MINUTES OF MEETING
BETWEEN
THE JAPANESE EVALUATION TEAM AND THE AUTHORITIES CONCERNED
OF THE GOVERNMENT OF THE REPUBLIC OF TURKEY
ON THE JAPANESE TECHNICAL COOPERATION
FOR FLATFISH CULTURE PROJECT

The Japanese Evaluation Team (hereinafter referred to as "the Japanese Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Hayato SHIRASE, Senior Advisor to the Director General, Rural Development Department, JICA, visited the Republic of Turkey from February 8, 2009 to February 27, 2009 in order to conduct the mid-term review on the Project for Flatfish Culture (hereinafter referred to as "the Project").

The Turkish Evaluation Team (hereinafter referred to as "the Turkish Team") was organized by the Ministry of Agriculture and Rural Affairs (hereinafter referred to as "MARA) of the Government of Turkey and headed by Mrs. Aylin VELİOĞLU, Agriculture Engineer (Project Officer), Aquaculture Department, General Directorate of Agricultural Production and Development, MARA.

For the mid-term review of the Project, the Japanese Team and the Turkish Team formed the Joint Evaluation Team (hereinafter referred to as "the Team") to conduct the Mid-term Evaluation of the Project by carrying out field surveys, exchanging views and holding a series of discussions with staff and personnel of the Project in respect of desirable measures to be taken by both Governments for successful implementation of the Project.

As a result of the evaluation, the Japanese Team and the authorities concerned of the Government of Turkey agreed to report to their respective Governments the matters referred to in the document attached hereto.

Antalya, February 26, 2009

Mr. Hayato SHIRASE
Leader,
Japanese Evaluation Team,
Japan International Cooperation Agency,
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Head of Aquaculture,
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Ministry of Agriculture and Rural Affairs,
The Republic of Turkey

Attached Document

After conducting study and analysis of the activities and achievements of the Project, the Team prepared the Joint Evaluation Report (hereinafter referred to as "the Report") and presented the evaluation results to the Joint Coordinating Committee (hereinafter referred to as "the JCC") of the Project that was held on February 26, 2009. In the meeting, the following issue was raised, discussed and agreed.

1. The JCC accepted the Report and took notes of the recommendations in the Report.

2. In the JCC, major issues were discussed and agreed as described below.

Revision of the Project Design Matrix (PDM) and PO (Plan of Operation)

The revised PDM and the revised PO were examined by the JCC and approved as the third version of the PDM and PO for remaining period of the Project.

MID-TERM REVIEW REPORT

ON

FLATFISH CULTURE PROJECT

IN THE REPUBLIC OF TURKEY

Antalya, February 26, 2009

Japan-Turkey
Joint Evaluation Team

Mr. Hayato SHIRASE
Leader
Japanese Evaluation Team
Japan International Cooperation Agency
Japan

Mrs. Aylin VELIOĞLU
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Turkish Evaluation Team
General Directorate of Agricultural Production and Development,
Ministry of Agriculture and Rural Affairs
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CONTENTS

1. Introduction

1.1 Objectives of the Mid-term Review

(1) To evaluate the overall achievement of "Flatfish Culture Project" (hereinafter referred to as "the Project") in terms of five evaluation criteria (relevance, effectiveness, efficiency, impact and sustainability) based on the Record of Discussions (R/D) and Project Design Matrix (PDM).

(2) To review the project plan of the remaining period of the Project through discussion on the plan of operations and prospect of achievement of the Project at the end of the Project.

(3) To identify and discuss necessary measures for solving problems on the project operation and assuring sustainability of the Project, and report and recommend the results of discussions to the relevant government agencies in Turkey and Japan.

1.2 Members of the Joint Evaluation Team

(1) Japanese Evaluation Team

Mr. Hayato SHIRASE	Team Leader	Senior Advisor to the Director General, Rural Development Department, Japan International Cooperation Agency (JICA)
Mr. Toyohiro NISHIOKA	Aquaculture Technique	Senior Researcher, Fish Diseases Diagnosis Group, National Research Institute of Aquaculture, Fisheries Research Agency
Mr. Hiroyuki TANAKA	Cooperation Planning	Assistant Director, Field Crop Based Farming Area Division 2, Rural Development Department, JICA
Mr. Isao DOJUN	Evaluation Analysis	International Project Department, Chuo Kaihatsu Corporation

(2) Turkish Evaluation Team

Mrs. Aylin VELİOĞLU	Team Leader	Agriculture Engineer (Project Officer), Aquaculture Department, General Directorate of Agricultural Production and Development, Ministry of Agriculture and Rural Affairs (MARA)
Mr. Ramazan ÇELEBİ	Member	Fisheries and Aquaculture Engineer, Aquaculture Department, General Directorate of Agricultural Production and Development, MARA
Ms. Binnur CEYLAN	Member	Agriculture Engineer, Central Fisheries Research Institute – Trabzon, MARA
Mr. Çetin SÜMER	Member	Fisheries and Aquaculture Engineer, Mediterranean Fisheries Research, Production and Training Institute, Antalya, MARA

1.3 Schedule of the Mid-term Review

The schedule of the evaluation is attached as Annex 1.

2. Outline of the Project

2.1 Background of the Project

The Government of Turkey has set a target to promote aquaculture industry, including

development of culture techniques for new varieties in the 8th National Development Plan (2001-2005), and Black Sea Turbot (hereinafter referred to as "Kalkan") was identified as the top priority variety. To achieve the Plan, the Government of Turkey requested a series of technical cooperation with the Government of Japan. In response of request from the Government of Turkey, JICA has cooperated for two projects, named "Fish Culture Development Project in the Black Sea" and "Technical Development of Sustainable Seed Production for Black Sea Turbot" for 10 years in total. As a result of cooperation, JICA and Turkish authority have developed seed production techniques of Kalkan and enhanced fish disease research skill.

The Government of Turkey has appreciated the achievement of technical cooperation by JICA, and they requested the Government of Japan the third technical cooperation, which means establishment of Kalkan culture model and extension system. Then, JICA dispatched the Preparatory Study Team to examine a framework of new project, which would be a final stage of series of technical cooperation for Kalkan culture.

Based on the results of the preparatory study, the Record of Discussions (R/D) on the Project was signed by both Japanese and Turkish sides on May 11, 2007. The Project has been implemented since July 2007 for the cooperation period of 3 years and 6 months.

2.2 Summary of the Project

The framework of the Project is shown in the draft PDM 3 which was modified based on the recommendations from the Joint Evaluation Team through this evaluation study (See Annex 2).

(1) Overall Goal

Aquaculture industry becomes diversified in Turkey.

(2) Project Purpose

Culture models of Kalkan in land-based facilities are developed.

(3) Outputs

Output 1: Techniques of Kalkan culture are developed.

Output 2: Production scales at commercial level are identified.

Output 3: Collection and transmission of information for extension activities are ready to initiate.

Output 4: Traceability system on Kalkan culture is established.

(4) Activities

1-1. Identify water management techniques

1-2. Identify nutritional value of the practical diets

1-3. Reinforce the fish pathology examination system

1-4. Prepare technical manuals for Kalkan culture.

2-1 Collect and analyze basic information of private aquaculture companies which have interest in Kalkan culture

2-2 Conduct market research to analyze consumers' reaction to different Kalkan sizes

2-3 Examine different culture models by amount of production and scale of facility

2-4 Develop culture guidelines for each model

3-1 Hold technical seminars of Kalkan culture

3-2 Publish the results of experiments for private aquaculture companies

3-3 Implement periodical survey on the private aquaculture companies' demand

3-4 An extension plan for Kalkan culture is formulated by the project team (the Turkish counterparts and JICA experts) under coordination by MARA and with cooperation of SUMAE and AKSAM.

4. Study food safety system for Kalkan culture

2.3 Proposed Revision of PDM (draft PDM 3) and modification of PO (Plan of Operation)

As a result of examination of current PDM (PDM 2), the Joint Evaluation Team has proposed further revision on outputs, activities, verifiable indicators and measures of verification, etc., as described in the following table. The evaluation was conducted based on the proposed PDM 3. In accordance with revision of PDM and the progress of the project activities, PO is also revised. For details see Annex 8.

Table: Major modifications of PDM

Item	Version 2	Proposed revision (Version 3)	Reason of change
First indicator of the Overall Goal	Useful data and technology for diversification are available for private sector	Useful data and technology for diversification are available for private sector (extension service)	Meaning of the first indicator and the fifth indicator of the Overall Goal is similar. Therefore, these indicators are integrated in one indicator.
Second indicator of the Overall Goal	Number of private aquaculture companies which have introduced Kalkan culture (15 companies)	Number of private aquaculture companies which have started trial Kalkan culture or started Kalkan culture business (10 companies)	Due to price decrease in sea bass and sea bream, financial capability of private aquaculture companies is reducing and there is no success case of the Kalkan culture business in the private sector yet. Therefore, target number of companies is changed.
Third indicator of the Overall Goal	Amount of cultured Kalkan (300 t/year)	Amount of cultured Kalkan (100 t/year)	There is information as to times when amount of production exceeded 100 tons per year, afterwards amount of production will be increased surely.
Fourth indicator of the Overall Goal	Percentage of cultured Kalkan in all Kalkan production (20 % in weight)	(Deleted)	Fluctuation in amount of catch of natural Kalkan is big by year. Therefore, this indicator is not suitable.
Fifth indicator of the Overall Goal	Operation situation of the extension service	(Deleted)	This indicator is integrated in the first indicator.
The Project Purpose	Culture models of Kalkan in land-based facilities are developed.	Culture models of Kalkan in land-based facilities are developed.	Change for a more suitable word
Second indicator of the Project Purpose	Number of private companies which started initial Kalkan culture activities (3 companies)	Culture guidelines for developed culture models of Kalkan	This project does not include extension activities for private aquaculture companies that enable them to start Kalkan culture. Therefore, original

			indicator is deleted. On the other hand, it is better to add a new indicator which is related with the Project Purpose.
New indicator for the Project Purpose	(None)	Kalkan culture extension plan	Formulation of an extension plan for Kalkan culture is added as a project activity.
First indicator of the Outputs	Survival rate of Kalkan at shipment (70 %)	Survival rate of Kalkan when weight of Kalkan is 1.0 kg in average (75 %)	The economy group of the project team is proposing 2 kinds of sales strategies. First one is to sell Kalkan at the weight between 750g to 1,000g (called radical strategy) and second one is to sell Kalkan at the weight more than 1,000g. Although it is better to determine the survival rate based on the profitability of Kalkan culture, the profitability is under examination. Considering the shipping weight in France (from 800g to 1,500g, in average 1,000g) and Japan (less than 1,000g) and also the survival rate in France (75%-85%), target survival rate for the Project is modified to 75% when weigh of Kalkan is 1,000g.
Second indicator of the Outputs	Amount of Kalkan production in the model culture (700 kg/tank/year)	Amount of Kalkan production in the model culture (700 kg/tank/crop) (Average weight of Kalkan more than 1.0kg)	Because 1.2 years to 2.0 years necessary for Kalkan to grow up to shipment size, it is better to modify the numerical indicator from 700kg/tank/year to 700kg/tank/crop. 700kg is estimated based on the information on density of turbot culture in Japan and information from feed production company. (Bottom area of tank is $28m^2$ and assumed suitable density is $25kg/m^2$, $28m^2 \times 25kg/m^2 = 700kg$)
Third indicator of the Outputs	Suggested Kalkan culture models (3 models)	Proposed Kalkan culture models with different production scales	Rather than the number of models, making models suitable for small, medium and large production scales is important.
Fourth indicator of the Outputs	Gross profit of each of the above model is estimated	(Deleted)	Economic analysis is included in each model. Therefore, it is not necessary to mention separately.
Output 4	(None)	Traceability system on Kalkan culture is established.	New additional output is set up because there is an activity "4. Study food safety system for Kalkan culture'.
Indicator for the Output 4	(None)	4-1 Kalkan rearing and management information is published in the website of AKSAM.	New indicator for the Output 4
Activity 3-4	3-4 Reconfirm roles of concerned organizations for Kalkan culture extension	3-4 An extension plan for Kalkan culture is formulated by the project team (the Turkish counterparts and JICA experts) under coordination by MARA and with cooperation of SUMAE and AKSAM.	In order to extend Kalkan culture, not only reconfirmation on roles of the organizations concerned, but also preparation of an extension plan for Kalkan culture is necessary.
Activity 4	4. Study Food security system for Kalkan culture	4. Study food safety system for Kalkan culture	Changed for a more suitable word
Measures for verification	Modification of several measures of verification is proposed as a more suitable source of data.		
Important assumption	(None)	Worldwide financial crisis does not affect Turkish economy significantly.	Economic situation may effect price of Kalkan and accessibility to finance for starting Kalkan culture.
Others	A remark is added.		

3. Methodology of Evaluation

3.1 Evaluation Procedure (Joint evaluation)

The Project was evaluated by the Turkish and Japanese Evaluation Teams (hereinafter referred to as "the Joint Evaluation Team") in accordance with the R/D. The evaluation study included analysis of documents, field survey, and interview with stakeholders such as counterparts, JICA experts, and persons of private aquaculture companies.

3.2 Evaluation Criteria (Five Evaluation Criteria)

The evaluation was conducted based on the following five Evaluation Criteria.

