawi Vision 2020, the overall goal of the project, "developing appropriate fish-farming techniques", ultimately leads to the improvement of the livelihood and nourishment of poor farmers by disseminating knowledge regarding self-sufficient fish-farming and to improved techniques for raising freshwater fish—the Malawian people's main source of animal protein. Thus, there is a certain consistency between the objectives of Malawi Vision 2020 and those of the project.

In 2006, when the project ended, "poverty reduction", "food security", and "improvement in nutrition" continued to be regarded as goals in the Malawi Growth and Development Strategy (MGDS 2006/07–2010/11). Consequently, there was no significant change in the direction of the country's policy. On the other hand, since the MGDS aspires to reduce poverty through economic growth, its approach is different from that of the aforementioned Malawi Vision 2020.[5] According to the logic indicated above, while a certain degree of consistency between the ultimate objectives of the country policy and the overall goal of the project is ensured, there are some differences in the way the two sides intend to achieve them.

(2) Consistency with fishery sector development strategies

At the time of the 1999 plan, in the (1) Fishing Resources Conservation Law (enacted in 1997), the provision of a relevant legal system was emphasized, with the "development of aquaculture" as a priority objective. Along with "promotion of investment in aquaculture in rural areas", "development of new fisheries resources" was regarded as a priority issue in the (2) Fisheries Management and Fish-Farming Policy (formulated in 1999). These objectives are therefore consistent with the overall goal and project purposes.

In 2006, when the project ended (2006), since the policy of "improving Chambo

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farmers who are not involved in fish farming nor relevant to the project)

・ Locations of survey: Chingale, Chididi and Domasi

[5] This point can also be inferred from the fact that the Presidential Initiative on Aquaculture Development (PIAD) 2006–2011, a fisheries sector policy described later, aspires to ensure food security through the promotion of small- to medium-sized commercial enterprises.

farming techniques" is enshrined in the (3) Strategy to Restore Chambo[6] Resources 2003–2015 (formulated in 2003), and since Chambo is a species targeted in the project, it is consistent with one of the project purposes, namely, the development of appropriate fish-farming techniques to increase the population of existing cultured fish species.

Under the leadership of Bingu wa Mutharika, President of Malawi, the (4) Presidential Initiative on Aquaculture Development (PIAD) 2006–2011 set a target for "increasing the production of fish-farming ten-fold by promoting commercial fish-farming", with the development of an elite seed as the main strategy. Under this presidential initiative, a complete change took place from the policy of "developing and disseminating self-sufficient fish-farming by small-holder farmers", which had been the main focus of the government's sector policy up to then, to one of: (1) effectively utilizing the large-scale seed production facilities at the NAC and elsewhere, and (2) disseminating commercial fish-farming techniques on pilot farms. Although some of the facilities and equipment provided under the project are being used in carrying out these activities, the thrust of these activities is a policy change from one stressing self-sufficient fish-farming toward one stressing commercial fish-farming. As such, a slight discrepancy is beginning to appear between these activities being undertaken at the initiative of President Mutharika and those carried out under the project.[7]

3.1.2 Relevance with the Development Needs of Malawi

At the time of the 1999 plan, the sharp reduction in Chambo catches, the main source of protein for the Malawian people, was acknowledged, and therefore, the search for a new source of nourishment through the development of fish-farming became a pressing issue. In this sense, it is easy to imagine that the need for research and development related to fish-farming in general was high.

At the time, the project ended in 2006, although the gross production of inland water fisheries was not on a decreasing trend, the sharp decline in reserves of fish species with high edible value was recognized. Thus, there continues to be a need for the research and development of new sources of nourishment through the development of aquaculture.

3.1.3 Relevance with Japan's ODA Policy

Both at the time of planning in 1999 and upon conclusion in 2006, Japan set out to "increase food production" and "increase food security" as priority areas in its assistance to Malawi. While there is no specific description of inland water fisheries, as stated earlier, the overall goal of the project ultimately lead to the improvement of the living standard and nutrition of poor farmers by improving Malawi's production efficiency of

[6] "Chambo" is the local name of a member of the Tilapia family.
[7] Of course, under this initiative, the spread of self-sufficient fish-farming to small-holder farmers is not considered less serious; rather, its importance as a means of improving livelihood continues to be recognized.

fish farming of freshwater fish, which is the main source of animal protein for Malawians. Therefore, the direction of the Japanese government is consistent with that of the project to a certain extent.

To sum it up, while a certain degree of consistency between the basic strategy of Malawi's priority measures and the goal of the project is guaranteed, the two sides use somewhat different approaches to achieve their similar objectives. Additionally, in terms of sector policy, a policy conversion of sorts has occurred, moving away from emphasis on self-sufficient fish-farming to emphasis on commercial fish-farming at around the completion of the project, implying that a discrepancy is beginning to appear between the project purpose and policies of Malawi in terms of methods chosen to realize their respective policy objectives. However, this does not mean that the dissemination of self-sufficient fish-farming to small-holder farmers is being less emphasized in the country's priority measures and fisheries sector policies. Rather, its importance as a means of improving for the livelihood of small-holder farmers is well recognized. Additionally, there exists a need to research and develop new sources of nourishment by developing fish-farming.

As a conclusion, the project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness (Rating: b)

Evaluation of the project's effectiveness was made comprehensively by assessing the following three perspectives: (1) whether the prescribed outputs (in the case of the project, seven outputs ranging from Output 1.1 to Output 2.4; details of each output is discussed below) were obtained, (2) whether each of the said outputs contributed to the process of realizing the project objectives, and (3) whether the project objectives were achieved through (1) and (2).

3.2.1 Project Outputs

3.2.1.1 Output 1.1: Reproductive ecology and spawning habits of new species are clarified.

The following indicator was set up to confirm the achievement rate of this output: "For at least two fish species, the spawning season and the factors that spur fish to produce eggs will be clarified by March 2004." From the field survey conducted for this evaluation, it became clear that the NAC, Japan's counterpart, was keenly aware of the following four points:[8]

・ By March 2004, the spawning season of four new cultured fish species (Mpasa,

[8] Based on responses given to the questionnaire administered at the NAC and on results of the hearings conducted with four counterparts who were staff members of the NAC at the time the project was being implemented

Nin-gui, Ntchila, and Thamba) was ascertained.

- Through various experiments, water temperature was revealed to be one of the factors that spur female fish to spawn.
- However, no clear understanding about the reproductive ecology of the four new cultured species was achieved. (Although the spawning season of four species was clarified, the reproductive ecology and life history of these species were not well understood[9].)
- The breeding ecology such as the reproductive ecology and life history was not much clarified, thus affecting various activities in the subsequent stage.

As of May 2006, when the project ended, the spawning seasons of the four new species has been ascertained, although the breeding ecology (including reproductive ecology and life history) of the four species has not been clarified entirely. Consequently, it was concluded that "the spawning ecology of the newly farmed species has not been fully clarified."[10]

3.2.1.2 Output 1.2: Broodstock rearing techniques of new species are established.

Regarding this output, the following indicator was established: "For at least two of the four species, stable production of broodstock will be realized by March 2004." The following facts came to light at the NAC hearings held as part of the field survey:

- By March 2004, broodstock were successfully bred from immature fish naturally harvested from the four newly farmed species (Mpasa, Nin-gui, Ntchila, and Thamba).
- Stable production of three species (Nin-gui, Ntchila, and Thamba) was realized.
- A certain number of the broodstock of the abovementioned three species were retained by the NAC.

Consequently, it was concluded that "the technique for cultivating broodstock of the three new aquaculture species is now established to a certain extent."[11]

3.2.1.3 Output 1.3: Induced spawning and larvae rearing techniques for new species are established.

Regarding this output, the following indicator was established: "For at least two of the four new cultured species (Mpasa, Nin-gui, Ntchila, and Thamba), a seed production manual was compiled by March 2004. Further, for at least two of the species, seedlings

[9] The terminal evaluation report describes that clarifying Nchila's growth and maturing process under natural breeding conditions was especially difficult.

[10] In the terminal evaluation report compiled in 2004, it is stated that "the spawning seasons of the four newly cultured species were ascertained and that in three of the four species, warm water was one of the factors that induced spawning. Thus, the prescribed output was obtained." Nevertheless, there is no mention of whether the reproductive ecology has been clarified in its entirety.

[11] The same judgment was made in the terminal evaluation.

will be produced in fingerlings in accordance with the procedure described in the manual." Meanwhile, the following facts came to light in the NAC hearings:

- The English term for fish that have just come out of eggs is "fry" or "larvae", and that for young fish is "fingerlings".[12]
- The biggest technical challenge in seed production is "how to provide fodder to larvae fish at the initial stage in the feeding process and nurture them to fingerlings." In short, the challenge is "how to raise the survival rate from larvae to fingerlings."
- According to the NAC, only Ntchila and Thamba were successfully raised to fingerlings by March 2004. Regarding seed production of these two species, while they were successfully raised, it took a long time to raise them to a size large enough to be marketed (even longer than the existing cultured fish, Tilapia) such that, if various costs are considered, it has to be concluded that the possibility of disseminating them to farmers was quite low. For this reason, during the extended period from May 2004 to May 2006,[13] only existing cultured species—none of the newly cultured species—were targeted for dissemination.
- As for the seed production manual for the new aquaculture species, a manual common to all four has already been compiled.[14]

Summing up the above facts, the common manual on the seed production of the four species was prepared by March 2004, and the seed production of Ntchila and Thamba was successfully achieved. However, these two species were excluded from the candidate species for extension activities to be conducted at the later stage, mainly because of economic reasons, whereas breeding techniques were developed at the laboratory level. Moreover, there is also the issue about how to interpret the survival rate which is the criterion for judging the extent to which a seed production technique is considered established[15], thus it is distinctly difficult to conclude that the prescribed output was obtained.

3.2.1.4 Output 2.1: Appropriate species and farming methods for variable physical, technical, and socio-economic conditions are clarified.

Many unknowns still remain regarding the adequacy of cultured fish species and

[12] Larvae fish refer to fish freshly hatched; fingerlings are about the size of a human finger.
[13] For more details on the reason for the extension and the actual extended period, see Section 3.3.1.3 below.
[14] Given the difficulty of understanding the contents of the manual, at present, the staff at the Department of Fisheries (DOF) is currently preparing a revised edition to make the manual more user-friendly. Before the end of 2010, 3,000 copies of the revised edition are slated to be distributed to farmers. The DOF gives the following reason for the revision: "The writing is too technical. The manual has to be written in a way that ordinary farmers can easily understand." (Source: Results of an interview conducted at DOF)
[15] In the terminal evaluation report compiled in 2004, it is stated that "the average survival rate of juveniles reached 70%." However, since "juveniles" refers to larval fish several days after hatching, and as referred to above, no matter how high the fry/larvae survival rate is raised, it means nothing if they are not raised to fingerlings. Consequently, the survival rate of juveniles may not be a suitable criterion for evaluating the level of seed production techniques.

fish-farming methods. Thus, research in this field continues as of 2010. The main perceptions and outputs regarding fish-farming methods that came to light during the implementation of the project consist of the following:

- Clarification of the relationship between the depth of the aquaculture pond and degree of growth (The rate of growth is faster when the water depth exceeds one meter. This finding was disseminated throughout Malawi as the project's highest output.);
- Confirmation of the superiority of the mono-sex culture method (Enhanced productivity was realized by raising male fingerlings only.); and
- Development of appropriate fertilization technology using a method appropriate for the actual condition of farms (poultry manure, etc.).

From the foregoing, given that uncertainties about appropriate fish species and farming methods still exist, the conclusion is that the degree of achievement of prescribed output was limited. On the other hand, a large number of groundbreaking perceptions were gained concerning fish-farming methods as a result of the research and development efforts made under the project. As referenced above, some of the perceptions gained in the project have been disseminated throughout Malawi. That said, unless there are constraints, it would be desirable to disseminate these perceptions as the "output of the project". Therefore, it would be desirable for interested parties to promote advocacy activities along these lines.

The following recommendation was made in the terminal evaluation (before the completion of the project): "Seek low-investment and low-cost fish-farming techniques that can be applied by small-scale farms by employing fertilizer available to local people." In this regard, specific dissemination activity based on the aforementioned three perceptions was carried out during the extended period of the project from May 2004 to May 2006.

3.2.1.5 Output 2.2: Constant seed production of the Clariid catfish is achieved.

Two indicators were established regarding this output: "By March 2004, (1) an average of at least 100,000 fingerlings a year would be produced, and (2) a seed production manual on the Clariid catfish will be compiled and seed production would be undertaken in accordance with said manual."

Regarding these indicators, it was confirmed through the hearings on the NAC that a seed production manual on the Clariid catfish was compiled, and that stable seed production techniques for farming this catfish would be established by March 2004. While the production volume of fingerlings was set at 14,000 in 2004, the NAC side stated: "Although our production capacity was adequate, the lack of demand prevented us from further production."[16] While doubts may remain about the relevance of setting an average

[16] In the terminal report, "the delay in the construction of the seed production facilities" is cited as another

annual production of 100,000 fingerlings as an indicator, given the actual annualized production volume of 67,000[17] as of 2010, the NAC's explanation was: "While there was capacity for production, the production volume remained low due to lack of demand."