(1) Relevance

Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the Government of Turkey as well as the needs of beneficiaries.

(2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.

(3) Efficiency

Efficiency refers to the productivity of the implementation process. It examines whether the inputs of the Project have been efficiently converted into outputs.

(4) Impact

Impact refers to direct and indirect, positive and negative impacts caused by implementation of the Project, including the extent to which the overall goal has been attained.

(5) Sustainability

Sustainability refers to the extent to which the Project can be further developed by the Government of Turkey and the extent to which the benefits generated by the Project can be sustained under national policies, technology, systems and financial state.

4. Achievement of the Project

4.1 Inputs

4.1.1 Inputs by Japanese side

(1) Dispatch of JICA Experts

JICA experts have been dispatched in the following fields: 1) Culture Techniques 1 (Water Management/ Chief), 2) Culture Techniques 2 (Feed Nutritional Analysis/ Fish Disease Control), 3) Culture Techniques 3 (Feed Development/ Fish Disease Control), and 4) Fisheries Economy. For details see Annex 3.

(2) Training in Japan

Two counterparts have participated in the training in Japan and a counterpart is participating in the training in Japan at present. Titles of training courses are "Prevention of cultured fish disease and fish-borne disease" and "Feed development". For details see Annex 4.

(3) Local cost allocated by Japanese side

Local cost allocated by JICA for the implementation of the Project activities in Japanese fiscal year 2007 and 2008 is 11,914,000 JPY (Japanese Yen) in total. For details see Annex 5.

4.1.2 Inputs by Turkish side

(1) Assignment of counterpart personnel

Currently, Project Director and Project Coordinator from MARA in Ankara, Project Manager from AKSAM, and 14 counterparts of AKSAM are assigned to the Project. For details see Annex 4.

(2) Budget allocation by Turkish side

MARA allocated budget for improvement of facilities, purchase of equipment and operational expenses. Total amount of budget allocated in the fiscal year 2007 and 2008 is 452,647 YTL. For details see Annex 6.

4.2 Outputs

4.2.1 Output 1: Techniques of Kalkan culture are developed.

It is expected that the target survival rate of Kalkan (75%) is achieved and the target amount of Kalkan production in the model culture (700kg/tank/crop) is achieved. Therefore, it is expected that the Output 1 will be achieved at a satisfactory level.

Indicator 1-1: Survival rate of Kalkan when weight of Kalkan is 1.0 kg in average (75 %)

Average body weight, survival rate and prospect of achieving the indicator (survival rate 75 % when weight of Kalkan is 1.0kg) by year of birth of juvenile (year class of Kalkan) are as follows.

Table: estimated mean body weight, survival rate and prospect of achieving the indicator based on the data on January 22, 2009.

Year class of Kalkan	Mean body weight (g)	Survival rate (%)	Prospect to achieving the indicator (75%)
2006	1,394	76	Already achieved
2007	733	86	High possibility
2008	62	98	Early to judge

In case of the juvenile of the year 2006, survival rate is 76% as the mean body weight is around 1.4 kg. Therefore, indicator is achieved. In case of the juvenile of the year 2007, mean body weight is 733g and its survival rate is 86%; therefore, there is high possibility to achieve the indicator. As for the juvenile of the year 2008, it is early to judge survival rate when weight of Kalkan is 1.0kg because body weight is too small yet.

Overall, there is good possibility to achieve this indictor at the time of completion of the Project.

Indicator 1-2: Amount of Kalkan production in the model culture (700 kg/tank/crop) (Average weight of Kalkan more than 1.0kg)

Examination of appropriate density of Kalkan is underway using juvenile of the year 2007. Target production is 700kg per tank (tank area is 28m^2). The following table shows data as of January 22, 2009.

juvenile of the 2007 year class	Estimated weight of Kalkan in tank (as of Jan. 22) (kg)	Weight of Kalkan shipped (kg)	Weight of production (as of Jan. 22) (kg)	Prospect to achieving the target
Target production 700 kg/tank No.1	558	59	617	High
Target production 700 kg/tank No.2	572	77	649	High

Considering the situation of weight of production as of January 22, 2009, there is possibility in achieving this indicator (700kg/tank/crop). In the case of the juvenile of 2008, same examination will be carried out from May 2009 and its result will be known in May 2010. The achievement of this indicator will be judged considering both results of examination.

4.2.2 Output 2: Production scales at commercial level are identified.

It is expected that several Kalkan culture models with different production scales will be proposed and the Output 2 will be achieved by the end of the Project.

Indicator 2-1: Proposed Kalkan culture models with different production scales

Following examination has been carried out at present.

(1) Examination on shape, material and equipment, etc.

Item (shape, material and equipment, etc.)	Present situation (Progress)	Further examination	Time of final proposal
Shape and material of tank			
A. Excavated earth pond	Considering current techniques on prevention of disease and management, it is judged that this type of pond is not suitable as model. This fact will be explained in the Culture guidelines for developed culture models of Kalkan and the Manual on Kalkan culture.		
B. Tank made of plywood and canvas	As a result of the survey, complicated rearing management is required for this type of pond, it is estimated that there is little possibility to extend this type of model in Turkey. This fact will be explained in the Culture guidelines for developed culture models of Kalkan and the Manual on Kalkan culture.		
C. Excavated earth pond with concrete lining	Estimation of construction cost is underway.	Estimation of initial investment cost and benefit	Comparison of construction cost will be done by the end of March 2009. Final proposal will be made by November 2010.
D. Round shape concrete tank	Estimation of construction cost is underway.	Estimation of income and expenditure based on rearing	Comparison of construction cost will be done by the end of March 2009. Final proposal will be made by November 2010.
E. Quadrilateral concrete tank	Estimation of construction cost is underway.	Estimation of initial investment cost and benefit	
F. FRP wall and concrete bottom tank	Estimation of construction cost is underway.	Estimation of initial investment cost and benefit	
Rearing reinforcing equipment			
G. With copper ion generator	Effectiveness is confirmed. Rearing trial is underway.	Estimation of income and expenditure based on rearing	Final proposal will be made by November 2010.
H. With UV sterilizer	Trial is underway in small tank for feed experiment	Undecided	
I. With copper ion generator and UV sterilizer	Undecided	Undecided	
Roof			
J. Plastic greenhouse K. Galvanized iron sheet L. Heat insulating material	Estimation of construction cost is underway.	Estimation of initial investment cost and benefit	Comparison of construction cost will be done by the end of March 2009. Final proposal will be made by November 2010.

(2) Examination of different production scale

Size of tank (round shape)	Present situation (Progress)	Further examination	Time of final proposal
A. Diameter of 6 meters B. Diameter of 8 meters C. Diameter of 11 meters	Estimation of construction cost is underway.	Estimation of initial investment cost and benefit	Comparison of construction cost will be done by the end of March 2009. Final proposal will be made by November 2010.

The project team judged that Kalkan culture in the excavated earth pond is not feasible to propose from the view points of disease control and management techniques. The project team also judged that Kalkan culture in tanks that made of plywood and canvas has little possibility to extend due to complicated rearing management.

The project team is conducting examination of other type of models at present. It seems possible that Kalkan culture models with different production scales will be proposed by November 2010.

4.2.3 Output 3: Collection and transmission of information for extension activities are ready to initiate.

Activities related with publicities such as seminar, newspapers, and magazines etc., are progressing satisfactorily and preparation of technical manuals is progressing almost as planned. Therefore, it is expected that Output 3 will be achieved at satisfactory level by the end of the Project.

Indicator 3-1: Record of publicities (Seminar, Newsletters, HP, etc.)

The followings are achievement related with publicity.

(1) Implementation of seminars

1) Seminar of aquaculture companies

Title of seminar	Date	Purpose	Number of participants	Participants
Seminar in Milas (potential of Kalkan culture)	June 16, 2008	For promoting smooth collection of basic information of aquaculture companies in Milas	84	Aquaculture companies

2) Seminar for University

Title of seminar	Date	Purpose	Number of participants	Participants
Seminar at the Akdeniz University Antalya	October 22, 2008	Publicity of the Project	91	Dean of Faculty of Fisheries and others

(2) Publicity related achievement

1) Creation of Website of the Project in May 2008

Information on the project activities is available.

2) Appearance: 8 times in newspaper and 2 times in TV, and 1 time in magazine

For examples

- Newspaper: August 18, 2007, Zaman newspaper, introduction of the project activities
- Newspaper: June 18, 2008, Newspapers Hurriyet and Akdeniz, introduction of the project

activities

- Newspaper: June 24, 2008, Onder newspaper, introduction of the project activities
- "World of Aqua" a magazine on fisheries, edition of November 2008, Title of article "Turkish-Japanese partnership on Turbot culture yields its fruits"

(3) Others

Poster and brochure for the promotion of sales of Kalkan are under preparation.

Indicator 3-2: Technical manuals for Kalkan culture are published.

The following manuals are under preparation.

	Title of manual	Planned time of completion	Language
1	Technical Manual for Kalkan Culture	First edition in March 2009 Second edition in March 2010 Final edition in December 2010	Turkish and English
2	Manual for Chemical Analysis of Kalkan Feed	First edition in February 2009	Turkish and English
3	Examination Manuals on Parasitic and Bacterial Disease	First edition in February 2009	Turkish and English
4	Field Guide on Kalkan (*Psetta maxima*) Disease	First edition was completed. Second edition in August 2009 Final edition in August 2010	Turkish and English

4.2.4 Output 4: Traceability system on Kalkan culture is established.

Traceability system on Kalkan culture will be established by the end of the Project.

Indicator 4-1: Kalkan rearing and management information is published in the website of AKSAM.

Kalkan rearing and management information including use of medicines will be published in the website of AKSAM by December 2009.

4.3 Prospect to achieve the Project Purpose

(Project Purpose: Culture models of Kalkan in land-based facilities are developed.)

It is prospected that appropriate number of AKSAM staff will acquire necessary knowledge and techniques on Kalkan culture, and culture guidelines for developed Kalkan culture models and an extension plan for Kalkan culture will be produced by the end of the Project. Therefore, there is good expectation that the Project Purpose is achieved.

Indicator 1: Number of staff who are able to instruct the techniques of Kalkan culture (10 persons)

The Turkish counterparts have been acquiring the basis of knowledge and skills necessary for Kalkan culture as researchers through daily activities such as trial examination on culture, data collection and analysis, presentation of activities, preparation of manuals, etc. It is expected that all of the counterparts acquire sufficient knowledge and skills on Kalkan culture by the end of the Project. There is high possibility that more than 10 staff members of AKSAM –will be able to instruct the techniques on Kalkan culture.

Indicator 2: Culture guidelines for developed culture models of Kalkan

The first edition of the culture guidelines for developed culture models will be produced by the end of March 2009 and the final edition will be produced by November 2010.

Indicator 3: Kalkan culture extension plan

An extension plan for Kalkan culture will be formulated by the project team (the Turkish counterparts and JICA experts) under coordination by MARA and with cooperation of SUMAE and AKSAM by the end of the Project.

5. Result of the Evaluation

5.1 Relevance

Relevance of the Project is high.

Because of lower price of sea bass and sea bream, aquaculture of those species is facing difficulty and needs of diversification of fish species are becoming higher. Moreover, catch of wild Kalkan has been declining and supply of Kalkan is not sufficient. Therefore, need to Kalkan culture is becoming high. In addition, considering the facts that many aquaculture companies participated in the seminar on Kalkan culture that was held by the Project in Milas (one of the target areas for dissemination of Kalkan culture), there is high interest on Kalkan culture. Therefore, it seems that this project is well relevant to the needs of the target area and target beneficiaries.

The main principle of fisheries policies in the Ninth Development Plan 2007-2013 is to establish resource utilization balance in fishery production by conducting stock assessment studies. Main focus in the fisheries sector in the Medium Term Program 2008-2010 is introduction of a sound resource management system, development of institutional capacity for stock assessment, and enhancement of environmentally friendly aquaculture production. According to the 2008 annual program, one of the priorities given in the fisheries sector is to achieve an aquaculture production in harmony with the environment and nourishing alternative sorts of fish. One of the important issues in the fisheries policies is diversification of aquaculture and the Overall Goal of this project (Aquaculture industry becomes diversified in Turkey). Therefore, aim of this project is relevant to the policies of the Government of Turkey.

One of the priority issues of Japanese ODA (Official Development Assistance) policy to Turkey is human resource development for socio-economic development. And advancement of industry and introduction of advanced technology are regarded important. This project is a next step of the JICA's technical cooperation project on development of production techniques of Kalkan juvenile that had been implemented at the coastal area of the Black Sea and one of the aims of this project is to develop Kalkan culture techniques that can be disseminated to private aquaculture companies including development of advanced techniques on Kalkan culture and human resources development concerned. Therefore, this project is in conformity with the priority assistance subjects of Japanese Government.

Japan has long experience on flatfish culture and has accumulated techniques and know-how on development of land-based aquaculture techniques such as development method of culture techniques, parasite extermination method, development method of artificial compound feed, etc. Therefore, those techniques can be applied to this project.

5.2 Effectiveness

Effectiveness of the Project will be at a satisfactory level.

As mentioned in the previous chapter, it is well expected that several kinds of Kalkan culture models will be developed and more than ten staff members will acquire the knowledge and skills necessary for instructing Kalkan culture techniques. A final edition of the culture guidelines for the developed culture models of Kalkan will be produced by November 2010. A Kalkan culture extension plan will be prepared by the end of the Project. Therefore, there is high expectation that the Project Purpose "Culture models of Kalkan in land-based facilities are developed" will be achieved.

5.3 Efficiency

Efficiency of the Project is at a satisfactory level.

Inputs of Turkish and Japanese sides were appropriate in general in terms of quantity, quality and timing, and have been utilized well for the Project activities.

Due to visa regulation of the Republic of Turkey, duration of a stay of JICA expert can not exceed 90 days; therefore, consideration has been made for dispatch of JICA expert in order that at least a JICA expert stays in Turkey. As for the JICA experts in the field of feed development and fish disease control, this expert is in charge of 2 different technical fields. There is an unidentified disease and its treatment method is not known. Because this disease may bring big problem, dispatch of expert specifically for the field of disease control is necessary in order to identify the cause of disease and establish the way of treatment.

Several counterparts have difficulty in communicating in English; therefore, efficiency of communication between Turkish counterparts and JICA experts is not so well.

Accepting a recommendation of a JICA expert, facility and equipment maintenance section was created and a mechanical engineer was assigned in order to strengthen operation and maintenance of facilities and equipment. This is a good arrangement made by Turkish side.

Provision and rehabilitation of facilities and equipment utilized for the Kalkan culture were made by Turkish side. Improvement works of water intake facilities have been done from the Turkish budget earlier than planned. However, there is still necessity for improvement of current water intake and water distribution facilities because there are effects of heavy rain (turbid water inclusion), red tide and high electric cost.

Procurement of equipment and tools has been done from the budget of the Turkish side. In Beymelek unit, there is still need for sufficient laboratory equipment in the pathology field.

5.4 Impacts

It is still too early to judge whether the Overall Goal will be achieved or not. Several positive impacts are observed.

5.4.1 Prospect of achieving the Overall Goal

(1) Overall Goal: Aquaculture industry becomes diversified in Turkey.

Indicator 1: Useful data and technology for diversification are available for private sector (extension service)

Development of Kalkan culture models is underway and also accumulation of techniques and data is underway. Information collection and transmission system at AKSAM will be created and an extension plan for Kalkan culture will be formulated by the end of the Project. By implementing the extension plan for Kalkan culture, extension services such as dissemination of data and technology on Kalkan culture to private aquaculture companies will be available.

Indicator 2: Number of private aquaculture companies which have started trial Kalkan culture or started Kalkan culture business (10 companies)

Although, SUMAE has distributed juveniles of Kalkan to private aquaculture companies who demanded them from the year 2000, there was no example of success as of the year 2007. Two private companies started to try Kalkan culture from the year 2007. Şeray company failed and Kılıç company is continuing Kalkan culture at present.

A seminar for aquaculture companies was held by the Project in Milas in June 2008 and the number of participants was 84. According to the results of questionnaire conducted at the seminar, 31 persons out of the 46 persons (67%) who responding to the questionnaire answered that they have interest in Kalkan culture. An aquaculture company visited AKSAM later.

However, it is early to judge whether more than 10 companies will start trial Kalkan culture or start Kalkan culture business within certain years after the completion of the Project.

Indicator 3: Amount of cultured Kalkan (100 t/year)

Practically, there was no production of cultured Kalkan before the start of the Project. After the start of the Project, only this project is producing cultured Kalkan and selling to the market as trial. In case of Kılıç company, it is planning to sell cultured Kalkan from this year. Therefore, it is early to prospect whether more than 100 tons of cultured Kalkan will be produced annually after the completion of the Project.

5.4.2 Other Impacts

Following positive impacts of the Project are observed.

(1) The project team has pointed out the problem of pond bottom condition management by the

private aquaculture companies and also proposed improvement methods at the technical surveys and the seminar of the Project. A sea bass culture company started improvement of bottom materials using probiotics by accepting suggestions of the project team.

(2) Execution of the Project has raised public awareness on Kalkan culture in the Aegean region.

5.5 Sustainability

5.5.1 Policy aspect

It is necessary to develop Kalkan culture models which can be disseminated. When such models are developed and an extension plan for Kalkan culture is formulated, necessary works for extension will be undertaken by MARA to ensure sustainability of the Project after completion of the Project.

5.5.2 Institutional and Organizational aspect

In order to disseminate Kalkan culture techniques, which are to be developed by the Project, after completion of the Project, it seems that the following issues are important.

1) Appropriate supply system of Kalkan juveniles

The production of Kalkan juveniles is carried out only by SUMAE. In order to supply Kalkan juveniles to aquaculture companies, SUMAE has to enhance production and supply capacity and linkage with AKSAM and aquaculture companies. It is recommended to create private juvenile production companies in future.

2) Appropriate assignment of staff for extension activities

It is necessary to assign staff who has involved in the project activities on development of techniques on Kalkan culture in order to participate in the extension activities after completion of the Project.

3) Demonstration farm

It might be necessary to set up demonstration farms in potential areas of Kalkan culture after implementation of the extension plan begins, in order to assure technical extension of Kalkan culture to private aquaculture companies, because different techniques are necessary for Kalkan culture compared to the sea bass and sea bream culture.

5.5.3 Financial aspect

In order to disseminate Kalkan culture techniques, it is necessary to allocate appropriate budget for implementing extension plan.

It is not estimated yet how much budget will be necessary for the extension plan at the moment, MARA has expressed intension to make effort for budgetary allocation.

5.5.4 Technical aspect

(1) Techniques transferred

Turkish counterparts have been acquiring the knowledge and skills transferred through the project activities satisfactorily and they will acquire knowledge and skills further in the remaining period of the Project; therefore, it is prospected that necessary knowledge and skills as researchers and knowledge on procedures of development of Kalkan culture techniques will be acquired by them and become established.

(2) Acceptability of developed Kalkan culture models by private aquaculture companies

Development of land-based Kalkan culture techniques is underway, and costs and profitability on Kalkan culture models by different production scales and level of required techniques will be clarified by the end of the Project. It is prospected that acceptable Kalkan culture models in terms of production scale and type will be proposed. However, in terms of culture techniques, higher level of techniques should be acquired by private aquaculture companies compared to the techniques on sea bass and sea bream culture. Therefore, it might take certain period for even existing aquaculture companies in transition into Kalkan culture from sea bass and sea bream culture.

5.6 Conclusion

As a result of the Joint Mid-term Review on the Project, the Joint Evaluation Team has made the following conclusion.

As a whole, the project activities have been carried out mostly as planned, and it is expected that techniques on Kalkan culture, Kalkan culture models and an extension plan for Kalkan culture will be developed at a satisfactory level by the end of the Project. In order to assure development of Kalkan culture techniques and extend developed techniques and culture models to private aquaculture companies, there are several issues to be improved. Those issues are mentioned as recommendation.

6. Recommendations and Lessons Learned

6.1 Recommendations

(1) Strengthening of fish disease control

Undiagnosed ulcers cause lower survival rate and reduce the commercial value of Kalkan. The cause of ulcer and the treatment method should be identified as soon as possible.

Therefore, dispatch of JICA expert specialized in the field of fish pathology and technical training of the Turkish counterpart personnel in Japan in the field of fish pathology should be considered.

(2) Further improvement of water intake facilities

Improvement works of water intake facilities have been done under the Turkish budget earlier than the scheduled. However, there is still necessity for improvement of current water intake and water distribution facilities because there are effects from heavy rain (turbid water inclusion), red tide and high electric cost.

It is recommended to make a test and install shallow well to ensure a steady supply of water. Furthermore, based on the result of shallow well test and installation, necessity of installation of deep well should be tested and considered.

(3) Procurement of equipment

Procurement of equipment and tools has been done by budget of the Turkish side. The equipment in the field of fish pathology is indispensable, and the existing pathology laboratory in Beymelek unit should be improved as soon as possible.

Therefore, it is recommended to consider procurement of the equipment for the existing pathology laboratory in Beymelek unit by budget of the Turkish and Japanese side. Continuation of procurement of the others should be considered by budget of the Turkish side.

(4) Extension plan

To ensure extension of Kalkan culture, appropriate extension plan must be prepared.

Therefore, authorities concerned (MARA, SUMAE, AKSAM, JICA) should support project team strongly for preparation of extension plan.

(5) Economic analysis

Economic analysis on 4 different production scale models using concrete tanks was done. It is necessary to have an economic analysis of the culture models to be developed in this project.

Furthermore, investigation into the possibility of Kalkan culture in other regions than Milas such as the Marmara should be conducted.

(6) Field observation of advanced case

Aquaculture of Atlantic turbot, which is the same species as Kalkan, is advanced in some European countries such as Spain and France. Observation of techniques and management of aquaculture in operation will be useful to develop culture models of Kalkan and to develop capacity of counterparts.

Therefore it is recommended to consider short-term dispatch of Japanese expert(s) and Turkish counterparts to European countries which are advanced in Atlantic turbot culture for field study.

(7) Training for counterparts

In order to ensure sustainability after the completion of the Project, training for counterparts is critical. Therefore, training for counterparts by local experts and academicians working in Turkey should be continued and gradually increased.

(8) Modification of PDM

As mentioned in "2.3 Proposed Revision of PDM (draft PDM 3)", the Joint Evaluation Team recommends the revision of the PDM version 2, which was revised on February 6, 2008 at JCC meeting.

6.2 Lessons Learned

Evidence on some indicators of the PDM was not clear. This causes some difficulty in evaluating the achievement of the project.

Therefore, evidence on indicators should be mentioned clearly.

Annex 1 Schedule of the Mid-term Review

Date		Schedule
8-Feb	Sun	A Japanese evaluation member arrive at Antalya
9-Feb	Mon	Antalya→Kepez Courtesy call to and meeting with Director of AKSAM (Kepez) Interview to C/P (field of Economy) Interview to C/Ps (field of Pathology) Observation of facilities of AKSAM Kepez Kepez→Beymelek
10-Feb	Tue	Meeting with JICA expert Observation of facilities of AKSAM Beymelek Interview to C/Ps (counterpart leader and field of planning)
11-Feb	Wed	Interview to C/P (field of Feed development) Interview to C/Ps (filed of Water management) Interview to C/P (field of Pathology) Interview to C/Ps (field of Economy)
12-Feb	Thu	Interview to Deputy Director of AKSAM Data analysis
13-Feb	Fri	Data collection and preparation of report
14-Feb	Sat	Antalya → Ankara
15-Feb	Sun	3 Japanese evaluation member arrive at Ankara
16-Feb	Mon	Meeting with JICA Courtesy call to and Meeting with MARA Joint Evaluation Committee Meeting (4 Turkish evaluation members joined)
17-Feb	Tue	08:15 Ankara (TK912) → 09:20 Antalya, Antalya → Kepez Courtesy call to and meeting with Director of AKSAM (Kepez) Kepez → Beymelek
18-Feb	Wed	Courtesy call to and meeting with Deputy Director of AKSAM (Beymelek) Observation of facilities of AKSAM Beymelek Meeting with counterparts (presentation on the project activities)
19-Feb	Thu	Beymelek → Milas Field observation (visit to aquaculture companies)
20-Feb	Fri	Field observation (visit to aquaculture companies)
21-Feb	Sat	Milas → Beymelek
22-Feb	Sun	Drafting of Joint Evaluation Report
23-Feb	Mon	Joint Evaluation Committee Meeting (Drafting of Joint Evaluation Report)
24-Feb	Tue	Joint Evaluation Committee Meeting (Drafting of Joint Evaluation Report)
25-Feb	Wed	Joint Evaluation Committee Meeting (Finalization of Joint Evaluation Report)
26-Feb	Thu	Joint Coordination Committee (Signing of Minutes of Meeting) Beymelek → Antalya, 22:40 Antalya (TK917) → 23:45 Ankara
27-Feb	Fri	Report to JICA Report to Embassy of Japan Japanese team leave from Ankara

Annex 2 Project Design Matrix (PDM)

(1) PDM version 2

Project Term: 3.5 years from first dispatch of the Japanese expert (Planned Jul/2007 to Dec/2010)
Implementation Agency: AKSAM-Beymelek / TUGEM / MARA
Target Area: Favorable areas for Kalkan culture, including South-Western Turkey
Target Groups: Researchers of AKSAM and private aquaculture companies
Date of approval: February 6, 2008 at JCC meeting

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
[Overall Goal] Aquaculture industry becomes diversified in Turkey.	• Useful data and technology for diversification are available for private sector • Number of private aquaculture companies which have introduced Kalkan culture (15 companies) • Amount of cultured Kalkan (300 t/year) • Percentage of cultured Kalkan in all Kalkan production (20 % in weight) • Operation situation of the extension service	• Fisheries statistics • Market research • Monitoring of private aquaculture companies which have introduced Kalkan culture • Questionnaires for concerned person	
[Project Purpose] Culture models of Kalkan in on-land facilities are developed.	• Number of staff who are able to instruct the techniques of Kalkan culture (10 persons) • Number of private companies which started initial Kalkan culture activities (3 companies)	• Questionnaires for concerned person • Reports made by the Project	- The national strategy of Kalkan culture is not changed. - Price of Kalkan does not decrease sharply.
[Outputs] 1 Techniques of Kalkan culture are developed. 2 Production scales at commercial level are identified. 3 Collection and transmission of information for extension activities are ready to initiate.	• Survival rate of Kalkan at shipment (70 %) • Amount of Kalkan production in the model culture (700 kg/tank/year) • Suggested Kalkan culture models (3 models) • Gross profit of each of the above model is estimated • Record of publicities (Seminar, Newsletters, HP, etc.) • Technical manuals for Kalkan cultures are published.	• Reports made by the Project • Kalkan culture manuals for each model • Questionnaires for concerned persons • Publication materials made by the Project	- Function and skills of aquaculture and research on pathology are not significantly reduced in SUMAE . - Private aquaculture companies do not lose their interest for Kalkan culture. - Serious fish disease does not occur.