From the foregoing, it is concluded that "constant seed production of the Clariid catfish is achieved."[18]

3.2.1.6 Output 2.3: Techniques developed at the NAC are verified at selected fish farms.

(1) Achievements involving this output and the facts

The various activities involved in the technical demonstration were carried out at selected fish farms during the period between 2002 and 2004.[19] As a result, two factors limiting the dissemination of fish-farming techniques (water leakage in the pond and insufficient amount of sources of nitrogen) were identified, and the real growth potential and reproductive behavior (spawning and fingerling production) of *Oreochromis shiranus* and *Tilapia rendalli* under two conditions—mixed-sex culture and mono-sex culture—were clarified.

In light of the above discussion, during the project's extended period between 2004 and 2006, along with dissemination activities, technique development tests and on-farm research were continued at the selected fish farms, and, targeting the three Tilapia species (*Oreochromis shiranus*, *Oreochromis karongae*, and *Tilapia rendalli*): (1) mix culture tests with the Clariid catfish were administered, (2) the reproduction behavior was clarified, and (3) research for the applicability of animal manure to fish-farming was carried out.

The various activities related to the technical demonstration that got started in 2002 turned out to involve Activities 2.3.1–2.3.5 prescribed in the Project Design Matrix (PDM), and various on-farm research on the techniques developed at the NAC were administered at selected fish farms.[20]

(2) Conclusion

While "a production objective of each fish species for each fish-farming method", which was the indicator of this output, was not established, for the facts referred to above, it is concluded that "the techniques developed by the NAC were verified at selected fish

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factor responsible for the failure to reach the production goal.

[17] Source: Results of a hearing held at the NAC

[18] Regarding the fact that "the production of the fingerlings of the alternative species, thamba, reached 100,000 per annum", since it is unclear whether there is technical interchangeability between the seed production method of thamba and the Clariid catfish, it is believed to be a bit difficult to evaluate Output 2.2 using the actual result of fingerling production of thamba as a criterion.

[19] Farms were first selected during the period between 2002 and 2004 as follows: (1) 12 individual farms, (2) four groups of farms, (3) two churches, (4) two schools, and (5) satellite stations operated by the NAC (located in Chinsue and Chisitu in the suburb of Zomba). During the extended period between 2004 and 2006, the number of targeted farms increased (to 30 individual farms and 15 group farms). Specific dissemination activities were carried out by the farms selected from 2002 to 2004 and those selected during from 2004 to 2006.

[20] The number of fish farms in the targeted areas expanded from nine in March 2004 to 46 in July 2010. (Source: Results of a hearing held at the NAC) It is also said that the number of fish farms are much higher than the above figures.

farms."

(3) Partly commercial fish farms were excluded from the targeted group

Regarding "partly commercial fish farms" that made up one of the targeted groups in the terminal evaluation report, it has been pointed out that the activities used to develop appropriate fish-farming techniques among the same target farms (which are also being covered by a separately implemented JICA development survey) have had only limited effect. To be precise, in 2004 when the project was ended, a decision to remove "partly commercial fish farms" from the target group was made by the DOF, and since 2004, only small-scale farms have been targeted.[21] Additionally, the commercial fish-farming facilities constructed in Kasinthula[22] under previous projects were leased out to a private business.[23]

The DOF decision had a major impact on the direction of the project, such that the counterparts and some of the long-term experts on the Malawian side at that time, as well as JICA's Malawi office side, opposed it vehemently, but to no avail. At the time the decision was made, the PDM should have been revised or changed[24] (by the elimination of "partly commercial fish farms" from PDM, for example).

3.2.1.7 Output 2.4: Farmer willingness and interest in fish-farming is promoted.

As presentation of successful cases, tours of selected fish farms were conducted, and a total of six workshops (Open Field Days) were held during the extended period from 2004 to 2006. According to the terminal evaluation report, as of 2004, the NAC had received a total of approximately 80 inquiries.

From the foregoing, it can be concluded that the motivation of small-holder farmers to convert to fish-farming has been heightened in a convincing way through implementation of the project.

3.2.1.8 Output 3: A mechanism to continue activities initiated by the project is established.

Three types of indicators were set up regarding this output to be achieved by 2004: (1) launch four or more new research programs by the counterpart institutions themselves; (2)

[21] Source: Results of hearings on those involved in the project on the Malawi side

[22] Kasinthula is located 50 km southwest of the commercial city of Blantyre, and at a distance of around 120 km from Domasi, the principal area of project activities.

[23] The commercial fish-farming facilities, including a large-scale aquaculture pond and related pumps, were provided by the Malawian side, along with the National Aquaculture Center in Domasi, as one of the project's research centers. They were expected to be used effectively in the project as facilities for verifying the quality of fish-farming techniques for some commercial fish-farming farms. However, as a result of the aforementioned decision of 2004, they were leased out to a private company, GK Aqua Firm. GK Aqua Firm had been actively running its business in Malawi as a pioneering commercial fish-farming company, along with Maldeco, but due to circumstances beyond its control, has pulled out of Malawi as of 2010.

[24] It should be added that some of the NAC staff expressed the view that, "at the time, the fish-farming facilities in Kasinthula were too big and overly ambitious."

introduce a revolving fund for farmers, and increase the said fund's share of use by farmers; and (3) raise the share of the farmed fish sales for which the revolving fund is used from 20% to 50%.

However, four or more new research programs have not been launched by March 2004 by the counterpart institutions. The revolving fund for farmers that was introduced at one point was frozen as of 2004.[25] However, with regard to the freezing of the revolving fund, as is detailed in the section on sustainability, the Malawian Ministry of Finance has refused to permit the application of the fund because of the compliance requirement and so on. Thus, in a sense, the freeze was unavoidable. Moreover, as is also described in detail in the sustainability section, with the importance it places on the fisheries sector as a remote cause, the government approved the FY2010 budget for fisheries of more than three times as large as any previous budget, paving the way for guaranteeing the financial sustainability of the project.

From the foregoing, it can be concluded that "the system for securing sustainability is about to be established."

Additionally, two recommendations were made in the terminal evaluation report (before the completion of the project): (1) to improve dissemination and transfer of knowledge generated by the project widely to the small-holder farmers and aquaculture related institutions, and (2) to enhance active collaboration with other organizations engaged in aquaculture related research and technical development, including those related to Chambo Restoration Strategic Plan. The first of these two recommendations was dealt with to a certain extent during the project's extended period from 2004 to 2006, while, as is described later in the impact section, various NGOs and international organizations are coordinating their efforts to address the second recommendation.

3.2.2 Achievement of Project Objectives

In order to measure the extent to which the project objectives were achieved, two types of indicators were established in advance: (1) the survival rate involved in the seed production of new aquaculture species; and (2) the increase in production volume among selected fish farms. In addition to the degree to which these two indicators were attained, the two perspectives that have already been described, namely: (i) whether the predetermined outputs were attained, and (ii) whether each of the output discussed above contributed to the attainment of the project objective, were surveyed in a comprehensive manner. The degree of the attainment of project objectives was then evaluated.

3.2.2.1 Indicator 1: Seed production with at least 30% of survival rate is achieved for at least two new aquaculture species by the end of March 2004.

No clear data related to the above was obtained in the present survey. In the terminal

[25] For details, see the section on sustainability.

evaluation, it is concluded that, as of 2004, "the survival rate of four new aquaculture species up to the juvenile stage was around 70%, and the counterparts were now able to collect eggs, hatch them, and raise them to the larvae/juvenile stage. Therefore, seed production techniques for the new aquaculture species have been nearly established." However, as is indicated in Note 11 of Section 3.2.1.3, the size of the survival rate of juveniles is not quite appropriate for evaluating the quality of seed production techniques.

From the above discussion, it is difficult to draw the conclusion that Indicator 1 was achieved.

3.2.2.2 Indicator 2: Production at selected fish farms increased after the project was executed, compared to before.

In the present survey, there is no quantitative data related to the above. However, according to the terminal evaluation, as of 2004, it was confirmed that the production volume of Tilapia increased at 11 out of the 12 farms selected for the project. Thus, Indicator 2 is judged to have been achieved.

3.2.2.3 Degree of the Output's Contribution to Achieve Project Objectives

Regarding Project Objective 1, "To establish seed production techniques for a new aquaculture species," since Output 1.1, which constitutes the essential part of the seed production techniques for a new aquaculture species, was not completely obtained, and also since it is difficult to affirm Output 1.3 as having been obtained, it is concluded that "the contribution of each output to the project objectives is limited."

Regarding Project Objective 2, "To establish appropriate fish-farming techniques for existing species (Tilapia and the Clariid catfish)", it is confirmed that, except for Output 2.1, all outputs have been obtained. In particular, Output 2.3, "the verification of techniques at selected fish farms" was performed by targeting only existing farmed fish species. Additionally, the fact that the expectations of farmers were very high for existing species can be deduced from the activities of Output 2.4. Moreover, with regard to Output 2.1, although it was not completely achieved, many groundbreaking perceptions were gained. It can be concluded these outputs are contributing significantly to the development of appropriate fish-farming techniques for existing farmed fish species.

3.2.2.4 Conclusions

While the seed production techniques for two of the targeted species were established with regard to Project Objective 1, it was determined that they have a low potential for dissemination among farmers, and because subsequently they were removed from the project component, it was concluded that Objective 1 was only partially achieved.

With regard to Project Objective 2, an increase in cultured fish production at selected fish farms was confirmed. In addition, during the period of extension from 2004 to 2006,

in tandem with the dissemination of fish-farming techniques, technique development tests and on-farm research were continued at selected fish farms. “Raising farmer motivation” was one of the outputs and is the best proof that appropriate seed production techniques have been developed, and this objective is judged to have been achieved.

The project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.3 Impact

3.3.1 Achievement of Overall Goal

“The number of cultured fish species for which fish-farming techniques have been established” was established in advance as an indicator for measuring the degree to which the goal of “developing appropriate fish-farming techniques in Malawi” was achieved. However, no meaningful responses were received from the results of a social assessment survey regarding the number of fish species for which fish-farming techniques have been established.

A conclusion drawn from the foregoing is that it is difficult to judge whether a goal was achieved or not.

3.3.2 Other Impacts

(1) Impacts observed from the results of the social impact assessment survey

Arising interest in aquaculture

The social impact assessment survey (shown in Tables 1 and 2 below), which conducted on both the fish farms that were selected and not selected in the project, revealed that interest in aquaculture among farmers in the vicinity of the selected fish farms was motivated via the project, thus paving the way for their participation in fish-farming.

Table-1: Inquiries from Ordinary Farmers to Selected Farmers (N=74)

Responses by Selected Farmers (N=73)	No. of Respondents	%
Received some inquiries from the farmers in the vicinity	48	65.8
Not received any inquiries from the farmers in the vicinity	25	34.2
Total	73	100.0

Source: Results of social impact assessment survey

Note): One of the respondents among 74 did not answer the question.

Table-2: The First Year of Participation in Fish Farming by Ordinary Farmers (N=25)
(Answers to the question of when to start fish farming)

Responses by Ordinary Farmers	No. of Respondents	%
Before 1999	1	4.0
2000	1	4.0
2004	8	32.0
Between 2005 and 2007	15	60.0
Total	25	100.0

Source: Results of social impact assessment survey

A survey concerning the period when ordinary farmers participated in fish-farming found that more than 90% of respondents began participating in fish-farming after 2004, suggesting that the extended period of the project (2004–2006) contributed significantly in changing farmer's behavior.

Contributing to diversifying income sources

The results of the social impact assessment survey administered on the selected fish farms revealed that income from fish-farming accounted for a significant part of farmer income. Although the extent of the project's contribution to the diversification of income sources is unclear, it can be inferred that through participation in the project, fish-farming came to be regarded as an important new source of income, thereby contributing to the presumed diversification of farmer income.

Table-3: Source of Income of Selected Farmers (N=74)

Business Activities for Income	Primary Source	Secondary Source	Tertiary Source
Business in general	5	4	5
Agriculture in general	51	19	1
Fish Farming	16	43	7
Others (Employees of private companies, Remittance from abroad, etc.)	1	1	1
No source of income	1	7	60
Total	74	74	74

Source: Results of social impact assessment survey

(2) Qualitative impacts

As a result of interviews with persons concerned at the time of field survey, it is assumed that the following impacts were generated. No negative impacts were seen.

- Changes in the image of fish-farming: As a result of the massive expansion of various NAC facilities triggered by the execution of the project and previous projects, expectations rose for fish-farming among farmers in the vicinity of Domasi, where the NAC is located. Particularly, it is believed that "the desire of small-holder farmers to participate in fish-farming was greatly motivated." Many people said: "Before the project was implemented, the image that farmers had of fish-farming was akin to 'fish-keeping' (merely keeping fish in ponds), but after implementation, their image changed to 'fish production' (raising fingerlings to adult fish)."
- Better living for small-holder farmers: Many people feel that, for small-scale farms that relied on growing maize and other subsistence farming, the "acquisition of new fish-farming techniques and the adoption of fish-farming have contributed tremendously to improving the livelihood of these farmers."

- Contribution to the dawning of commercial fish-farming: In Malawi, commercial fish-farming began in the 1970s, but it became fully in progress in the second half of 2004 when Maldeco started a fish-farming business.[26] Maldeco received supplies of fingerlings from the NAC for the first two years. Thus, it can be said that the project outputs contributed to the growth of commercial fish-farming in Malawi.
- Collaboration with and contribution to the FAO project: On the premise that it would be able to use the research output of the project related to the fish-farming techniques used for cultivating the Clariid catfish, the FAO implemented the "Small-Scale/Semi-Industrial Aquaculture Promotion Project". In 2009, some 250,000 Clariid catfish seedlings were produced.
- Indirect contribution to NGO activities: In the vicinity of Domasi, where the NAC is located, NGOs from various countries (e.g., World Vision, World Fish Center, Sea Fish, CARE International, Concern International) are engaged in a host of assistance activities involving community development. The introduction of fish-farming is being tried as part of these activities. The NAC provides basic support to these NGOs by offering them fingerlings.