[Activities]	[Input]		
	< Turkish side >	< Japanese side >	- Concerned persons in the Project do not leave the relevant organizations. - Private aquaculture companies do not leave their job in large numbers.
1-1. Identify water management techniques 1-2. Identify nutritional value of the practical diets 1-3. Reinforce the fish pathology examination system 1-4. Prepare technical manuals for Kalkan culture. 2-1 Collect and analyze basic information of private aquaculture companies which have interests in Kalkan culture 2-2 Conduct market research to analyze consumers' reaction for different Kalkan sizes 2-3 Examine different culture models by amount of production and scale of facility 2-4 Develop culture guidelines for each model 3-1 Hold technical seminars of Kalkan culture 3-2 Publish the results of experiments for private aquaculture companies 3-3 Implement periodical survey on the private aquaculture companies' demand 3-4 Reconfirm roles of concerned organizations for Kalkan culture extension 4. Study food security system for Kalkan culture	1 Counterparts (10 persons in aquaculture field, 4 persons in pathology field) 2 SUMAE's cooperation, such as technical training, human exchange to AKSAM, etc. 3 Equipments, such as pumps, pipes, stabilization machineries, etc. 4 Strengthened facility 5 Land, culture facilities, laboratories, project office, etc. 6 Other expense, such as business trips of Project members, utility charge, maintenance of facilities and machineries, some consumption for Kalkan culture, etc.	1 Experts (about 3 fields; aquaculture, diet development, fisheries economy / marketing) 2 Training in Japan for counterparts (maximum 3 if necessary) 3 Equipments for Japanese experts 4 Others (some consumables for experiments, etc.)	[Pre-condition] - Mass mortality does not occur in the Project. - SUMAE provides sufficient number of high quality juveniles to AKSAM.

AKSAM: Mediterranean Fisheries Research, Production and Training Institute (MFRPT in English)
MARA: Ministry of Agriculture and Rural Affairs, SUMAE: Central Fisheries Research Institute (CFRI in English)

(2) Proposed PDM (version 3)

Project title: Flatfish Culture Project
Project Term: 3.5 years from first dispatch of the Japanese expert (From July 1, 2007 to December 31, 2010)
Implementation Agency: AKSAM-Beymelek / TUGEM / MARA
Target Area: Favorable areas for Kalkan culture, including South-Western Turkey
Target Groups: Researchers of AKSAM and private aquaculture companies Date of revision: February 26, 2009 at JCC meeting

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
[Overall Goal] Aquaculture industry becomes diversified in Turkey.	1. Useful data and technology for diversification are available for private sector (extension service) 2. Number of private aquaculture companies which have started trial Kalkan culture or started Kalkan culture business (10 companies) 3. Amount of cultured Kalkan (100 t/year)	1. Contents of Website of MARA, AKSAM and SUMAE 2. Market research 3. Monitoring of private aquaculture companies which have introduced Kalkan culture	
[Project Purpose] Culture models of Kalkan in land-based facilities are developed.	1. Number of staff who are able to instruct the techniques of Kalkan culture (10 persons) 2. Culture guidelines for developed culture models of Kalkan 3. Kalkan culture extension plan	1. Questionnaires for concerned person *1 2. Culture guidelines for developed culture models of Kalkan 3. Document on Kalkan culture extension plan	- Worldwide financial crisis does not affect Turkish economy significantly. - The national strategy of Kalkan culture is not changed. - Price of Kalkan does not decrease sharply.
[Outputs] 1 Techniques of Kalkan culture are developed. 2 Production scales at commercial level are identified. 3 Collection and transmission of information for extension activities are ready to initiate. 4. Traceability system on Kalkan culture is established.	1-1 Survival rate of Kalkan when weight of Kalkan is 1.0 kg in average (75 %) 1-2 Amount of Kalkan production in the model culture (700 kg/tank/crop) (at average weight of Kalkan more than 1.0kg) 2-1 Proposed Kalkan culture models with different production scales 3-1 Record of publicities (Seminar, Newsletters, HP, etc.) 3-2 Technical manuals for Kalkan culture are published. 4-1 Kalkan rearing and management information is published in the website of AKSAM.	1-1 Reports made by the Project 1-2 Reports made by the Project 2-1 Guideline on Kalkan culture 3-1 Publication materials made by the Project 3-2 Manual on Kalkan culture 4-1 Website of AKSAM	- Function and skills of aquaculture and research on pathology are not significantly reduced in SUMAE . - Private aquaculture companies do not lose their interest for Kalkan culture. - Serious fish disease does not occur.

[Activities]	**[Input]**		
1-1. Identify water management techniques 1-2. Identify nutritional value of the practical diets 1-3. Reinforce the fish pathology examination system 1-4. Prepare technical manuals for Kalkan culture. 2-1 Collect and analyze basic information of private aquaculture companies which have interest in Kalkan culture	< Turkish side > 1 Counterparts (10 persons in aquaculture field, 4 persons in pathology field) 2 SUMAE's cooperation, such as	< Japanese side > 1 Experts (about 4 fields; aquaculture, diet development, pathology, and	- Concerned persons in the Project do not leave the relevant organizations. - Private aquaculture companies do not leave their job in large numbers.

2-2 Conduct market research to analyze consumers' reaction to different Kalkan sizes 2-3 Examine different culture models by amount of production and scale of facility 2-4 Develop culture guidelines for each model 3-1 Hold technical seminars of Kalkan culture 3-2 Publish the results of experiments for private aquaculture companies 3-3 Implement periodical survey on the private aquaculture companies' demand 3-4 An extension plan for Kalkan culture is formulated by the project team (the Turkish counterparts and JICA experts) under coordination by MARA and with cooperation of SUMAE and AKSAM. 4. Study food safety system for Kalkan culture	technical training, human exchange to AKSAM, etc. 3 Equipments, such as pumps, pipes, stabilization machineries, etc. 4 Strengthened facility 5 Land, culture facilities, laboratories, project office, etc. 6 Other expense, such as business trips of Project members, utility charge, maintenance of facilities and machineries, some consumption for Kalkan culture, etc.	fisheries economy / marketing) 2 Training in Japan for counterparts (maximum 3 if necessary) 3 Equipments for Japanese experts 4 Others (some consumables for experiments, etc.)	[Pre-condition] - Mass mortality does not occur in the Project. - SUMAE provides sufficient number of high quality juveniles to AKSAM.

AKSAM: Mediterranean Fisheries Research, Production and Training Institute (MFRPT in English)
MARA: Ministry of Agriculture and Rural Affairs, SUMAE: Central Fisheries Research Institute (CFRI in English)

*1: Evaluation on the technical capacity of the counterparts on Kalkan culture will be carried out by the deputy director (in charge of technical fields), the counterparts leader, JICA experts and the counterparts (self-evaluation). The project team will decide detailed items for evaluation and allocation of points.

Annex 3 Dispatch of Japanese Experts

No.	Name of Expert	Field	Period of assignment		M/M	Total	2007		2008				2009				2010			
			From	To	(Man-Month)	M/M	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Mr. Goro NEZAKI	Culture Techniques 1 (Water Management/ Planning)	01 Jul 2007	27 Sep 2007	2.97	14.90														
			07 Nov 2007	07 Feb 2008	3.10															
		Culture Techniques 1 (Water Management/ Chief)	05 May 2008	30 Jul 2008	2.90															
			01 Sep 2008	29 Nov 2008	3.00															
			20 Dec 2008	17 Mar 2009	2.93															
2	Mr. Noboru TAKENO	Culture Techniques 2 (Feed Nutritional Analysis/ Fish Disease Control)	01 Jul 2007	25 Aug 2007	1.97	7.27														
			18 Sep 2007	23 Nov 2007	2.23															
			19 Jan 2008	19 Apr 2008	3.07															
3	Mr. Masahiko OIKAWA	Culture Techniques 3 (Feed Development/ Fish Disease Control)	01 Jun 2008	28 Aug 2008	2.97	4.64														
			28 Oct 2008	16 Dec 2008	1.67															
4	Mr. Kazuo UDAGAWA	Fisheries Economy	16 Jan 2008	24 Feb 2008	1.33	5.03														
			28 May 2008	06 Jul 2008	1.33															
			16 Nov 2008	25 Dec 2008	2.37															
					Total	31.84														

Annex 4 Assignment of Counterparts and Training in Japan

No.	Name of Counterpart	Field	Present Post	Employment status*	Period of Assignment as a Counterpart		Training in Japan		
			Post at assignment time		From	To	Year	Name of Training Course	Duration
1	Huseyin VELİOGLU	Project Director	Director General, TUGEM, MARA	P	1-Jul-07	09-Sep-07			
2	Dr. Talat ŞENTÜRK	Project Director	Acting General, TUGEM, MARA	P	10-Sep-07	23-Jan-08			
3	Ali KARACA	Project Director	Director General, TUGEM, MARA	P	24-Jan-08	Present			
4	Erkan GÖZGÖZOĞLU	Project Coordinator	Head of Aquaculture, TUGEM, MARA	P	1-Jul-07	Present			
5	Dr. Yılmaz EMRE	Project Manager	AKSAM, Director	P	1-Jul-07	Present			
6	Dr. Rızvan SÜYEK	Planning (Economy)	AKSAM, Deputy Director	P	24-Nov-08	Present			
7	İsa TEKŞAM	Planning	AKSAM, Deputy Director	P	1-Jul-07	Present			
8	Murat ŞANLI	Planning	Hatchery manager, Beymelek	P	1-Jul-07	Present			
9	Salih KOCAKAYA	Counterparts leader	Aquaculture engineer, Beymelek	P	1-Jul-07	Present	2008	Prevention of Cultured Fish Disease and Fish-borne Disease	66 days
10	Hikmet ERTEKİN	Water management (Head)	Aquaculture engineer, Beymelek	P	1-Jul-07	Present			
11	Erol ÖZTÜRK	Water management	Agriculture engineer, Beymelek	P	1-Jul-07	Present			
12	Dr. Hüseyin SEVGİLİ	Feed development (Head)	Aquaculture engineer, Kepez	P	1-Jul-07	Present	2009	Feed Development	69 days
13	Adem KURTOĞLU	Feed development	Aquaculture engineer, Beymelek	P	1-Jul-07	Present			
14	Ahmet MEFUT	Pathology (Head)	Veterinarian, Kepez	P	1-Jul-07	Present	2008	Prevention of Cultured Fish Disease and Fish-borne Disease	66 dyas
15	Nesrin EMRE	Pathology	Biologist, Kepez	P	1-Jul-07	Present			
16	Nurgül DEDEBALİ	Pathology	Veterinarian, Beymelek	P	1-Jul-07	Present			
17	Bülent ÇELİKÖZ	Pathology/Water management	Veterinarian technician, Beymelek	P	30-Jan-08	Present			
18	Devlet FEDAKAR	Economy (Head)	Aquaculture engineer, Beymelek	P	1-Jul-07	Present			
19	Abdülkerim AKSOY	Economy	Biologist, Kepez	T	1-Jul-07	Present			
20	Durali ERASLAN	Feed development	Food engineer, Beymelek	P	1-Jul-07	30-Sep-07			
21	Abdullah DEMİR	Feed development	Agriculture engineer, Beymelek	P	1-Jul-07	30-Sep-07			
22	Baha ENHOŞ	Pathology	Biologist, Beymelek	P	1-Feb-08	30-Aug-08			

*Note: Permanent (P) or Temporary (T)

Annex 5 Local Cost Allocated by Japanese Side

Unit: Japanese Yen

No.	Category	JFY.2007	JFY.2008	Total
1	Administration (General Affairs)	2,884,000	9,030,000	11,914,000
	Total	2,884,000	9,030,000	11,914,000

Remarks: JFY: Japanese Fiscal Year (from April to March of next year)

Annex 6 Allocation of Budget by Turkish Side

Unit: YTL (New Turkish Lira)

No.	Description	TFY.2007	TFY.2008	Total
1	Construction of research unit	20,375	5,990	26,365
2	Water intake pumps (2 sets)	25,300	0	25,300
3	Generator	0	42,126	42,126
4	Automatic water filter	38,615	0	38,615
5	Poly ethylene pipe fittings	*3,000*	*0*	3,000
6	Control panel	0	5,800	5,800
7	Transformer	-	22,344	22,344
8	Electricity	25,000	90,000	115,000
9	Water	1,000	1,700	2,700
10	UV sterilizer and other spare particles	9,440	2,500	11,940
11	Tanks (Trial unit)	29,181	-	29,181
12	Cartridge filter	-	650	650
13	Chemicals	1,444	7,108	8,552
14	Medicines	3,000	15,400	18,400
15	Fuel for generator	-	9,953	9,953
16	Construction of reservoir tank	-	4,000	4,000
17	Tank maintenance	-	20,000	20,000
18	Tools and materials for laboratory	12,660	3,500	16,160
19	Construction of pump station	-	3,500	3,500
20	Other research materials	18,652	3,000	21,652
21	Shading production unit		2,000	2,000
22	Watching tower construction and excavations	-	5,000	5,000
23	Construction of caisson well	7,000	-	7,000
24	Feed	1,000	12,409	13,409
	Total	195,667	256,980	452,647

Remarks: TFY: Turkish Fiscal Year (from January to December)

Annex 7 Evaluation Grid: Project on Flatfish Culture Mid-term Review

1. Evaluation Grid

Evaluation criterion	Evaluation Question		Information/ data required	Information source	Data collection method
	Main Question	Sub Question			
Relevance	Necessity	Relevant to the needs of the target area and society? (Are needs of Kalkan culture high?)	・Information about the needs of the target area and society (private aquaculture companies and researchers of AKSAM)	1) Related document and information 2) Private aquaculture companies and researchers of AKSAM	1) Data review 2) Interview
	Priority	Are the aims of the Project relevant to the National Development Plan of Turkey? (Importance of fish culture within the policies of Turkey)	・Political status or importance	・The Ninth Five-Year Development Plan (2007-2013) , and the Agricultural Strategy 2006-2010, etc.	Data review
		Conformity with priority assistance subjects of Japanese Government and JICA.	・Priority assistance subjects of Japanese Government for Turkey	・Assistance policy of Japan and JICA country-wise Implementation Plan	Data review
	Suitability as a means	Was the project approach adequately for Kalkan culture development and its dissemination system, including investigation for appropriate size of Kalkan culture enterprise considering the planned project activities and the project duration (around 3 years)?	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview
		Does Japan have a technology advantage? (Does Japan have accumulated know-how on development of inland Kalkan culture technology? Can Japan's experiences be applied?)	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview
	Others	Have there been any changes in the circumstances of the Project (politics, economy, society, etc.) since the start of the Project?	・Information on policies, economy, and society of Turkey, and opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview

Evaluation criterion	Evaluation Question		Information/ data required	Information source	Data collection method
	Main Question	Sub Question			
Effective-ness	Degree of achievement of the Project Purpose	Will the Project Purpose be achieved?	(Table of achievement)	(Table of achievement)	(Table of achievement)
	The relation of cause and effect between the Outputs and the Project Purpose	Were the Outputs enough to achieve the Project Purpose? Were its no wonder in the logic that "the Project Purpose would be achieved if all the Outputs were achieved?"	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview
	Influence of Important Assumption	Influence of following aspects for achieving the Project Purpose 1) Function and skills of aquaculture and research on pathology are not significantly reduced in SUMAE . 2) Private aquaculture companies do not lose their interest for Kalkan culture. 3) Serious fish disease does not occur.	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview
	Factors promoted and hampered to achieve the Project Purpose.	Factors promoted to achieve the Project Purpose.	・Information of implementation process ・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview
		Factors hampered to achieve the Project Purpose.	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Interview

Evaluation criterion	Evaluation Question		Information/ data required	Information source	Data collection method
	Main Question	Sub Question			
Efficiency	Achievement of Outputs	Are the Outputs achieved?	(Table of achievement)	(Table of achievement)	(Table of achievement)
	The relation of cause and effect between the project activities and the Outputs	Unnecessary activities	Opinions of persons concerned	Japanese experts & C/Ps	Interview
		Activities that should have been involved in	Opinions of persons concerned	Japanese experts & C/Ps	Interview
	Quality, quantity and timing of Inputs	Appropriateness about number, specialty, capability, duration, timing of dispatch of Experts.	・Record of dispatch of Experts ・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Questionnaire, Interview
		Appropriateness of trainings in Japan and in other countries (number of persons, training contents, and timing etc.)	・Record of trainings	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Questionnaire, Interview
		Appropriateness about number, capability and timing of assignment of C/Ps.	・Record of assignment of C/Ps ・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps	1) Data review 2) Questionnaire, Interview
		Appropriateness about size and convenience of office space and facilities for fish culture etc. utilized for the Project.	・Situation of office space etc utilized by the Project. ・Opinions of persons concerned	1) Situation of office and equipment 2) Japanese experts & C/Ps	1) Site observation 2) Interview
		Appropriateness about budget allocated by Turkish side	・Budget allocated by Turkish side to the Project ・Opinions of persons concerned	1) Data of budget allocation 2) Japanese experts & C/Ps	1) Data review 2) Questionnaire
	Cooperation with other organizations	Is there effective cooperation and information sharing with private aquaculture companies?	・Opinions of persons concerned	1) Japanese experts & C/Ps 2) Private aquaculture companies	1) Questionnaire, Interview 2) Interview
	Are there factors promoted or hampered that influenced on efficiency of the Project.	Other factors influenced.	・Opinions of persons concerned	・Japanese experts & C/Ps	Interview

Evaluation criterion	Evaluation Question		Information/ data required	Information source	Data collection method
	Main Question	Sub Question			
Impact	Prospect of achievement of Overall Goal	Is there prospect that the overall goal will be achieved as an effect of the Project?	(Table of achievement)	(Table of achievement)	(Table of achievement)
		Is the possibility high that the important assumptions from the Project Purpose to the Overall Goal are correct? 1) The national strategy of Kalkan culture is not changed. 2) Price of Kalkan does not decrease sharply.	・Opinions of persons concerned	・Japanese experts & C/Ps	Interview
		Are the overall goal and the project objective consistent? (Is there no wonder in the logic that "the Overall Goal would be achieved as an effect of the achievement of the Project Purpose?")	・Opinions of persons concerned	・Japanese experts & C/Ps	Interview
	Ripple effect (Impact) (prospect)	Are there any positive and negative impacts of the Project?	・Opinions of persons concerned	・Japanese experts & C/Ps	Questionnaire, Interview

Evaluation criterion	Evaluation Question		Information/ data required	Information source	Data collection method
	Main Question	Sub Question			
Sustain-ability	Policy aspect	Will the project components be regarded important politically by Turkish government? (Importance of promotion of fish culture after the project completion)	・National Development Plan and other related policies	1) National Development Plan and other related policies etc. 2) Managerial person of MARA	1) Data review 2) Interview
	Institutional and organizational aspects	1) Will the seedling supply system by AKSAM be continued appropriately after the completion of the Project? 2) Will technical instruction to private aquaculture companies by AKSAM be continued appropriately? Will –information provision and information sharing between AKSAM and private aquaculture companies be continued appropriately? 3) Does AKSAM have necessary staff and capacity to make appropriate decision making for promoting Kalkan culture?	・Opinions of persons concerned	1) Japanese experts & C/Ps 2) Private aquaculture companies	1) Questionnaire, Interview 2) Interview
	Financial aspect	Can MARA secure necessary budget for promoting Kalkan culture utilizing outcomes of the Project after the completion of the Project?	・Opinions of persons concerned	1) Managerial person of MARA 2) Japanese experts & C/Ps	1) Interview 2) Questionnaire
	Technical aspect	Will knowledge and skills transferred under the Project become established at AKSAM? Does AKSAM have ownership for continuing research and development on Kalkan culture?	・Opinions of persons concerned	・Japanese experts & C/Ps	Interview
		Will developed technologies on Kalkan culture under the Project be accepted by private aquaculture companies? Are technical level and cost for Kalkan culture acceptable for them? (Whether developed technologies adequate for dissemination or not?)	・Opinions of persons concerned	1) Documents prepared by Japanese experts 2) Japanese experts & C/Ps 3) Private aquaculture companies	1) Data review 2) Questionnaire Interview 3) Interview
		Have aquaculture companies that have received advices and information of Kalkan culture techniques under the Project acquired necessary knowledge and techniques for continuing Kalkan culture?	・Information and opinions of persons concerned	1) Japanese experts & C/Ps 2) Private aquaculture companies	1) Interview 2) Interview
	Facilitating and hampering factors	What are major factors that facilitated or hampered the sustainability, or could facilitate or hamper in future?	・Opinions of persons concerned	・Japanese experts & C/Ps	Questionnaire

2. Implementation Process

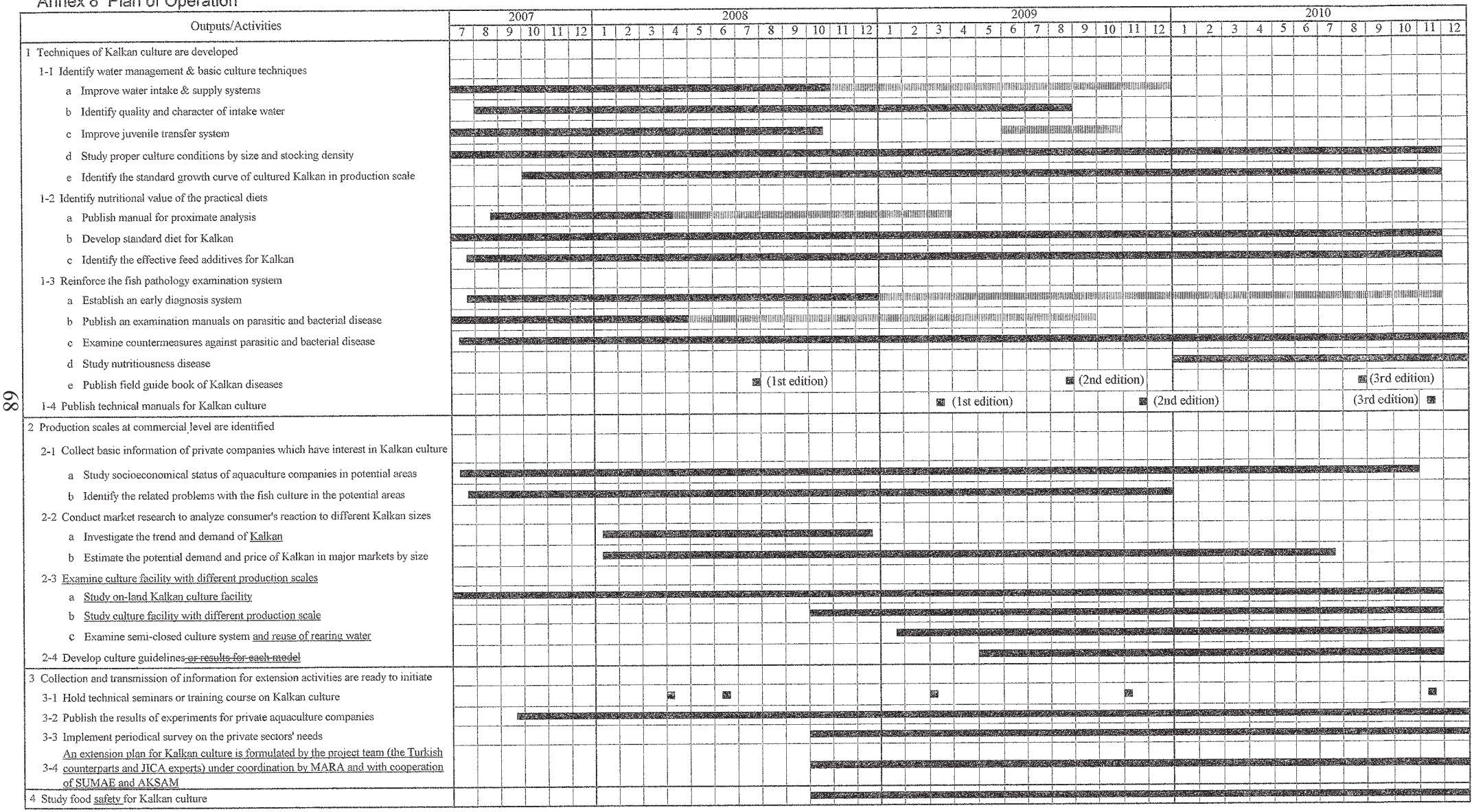
	Evaluation Question		Information source	Data collection method
	Main Question	Sub Question		
	Were there any modification of project plan, implementation structure for accomplishing initial target of the Project?	Were there any problems on progress of implementation? How those problems solved?	1) Documents prepared by the Project 2) Japanese experts & C/Ps	1) Data review 2) Interview
	Appropriateness of methodology of technical transfer	Were there any problems on methodology of technical transfer? If available, what kinds of problems. How those problems solved?	Japanese experts & C/Ps	Questionnaire
	Ownership of Turkish side	1) Appropriateness of allocation of C/Ps 2) Allocation of budget	Documents prepared by the Project	Data review
	Project management system	Have JCC (Joint Coordinating Committee) meetings been held at appropriate timing with appropriate themes.	1) Documents prepared by the Project 2) Japanese Experts 3) C/Ps	1) Data review 2) Questionnaire 3) Interview
		Periodical or regular meetings among Turkish counterparts and Japanese experts functioned well?	1) Documents prepared by the Project 2) Japanese Experts & C/Ps	1) Data review 2) Questionnaire, Interview
		Appropriateness of monitoring system	Japanese experts & C/Ps	Interview
		Appropriateness of communication between Japanese experts and C/Ps	1) Japanese experts 2) C/Ps	1) Interview 2) Questionnaire
		Relationship among the Project, JICA office in Turkey and JICA headquarters	Japanese Experts	Interview