From the foregoing, it can be judged that many positive impacts were generated through the implementation of the project.

3.4 Efficiency (Rating: b)

3.4.1 Inputs

3.4.1.1 Elements of Inputs

Table 6 compares the input plans and actual performance. The amount of input made by Japan is nearly as planned. As for the input amount by the Malawi side, for the period from 1999−2004, the number of counterparts almost doubled, ultimately enabling the Malawi side to secure more inputs than originally planned.

Table-4: Comparison of Inputs before and after the Project

Elements of Inputs	Plan (as of Apr. 1999)	Actual Performance (as of May 2007)	Difference
1. Malawian Side (1) Counterpart Assigned a) Counterpart	12 counterparts	21 counterparts in total (of which 5 are in charge of on-farm research for selected farmers) 7 counterparts were transferred and 1 counterpart was resigned	Increased (9)
b) Other Personnel	1 Fund Manager	Not assigned	Decreased (1)
(2) Land, Building and Facilities	Project sites and seed production facilities to be provided at NAC and Kasinthula	Area of project sites: 34 ha. in total (of which, 17 ha. at Kasinthula was leased out to a	Mostly as planned

[26] Maldeco produced Tilapia using a cage culture system in the southern part of Lake Malawi.

Elements of Inputs	Plan (as of Apr. 1999)	Actual Performance (as of May 2007)	Difference
	Vehicle, Accommodation for NAC staff, Equipment for on-farm research, etc	private firm), Project office, Hatcheries, Vehicle, Office machinery, etc.	
(3) Local Costs	To be decided (costs of expendables, allowances, etc.)	19.45 million Malawi Kwacha in total	N/A
2. Japanese Side			
(1) Experts			
a) Long-term Experts	Chief advisor, Seed production, Rearing techniques, Feeding techniques, On-farm research, Project coordinator	14 experts in total, 272.8M/M in total	N/A
b) Short-term Experts	To be appointed when necessar (Aquaculture management, Reproductive physiology, Bilharzia control, etc.)	13 experts in total, 20.5M/M in total	N/A
(2) Trainees received	10 trainees in total for 5 years (2 trainees per year)	22 trainees in total (more than 3 trainees per year on average)	Increased (12)
(3) Equipment	Equipment for seed production facilities, Vehicle, Equipment for on-farm research, etc.	434 items, 59.8 million yen in total	N/A
(4) Operational Costs	To be decided	69.1 million yen for 1999 to 2004, 16.5 million Malawi Kwacha for 2004 to 2006	N/A

Source: JICA internal documents, Answers to the questionnaires to DOF and NAC, etc.

(1) Relevance of inputs in terms of amount and quality

Asked about the appropriateness of the quality and amount of inputs made, both the DOF and NAC, the two counterpart institutions, said, "hardly no problems".[27]

A comparison of the project[28] with similar projects elsewhere revealed that, as shown in Table 5, the number of long-term experts sent to Malawi was a bit larger than the number sent to Indonesia, where a similar project was held. However, there was not much difference between the two countries in terms of the amount of human resource and financial resource input (including the amount provided in equipment) regarding their respective projects. Moreover, given the fact that the research and development component was not included in the Laotian project, there was not much difference between the amount and quality of the inputs made to the Laotian project and those made to the Malawian project.

[27] Source: This is how the DOF and NAC responded to questionnaires sent to them.

[28] There are two similar projects, one in Laos and another in Indonesia. The former was called the "Aquaculture Improvement and Extension Project"; the latter the "Freshwater Aquaculture Development Project". The Laotian project entailed a smaller ratio of R&D, but included several components, such as: (1) the establishment of an aquaculture development center, (2) improvement in freshwater aquaculture techniques, and (3) the cultivation of the ability to undertake dissemination activities. Thus, in terms of activity content, it bears close resemblance to the Malawian project. The Indonesian project aimed at the development of freshwater aquaculture techniques targeting small-scale fish farmers. The project's outputs—including (1) the development of breeding/raising techniques for new cultured species, (2) the development of breeding/seed production techniques for existing species, and (3) the development of a dissemination model based on the regional characteristics—matches perfectly with the content of the Malawian project.

Table-5: Comparison of Inputs: This Project and Two Other Similar Projects

Items for Comparison	Lao PDR: Aquaculture Improvement and Extension Project	Indonesia: Freshwater Aquaculture Development Project	This Project
Inputs from Japan	Long-term experts: 5 Short-term experts: 5 Trainees received: 10 Equipment provided: 17.61 mil.yen Local costs: 80.0 mil.yen	Long-term experts: 6 Short-term experts: 19 Trainees received: 20 Equipment provided: 152 mil.yen Local costs: 85.0 mil.yen	Long-term experts: 14 Short-term experts: 13 Trainees received: 22 Equipment provided: 59.8 mil.yen Local costs: 69.10 mil.yen (not including all)
Inputs from Recipient Countries	Counterpart assigned: 12 Land and facilities: Provided Local costs: 420 mil.Kip (4.4 mil.yen)	Counterpart assigned: 30 Land and facilities: Provided Local costs: 254 mil.yen	Counterpart assigned: 21 Land and facilities: Provided Local costs:19.45 mil. Malawi Kwacha (12.0 mil.yen)
Total Costs	0.568 billion yen	1.002 billion yen	0.893 billion yen
Period of Cooperation	3 years and 6 months (from Feb.2001 to Aug.2004, incldluing follow up period)	7 years (from Aug.2000 to Aug.2007, including extended period of 2 years)	7 years (from Apr.1999 to May 2006)

Source: Prepared from JICA internal documents, etc.

From the foregoing, since the input amount (human resources and equipment) was considered appropriate, compared to similar projects, the input for the project is judged to be generally relevant.

(2) Timing of inputs

Although there was generally no problem with the timing of the inputs, the project's execution seemed to lack efficiency regarding the following three points:

- Regarding the quality of the inputs, the NAC side said that, "Some of the technical expertise of the experts assigned to the project was inadequate."
- In an interview survey, a respondent pointed out that various problems arose remotely during the execution of the project, caused by a lack of communication between JICA experts and the counterparts on the Malawian side. Additionally, the opinion was expressed that even among JICA experts communication problems occurred.[29]
- Shortening the term of office[30] of long-term experts at the initial stage of the project had a negative effect (especially since the operation in Kasinthula had to be discontinued, which paralyzed operations in the latter stage of the project).

3.4.1.2 Project Cost

The cost of cooperation, including the cost of dispatching experts, came to 892.54 million yen. Regarding the size of the cost of cooperation and the timing of disbursement, the DOF has issued the opinion that "there is virtually no problem."[31] Additionally, the

[29] Source: Results of interviews with the DOF (including a former DOF staff member and former counterpart of the project) and the NAC
[30] Due to illness
[31] Source: Response to a questionnaire sent by the DOF

cost of cooperation for a similar project, the Freshwater Aquaculture Development Project, was about 1 billion yen, or about the same as the cooperation cost of the project. From these comparisons, the cooperation cost of the project is judged to be relevant.

3.4.1.3 Period of Cooperation

Regarding the period of cooperation, as has already been mentioned, the extension of the project period created a gap between the planning period (five years from 1999 to 2004) and the actual period (seven years from 1999 to 2006).

The decision to extend the project period two years was reached on the basis of outputs achieved from 1999 to 2004 and for the purpose of: (1) continuing the on-farm research, and (2) disseminating fish-farming techniques among selected farmers. Although the period was extended to make sure outputs were spread, the dissemination of fish-farming techniques among selected farmers was materially included in the initial action scope, so that by 2004, a certain amount of outputs was expected. In light of these facts, the efficient implemenation of the project was disturbed to some extent, as an afterthought[32].

Therefore, period of cooperation are not so appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: b)

3.5.1 Related Policy toward the Project

The dissemination of techniques for cultivating Tilapia and the Clariid catfish, both existing cultured fish species, is part of the Malawi National Aquaculture Strategic Plan (NASP),[33] which is targeted for 2015. Since the techniques for farming these existing species were developed under the project, the NASP and the project are highly consistency with each other.[34] (The consistency with the three policies that are still valid as of 2010, namely: (1) Malawi Vision 2020, (2) MGDS 2006/07–2010/11, and (3) the Presidential Initiative on Aquaculture Development (PIAD) 2006–2011 was, as discussed in Section 3.1 above, slightly different compared to the present government's policy direction and the project objectives.)

[32] At the same time, the NAC side commented on the relevance of the two-year extension, thus: "Given the significance of ensuring the continuity of the dissemination activities, further extending the period of cooperation was the right thing to do."

[33] The NASP was prepared as an output of the "Master Plan Study on Aquaculture Development in Malawi" by JICA during the period from January 2003 to August 2005, and was approved by the Malawian government.

[34] In 2009, the Malawian government formulated the Agricultural Sector-Wide Approach (A-SWAP), which forcefully stresses the agricultural sector, and designates as priority areas: (1) food security and risk management; (2) commercial agriculture, agricultural processing, and market development; and (3) sustainable land and water resource management. As will be discussed later, the DOF's budget increased substantially as a result of this policy.

3.5.2 Institutional and Operational Aspects of the Executing Agency

Given that the Mutharika government emphasizes the agricultural sector, in 2008, the DOF was transferred from the Ministry of Mines, Natural Resources and Environment to the Ministry of Agriculture. The transfer has not triggered any significant organizational change in the DOF. As for the research and development division, a clear line is drawn between the Fishery Research Unit (FRU), which is located in Monkey Bay, and the NAC. The FRU is in charge of research concerning freshwater fish catches in large lakes (Lake Malawi, Lake Chilwa, Lake Malombe, etc.), while the NAC is in charge of research concerning fish-farming techniques (especially self-sufficient aquaculture). Additionally, since 2005, the total number of DOF staff members has been on the rise. For details, see Table 8 below.

Table-6: Number of Staff in DOF and NAC

Year	Number of Staff	Of which, who are involved in Research and Development (R&D) activities	Average Years of Employment for Staff who are involved in R&D activities
2005	DOF: 305 NAC: 34	DOF: 27 NAC: 13	DOF: 11 yrs. NAC: 12 yrs.
2006	DOF: 300 NAC: 34	DOF: 27 NAC: 13	DOF: 12 yrs. NAC: 12 yrs.
2007	DOF: 325 NAC: 35	DOF: 32 NAC: 14	DOF: 12 yrs. NAC: 12 yrs.
2008	DOF: 330 NAC: 30	DOF: 28 NAC: 9	DOF: 11 yrs. NAC: 13 yrs.
2009	DOF: 352 NAC: 29	DOF: 34 NAC: 9	DOF: 9 yrs. NAC: 10 yrs.

Source: Answers to the questionnaire to DOF

In contrast, the number of NAC staff in charge of the aquaculture division has been on a declining trend. Especially alarming is the number of staff in research and development, which declined from 13 in 2005 to nine in 2009.[35] The NAC cites two reasons for why the staff level is falling: “voluntary resignation” and “personnel cuts accompanied by budget shortfalls”. Staff drain and the lack of replenishment are factors that greatly impact the sustainability of fish-farming techniques, which will be discussed later. Consequently, measures designed to raise staff incentive and prevent staff drain need to be seriously considered.

The following may be pointed out as a source of concern regarding the organizational structure.

- The structure for disseminating fish-farming techniques: Jurisdiction over activities used to disseminate fish-farming techniques has been transferred to the departments and agencies of the local government (District Assembly), which, under the legal system, is called the District Fishery Officer (DFO), and the NAC is not in a position to hold jurisdiction over these dissemination activities. However, with the decentralization of authority still continuing, the separation of actual operations remains unclear, and the DFO’s fish-farming techniques and knowledge are not up to par. As a result, the implementation structure for dissemination activities has been

[35] In percentage terms, this is over 40%. Details are shown in Table 6.

somewhat mixed-up, as reflected in the fact that that, in many cases, NAC staff have to support the dissemination activities. While the budget allocation for the DFO has taken a turn for the better in recent years, the human resources that actually engage in dissemination activities are grossly lacking.[36] Among measures desired going forward are the clarification of jurisdiction over dissemination activities, expansion of the DFO's own funds for the implementation of dissemination activities, and the consideration of a system of cooperation between the NAC and DFO. For instance, steps to be taken might include increasing the frequency of Research Extension Forum meetings, which brings together concerned individuals involved in dissemination activities (e.g., the DFO, disseminators from the Ministry of Agriculture, and disseminators from the fisheries catch business).[37]

3.5.3 Technical Aspects of the Executing Agency

Some of the counterparts in the project from the NAC have either been transferred or have resigned, while other counterparts still work for the NAC. The rearing techniques developed for new aquaculture species (detailed in Section 3.2.1.4) and the various appropriate techniques developed for existing cultured species (also detailed in Section 3.2.1.4) have already been transferred to the counterparts still working for the NAC. Consequently, while no particular training has been given since project completion, there seems to be no problem in handing down techniques.[38]

If the counterparts of the project continue to be employed by the NAC, there appears to be no problem regarding the continuity of fish-farming techniques developed while executing the project. However, as has already been discussed, since the NAC is afflicted with the problem of a loss of staff members, it is necessary to consider taking measures to prevent staff drain and to increase the number of staff. Note that the NAC launched a process to recruit one staff member as of July 2010.[39]

3.5.4 Financial Aspects of the Executing Agency

The budget situation of the DOF as a whole and that of the NAC after 2005 are as described below. As already described, in 2008, under the current government's policy of stressing the agriculture sector, the DOF was transferred from the Ministry of Mines, Natural Resources and Environment to the Ministry of Agriculture, thus paving the way for a substantial budget increase.