3. Table of achievement (Achievement of the Overall Goal, Project Purpose and Outputs at the time of evaluation)

	Items		Information/ data required (Indicators)	Information source	Data collection method
	Main items	Sub items			
Achieve-ment	Prospect of achievement of the Overall Goal Aquaculture industry becomes diversified in Turkey.		1. Useful data and technology for diversification are available for private sector (extension service)	1. Contents of Website of MARA, AKSAM and SUMAE	Data review
			2. Number of private aquaculture companies which have started trial Kalkan culture or started Kalkan culture business (10 companies)	2. Market research	Data review
			3. Amount of cultured Kalkan (100 t/year)	3. Monitoring of private aquaculture companies which have introduced Kalkan culture	Data review
	Achievement of the Project Purpose Culture models of Kalkan in land-based facilities are developed.		1. Number of staff who are able to instruct the techniques of Kalkan culture (10 persons)	1. Questionnaires for concerned person	Data review
			2. Number of private aquaculture companies which have started trial Kalkan culture or started Kalkan culture business (10 companies)	2. Culture guidelines for developed culture models of Kalka	Data review
			3. Amount of cultured Kalkan (100 t/year)	3. Document on Kalkan culture extension plan	Data review
	Are Outputs producing as planned?	1. Techniques of Kalkan culture are developed.	1-1 Survival rate of Kalkan at the time weight of Kalkan is 1.0 kg in average (75 %)	1-1 Reports made by the Project	Data review
			1-2 Amount of Kalkan production in the model culture (700 kg/tank/crop) (at average weight of Kalkan more than 1.0kg)	1-2 Reports made by the Project	Data review
		2. Production scales at commercial level are identified.	2-1 Proposed Kalkan culture models with different production scales	2-1 Guideline on Kalkan culture	Data review
		3. Collection and transmission of information for extension activities are ready to initiate.	3-1 Record of publicities (Seminar, Newsletters, HP, etc.)	3-1 Publication materials made by the Project	Data review
			3-2 Technical manuals for Kalkan cultures are published.	3-2 Manual on Kalkan culture	Data review
		4. Traceability system on Kalkan culture is established.	4-1 Kalkan rearing and management information is published in the website of AKSAM.	4-1 Website of AKSAM	Data review

Annex 8 Plan of Operation

Revised: Feb. 26, 2009



４．評価グリッド（調査結果記入版）：トルコ国　カレイ類養殖プロジェクト運営指導調査（中間レビュー）

１．評価グリッド

5項目 その他	評価設問 大項目	小項目	調査結果
妥当性	必要性	対象地域・社会のニーズに合致しているか（カレイ類養殖のニーズは高いか）	スズキやヘダイの価格低下のため養殖業が困難な状況に直面しており、養殖の多様化が必要になっていること、また、天然物のカルカン漁獲量が減少し、供給量が十分でない状況でもあることから、カルカン養殖のニーズは高まっている。また、普及想定地ミラス（　　県内）におけるセミナーに多くの養殖業者が参加したことからも、カルカン養殖への関心の高さが伺える。したがって、対象地域・社会のニーズに合致していると思われる。
	優先度	被援助国の開発政策との整合性はあるか（養殖が優先課題として位置づけられているか）	第9次開発計画2007 2013年における、水産分野の政策としては、資源の評価調査を実施しつつ、漁業資源量とバランスの取れた漁業生産を行っていくことが示されている。また、中期プログラム（2008 2010年）では、適切な資源管理体制の導入とストック評価の能力向上、環境に配慮した養殖生産の強化が示されている。また、2008年の年間プログラムでは、環境に調和した養殖の確立と代替魚種の奨励が示されている。 したがって、環境に配慮した養殖ならびに養殖の多様化が重視されており、このことは、本プロジェクトの上位目標である「トルコにおいて養殖事業が多様化する。」と整合性がある。
		日本の援助政策・　A国別事業実施計画との整合性はあるか。	我が国のトルコ国に対する　Aの重点分野の一つは、経済社会開発のための人材育成であり、産業の高度化や先端技術の導入が重視されている。本プロジェクトでは、これまで黒海沿岸域で行われていたカレイ類の稚魚生産技術開発に引き続き、民間業者に普及できる養殖技術の確立を図るものであり、養殖分野の技術の高度化とそのための人材育成を図るものである。したがって、我が国の　A政策との整合性があると言える。
	手段としての適切性	本プロジェクトのアプローチは、事業化に適した養殖規模の検討を含めた黒海カレイ（以下カルカンと称する）養殖技術の開発と養殖普及体制の強化（情報発信とカルカン養殖技術を指導できるスタッフの育成）で構成されている。活動内容ならびに活動期間等を勘案して適切なアプローチであったかどうか。	これまで、約10年間協力してきた黒海沿岸にあるS　MA　は、研究機関としての施設と陣容を持ち合わせていた一方で、本プロジェクトの実施機関となったAKSAMに、研究機能が追加されたのは数年前（2004年）のことであり、それまでは、主として稚魚生産活動が主体であった。そのため、職員には、研究員としての基礎が必ずしも身に付いていないという弱点があり、この面の能力強化も本プロジェクトで進められている。なお、これまでのプロジェクト活動の進捗状況から判断して、カルカンの養殖技術開発とカルカン養殖情報発信とスタッフ育成を主体とする本プロジェクトのアプローチは、プロジェクト期間も含めて概ね適切なものであると考えられる。なお、本プロジェクトでは開発された技術の情報発信までは含まれているが、実際に、カルカン養殖候補地でのデモンストレーション等を通じて民間業者への技術移転までは含まれていない。普及活動は、養殖技術開発後にトルコ側独自に実施するという整理でプロジェクトが開始されている。ただし、これまで、カルカンの稚魚の配布を受けながら、カルカン養殖に成功した事例がまだ出ていないことで、民間業者の間では、カルカン養殖の難しさが目立っており、普及を図っていくためには成功事例を作る必要性が高くなっている。そのための前段階として、本プロジェクト活動として、カルカン養殖普及計画作成を新規の活動項目として追加した。

		日本の技術の優位性はあるか（カルカン陸上養殖モデル開発の技術・ノウハウが日本に蓄積されているか、日本の経験が活かせるか等）	我が国には、カレイ・ヒラメ類養殖について長年の知見があり、養殖技術の開発手法、寄生虫駆除方法、配合飼料の開発手法等、陸上養殖技術開発に関しての技術・ノウハウが蓄積されており、日本の経験が活用できる。
	その他	協力開始当初と比べてプロジェクトを取り巻く環境（政策、経済、社会など）に変化はないか	カルカン養殖技術開発を取り巻く環境に、特に大きな変化はない。ただし、経済環境の悪化は、カルカン養殖への新規参入にとってハードルを高める要因となりつつある。

5 項目 その他	評価設問		調査結果
	大項目	小項目	
有効性	プロジェクト目標の達成度合い	プロジェクト目標の達成の見込みはあるか	プロジェクト終了時までに、①適した人数の AKSAM 職員がカルカン養殖に関して必要な知識と技能を身につけ、②開発されたカルカン養殖モデルの養殖ガイドラインが作成され、③カルカン養殖普及計画が作成される、見通しであることから、プロジェクト目標の達成度は良好なものになると見込まれる。
	アウトプット（成果）とプロジェクト目標の因果関係	アウトプット（成果）は、プロジェクト目標を達成するために十分であったか、「アウトプットがすべて達成されればプロジェクト目標は達成される」という論理に矛盾はないか	プロジェクト目標は、「カルカンの陸上養殖モデルが開発される」であり、そのために設定されたアウトプットは、①1　カルカンの養殖技術が開発される、②事業化に適した生産規模が検討される、③養殖普及にかかる情報の収集・発信体制が整う、である。陸上養殖モデル開発とそれを普及させる情報発体制の整備が含まれていることから、プロジェクト目標を達成する上でのおおきな論理上の矛盾は無いと考える。
	外部条件の影響	以下の外部条件の影響があったかどうか。あったとすれば、どの程度目標達成に影響しているか。 ● SUMAE の養殖・魚病研究機能が著しく低下しない。 ● 養殖業者がカルカン養殖への関心を失わない。 ● 重大な影響を及ぼす魚病が発生しない。	本プロジェクト開始から現在まで、カルカンの養殖技術開発を阻害するような外部条件の影響は特に見られない。ただし、まだ原因未解明の魚病が見られるので、原因特定と有効な対策を検討する必要がある。さらに、大雨や赤潮発生時にも適切な取水ができるよう、取水システムのさらなる改善が必要となっている。
	阻害・貢献要因	プロジェクト以外に貢献する要因はあるか（政策、政府による事業、経済状況の変化、自然条件等の要因はあったか。その他の要因はあったか。）	現在の所、特になし
		プロジェクト目標を阻害する要因はあるか	特になし

5項目 その他	評価設問		調査結果
	大項目	小項目	
効率性	アウトプット（成果）の達成度	アウトプットは達成されているか	４つのアウトプットが設定されており、それぞれほぼ順調に成果を上げつつある（飼料分析マニュアルや病理検査マニュアルの作成が、予定より遅れた)。プロジェクト終了時までには、全てのアウトプットが満足できる水準で達成されるものと見込まれる。
	活動とアウトプット（成果）の因果関係	不要な活動はなかったか	特になし。
		必要なのに予定していなかった活動はなかったか	既述のとおり、カルカン養殖普及計画の作成をプロジェクトの新規活動として追加した。
	投入の質・量・タイミング	専門家派遣の人数、専門分野・能力、派遣のタイミング・期間は適切か。	これまでに4名のJICA専門家が派遣されている。分野としては、1)養殖技術1（水管理・計画、チーフアドバイザー)、2)養殖技術2（飼料栄養分析/魚病管理)、3)養殖技術2（飼料開発/魚病管理)、4)水産経済である。中間評価時点におけるM/Mは、31.84である。 カウンターパートへの質問票の回答やインタビュー結果からみると、JICA専門家の派遣は、その人数、専門性、能力等において概ね適切であったと言える。なお、トルコ国のビザの規定により、JICA専門家の1回当たりの滞在期間が90日を超えることができないため、JICA専門家うちの誰かが滞在し、不在期間を作らないようにしている。水管理専門家と魚病・餌料開発専門家が相互の分野をカバーしつつ可能な限り切れ目のない指導を行っており、その点では、技術移転の継続性が確保されていると言える。 なお、魚病管理分野については、飼料開発分野と兼務する形態での派遣であったが、異なる技術分野を兼務させることに無理が生じている。魚病については、無眼側の潰瘍や疣先端からの出血が観察されることからその原因究明と対策を確立する必要が生じており、活動内容が高度化しているので、魚病管理に特化した専門家を派遣する必要性がある。 トラブゾンで10年間実施されたプロジェクトの知的財産、技術的成果、人脈を十分活用することが、今回のプロジェクトを短期間で成功に導くための必須条件である。日本側のプロジェクト責任者として同プロジェクトの経験者を投入したことは、効率性確保のうえで大いに役立っている。
		供与機材の種類、量、供与時期は適切か。	本プロジェクトでは、機材や施設整備をトルコ側予算で実施することとしており、日本側からの機材供与は計画に含まれていない。そのため現時点では、JICA専門家の携行機材以外には、機材の供与実績はない。
		研修員受け入れの人数、内容、時期などは適切か	本邦研修には、計2名が参加済で、現在1名が研修受講中である。研修内容は、「養殖魚の病気予防と魚病」である。現在受講中の研修内容は、「飼料開発」である。（なお、プロジェクト開始初年度では、研修候補者の勤務年数が農業農村開発省の基準（2年）に達していなかったため、本邦研修は実施できなかった。） インタビュー結果から判断して、本邦研修「養殖魚の病気予防と魚病」の内容、研修期間、タイミング等は概ね適切であったと思われる。ただし、集団コースであり、理論面の講義が多く、ラボの実地研修の時間が少なかったこと点は、実務面をより学びたいカウンターパートにとっては、不十分な点であった。

		カウンターパートの人数、配置のタイミング、能力は適切か。	農業農村開発省本部勤務のプロジェクト・ダイレクターとプロジェクト・コーディネーター、AKSAM 所長であるプロジェクト・マネージャーにほか、14 名のカウンターパートが配置されている。AKSAM の Beymelek センター所属のカウンターパートが 10 名、AKSAM の Kepez センター所属のカウンターパートが 4 名である。人数としては十分なものである。 これまでに 3 名のカウンターパートが、本プロジェクトのカウンターパートであることを止めているが（2 名は配置転換、1 名は健康上の理由）、この影響はほとんどなかった。 プロジェクト活動は、Beymelek センターで実施されているが、上記の通り、Beymelek センター配置の C/P と Kepez センター配置の C/P がおり、特に、病理グループの C/P の多くが Kepez センターに配置されているため、プロジェクト活動進捗上、若干の支障を生じさせている（魚病管理では、日常的に観察することが必要である）。また、経済グループの C/P によっては、兵役や病欠により不在期間があった。 カウンターパートの中には英語での会話が難しい者もおり、通訳を通じての会話となるので、意思疎通の効率面で影響がある。 このほか、JICA 専門家の提案に沿って、施設・機材の維持管理面の強化を図る目的で、施設・機材管理課が新しく設けられ、メカニカル・エンジニアが配属されたことは評価される。
		トルコ側提供の事務室・施設等の規模、利便性は適切か。	Beymelek センター内の部屋を JICA 専門家執務室として提供を受けている。適切なスペースと設備がある。本プロジェクトで利用している養殖施設や機材の提供と施設の修理や新規整備は、トルコ側によって実施されている。取水システムは、トルコ側の予算により、当初計画より早く改善が実施された。ただし、電気代が嵩むこと、大雨や赤潮発生時への対応が必要なことから、現行の取水・送水システムについては、改善策を講じる必要がある。機材・機具類の調達もトルコ側の予算で実施されているが、さらに顕微鏡等の研究分析機器の整備の必要性がある。なお、研究機器の多くは、Kepez に配備されている。魚病管理を適切に実施するためには、Beymelek のラボの機器を整備する必要がある。
		トルコ側のプロジェクト予算は適切な規模か。適切なタイミングで支出されたか。	トルコ側は、本プロジェクト活動向け予算として、2007 年度に 195,667YTL、2008 年度に 256,980YTL を支出している。支出項目は、電気代、研究施設建設、機材購入（発電機、取水ポンプ、水フィルター、水槽、他）などである。 質問票及びインタビュー結果から判断すると、トルコ側の予算支出は概ね適切なものであると思われる。なお、一部機材・機具の購入が実現しておらず、日本側による機材調達あるいは、トルコ側の予算確保が必要となっている。

	他の関連機関との協力	養殖業者との情報交換や連携があったかどうか	(1) 大学（Çanakkale Onsekiz Mart　niversity）との連携 同大学助教授 Dr. Murat YIGIT との協力関係が構築され、カウンターパート全員の飼料関連基礎知識の補強を目的にした講義を 1 回行ってもらった。同大学は、カルカン養殖の普及ポテンシャルを有するマルマラ海峡沿いに位置するので、周辺情報の提供も期待される。 (2) 飼料開発における民間企業との連携 飼料開発において、飼料開発において、クルチ社と合意書を結んで開発を進めている。また、飼育技術開発について情報交換も行っている。 (3) 農業農村開発省貿易管理総局(KKGM)水産部 使用禁止薬剤についての情報提供を受けた。
	効率性を促進あるいは阻害する要因はあるか	機材等は有効に利用されているか	プロジェクト開始当初は、施設の老朽化に加え、機材管理体制に問題があることから事故が多発していた。度重なる取水ポンプの故障のみならず感電事故も数件報告されていた。許容を超えた電力使用による種苗場の出火など早急な対応が必要であった。これらの原因の一つは、施設・機材管理の核となるべき人材が不足していたことである。すでに記載したように、その後、JICA 専門家の提案に沿って、施設・機材管理課が新しく設けられ、メカニカル・エンジニアが配属されたことで、機材の維持管理が良好に行われるようになった。
		その他の要因はあるか。	＜促進要因＞ JICA 専門家の派遣期間が最大 90 日であるので、プロジェクト活動の円滑な進捗を維持することを目的に、JICA 専門間で業務に関する引き継ぎ書を作成し、業務の継続性を確保している点は、効率性を維持する上で多いに役立っていると思われる。また、JICA 専門家不在時にカウンターパートが担当する活動内容を打合せ、その詳細計画に沿ってプロジェクト活動を進めている点も、効率性を維持する上で役立っていると思われる。 ＜阻害要因＞ プロジェクト開始前の事前調査には、AKSAM の現有施設の調査、設備の問題点分析と改善計画提示が含まれている。しかし、養殖を行う上で基本となる取水に関する調査分析が正確ではなく、実際の取水量は、報告書記載数値の半分程度であった。具体的には、70 m3/時(35m3/時 x 2)の水量が使用可能との前提で、プロジェクト初年度活動計画が立案されていた。しかし、実際の取水量は 40m3/時に満たなかった。また夏場は予定した取水システムが使用できなかった。代替システムの使用は他の活動と共有されていたため、十分な量の給水を行えず、カルカンの成長阻害要因の一つとなった。取水関連工事は、予算と時間を必要とすることから、事前調査において、できる限り精度の高い調査を行うことが望まれる。

5項目 その他	評価設問		調査結果
	大項目	小項目	
インパクト	上位目標の達成予測	上位目標はプロジェクトの効果として達成が見込めるか	本プロジェクトでカルカン養殖技術を開発し、そのモデルを提示し、普及計画も作成するので、上位目標は、プロジェクトの効果として達成が見込まれると考える。 なお、カルカン養殖を着実に普及させていくためには、普及想定地であるミラス地区にデモンストレーション施設を設けて、カルカン養殖の実例と成功事例を周囲の民間養殖業者に展示し、自分たちでもやっていけるのではないかとの感触をつかんでもらうことが今後は重要になってくるものと思われる。
		上位目標達成のための外部条件は満たされる見込みか？ ・ カルカン養殖にかかるトルコの国家方針に変更が生じない。 ・ カルカンの価格が暴落しない。	カルカン養殖に関するトルコ政府の方針・政策に変更はなく、養殖の多様化が必要とされている。また、カルカンの市場価格の暴落は生じていない。（なお、スズキやヘダイの価格は、過剰生産のために低下し、養殖業者にとっては、利益が上げづらくなっている）
		上位目標とプロジェクト目標は乖離していないか （上位目標はプロジェクト目標の達成の結果もたらされるという論理に矛盾はないか）	プロジェクト目標は、「カルカンの陸上養殖モデルが開発される」であり、上位目標は「トルコにおいて養殖事業が多様化する」である。本プロジェクトで、カルカンの陸上養殖モデルが開発され、その後、カルカン養殖技術が普及されれば、養殖事業の多様化に資することにつながるものであり、論理上の矛盾はないと考える。
	波及効果（インパクト）（見込み）	以上の他にどのような正・負のインパクトを与えているか	● 技術調査時やセミナー開催時に、民間の養殖場の底質管理技術の問題点を指摘と改善策の提示を行ってきたが、スズキ養殖業者の中には、プロジェクトの意見に賛同し、プロバイオティクス（Probiotics）を使用して底質（bottom material / bottom sediment）改善を図る業者が出始めた。 ● 本プロジェクト活動実施を通じて、エーゲ海地域においてカルカン養殖に関する認識が高まりつつある。

5項目 その他	評価設問		調査結果
	大項目	小項目	
自立発展性（見込み）	政策的側面	協力内容が今後もトルコ側の政策として支援されるか（プロジェクト終了後におけるカルカン養殖振興の位置づけはどうなるか）	本プロジェクトによって、普及可能なカルカン養殖モデルが開発されることがまず必要であるが、カルカン養殖モデルが開発されれば、農業農村開発省としては、本プロジェクトの自立発展性を確保する上でも、必要な普及活動を実施していく方針を持っている。
	制度・組織面	プロジェクト終了後、カルカン養殖普及を図るには、以下の点が重要であると考えられるが、これらの条件は整っているか、あるいはプロジェクト終了時までに整う見込みがあるか。 ①適切な種苗供給体制が継続するか。 ②養殖業者とAKSAMとの間で適切な情報交換、技術指導体制が継続するかどうか。 ③カルカン養殖振興において、AKSAMに適切な人材が配置され、的確な意志決定が行う能力があるかどうか。	プロジェクト終了後、開発されたカルカン養殖技術の普及を図るためには、以下の体制が整備されていることが必要と考えられる。 1)　適切な種苗供給体制があること。 現在、カルカンの種苗生産を行っているのは、S MA だけである。民間業者に必要な種苗を配布するには、S MA の種苗生産供給能力の強化や、AKSAM及び民間業者との連携強化が必要である。また、将来的には、民間養殖業者で種苗生産できる業者を育成することが望まれる。 2)　本プロジェクトでは、カルカン養殖の情報発信として、セミナーの開催やAKSAMウェブサイトでの情報提供を行っている。これを継続・強化するとともに、普及可能な地域や業者をさらに特定し、どのように技術指導を実施していくか、具体的な普及計画の実施も必要である。 3)　本プロジェクトでカルカン養殖活動に関わってきた人材（カウンターパート）をプロジェクト終了後に、普及活動に従事させるよう、適切な人材配置の継続が必要である。 4)　デモンストレーション・ファームの設置 カルカン養殖は、スズキやヘダイ養殖と異なる技術を必要とするので、民間養殖業者にカルカン養殖技術を普及させるためには、プロジェクト終了後、カルカン養殖のポテンシャルを有する地域にデモンストレーション・ファームを設置する必要がある。
	財政面	プロジェクト終了後、トルコ側が、プロジェクトの成果を用いつつ、カルカン養殖振興活動を継続するために必要な予算が確保できる見通しがあるかどうか。	プロジェクト終了後、開発されたカルカン養殖技術を普及させるためには、普及計画実施に必要な予算を確保する必要がある。 どれくらいの予算が必要となるか、現時点では不明であるが、農業農村開発省当局側は、これらの予算の確保について努力していく方針を有する。
	技術的側面	移転された技術・知識は、AKSAM内で定着するかどうか。 さらに研究開発を継続実施するオーナーシップが備わっているかどうか。	本プロジェクト活動を通じてカウンターパートに移転された技術や知識、すなわち、研究者として基礎的な技術・知識やカルカン養殖技術開発手順については、確実に定着するであろうと見込まれている。
		プロジェクトで開発されたカルカン養殖技術（陸上養殖技術）は、養殖業者に受け入れられる技術であるかどうか、技術水準や必要なコスト等を考慮した場合。（普及可能な技術であるかどうか）	現在、カルカン陸上養殖モデルを開発中であり、プロジェクト終了時までには、養殖モデルを実際に適用させる場合のコストや必要とされる技術水準が明確になる。現時点での見通しとしては、コスト的には、十分、養殖業者に受け入れられるモデルを提示可能と思われるが、技術水準については、ヘダイやシーバスの養殖技術と異なる技術を身に付けることが必要とされるため、既存の養殖業者であってもヘダイ・シーバスの

			養殖からカルカンの養殖へと転換するには時間を要するものと見られる。
		カルカン養殖技術の指導を受けている養殖業者は、養殖を継続実施できる知識・技術を身につけているかどうか。	まだ養殖技術を十分身に付けている民間業者はない。
	阻害要因	自立発展性に影響を与える貢献・阻害要因は何か	自立発展性に悪影響を与えないよう、AKSAM の施設面で、以下の点について適切に対応することが求められる。 1) 取水システムの関連で、大雨、赤潮対策を施す必要がある。取水システムを適切なものに整備しないと、事故が多発し活動が停滞する恐れがある。 2) Beymelek の魚病関連ラボの機器類の整備状況が不十分であり、魚病管理を改善するには、早期に必要な機器を整備する必要がある。

２．実施プロセスの検証

	評価設問		調査結果
	大項目	小項目	
実施プロセス	当初計画した成果を達成するためにどのような計画・実施体制の変更・軌道修正が行われたか	プロジェクト実施中に把握されていた課題は何か。その課題はどのように解決されたか	取水施設の改善対策を講じてきているものの、予定しているプロジェクト活動の遅延を招くなど、活動進捗上マイナスの影響を与えている。取水システムの改善が必要と見られている。
	技術移転の方法に問題はなかったか。	問題がある場合、どの分野におけるどのような技術移転方法に問題があったか。どのように解決されたか。	JICA 専門家滞在中は、カウンターパートのプロジェクト運営能力強化とプロジェクト内における活動内容の周知を図るため、全体活動計画に基づき詳細活動計画をカウンターパートと共同で作成している。JICA 専門家滞在中は、この詳細活動計画に基づきプロジェクト活動が実施されている。JICA 専門家不在時については、当該分野のプロジェクト活動の停滞を防ぐため、不在期間中の詳細活動計画をカウンターパートと立案し、その計画に沿っ活動が進められている。このような形で、概ね予定どおりの技術移転が進められている。 技術移転にあたっては、カウンターパートのこれまでの主業務が稚魚生産であり、技術開発・研究業務に対する基礎知識や経験が少なかったため、データの記録と整理方法の基礎について繰り返し指導が行われた。 以上のような形で、技術移転は概ね適切に進められていると思われる。
	相手国のオーナーシップ	①C/P 配置の適正さ ②実施機関･C/P のプロジェクトに対する認識が高いか ③養殖業者のプロジェクトに対する認識は高いか	カウンターパートの配置は、人数的には十分であり、概ね適切な配置である。プロジェクト開始当初は、全員、パートタイムのカウンターパートであったが、現在ではほとんどのカウンターパートがフルタイムとなっている。カウンターパートの本プロジェクト活動に対する取り組み姿勢は、良好であり、カウンターパート間での積極的な意見交換も見られる。 当初は、AKSAM における本プロジェクトの位置づけが不明確であった。そのため、カウンターパート間の指示系統が不明確で、活動効率が低くかったので、MARA、AKSAM 双方に対して、プロジェクト組織図の作成を依頼した。カウンターパートの作成した組織図に基づき、修正を施したプロジェクト組織図が調整会議(CC)で了承された。 施設整備や機材購入等に必要な予算は、トルコ側が負担しており、その点ではトルコ側のオーナーシップは高いと言える。