However, the budget that was freshly appropriated from 2008 to 2009 was the budget

[36] About one or two staff members in each local government are engaged in dissemination activities, meaning that the total number of such staff members is only 27 for all of Malawi. Additionally, there is even a rumor that the activity expenses of the DFO is paid directly to the individual DFO with funds drawn from the funds of NGOs and international donor organizations.

[37] The Research Extension Forum is held approximately every quarter to facilitate mutual communication between those involved in dissemination activities. (Source: Results of a hearing held at the DOF)

[38] The beneficiary survey yielded no noticeable views on the technical level of NAC staff and the DFO.

[39] Source: Results of interview held at the NAC

related to the aforementioned Presidential Initiative on Aquaculture Development (PIAD) 2006−2011. This budget is the so-called program budget compiled for each project in which use is decided, and the scale of the recurrent budget that serves as a source of funds for regular activities had not been increased for the two years during 2008 and 2009.[40]

That said, in July 2010, it became official that the NAC's FY2010 budget would be 2.4 times larger than the year before. This budget does not include any of the aforementioned PIAD-related budgets. Part of the budget is allocated by the Ministry of Agriculture's ASWAP (Agriculture Sector-Wide Approach Program) budget, all of which is allocated to the NAC as a recurrent budget. The NAC is considering using this budget to fund: (1) the construction of hatching facilities, (2) the strengthening of the production of Tilapia and Clariid catfish fingerlings, and (3) the expansion of on-farm research for selected farmers.

Table-7: Budget Allocation to DOF and NAC

Unit: Thousand Malawi Kwacha (MK)

Fiscal Year	DOF Budget	Of which, Aquaculture - related	Of which, Budget for NAC
2005	37,241	2,788	600
2006	40,107	3,793	600
2007	44,053	6,002	600
2008	66,000	5,622	4,915
2009	67,000	9,697	4,915
2010	Not confirmed	Not confirmed	12,000

Source: Answers to the questionnaires to DOF and NAC
Note-1): 1 MK ＝ 0.61 yen (as of July 2010)
Note-2): A proportion of the development budget to the recurrent budget was not obtained.

The above discussion may be thought of as an obvious manifestation of the Mutharika administration's emphasis on the agricultural sector. Should this trend continue going forward, the project's financial sustainability will improve dramatically.

However, the Ministry of Finance has yet to authorize the use of the revolving fund that was frozen during the execution of the project. Thus, there is little chance of utilizing this system in the immediate future.

3.5.5 Continuity of Effectiveness/Impact

(1) Current status of continuity of effectiveness/impact after 2006 up to now

Fish-farming techniques relating to the existing species such as Tilapia and Clariid catfish are firmly maintained. As explained in Section 3.3 Impact, the FAO implemented the new project on the premise of using the research output of the project related to the fish-farming techniques of Clariid catfish.

Regarding the farmers' willingness to participate in fish farming, a certain level of

[40] At the time of the May 2010 field survey, the NAC said, "The recurrent budget is tending to shrink; the budget shortfall continues."

motivation is still kept by small-holder farmers in the course of the implementation of the project. The interviews with small-holder farmers and groups held in May 2010 revealed that the motivation of farmers in the vicinity of Domasi to adopt fish-farming was heightened greatly by their participation in the project.[41] Furthermore, the results of a social impact assessment survey shown in Tables 1 and 2 below revealed that the selected fish farms received many inquiries from ordinary farmers.

Table-8: Inquiries from Ordinary Farmers to Selected Farmers (N=74)

Responses by Selected Farmers (N=73)	No. of Respondents	%
Received some inquiries from the farmers in the vicinity	48	65.8
Not received any inquiries from the farmers in the vicinity	25	34.2
Total	73	100.0

Source: Results of social impact assessment survey
Note): One of the respondents among 74 did not answer the question.

Table-9: Some Indicators about Inquiries from Ordinary Farmers

Item	Number of Inquiries
The number of inquiries in total (Inquiries to 48 selected farmers)	353
The average number of inquiries per selected farmer	7.5

Source: Calculated from results of social impact assessment survey

(2) Equipment

With regard to granted equipment, for some equipment (dissolved oxygen meters, heat pumps, etc.) spare parts cannot be purchased in Malawi, which is affecting operations. Other granted equipment (analytical equipment, etc.) are running without any problem.

(3) Responses to the recommendations made by the Terminal Evaluation

The following two recommendations were made by the terminal evaluation (after the completion of the project): (1) the government of Malawi should establish self-revenue generation system for necessary activities in NAC and to maintain at least the current level human resources, and (2) both governments of Malawi and Japan should immediately commence consultation on the framework of further assistance based on the project results for aquaculture development and improvement of livelihood of the small-holder farmers. Regarding the first, as has already been discussed, only limited methods are available for raising funds, thus no effective measures have been established, and the NAC is facing the problem of staff drain. Regarding the second, the "Master Plan Study on Aquaculture Development in Malawi" and a follow-up expert dispatch were implemented by JICA, and policy recommendations utilizing the project outputs were made.

[41] In May 2010, in-depth interviews were held at two selected fish farms in the vicinity of Domasi and with one farmers' group (women) in the Chingali district.

3.5.6 Conclusion of Sustainability

With respect to fisheries sector policy, the current Mutharika government is striving to effect a conversion from "improving poor farmer livelihoods by disseminating self-sufficient fish-farming techniques", as advanced by the previous administration, in order to "promote the fishery products industry by, among others, developing commercial fish-farming and contributing to economic growth", through the preparation of PIAD and others.[42]

On the financial front, with the aforementioned policy conversion as a remote cause, the budget of both the DOF and NAC has tended to increase, and the FY2010 budget grew 2.4-fold over the previous year.[43] Improving the livelihood of poor farmers by continuing to promote self-sufficient aquaculture is expected to be stressed as one of the basic policies of the Ministry of Agriculture and the DOF. However, it should be more paid attention to, under the circumstances of more focus on promoting Malawi's fish industry through the development of commercial fish farming, whether the budget appropriation will continue to improve for NAC in the years ahead.

On the technology front, no major problem has risen as of now, but the trend toward staff reduction observed since 2005 poses a critical risk that will have a decisive influence on efforts to ensure sustainability. Thus, unless radical measures for preventing staff drain are taken going forward, the fish-farming techniques established in the project will be of no use. In this sense, it is preferable as a timely measure to address this issue that NAC launched a process to recruit one staff member.

On the system front, the dissemination of fish-farming techniques related to self-sufficient fish-farming, which was one of the outputs of the project, as has already been discussed, is fraught with problems regarding the DFO's capacity and demarcation between NAC and the local authority (DFO). Due to this, at present, systematic activities are not being undertaken, which causes concern about the lack of continuous and effective dissemination activities in the days to come.

In conclusion, ensuring sustainability is difficult in some quarters.

Some problems have been observed in the structural aspects of the executing agency, and the continuity of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

Basically, there are no problems with project content and its consistency with the country's policy. Some of the project objectives had been achieved by 2006 when the

[42] To reiterate, the government does not take lightly the effect self-sufficient aquaculture has on improving the livelihood of poor farmers.

[43] This budget is accounted for by the recurrent budget, which becomes the source of funding for all independent activities.

project ended. The project period is the issue in terms of the efficient implementation of the project, and some apprehensions remain regarding the sustainability of institutional and operational aspects. On the other hand, however, many positive impacts have been generated, and dramatic improvement in financial stability can be expected as a result of sharp increases in the size of the budget. In light of the above, this project is evaluated to be fairly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Recommendation 1

Regarding the important outputs of the project, there is a lack of PR and advocacy activities by the DOF and NAC. Particularly, with regard to the three groundbreaking perspectives that were obtained in the project—(1) the relationship between the depth of the aquaculture pond and the degree of fish-rearing, (2) the superiority of the mono-sex culture method, and (3) fertilizer application techniques that use fertilizing methods appropriate to the needs of fish farmers—although the first one has spread to all of Malawi, the other two have spread only through the districts of Zomba and Chingali (the target areas of the project). Thus, immediate dissemination of these perceptions is desired.

Recommendation 2

In order to realize the above recommendations, first, those concerned with the dissemination of fish-farming techniques, including the DFO, agricultural improvement disseminators, and the NAC, should begin carrying out their dissemination activities in a systematic manner.[44] Taking the present situation of sufficient budget appropriation as an opportunity, the building of a concrete implementation structure for promoting dissemination activities should be started. For example, the existing Research Extension Forum could be held more often, in order to begin deliberation on the strengthening of the implementation structure.

4.3 Lessons Learned

4.3.1 Timely Revision of the PDM in response to changes in the Direction of the Project

Regarding the target groups of the project, at the start of the project, two types were envisaged: “small-holder fish farms” and “partly commercial fish farms”. However, in 2004, the decision was made to exclude “some commercial fish farms” from the target group. As has been noted, this decision significantly altered the direction of the project. At the time this decision was made, adjustments and corrections (such as the elimination of “partly commercial fish farms” from PDM, for example) should have been made to the

[44] As has been discussed, because of the division of duties, the NAC is not in a position to take charge of dissemination activities. However, the fact is that, as has been noted, NAC staff members sometimes support dissemination activities.

PDM, and then the details of new objectives and activities should have been fully notified to those concerned, including the Malawian counterparts.

Summary

Evaluation conducted by:
Hajime Onishi, Mitsubishi UFJ Research & Consulting

1. Outline of the Project		
Country: Kingdom of Morocco		**Project title:** The Project for the Establishment of an Extension System for Artisanal Fisheries
Issue/Sector: Fishery Sector		**Cooperation scheme:** Technical Cooperation Project
Division in charge: Arid and Semi-Arid Farming Area Team II, Rural Development Dept.,		**Total cost:** 597.48 million yen
Period of Cooperation	June 2001 – May 2006	**Partner Country's Implementing Organization:** Ministry of Fisheries (Ministere de l'Agriculture et de la Peche Maritime, MPM)
		Supporting Organization in Japan: Fisheries Agency of Japan
Related Cooperation	Study on Artisanal Fisheries Development Project (Development study) Larache Fishery Technology Improvement Center Construction Project (Grant aid project)	

1-1. Background of the Project

As of the year 2000, the government of the Kingdom of Morocco recognized that the correction of income disparity among regions and the conservation of fishery resources were priority policy issues, and thus emphasized to support a capacity development of 48,000 artisanal fisherpersons in the fisheries sector. On the other hand, because of the lack of an extension worker system in the field of fisheries, no specific extension project for artisanal fisherpersons had been started. Based on the background described above, the government requested project-type technical cooperation from the government of Japan for the development of extension programs to establish a new extension system appropriate to the local situation under which extension workers would efficiently engage in extension activities.

In response to this request, the Japan International Cooperation Agency (JICA) sent over a preliminary study team in March 2000 and a short-term study team in October 2000 to discuss the details of cooperation. In March 2001, a Record of Discussion (R/D) between the governments of Morocco and Japan was signed, and thus, for the purpose of achieving a state where "an efficient extension system is established and where extension activities are carried out in fishing villages", a technical cooperation project commenced for a scheduled period of five years beginning in June 2001.

1-2. Project Overview

(1) Overall Goal

To improve the socio-economic conditions of artisanal fisherpersons along with conservation of marine resources

(2) Project Purpose

To develop and establish extension system

(3) Outputs

- ✓ Practices and situation of artisanal fisheries are understood.
- ✓ Extension programs on relevant themes for fisherpersons are developed.
- ✓ Curriculum and teaching materials are developed and technical capacity of Extension Coordinators (V/Cs) is improved.
- ✓ Extension activities are carried our effectively on selected sites.
- ✓ Monitoring, evaluation and feedback mechanism is established.

(4) Inputs (as of the Project's termination)

Japanese side:

Long-term Expert 8 **Equipment** 56.4 million Yen

Short-term Expert	11	**Local cost**	90.3 million Yen		
Trainees received	15	**Others (Dispatching costs of study team, etc.)**		450.8 million Yen	
		Total cost	597.5 million Yen		

Moroccan Side:

Counterpart	38	**Land and Facilities**	Project office, etc.
Local Cost	54.6 million Yen	**Others(Assignment of extension workers)**	77 in total

2. Evaluation Team

Members of Evaluation Team	Hajime Onishi Mitsubishi UFJ Research & Consulting Co., Ltd.	
Period of Evaluation	January 2010 – October 2010	**Type of Evaluation:** Ex-post

3. Project Performance

3-1. Performance of Project Purpose

The following comments are described in the terminal evaluation report: Although the correction of regional disparities and the improvement of the livelihood of fisherpersons have not been observed as a result of the project, positive impacts are expected to become evident as more fisherperson cooperatives are organized. Therefore, the improvement of the livelihood of fisherpersons and, eventually, the correction of regional disparities can be expected in the future.

3-2. Achievement related to Overall Goal

The following comments are described in the terminal evaluation report: Through the implementation of the project, the foundation of an extension system, which did not exist on the Moroccan side, has been established, and the system is being improved continuously under the ownership of the government of Morocco. The project objective is expected to be achieved by the completion of the project.

3-3. Follow-up of the Recommendations by Terminal Evaluation Study

The following recommendations were described in the terminal evaluation report: i) To strengthen the institutional structure, personnel resources and budgetary allocation for the National Extension Center (CNVM) in order to further develop the extension activities, ii) to share the outputs of the project with other potential beneficiaries (through the internet website, for example), iii) to conduct another baseline survey (to understand the economic and social developments of artisanal fishery villages after the completion of the project), iv) to conduct resource management activities covering coastal and offshore fishery, etc. As to the recommendation-i) to strengthen the budgetary allocation for CNVM, the budget for extension activities is now appropriated exclusively to the CNVM starting from 2006. Regarding the recommendation-iv) to conduct resource management activities, additional long-term experts from JICA are being dispatched for the development of resource management activities, and extension programs are expected to be carried out in combination with resource management activities

4. Results of Evaluation

4-1. Summary of Rating Results

Overall Rating: A

Relevance: a
Effectiveness: a
Efficiency: a
Sustainability: b

4-2. Summary of Evaluation Results

(1) Relevance

Consistency with the national development policy, etc.: At the time of project planning in 2001, the Socio-economic Development Plan (2000–2004) emphasized poverty reduction and the correction of economic disparities as important policy, and were highly consistent with the overall goal of the project aiming at improving the living and socio-economic conditions of artisanal fisherpersons. As of the completion of the project in 2006, the National Initiative on Human Development, established in May 2005 by His Majesty King Mohamed VI, set the objectives of reducing poverty and promoting equality, indicating no significant change in the overall national policy. Therefore, the overall goal of the project remains highly consistent with the national policy.

Consistency with the development strategies, etc., of the fisheries sector: At the time of project planning in 2001, the Five-Year Development Plan (2000–2004) of the Ministry of Fisheries (MPM) emphasized correction of regional disparities, poverty reduction, and education and training, and set the objective of promoting the education of artisanal fisherpersons, which coincided with the overall goal of the project. As of the completion of the project in 2006, the New Three-Year Development Plan (2005–2007) of the MPM also emphasized the improvement and expansion of the social security system for artisanal fisherpersons. Therefore, the overall goal of the project remains highly consistent.

Regarding the relevance with Japan's ODA Policy, both at the time of project planning in 2001 and at the time of project completion in 2006, the government of Japan and the government of Morocco agreed on the following three points as part of the priority areas of assistance: i) assistance for the development and promotion of agriculture and fisheries; ii) assistance in the field of regional development aimed at poverty reduction; and iii) assistance for social development. These priority areas have not been changed since 1999, and therefore, the project remains highly consistent. These facts indicate that the project was highly consistent with Japan's ODA policy.

To sum up, this project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

(2) Effectiveness

An "extension system" mentioned in the project objective, which is to achieve a state where "an efficient extension system is established and extension activities are carried out in fishing villages", is defined as "a cycle of i) analysis of the current situation and problems in artisanal fisheries regarding specific issues → ii) development of extension programs (program plan, methods, teaching materials, etc.) → iii) training of extension workers → iv) extension activities → v) monitoring and evaluation of extension programs → vi) problem analysis of other/new issues → vii) development of extension programs on other/new issues".

Regarding the degree of attainment of five outputs which directly contribute to achieve the project purpose, it is confirmed that almost all outputs (clarification of current situation of artisanal fisheries, development of extension programs for fisherpersons, improvement of extension coordinator's technical capacity, expansion of extension activities, and establishment of feedback mechanism of extension activities) have been attained. These outputs form the basis of the present extension system for artisanal fisheries by the MPM and are essential factors in the implementation of the extension system. In addition, it is confirmed that the number of active fisherperson cooperatives at the selected sites was increased after the project and the amount of budget planned and executed by the MPM was increased compared to that in 2001.

This project has largely achieved its objectives, therefore its effectiveness is high.

(3) Efficiency

The amount of inputs of the Japanese side was almost as planned. As for the amount inputs of the Moroccan side, the number of the extension coordinators (V/Cs) and extension workers (Vs) increased from 18 to 24 and from 38 to 53, respectively, and in total, a larger amount of inputs than initially planned was secured. The Input of human resources is indispensable in carrying out extension activities in a certain scale. The increase in counterparts on the Moroccan side greatly contributed to the achievement of the project objective and therefore is considered an appropriate input. Additionally, there was almost no problem with the timing of the inputs, project cost and period of cooperation.

The inputs are appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is high.

(4) Impact

The results of the social impact assessment survey indicate that the acquisition of knowledge regarding coastal fisheries through participation in the extension programs has a positive impact on the fishing activities of artisanal fisherpersons (such as learning of maintenance skills of outboard engines, understanding of importance of maritime safety, etc.). It is also confirmed by the social impact assessment survey results that the establishment of cooperatives greatly contributed to the improvement of the business environment of fisherpersons. According to the interview with artisanal fisherpersons, the following comments are received as positive impacts.

- ✓ Some artisanal fishery cooperatives are active in pursuing income sources other than fisheries. (For example, the operation of seafood restaurants or the growing and sale of Argan oil, a specialty product of the southern region, are being planned by some cooperatives.) The extension activities under the project may have indirectly encouraged the independent and autonomous activities of fisherpersons.
- ✓ The mobile units that are used for extension activities are also used for literacy education activities for artisanal fisherpersons.

(5) Sustainability

In the development strategy for the fisheries sector for the target year of 2020 (the Halieutis Plan), job creation for the poverty group in the fisheries sector, including artisanal fisherpersons, is listed among priority objectives, and therefore, the overall goal of the project is highly consistent.

As to the institutional and operational aspects of the executing agency, the organizational structure to maintain the present level and frequency of extension activities is mostly secured. Since the completion of the project, a certain amount of extension activities, more than 200 activities on average per year, have been accumulated to date. This fact proves that the implementation structure of the MPM and the implementation cycle of extension activities are working without any problem. Regarding the technical capacity of the V/Cs and Vs which support the implementation cycle, their capacity is highly satisfied by artisanal fisherpersons according to the social impact assessment survey.

As to the financial aspects, on the other hand, the CNVM recognizes that the additional budget is needed in reinforcing extension activities although the budget for extension activities, which was not allocated to the CNVM before, is now appropriated exclusively to the CNVM (expended for transportation costs, maintenance costs, and fuel costs for mobile units, etc.), starting from 2006. Moreover, nearly half of the V/Cs and Vs are not paid remuneration for extension activities at present, and there are some concerns about securing their motivation.

Some problems have been observed in the financial aspects of the executing agency, and the continuity of the project effects is fair.

4-3. Conclusions

The contents of the project are highly consistent with the national policy, and the project objective has been achieved, as of the completion of the project in 2006. Although there was some concern remains over financial sustainability, no specific problem has been found regarding the operation and maintenance system. In addition, a lot of positive impacts have been produced, including some regarding the overall goal.

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

4-4. Recommendations

Recommendations to the Executing Agency

Recommendation-1

The recruitment of new V/Cs and Vs was suspended as of July 2010 as an indirect consequence of the limitation of the number of employees. Financial support for these workers involved in extension activities is also limited. Given these restrictions of various resources, it would be a realistic strategy to carry out extension activities by utilizing the existing resources more efficiently and effectively rather than inputting new resources on a large scale. To be specific, it would be effective to re-examine the extension target sites covered by each of the eight Regional Extension Centers and reduce the number of sites, if appropriate. Additionally, it is advisable to consider ways to utilize the equipment provided under the "Mini Project" technical localization project more effectively.

Recommendation-2

As of July 2010, nearly half of the V/Cs and Vs are not paid remuneration (such as a per-diem allowance) for extension activities at present, and such a situation restricts the expansion of the activities. It is advisable to pay allowance to each worker in order to maintain their motivation.

Recommendation-3

According to the results of the social impact assessment survey, no significant change is observed in household income before and after the implementation of the project, and many fisherpersons point out "sluggish fishing activities due to the rise of fuel costs" as one of the reasons for this.

Regarding the fuel necessary for the operation of outboard motors, the MPM, the National Fisheries Office (ONP), and Moroccan customs agreed in December 2008 to "exempt" artisanal fisherpersons from taxation on the purchase of fuel. As was pointed out in the interview with beneficiaries saying that "if tax exemption on fuel was applied, our income would increase by 40%", the effect of tax exemption on the livelihood of artisanal fisherpersons would be tremendous. However, in a fishing village covered by the PDA project where a gas filling station has been constructed under that project, fisherpersons still cannot enjoy the benefit of tax exemption because of the delay in the arrival of the assigned customs officer. Additionally, it is pointed out that "the tax exemption application process is too complicated for fisherpersons to carry out by themselves".

In light of the above, the MPM should immediately: i) provide concrete assistance services in expediting the tax exemption application process (e.g., preparing the application form on behalf of fisherpersons) and ii) hold dialogue with customs with a view to facilitating the introduction of tax exemption.

4-5. Lessons Learned

Quality of the base line survey

The high quality of the baseline survey of the project (the accuracy in understanding the needs of the beneficiaries) greatly contributed to the selection of extension themes that are highly needed by fisherpersons. While there is the opinion that "too much time was spent before the start of the extension activities", conducting an intensive baseline survey turned out to be one of the factors that led to the success of this project, although a "preparation period" including the baseline survey took rather a long time. When formulating and implementing similar projects containing extension activities in the future, it is advisable to take enough time for the baseline survey to understand the needs of the beneficiaries. In addition, it is advisable to evaluate the accuracy of the baseline survey in the mid-term evaluation without exception and, if any problem is found, recommend that additional survey be conducted.

Issues on gender

As was pointed out in the termination evaluation report, the preliminary survey on the activities of female artisanal fisherpersons conducted in the early stage of the project was not enough, and as a result, it was extremely difficult to carry out activities targeting women. Therefore, when implementing similar projects in Muslim regions, in particular, it is essential to precisely understand the cultural and social background of the recipient country.

Kingdom of Morocco

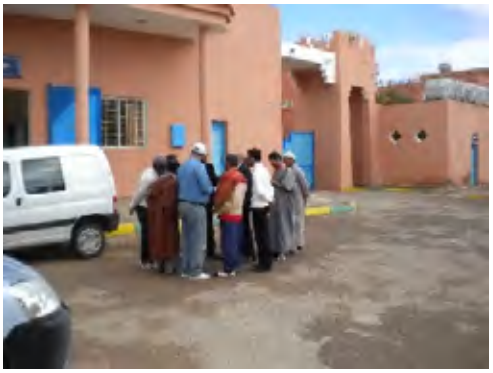
Ex-Post Evaluation of Japanese Technical Cooperation Project

"The Project for the Establishment of an Extension System for Artisanal Fisheries"

External Evaluator:
Hajime Onishi, Mitsubishi UFJ Research & Consulting

1. Project Description

Project Locations



Artisanal Fisherpersons and Extension Coordinator at Immessouane Village (Facilities in the back are constructed by PDA Project)

1.1 Background

As of the year 2000, the government of the Kingdom of Morocco recognized that the correction of income disparity among regions and the conservation of fishery resources were priority policy issues, and thus emphasized to support a capacity development of 48,000 artisanal fisherpersons in the fisheries sector. On the other hand, because of the lack of an extension worker system in the field of fisheries[1], no specific extension project for artisanal fisherpersons had been started. Based on the background described above, the government requested project-type technical cooperation from the government of Japan for the development of extension programs to establish a new extension system appropriate to the local situation under which extension workers would efficiently engage in extension activities.

In response to this request, the Japan International Cooperation Agency (JICA) sent over a preliminary study team in March 2000 and a short-term study team in October 2000 to discuss the details of cooperation. In March 2001, a Record of Discussion (R/D) between the governments of Morocco and Japan was signed, and thus, for the purpose of achieving a state where "an efficient extension system is established and where extension

[1] To be more accurate, the authority to be responsible for the extension system had been determined by the government, but the contents of extension activities, the division of roles among agencies concerned, and the chain of command, etc., had not been clearly defined at that time. (Source: JICA [2001] Supplementary Study Report on the Project for the Establishment of an Extension System for Artisanal Fisheries in Morocco, pp.53)

activities are carried out in fishing villages", a technical cooperation project commenced for a scheduled period of five years beginning in June 2001.

1.2 Project Outline

Overall Goal	To improve the socio-economic conditions of artisanal fisherpersons along with conservation of marine resources
Project Objective	To develop and establish extension system
Outputs	1. Practices and situation of artisanal fisheries are understood. 2. Extension programs on relevant themes for fisherpersons are developed. 3. Curriculum and teaching materials are developed and technical capacity of Extension Coordinators (V/Cs) is improved. 4. Extension activities are carried our effectively on selected sites. 5. Monitoring, evaluation and feedback mechanism is established.
Inputs	Japanese Side: 1. Experts: 19 experts in total For Long-Term: 8 experts, For Short-Term: 11 experts 1. Trainees received: 15 trainees 2. Trainees for Third-Country Training Programs: N/A 3. Equipment: 56.4 million yen 4. Local Cost: 90.3 million yen 5. Others (incl. dispatch of related missions): Advisory Study (2002) Moroccan Side: 1. 38 Counterparts (Long-Term: 9, Short-Term: 29) 2. Extension Coordinator (V/C): 24 coordinators in total 3. Extension Worker (V): 53 workers in total (at the time of project completion in 2006) 4. Land and Facilities, Project Office and Utilities: Project office, etc. 5. Local Cost: 54.6 million yen

Total Cost	597.48 million yen
Period of Cooperation	June 2001 – May 2006
Executing Agency	Ministry of Fisheries (Ministere de l'Agriculture et de la Peche Maritime, MPM)
Cooperation Agency in Japan	Fisheries Agency of Japan

Related Projects	Study on Artisanal Fisheries Development Project (Development study) Larache Fishery Technology Improvement Center Construction Project (Grant aid project)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

Although the correction of regional disparities and the improvement of the livelihood of fisherpersons have not been observed as a result of the project, positive impacts (such as the realization of the purchase of tax-free gasoline, the cooperative purchase of low-priced fishing gear, and a consequent increase in income as a result, etc.) are expected to become evident as more fisherperson cooperatives are organized. Therefore, the improvement of the livelihood of fisherpersons and, eventually, the correction of regional disparities can be expected in the future.

1.3.2 Achievement of Project Objective

Through the implementation of the project, the foundation of an extension system, which did not exist on the Moroccan side, has been established, and the system is being improved continuously under the ownership of the government of Morocco. The project objective is expected to be achieved by the completion of the project.

1.3.3 Recommendations

A total of seven recommendations were made: three for the remaining period before the scheduled completion of the project in 2006 and four for the period after the completion of the project.

<u>Recommendations before the termination of the Project</u>

- To strengthen the institutional structure, personnel resources and budgetary allocation for the National Extension Center (CNVM) in order to further develop the extension activities,
- To share the outputs of the project with other potential beneficiaries (through the internet website, for example), and
- To conduct another baseline survey to understand the economic and social developments of artisanal fishery villages after the completion of the project.

<u>Recommendations after the completion of the Project</u>

- To give incentives to extension workers (ex. awarding best practices) based on the appropriate recognition of the importance of extension workers' roles,
- To develop extension activities considering the needs of the women in fishing

villages,

- To conduct resource management activities covering coastal and offshore fishery, and
- To immediately complete the panned PDA[2] project, which is being promoted by the Moroccan government, on the ground that PDA and activities by fisherperson's cooperatives are closely related each other.

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Onishi (Mitsubishi UFJ Research & Consulting Co., Ltd.)

2.2 Duration of Evaluation Study

The following study was conducted for the ex-post evaluation.

Duration of the Study: January 2010 – November 2010

Duration of the Field Study: February 22, 2010 – March 7, 2010, July 19, 2010 – July 21, 2010

2.3 Constraints during the Evaluation Study

It was difficult to conduct studies at two locations among the project sites, due to the political and security situation. These sites are excluded from the field survey[3] and beneficiary survey[4].

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

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Morocco

Consistency with the national development policy, etc.: At the time of project planning in 2001, the Socio-economic Development Plan (2000–2004) emphasized poverty reduction and the correction of economic disparities as important policy, and were highly consistent with the overall goal of the project aiming at improving the living and socio-economic conditions of artisanal fisherpersons. As of the completion of the project in 2006, the National Initiative on Human Development, established in May 2005 by His Majesty King Mohamed VI, set the objectives of reducing poverty and promoting

[2] "Points Débarquement Aménagé": A project to construct 66 fish-landing facilities (a fish-landing site, auction market, outboard motor storage, meeting hall, etc.) in the next 10 years from 2007; these facilities are expected to serve as the bases for the fishing activities of artisanal fisherpersons.

[3] In this post evaluation study, i) interviews with government officials, ii) site investigation (including interviews with artisanal fisherpersons at three (3) target fishery villages of the project), iii) beneficiary survey (conducted through a face-to-face interview) are conducted.

[4] The details of the beneficiary survey are as follows:

- Sampling method: Two-stage stratified random sampling
- Number of Samples: 151 samples in total (110 for artisanal fisherperson, 30 for fish whole sellers and 11for others including fisherman's wives)
- Locations of survey: Moulay Bousalham, Diky, Tifnit and Immessouane (These are all target fishery villages of the project.)

equality, indicating no significant change in the overall national policy. Therefore, the overall goal of the project remains highly consistent with the national policy. (The Socio-economic Development Plan has not been drawn up after the 2000–2004 version.)

Consistency with the development strategies, etc., of the fisheries sector: At the time of project planning in 2001, the Five-Year Development Plan (2000–2004) of the Ministry of Fisheries (MPM) emphasized correction of regional disparities, poverty reduction, and education and training, and set the objective of promoting the education of artisanal fisherpersons, which coincided with the overall goal of the project. As of the completion of the project in 2006, the New Three-Year Development Plan (2005–2007) of the MPM also emphasized the improvement and expansion of the social security system for artisanal fisherpersons. Therefore, the overall goal of the project remains highly consistent.

Additionally, under the abovementioned fish-landing site development project (PDA) carried out by the government of Morocco, various fisheries-related facilities (auction markets, lodging facilities for fisherpersons, warehouses, fuel storage, etc.) are being constructed in artisanal fishing villages. These basic infrastructures support the extension activities of the project.

3.1.2 Relevance with the Development Needs of Morocco

As of 2001, when the project was planned, extension activities initiated by the MPM have not developed into systematic activities, and there was an extremely strong need for the capacity-building of 48,000 artisanal fisherpersons all over Morocco through extension activities.

As of 2006, when the project was completed (according to the results of the beneficiary survey as mentioned later in the section on “Impact”), the income of artisanal fisherpersons was still unstable, indicating that the need for the improvement of fishing-related skills through extension activities still applied.

3.1.3 Relevance with Japan’s ODA Policy

Both at the time of project planning in 2001 and at the time of project completion in 2006, the government of Japan and the government of Morocco agreed on the following three points as part of the priority areas of assistance: i) assistance for the development and promotion of agriculture and fisheries; ii) assistance in the field of regional development aimed at poverty reduction; and iii) assistance for social development. These priority areas have not been changed since 1999, and therefore, the project remains highly consistent. These facts indicate that the project was highly consistent with Japan’s ODA policy.

This project has been highly relevant with the country’s development plan, development needs, as well as Japan’s ODA policy, therefore its relevance is high.

3.2 Effectiveness (Rating: a)

The effectiveness of a project is evaluated comprehensively from three points of view: i) whether the planned outputs (in the case of this project, Output 1 to Output 5, as detailed below) have been obtained, ii) whether each of the above outputs contributed to the achievement of the project objective in its achievement process, and iii) whether the project objective has been achieved through i) and ii) above.

An "extension system" mentioned in the project objective, which is to achieve a state where "an efficient extension system is established and extension activities are carried out in fishing villages", is defined in the preliminary short-term study conducted in October 2000 as "a cycle of i) analysis of the current situation and problems in artisanal fisheries regarding specific issues → ii) development of extension programs (program plan, methods, teaching materials, etc.) → iii) training of extension workers → iv) extension activities → v) monitoring and evaluation of extension programs → vi) problem analysis of other/new issues → vii) development of extension programs on other/new issues".[5]

3.2.1 Project Outputs

3.2.1.1 Output 1: Clarification of current situation of artisanal fisheries (Practices and situation of artisanal fisheries are understood.)

With regard to the indicator "extension themes, based upon the situation and needs of artisanal fisherpersons, are selected", most of the eight interviewed extension coordinators (hereinafter referred to as the "V/Cs") and extension workers (hereinafter referred to as the "Vs")[6] mentioned that "appropriate themes were selected". Also in the beneficiary survey to the artisanal fisherpersons who are the recipients of the extension programs, all of the 81 fisherpersons surveyed answered "themes were selected appropriately" or "themes were selected almost appropriately" [7].

Table-1: Views of Artisanal Fisherpersons on the Selection of Extension Themes (N=81)

Responses	No. of Respondents	%
6 themes were selected appropriately.	49	60.5
6 themes were selected almost appropriately.	32	39.5
6 themes were not appropriately selected.	0	0.0
No answers / No opinions	0	0.0
Total	81	100.0

Source: Results of social impact assessment survey

[5] Source: JICA (2001) Supplementary Study Report on the Project for the Establishment of an Extension System for Artisanal Fisheries in Morocco

[6] The breakdown of the eight interviewees is: three (3) for Larache National Extension Center (incl. one V/C), two (2) for Casablanca Regional Extension Center (incl. one V/C) and three (3) for Agadir Regional Extension Center (incl. one V/C).

[7] Out of 6 themes (Cooperatives formulation, Outboard engine maintenance, Marine safety, Hygiene and quality control, Fishery technique, Fishery resource conservation), outboard engine maintenance, marine safety and fishery technique were answered as "very useful". (Source: Results of social impact assessment survey)

Based on the above results, it is concluded that the extension themes were selected appropriately. This fact also proves the accuracy of the results of the baseline survey. In response to the recommendations made in the mid-term evaluation in 2004, an additional baseline survey was conducted. It seems that the baseline survey for this project including the additional survey was conducted so precisely that it resulted in the selection of extension themes for which fisherpersons had strong needs.

3.2.1.2 Output 2: Development of extension programs for fisherpersons (Extension programs on relevant themes for fisherpersons are developed.)

Although there is no documented program, the curriculum (program plan), teaching materials for the training of the V/Cs, teaching materials for the training of fisherpersons, and visual aids for the mobile class had been developed for each of the six selected themes before the completion of the project in 2006. The V/Cs and Vs consider that these plans and teaching materials as a whole constitute a program, and each worker uses various teaching materials as appropriate at their own discretion. In this way, the extension activities are implemented in accordance with the program plan.

With regard to the quality of the extension programs, an interview survey was conducted with the artisanal fisherpersons who are the recipient of the programs. As shown below, all of the interviewed fisherpersons answered "the contents of the programs are useful" or "mostly useful".

Table-2: Views of Artisanal Fisherpersons on the Contents of Extension Programs (N=81)

Responses	No. of Respondents	%
The contents of extension programs are useful.	50	61.7
The contents of extension programs are mostly useful.	31	38.3
The contents of extension programs are not useful.	0	0.0
No answers / No opinions	0	0.0
Total	81	100.0

Source: Results of social impact assessment survey

From the above, it is concluded that extension programs were developed appropriately as planned.

3.2.1.3 Output 3: Improvement of V/C's technical capacity (Curriculum and teaching materials are developed and technical capacity of V/Cs is improved.)

By the time of the completion of the project in 2006, 23 types of training sessions were provided to the V/Cs. With respect to the degree of understanding of the extension programs and the technical capacity of the V/Cs, many respondents of the interview survey to the MPM answered that "there is no problem"[8]. In the beneficiary survey to

[8] The termination evaluation (conducted in 2007) also came to the conclusion that there was almost no problem.

artisanal fisherpersons, all of the fisherpersons who received extension programs and covered by the beneficiary survey answered that they were "satisfied with the technical skills and capacity of the V/Cs" or "mostly satisfied". In addition, V/C's level of understandings of each theme was mostly satisfied by them. (For the details, refer to two tables below.)

Table-3: Views of Artisanal Fisherpersons on the Technical Skills and Capacity of the V/Cs (N=81)

Responses	No. of Respondents	%
Satisfied with the technical skills and capacity of the V/Cs	51	63.0
Mostly satisfied with the technical skills and capacity of the V/Cs	30	37.0
Not satisfied with the technical skills and capacity of the V/Cs	0	0.0
No answers / No opinions	0	0.0
Total	81	100.0

Source: Results of social impact assessment survey

Table-4: Views of Artisanal Fisherpersons on V/C's Understandings of Themes (N=81)

Responses	No. of Respondents	%
V/C's understandings of each theme are appropriate.	51	63.0
V/C's understandings of each theme are almost appropriate.	29	35.8
V/C's understandings of each theme are not appropriate.	1	1.2
No answers / No opinions	0	0.0
合計	81	100.0

Source: Results of social impact assessment survey

These results of the beneficiary survey show the situation as of 2010. Considering also that the technical capacity of the V/Cs was highly evaluated in the termination evaluation, it is concluded that the degree of understanding of the extension programs and the technical capacity of the V/Cs have improved through the various activities of the project.

3.2.1.4 Output 4: Expansion of extension activities (Extension activities are carried out effectively on selected sites.)

It is confirmed that: i) a sufficient number of mobile units' classes were held (increased from 76 in 2001 to 187 in 2004, 299 in 2005, and 224 in 2006), ii) the women's group activity promotion program was carried out, iii) fisherperson group activity presentation meetings were held, iv) inspection visits to advanced sites were conducted, and v) the technical localization project (the "Mini Project") was implemented[9]. With respect to the effectiveness of the mobile class, all of the fisherpersons who received extension programs and covered by the beneficiary survey answered that "the mobile class is effective in understanding the extension programs" or that it was "effective to some

[9] The number of mobile units' classes was confirmed by the field survey of this post evaluation. For the other results of ii), iii), iv) and v), the actual performance was already confirmed by the terminal evaluation.

extent". In addition, the quality of teaching materials of mobile units was satisfied by them. (For the details, refer to two tables below.)

Table-5: Views of Artisanal Fisherpersons on the Effectiveness of Mobile Units (N=81)

Responses	No. of Respondents	%
The mobile class is effective in understanding the extension programs.	55	67.9
The mobile class is effective to some extent in understanding the extension programs.	26	32.1
The mobile class is not effective in understanding the extension programs.	0	0.0
No answers / No opinions	0	0.0
Total	81	100.0

Source: Results of social impact assessment survey

Table-6: Views of Artisanal Fisherpersons on Teaching Material of Mobile Units (N=81)

Responses	No. of Respondents	%
Satisfied with teaching material of mobile units	51	63.0
Mostly satisfied with teaching material of mobile units	30	37.0
Not satisfied with teaching material of mobile units	0	0.0
No answers / No opinions	0	0.0
Total	81	100.0

Source: Results of social impact assessment survey

The facts described above show that the extension activities produced satisfactory results, and Output 4 is considered to have been obtained. As pointed out in the termination evaluation report, the preliminary survey was not enough in that the project intended that women in fishing villages would be the target, in spite of the fact that female involvement in fisheries is limited due to the cultural and social background of Morocco. For these and other reasons, it was reported that the abovementioned "women's group activity promotion program" was extremely difficult to implement[10]. The same fact was pointed out in the hearing to those concerned with the field survey conducted this time[11].

3.2.1.5 Output 5: Establishment of feedback mechanism of extension activities (Monitoring, evaluation and feedback mechanism is established.)

The monitoring, evaluation, and feedback mechanism of extension activities is defined in this post evaluation as such that the "V/Cs visit the selected sites on a regular basis and grasp the socio-economic conditions of artisanal fisherpersons, based on which the V/Cs suggest new extension themes to fisherpersons and implement extension activities on their own initiative"[12].

[10] Details are provided in p.30, p.33, and p.35, etc., of the termination evaluation report.
[11] Source: Results of interviews with the MPM, CNVM, and the V/Cs.
[12] This definition is almost same as that of the "extension mechanism" (which is already mentioned), and this output is considered to be an essential part of this project. The achievement situation of this output as of 2010 is to be analyzed again in the section on "Sustainability" in the latter part.

Table-7: Views of Artisanal Fisherpersons on the Establishment of Feedback Mechanism as of 2010 (N=81)

Responses	No. of Respondents	%
V/C visits our village regularly and recommends new theme frequently.	2	2.5
V/C visits our village irregularly and recommends new theme occasionally.	57	70.4
V/C rarely visit our village and rarely recommend new theme.	19	23.5
V/C never visit our village and nor recommend new theme.	3	3.6
Total	81	100.0

Source: Results of social impact assessment survey

As to whether such a feedback mechanism as described above has been established, many respondents of the interview survey to the V/Cs, Vs, and the MPM answered that "the mechanism has been established appropriately." As a basis of the judgment that the mechanism has been established, many respondents mentioned the "quarterly holding of the V/C liaison conference" and the "sharing of various information between the V/Cs and Vs". On the other hand, artisanal fisherpersons answered in the beneficiary survey that the V/Cs and Vs did not visit them so often and that only a limited number of suggestions were made for new extension themes (see the above table for details).

These answers from artisanal fisherpersons reflect the situation as of 2010. The fact that a limited number of suggestions for new themes have been made to date may indicate that the same tendency as observed in these answers also existed at the time of the completion of the project in 2006.

Based on the observations described above, it is assumed (not concluded) that the frequency of the monitoring activities of the V/Cs and Vs was not so high in 2006. However, considering that some suggestions were made for new themes in line with the needs of fisherpersons, the feedback mechanism is considered to have been established to some extent. Therefore, it is concluded that this output has been partially obtained.

3.2.2 Achievement of Project Objective

In order to measure the achievement of the project objective, which is to achieve a state where "an efficient extension system is established and where extension activities are carried out in fishing villages", three indicators (the number of active groups of artisanal fisherpersons, amount of government budget executed for extension activities, and the number of activities carried out by the government by itself) have been selected beforehand. Achievement of the project objective is assessed comprehensively by examining these indicators and from the previously mentioned two points of view: i) whether the planned outputs have been obtained; and ii) whether each of the above outputs contributed to the achievement of the project objective.

3.2.2.1 Indicator 1: Number of active group from the selected sites will increase.

In this survey, no definite data concerning this indicator has been obtained. According

to the termination evaluation, more than two cooperatives were newly organized as of 2006, and inspection visits to advance fishing villages and exchange activities through the meetings of the leaders of fisherperson organizations were conducted, indicating the active involvement of fisherpersons. Based on these facts, it is concluded that Indicator 1 has been attained.

3.2.2.2 Indicator 2: Amount of budget planned and executed by the MPM will increase compared to 2001

As the information concerning the budget appropriated and executed for the extension activities as of when the project started (2001) is not available, it is difficult to make a comparison of before and after project implementation. However, the budget dedicated to the National Fisheries Extension Center (CNVM), which did not exist before, is now appropriated starting from 2006. In addition, the amount of such budget has been increasing (see the section on "Sustainability" for details). Based on these facts, it is concluded that Indicator 2 has been attained.

3.2.2.3 Indicator 3: Extension activities implemented by the MPM themselves will increase compared to 2001.

It is impossible to assess the achievement of this indicator because no definite data regarding this indicator has been obtained in this survey. When the "number of extension activities carried out by the Moroccan government by itself" is read as the "number of extension activities carried out through this project", the number of activities sharply increased from 76 in 2001 to 224 in 2006, as mentioned in Section 3.2.1.4.

3.2.2.4 Degree of the output's contribution to achieve Project objective

As stated in Section 3.2.1, more than satisfactory results have been achieved for all of Outputs 1 to 5 with the exception of Output 5. These outputs form the basis of the present extension system for artisanal fisheries by the MPM and are essential factors in the implementation of the extension system. As for Output 5, a feedback mechanism has been established to some extent.

Therefore, it is concluded that each output made great contributions to the establishment of the extension system.

3.2.2.5 Conclusions

As stated above, it is confirmed that almost all outputs have been attained, and it is concluded that each output made great contributions to the establishment of the extension system. In relation to budget appropriation and execution by the government, among Indicators 1–3, which measure the achievement of the project objective, the budget dedicated to the CNVM has been appropriated starting from 2006. Although there is a

view that “the amount remains inadequate” (CNVM), the “financial support for the implementation of extension activities” that was not provided before is now realized.

This project has largely achieved its objectives, therefore its effectiveness is high.

3.3 Impact

3.3.1 Achievement of Overall Goal

Two indicators have been specified beforehand to measure the achievement of the overall goal: i) regional differences of income are to be corrected by 2010; and ii) knowledge about coastal fishery resources is to be disseminated by 2010. In this survey, it was difficult to obtain significant macro data concerning i) and ii) above (e.g., data on the household income of artisanal fisherpersons in the coastal area of Morocco and data on changes in the fish catches of coastal fishing). In this section, therefore, the achievement state of i) and ii) is assessed mainly based on the results of the social impact assessment survey.

Changes in the standard of living of artisanal fisherpersons

The results of the social impact assessment survey shown below demonstrate that the income of the surveyed fisherpersons has not necessarily increased through the implementation of the project. Further, it cannot be said that there is a significant change in household income before and after the implementation of the project. On the other hand, over 70% of the respondents said that the “fish catch has not increased”, and mentioned “sluggish fishing activities due to the rise of fuel costs” as one of the reasons for this. If fuel costs had not skyrocketed, household income of fisherpersons would have increased much more than that in the current level.

Table-8: Household Income before and after the Project (N=110)

Responses	No. of Respondents	%
Our income has drastically increased after the Project.	30	27
Our income has increased but to a limited extent after the Project.	19	17
Our income has not increased after the Project.	41	38
No answers / No opinions	20	18
Total	110	100

Source: Results of social impact assessment survey

Table-9: Fishery Yield before and after the Project (N=110)

Responses	No. of Respondents	%
Fishery yield has increased after the Project.	30	27
Fishery yield has not necessarily increased after the Project.	80	73
No answers / No opinions	0	0
Total	110	100

Source: Results of social impact assessment survey

Regarding the fuel necessary for the operation of outboard motors, the MPM, the National Fisheries Office (ONP), and Moroccan customs agreed in December 2008 to "exempt" artisanal fisherpersons from taxation on the purchase of fuel. On the other hand, in a fishing village covered by the PDA project where a gas filling station has been constructed under that project, fisherpersons still cannot enjoy the benefit of tax exemption because of the delay in the arrival of the assigned customs officer. Additionally, it is pointed out that "the application process of selling tax-free gasoline is too complicated for fisherpersons to carry out by themselves".

Acquisition of knowledge regarding coastal fisheries by artisanal fisherpersons

The results of the social impact assessment survey shown below indicate that the acquisition of knowledge regarding coastal fisheries through participation in the extension programs has a positive impact on the fishing activities of artisanal fisherpersons. It seems obvious that artisanal fisherpersons have gained certain knowledge.

Table-10: Views of Artisanal Fisherpersons on the Effects of Extension Programs on Fishing Activities (N=110)

Responses	No. of Respondents	%
Extension programs have contributed to our fishing activities.	75	68.2
Extension programs have not contributed to our fishing activities.	4	3.6
No answers / No opinions	31	28.2
Total	110	100.0

Source: Results of social impact assessment survey

Table-11: Detailed Contribution to Fishing Activities (N=75, A question to those who answered some contributions in the table above)

Responses	No. of Respondents	%
Learning of maintenance skills of outboard engines	67 / 75	89.3
Understanding of importance of maritime safety	64 / 75	85.3
Better understanding of fishing techniques and management	62 / 75	82.7
Better knowledge of hygiene	42 / 75	56.0
Learning of GPS usage	30 / 75	40.0

Source: Results of social impact assessment survey
Note: Multiple answers

Implication of cooperative activities on artisanal fisherpersons

As shown below, the results of the social impact assessment survey indicate that the establishment of cooperatives, relating to Output-4 of this project, greatly contributed to the improvement of the business environment of fisherpersons. Based on these results, it is concluded that the establishment of cooperatives and related activities had a positive impact on artisanal fisherpersons.

Table-12: Views of Artisanal Fisherpersons on the Impact by the Establishment of Cooperatives (N=110)

Responses	No. of Respondents	%
The establishment of cooperatives has affected the fishing activities.	83	75.5
The establishment of cooperatives has not affected the fishing activities.	4	3.6
No answers / No opinions	23	20.9
Total	110	100.0

Source: Results of social impact assessment survey

Table-13: Detailed Impacts by the Establishment of Cooperatives (N=83, A question to those who answered some impacts in the above table)

Responses	No. of Respondents	%
Being able to receive more financial support than before	32 / 83	38.6
Being able to receive more technical support (incl. maintenance support) than before	23 / 83	27.7
Being able to use more equipment (boat, outboard engines, fishing instruments, etc.) than before	31 / 83	37.3
Being able to share fishing knowledge and techniques	37 / 83	44.6
Being able to sell the fish more expensive than before	14 / 83	16.9

Source: Results of social impact assessment survey
Note: Multiple answers

3.3.2 Other Impacts

As a result of the interview with artisanal fisherpersons, the following comments are received as positive impacts.

- Some artisanal fishery cooperatives are active in pursuing income sources other than fisheries. (For example, the operation of seafood restaurants or the growing and sale of Argan oil, a specialty product of the southern region, are being planned by some cooperatives.) The extension activities under the project may have indirectly encouraged the independent and autonomous activities of fisherpersons.
- The mobile units that are used for extension activities are also used for literacy education activities for artisanal fisherpersons.

Throughout the implementation of the project, no negative impact on artisanal fisherpersons has been generated in terms of environmental and social aspects.

3.4 Efficiency (Rating: a)

3.4.1 Inputs

3.4.1.1 Elements of Inputs

The table below shows a comparison between planned and actual inputs. The amount of inputs of the Japanese side was almost as planned. As for the amount inputs of the Moroccan side, the number of the V/Cs and Vs increased from 18 to 24 and from 38 to 53, respectively, and in total, a larger amount of inputs than initially planned was secured.

Table-14: Comparison of Inputs before and after the Project

Elements of Inputs	Plan	Actual Performance	Difference
1. Moroccan Side			
(1) Counterpart Assigned			
a) Long-term	6 types of counterparts such as Project Director, Project Manager, etc.	9 counterparts in total	N/A
b) Short-term	To be appointed when necessary	29 counterparts in total	N/A
c) V/C and V	V/C: 18 staff (3 X 6 Centers) V: 38 staff	V/C: 24 staff (3 X 8 Centers) V: 53 staff	V/C: 6 V: 15
(2) Land, Building and Facilities	Related facilities at Larach CQPM	The sam	As planed
(3) Local Costs	To be decided	54.6 million yen	N/A
2. Japanese Side			
(1) Experts			
a) Long-term Experts	4 types of experts such as Chief Advisor, Extension Activities, Fisherpersons Education, and Coordinator	8 experts in total (2 Chief Advisor, 2 Extension Activities, 2 Fisherpersons Education, 1 Coordinator and 1 Regional Development)	N/A
b) Short-term Experts	To be appointed when necessary	11 experts in total	N/A
(2) Trainees received	2 to 3 trainees per year	15 trainees in total (3 per year)	As planned
(3) Equipment	Extension acitivities-related, Audio & Visual aids, etc.	26 types, 56.4 million yen in total	N/A
(4) Operational Costs	To be decided	90.3 million yen in total	N/A

Source: JICA internal documents, Answers to the questionnaire to MPM, Answers to the questionnaire to CNVM, etc.

(1) Amount of inputs

When asked about the adequacy of the quality and quantity of the inputs, the Moroccan counterparts—the MPM and the Larache National Fisheries Extension Center (CNVM)—both answered "almost no problem", as shown in the table below[13]. From the above, it is concluded that the amount of inputs (personnel and equipment) was generally adequate.

Table-15: Views of Executing Agency on the Relevance of the Amount of Inputs

Questions to MPM/CNVM	Response by MPM	Response by CNVM
The number of JICA experts dispatched (both long-term and short-term ones), duration of dispatching and their expertise	Almost appropriate	The number of experts was appropriate, but duration and expertise were the issue[14].
The number of Moroccan side counterparts assigned, duration of assignments and their expertise	Almost appropriate	Almost appropriate
Types, capacity and volume of equipment provided (incl.	Appropriate	Almost appropriate

[13] Responses to the questionnaire to the MPM and CNVM

[14] The CNVM commented that an "extension was needed" for the period of the dispatch of Japanese experts and that the qualification and specialist knowledge of some of the Japanese experts were "regrettably below the level required for efficient implementation of the project, and they had some problem in their communication ability". (Source: Results of hearings to the CNVM)

Questions to MPM/CNVM	Response by MPM	Response by CNVM
vehicles and other instruments)		
The number of trainees sent to Japan, contents of training programs in Japan and duration of training courses	Almost appropriate	Almost appropriate

Source: Answers to the questionnaires to MPM and CNVM

(2) Timing of inputs

There was almost no problem with the timing of the inputs. However, the efficient implementation of the project may have been hindered somewhat by the following two factors.

- The absence of a chief advisor in the early stage of the project saw negative impacts on the project (such as delays in decision-making concerning the acquisition of equipment and a lack of communication between the Japanese experts and the Moroccan side, etc.).
- The Moroccan side pointed out the poor communication ability of some of the Japanese experts and the need for interpreters[15].

The Input of human resources is indispensable in carrying out extension activities in a certain scale. The increase in counterparts on the Moroccan side (the increase of the V/Cs and Vs) greatly contributed to the achievement of the project objective and therefore is considered an appropriate input.

3.4.1.2 Project Cost

The total amount of cooperation, including the dispatching costs for experts, etc., was 597.48 million yen. With regard to the amount and timing of disbursement, the MPM and CNVM commented that "there was almost no problem"[16]. Therefore, it is concluded that the amount of cooperation was appropriate[17].

3.4.1.3 Period of Cooperation

There was no change in the period of cooperation, which was planned as five years, at the time of completion. When asked about the appropriateness of the period of cooperation, the MPM and CNVM answered that "there was no problem regarding the period of cooperation and the timing of the commencement/completion of the project"[18]. Therefore, it is concluded that there was no problem regarding the period of cooperation.

[15] Additionally, it was pointed out that the "poor communication ability of some of the Japanese experts somewhat indirectly impeded the establishment of a favorable cooperative relationship between the Japanese experts and the Moroccan counterparts". (Source: Results of hearings to the MPM and CNVM)
[16] Source: Responses to the questionnaire to the MPM and CNVM
[17] The CNVM commented that "if additional budget had been appropriated to the local operation cost of the Japanese side and the local cost of the Moroccan side, it would have been possible to acquire more equipment and thereby carry out additional activities". (Source: Results of hearings to the CNVM)
[18] Source: Responses to the questionnaire to the MPM and CNVM

The inputs are appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is high.

3.5 Sustainability (Rating: b)

3.5.1 Related Policy toward the Project

In September 2009, a development strategy for the fisheries sector for the target year of 2020 (the Halieutis Plan) was formulated. In this strategy, job creation for the poverty group in the fisheries sector, including artisanal fisherpersons, is listed among priority objectives, and therefore, the overall goal of the project is highly consistent. The Socio-economic Development Plan, known as the five-year national plan, has not been drawn up after the 2000–2004 version.

3.5.2 Institutional and Operational Aspects of the Executing Agency

There is no significant change in the organizational structure, and the structure to maintain the present level and frequency of extension activities is secured. The table below shows the number of employees at the Larache National Fisheries Extension Center (CNVM) and at the eight Regional Fisheries Extension Centers (CRVM) located across the country.

Table-16: Number of Staff in CNVM and CRVM

Year	Number of Staff	Of which, who are involved in extension activities
2006	CNVM: 4 CRVM: 24	CNVM: 3 CRVM: 24
2007	CNVM: 4 CRVM: 24	CNVM: 3 CRVM: 24
2008	CNVM: 4 CRVM: 24	CNVM: 3 CRVM: 24
2009	CNVM: 4 CRVM: 24	CNVM: 3 CRVM: 24

Source: Answers to the questionnaire to CNVM

Table-17: Number of V/Cs and Vs

Year	V/C in Total	Full-Time V/C	V/Cs in Total	Full-Time V/Cs
2006	8	8	53	16
2007	8	8	53	16
2008	8	8	53	16
2009	8	8	53	16

Source: Answers to the questionnaire to CNVM

Since the completion of the project, a certain amount of extension activities have been accumulated to date (see Table-18 for the number of extension activities carried out after the completion of the project to present). This fact proves that the implementation structure of the executing agency and the implementation cycle of extension activities are working without any problem.

However, according to the results of the beneficiary survey, the views of artisanal fisherpersons do not necessarily correspond with the record of activities shown in the table below. Only 28% of the respondent fisherpersons answered that “extension activities

are carried out on a regular basis at present", whereas those who answered "extension activities are rarely carried out or carried out on a non-regular basis" accounted for 47% of all respondents[19]. There seems to be a gap between the extension activities that were actually carried out and the perception of artisanal fisherpersons on the beneficiary side. Among the various factors that may have created this perception gap, the following are considered the two main factors: i) problems unique to the sample sites selected for the beneficiary survey (there may be regional differences in the frequency of extension activities), and ii) a reflection of the further need of fisherpersons for extension activities.

Table-18: Records of Extension Activities (from 2006 up to now)

Year	Number of Extension Activities Conducted	Number of Target Sites	Number of Participants in Total
2006	224	63	20,082
2007	260	66	18,312
2008	209	66	11,500
2009	211	58	12,051

Source: Answers to the questionnaire to CNVM and MPM internal documents
Note): The number of extension activities is equal to that of mobile classes.

Table-19: Views of Artisanal Fisherpersons on the Frequency of Extension Activities (N=110)

Responses	No. of Respondents	%
Extension activities are regularly conducted.	31	28
Extension activities are irregularly conducted.	36	33
Extension activities are rarely conducted.	15	14
No answers / No opinions	28	25
Total	110	100

Source: Results of social impact assessment survey
Note): The number of extension activities is equal to that of mobile classes

Additionally, when it comes to the issue of the future development and reinforcement of extension activities, further strengthening of the organizational structure, mainly through the increase of employees, will be a little difficult because new recruitment is suspended due to the limitation of the number of employees allowed, etc. Therefore, measures to improve the quality of each worker and the efficiency of extension activities will be needed for the future.

3.5.3 Technical Aspects of the Executing Agency

The following facts have been confirmed, and there seems to be no problem regarding the technical level of the employees concerned that may affect the continuation of their activities.

- The training of the V/Cs and Vs was conducted on a continuous basis even after the

[19] Note that the frequency of monitoring activities by extension workers is shown in Talbe-7 (Views of Artisanal Fisherpersons on the Establishment of Feedback Mechanism). The responses of fisherpersons shown in Table-19 and Table-7 are indicating a similar tendency.

completion of the project[20].

- The MPM says that "there is no problem" with the technical capacity of the V/Cs and Vs. Additionally, according to the beneficiary survey, the technical capacity of the V/Cs and Vs is highly evaluated by artisanal fisherpersons at present (for details, see Output 3 in the section on "Effectiveness").
- With respect to the transmission of skills, in the interviews with the V/Cs and Vs, they said that "skills are transmitted by retiring workers mostly without problem".

Table-20: Training Courses Provided for V/Cs and Vs after 2006 (New theme only)

Year	Training courses for V/Cs	Training courses for Vs
2006	2	2
2007	2	2
2008	5	5
2009	2	2

Source: Answers to the questionnaire to CNVM

3.5.4 Financial Aspects of the Executing Agency

The budget allocated to the CNVM after 2006 is shown below. The budget for extension activities, which was included in the budget of the ITPM up to 2005, is now appropriated exclusively to the CNVM (expended for transportation costs, maintenance costs, and fuel costs for mobile units, etc.), starting from 2006. The amount of budget has been increasing, as shown below.

Table-21: Budget Allocation to CNVM

(Unit: Moroccan Dirham)

Year	Budget Allocation
2006	100,000
2007	120,000
2008	140,000
2009	180,000

Source: Answers to the questionnaire to CNVM

However, the CNVM says that "Our budget request has not been approved in the full amount. An additional source of revenue is needed in reinforcing extension activities." At present, nearly half of the V/Cs and Vs are not paid remuneration for extension activities, and such a situation restricts the expansion of the activities[21]. About half of the V/Cs and Vs also serve as teachers of the ITPM and are paid teacher salaries.

3.5.5 Continuity of Effectiveness / Impact

The scope of this project is to establish the institutional system of training V/Cs and Vs at nine premises including the national and regional extension centers. As already explained in Section 3.5.2, the structure to maintain the present level and frequency of

[20] Specifically, training on new themes is provided on a regular basis. See Table-16 for details. Study tours, etc., are also conducted as part of training. (Source: Results of hearings to the CNVM)
[21] Gradual reduction of motivation for continuing extension activities, for example.

extension activities is mostly secured. The capacity of each extension workers, which is the key element for securing the sustainability of extension system as a whole, was highly evaluated by the beneficiaries as shown in Table-3. It seems that these facts demonstrate that CNVM, a central control hub of the extension system, is functioning smoothly at this moment.

Considering that a certain number of extension activities are confirmed to have been carried out (although there are some issues regarding the recruitment of personnel to replace workers reaching retirement age and additional training for newcomers), there seems to be almost no problem in ensuring sustainability in organizational and technical aspects. Regarding financial aspects, further budgetary measures are necessary, and therefore, little concern remains over sustainability.

Regarding the provided equipment, a shortage of spare parts is pointed out for some equipment. Additionally, some of the ice-making machines provided under the technical localization project (the "Mini Project"), which was implemented as part of this project, are not in use because of the shortage of an ice-making capacity[22].

With respect to the three recommendations made in the termination evaluation: i) "it would be effective to properly recognize the important role played by the Vs and give incentive for their activities (e.g., awarding good performance)", ii) "it is important to promote extension activities taking into consideration the needs of women in fishing villages", and iii) "resource management activities covering coastal and offshore fisheries are needed", additional long-term experts from JICA are being dispatched for the development of resource management activities, and extension programs are expected to be carried out in combination with resource management activities. For the recommendations of i) and ii) of the above, specific measures were not taken.

Some problems have been observed in the financial aspects of the executing agency, and the continuity of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The contents of the project are highly consistent with the national policy, and the project objective has been achieved, as of the completion of the project in 2006. Although there was little difficulty during the implementation process of the project and some concern remains over financial sustainability, no specific problem has been found regarding the operation and maintenance system. In addition, a lot of positive impacts have been produced, including some regarding the overall goal.

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

[22] Larger ice-making machines have additionally been procured at some cooperatives.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Recommendation-1

As already mentioned, the recruitment of new V/Cs and Vs was suspended as of July 2010 as an indirect consequence of the limitation of the number of employees. Financial support for these workers involved in extension activities is also limited. Given these restrictions of various resources, it would be a realistic strategy to carry out extension activities by utilizing the existing resources more efficiently and effectively rather than inputting new resources on a large scale. To be specific, it would be effective to re-examine the extension target sites covered by each of the eight Regional Extension Centers and reduce the number of sites, if appropriate[23]. Additionally, it is advisable to consider ways to utilize the equipment provided under the "Mini Project" technical localization project more effectively.

Recommendation-2

In this project, nearly half of the V/Cs and Vs are not paid remuneration (such as a per-diem allowance) for extension activities at present, and such a situation restricts the expansion of the activities. It is advisable to pay allowance to each worker in order to maintain their motivation.

Recommendation-3

According to the results of the social impact assessment survey, no significant change is observed in household income before and after the implementation of the project, and many fisherpersons point out "sluggish fishing activities due to the rise of fuel costs" as one of the reasons for this.

Regarding the fuel necessary for the operation of outboard motors, as mentioned above, the MPM, ONP, and Moroccan customs agreed on a tax exemption. As was pointed out in the interview with beneficiaries saying that "if tax exemption on fuel was applied, our income would increase by 40%", the effect of tax exemption on the livelihood of artisanal fisherpersons would be tremendous. However, in a fishing village covered by the PDA project, fisherpersons still cannot enjoy the benefit of tax exemption because of the delay in the arrival of the assigned customs officer. Also pointed out is that "the tax exemption application process is too complicated."

In light of the above, the MPM should immediately: i) provide concrete assistance services in expediting the tax exemption application process (e.g., preparing the application form on behalf of fisherpersons) and ii) hold dialogue with customs with a view to facilitating the introduction of tax exemption.

[23] It is possible to efficiently utilize the limited resources for the smaller number of target sites, due to the reduction of the number of sites to be visited.

4.3 Lessons Learned

(1) Quality of the base line survey (Better understanding of beneficiaries' needs)

The high quality of the baseline survey of the project (the accuracy in understanding the needs of the beneficiaries) greatly contributed to the selection of extension themes that are highly needed by fisherpersons. While there is the opinion that "too much time was spent before the start of the extension activities", conducting an intensive baseline survey turned out to be one of the factors that led to the success of this project, although a "preparation period" including the baseline survey took rather a long time.

When formulating and implementing similar projects containing extension activities in the future, it is advisable to take enough time for the baseline survey to grasp the needs of the beneficiaries. In addition, it is advisable to evaluate the accuracy of the baseline survey in the mid-term evaluation without exception and, if any problem is found, recommend that additional survey be conducted.

(2) Issues on gender

As was pointed out in the termination evaluation report, the preliminary survey on the activities of female artisanal fisherpersons (including the baseline survey) conducted in the early stage of the project was not enough, and as a result, it was extremely difficult to carry out activities targeting women.

Therefore, when implementing similar projects in Muslim regions, in particular, it is essential to precisely understand the cultural and social background of the recipient country.