<table>
<tr><td></td><td>プロジェクトのマネジメント体制に問題はなかったか。</td><td>JCC は必要な時期に実施され、必要なテーマが話し合われていたか</td><td>プロジェクト開始からこれまでの 1 年半で、技術調整会議が 4 回、JCC が 2 回実施された。開催日時と議題等は、下表のとおりである。
(1) JCC 開催実績
<table><tr><td></td><td>開催日時</td><td>会議テーマなど</td></tr><tr><td>1</td><td>2007 年 9 月 25 日</td><td>大学、S MA との協力関係構築、PDM の説明と承認、全体活動計画の説明と承認、プロジェクト進捗状況説明、質疑応答</td></tr><tr><td>2</td><td>2008 年 2 月 5 日</td><td>PDM の指標の検討、進捗状況報告と今後の計画説明</td></tr></table>
(2) 調整会議開催実績
<table><tr><td></td><td>開催日時</td><td>会議テーマなど</td></tr><tr><td>1</td><td>2007 年 9 月 10 日</td><td>予算措置、プロジェクト組織図の承認、S MA ウイルス検査体制の確認と検査結果公表の依頼、C/P の国内出張旅費手配の確認、C/P 本邦研修</td></tr><tr><td>2</td><td>2008 年 1 月 21 日</td><td>本邦研修について、トルコ側の予算措置、施設管理担当エンジニア配置提案</td></tr><tr><td>3</td><td>2008 年 6 月 17 日</td><td>出版物 First Author についての確認、プロジェクトで取得したデータの取り扱いについての確認、病理研究室研究資機材の充実依頼、ニュースレターの発刊についての AKSAM の意向確認、C/P とワーカーの配置状況についての AKSAM の見解、メンテナンス部門の新設確認</td></tr><tr><td>4</td><td>2008 年 11 月 24 日</td><td>活動進捗状況説明、本邦研修</td></tr></table>
以上のデータから見て、必要な時期に必要なテーマについて話し合われていると考えられる。</td></tr>
<tr><td></td><td></td><td>その他の定例会議は、十分機能しているか。</td><td>毎朝の朝礼と週ミーティングが定着している。朝礼の趣旨は、作業内容の確認と指示の徹底にある。週ミーティングは、プロジェクト間の円滑な実施と運営上の問題を論議するために開催されている。このほか、カウンターパート間の情報伝達システムも確立しつつある。今後は、プロジェクト・マネージャー（AKSAM 所長）と JICA 専門家、カウンターパート間のコミュニケーションをさらに改善する必要がある。（プロジェクト・マネージャーが、常駐しているのは Kepez であるため、コミュニケーションの機会が限定されること）</td></tr>
<tr><td></td><td></td><td>プロジェクトの進捗状況はどのようにモニタリングされていたか。</td><td>トルコ側のプロジェクト進捗報告モニタリングとしては、カウンターパートは、実験結果や出張報告等を AKSAM 所長を通じて、農業農村開発省本省に提出している。
プロジェクトのモニタリングとしては、上記の通り、JCC、調整会議、週ミーティング等で行われている。</td></tr>
<tr><td></td><td></td><td>専門家とカウンターパート間のコミュニケーションは、円滑に行われているか。</td><td>カウンターパートの英会話能力が十分ではないため、通訳を必要とするケースが多い。ミーティング内容については、英文及びトルコ語の議事録を作成して、確認している。プロジェクト活動実施上でのコミュニケーションに不都合は生じていない。ただし、プロジェクト・マネージャー（AKSAM 所長）の勤務場所は、Kepez であるため、プロジェクトのミーティングへの参加機会が少なくなるため、適切に意思疎通を図ることが必要である。なお、JICA 専門家の一部は、英語力がかならずしも十分でないとカウンターパートから評価されている。</td></tr>
</table>

		JICA トルコ事務所及び JICA 本部との連絡・協力が円滑に実施されたか。	ほぼ円滑な連絡・協力が実施されている。

５．カウンターパート向け質問票回答集計（14 名分）

（トルコ国カレイ類養殖プロジェクト中間レビュー）

1. Inputs to the Project and Efficiency

Japanese Input

Q1.1 Do you think that the Japanese experts have been dispatched appropriately in terms of quantity, specialty, and timing, and so forth? Please select one of box which is the most similar to your opinion. (Please mark "X" in one box of each row)

	Very appropriate	Appropriate	Not appropriate	回答無し
Number of experts	1	9	3	1
Timing of dispatch	1	10	1	2
Duration of stay	1	10	3	0
Field of specialty	1	9	3	1
Technical capability	1	9	2	2
Communication ability	0	11	3	0

Comments/Reasons;

- It would be more appropriate to have the experts on fish health, fish feeding and economics in the Project activities on long term basis. This situation means that the number of experts is limited at certain periods.
- We benefit from the knowledge of some experts. Especially Mr. Nezaki is very good at his own expertise area and in the other areas thanks to his accumulation of knowledge. I benefit from his knowledge a lot. Sometimes, we face some problems in communication. His technical and solution-based approach is very good. I believe that the experts at the level of Mr. Nezaki shall be very useful. We have problems in communicating with the Pat. Expert. Especially about the language. The expert on economics is very good in his area and we benefit from his knowledge.
- The technical capability of the experts was not enough except for Mr. Nazaki and Udagawa.
- The duration of stay of each expert may be extended in a year, specifically in fish disease, nutrition and economy.
- Assigning the persons having expertise on diseases shall be more appropriate for the disease group. Since the beginning of the project, the disease group could not realize an efficient work concerning food. Therefore, if disease experts are involved in the disease-related works, both knowledge and technology shall be transferred.
- The disease group has worked with the Japanese expert in the area of food. I wish I could do more efficient work with the Japanese experts on diseases.
- I think that the language capability of the pathology expert was not adequate. That is why, we faced some problems in communication and we could not benefit from his experiences sufficiently. Besides, we got more assistance from the chief adviser concerning the technical issues. I think that the chief adviser was very good on technical capabilities.
- There is lack of expertise on feeding and pathology – there are shortcomings in technical issues. Other areas are very appropriate.
- The experts should have been assigned in more specific areas (for example, practices in the fish diseases laboratory, genetics laboratory activities). The project is quite insufficient in terms of disease related activities and fish pathology.

Q1.2 Please answer this question the persons who participated training in Japan.

Q1.2.1 Was training in Japan appropriate for you?

	Very appropriate	Appropriate	Not appropriate	回答無し
Timing of training	1	2	1	10
Duration of training	1	3	0	10
Contents of training	0	4	0	10

Comments/Reasons

- Since the timin o the trainin is outside the uvenile production period, enou h practices could not be done.
- Apart rom the trainin , I have experienced Japan ith its di erent culture. Cultural approach is also important besides our technical kno led e. ery intense trainin as implemented in Japan. It should have been supported ith the cultural point o vie .
- I have participated in the course Prevention o ish diseases and ish borne diseases on 28/08/2008 31/10/2008. The or anization as per ect. o ever, the other classes o the course ere mainly on eneral ish diseases. For a success ul course, disease speci ic sub ects should be selected and a ull trainin on dia nosis and treatment should be iven. There should be more opportunities to ork in the laboratory. Also those ho are orkin on diseases should participate in the disease course.

1.2.2 Please describe matters or sub ects that your have satis ied ith contents o the trainin in Japan.

Matters or sub ects satis ied

- Outside the Pro ect scope, I have been trained in Japan or a period 5 months in the area o rein orcin natural ish stocks to produce uveniles. The trainin that I had has been ultimately use ul. Durin the trainin , many sub ects on a uaculture have been explained in detail.
- A very intense schedule as implemented. The Japanese experts have exerted their reatest e ort or us. Implementations ere realized.
- Introduction to Fish Disease, Fish Disease Dia nosis, PCR, A uaculture Activity in Japan, Prevention Method sin vaccine, y ienic Procedure in Fish andlin , Immunolo y, Fish denaturation, reshness and storin , isit to Sama ei Trout arm, Yama uchi Pre . Researche Cent.,Osaka holesale Market, Fisheries Promotin Inst.

1.2.3 Please describe matters or sub ects that you are utilizin or your orks.

Matters or sub ects that you are utilizin or your orks

- Marketin o products, calculation o product cost, planned ork
- Since the trainin I had in Japan has closely overlapped ith the ish production activities o our institute, it has been very use ul.
- I bene it rom kno led e on protection rom the ish diseases and hy iene or my ob.
- Fish Disease Dia nosis (Lecture and experiment), PCR (Lecture and experiment), Prevention Method sin vaccine (Lecture and experiment)

1.2.4 Please describe i you have some comments on the trainin in Japan.

Comments

- It ould be better i the intense theoretical trainin is supported by the practices. Additionally, the pro rams to introduce the Japanese history and culture could have been or anized.
- Course pro ram should also include cultural activities. Tours should be or anized or the eekends. Japanese livin style and culture should be introduced to the course participants. Short term trainin pro rams should be or anized on the speci ic sub ects (PCR, vaccine etc.)

Turkish Inputs

1.3 Do you think assi nment o Turkish counterpart sta is appropriate in terms o number, capability and timin (Please

mark in one box o each ro)

	ery appropriate	Appropriate	ot appropriate	回答無し
umber o counterpart sta	1	9	2	2
Field o specialty	3	8	3	0
Technical capability	0	8	6	0
Timin o assi nment	1	10	2	1

Comments/Reasons

- The collea ues orkin in the pro ect ork ith ood ill in line ith their kno led e and skills.
- The technical and lin uistic level o the Turkish counterparts is not ood. o ever, they improve their technical capability.
- e need more counterparts or the conduct o the pro ect activities. The counterparts should be trained and iven in ormation be ore the be innin o the pro ect.
- Thou h Turkish counterparts have made and enormous pro ress in their areas in terms o kno led e, experience, evaluation o the data, askin ne uestions, there are still many issues to be tackled such as readin literature, makin conclusion rom the data obtained rom the experiments and production ponds and stru lin or improvement o lan ua e e iciency. Moreover, there may be some problems ith re ard to timin i assi nment due to insu icient number o sta in the institute.
- Since I am o the idea that my personal skills and my personal capacity is not su icient or the scienti ic researches, and that I am the ron person or the pro ect, I ticked the option in the technical capability part that I am not appropriate.
- Many Turkish experts have been involved into such an international pro ect or the irst time. At the be innin , e had the di iculty to ork ith the people havin di erent culture and understandin . e try to et used to ork in a planned and a systematic ay.
- The number o experts is enou h but since some experts are orkin at the unit in Kepez this causes disruptions.
- There are not Turkish experts or every branch except or the Disease Group. There ore, the areas o expertise are not enou h.

1.4 Are acilities (o ice spaces and acilities or ish culture etc.) utilizin or the Pro ect appropriate or the implementation o the pro ect activities

(3) ery appropriate

(9) Appropriate

(1) ot so appropriate

(1) 回答無し

Comments/Reasons

- hen you look at the acilities o the Institute, 40% o the space and acilities is utilized.
- As lon as the ater is provided rom open areas, there is al ays the risk o disease. There is a temperature di erence in summer and inter. ater ets turbid, hen there is over precipitation. The ater temperature increases in summer. There ore, e sometimes ace some problems and stress.
- specially experimental unit or ish disease should be rein orced. Di estibility tanks should also be added or eedin experiments.
- I cannot declare any idea on this sub ect. There are no di erences that allo me to compare.
- Appropriate, but e have certain shortcomin s.
- The technical capacity o the Institute is very ood or a culture pro ect. o ever, the lack o kno led e on the ish

biolo y (re uirement o temperature etc.) causes problems to occur in that kind o activities.

1.5 Do you think that the amount o bud et or the Pro ect provided by Turkish side is appropriate

(2) ery appropriate

(7) Appropriate

(3) ot so appropriate

(2) 回答無し

Comments/Reasons

- Despite the shortcomin s, it has provided the necessary support and continues to provide it.
- I do not ant to comment on that.
- The acilities o the institute are uite limited. ithin this context, the Turkish side allocates enou h amount o bud et or the pro ect. o ever, the Japanese side should have provided bud et and tools and e uipments.
- I do not kno the bud et amount allocated to the pro ect. There ore, I do not have any idea.
- The acilities o the Institute are already limited. ithin this context, the bud et allocated by the Turkish side is uite ood. o ever, the bud etary assistance and assistance or certain tools and e uipments rom the Japanese side should have been provided.

1.6 Is there e ective cooperation and in ormation sharin ith private a uaculture companies I yes, please describe some examples. I no, please describe ho to improve the cooperation.

xamples:

- Yes. The enterprises are in ormed and bein encoura ed to produce ithin the rame ork o the planned endeavors.
- Despite the act that there is cooperation and in ormation sharin ith the private ish culture companies, it is not su icient. The reason is that in the enterprises, mostly sea bass and sea bream is produced, and that there is not a custom o culturin and consumin turbot, it is necessary to have promotional activities on sustainable and lon term basis.
- Lack o a areness at the side o the consumers economic crises occurred in 2008 2009 either positive or ne ative or realistic results cannot be obtained in this period.
- Yes. The enterprises in the potential area are visited. The sharin o in ormation is done (Kılıç Group). e share in ormation ith the enterprises and the companies that are expected to do this ob. specially, e try to ans er the uestions o the producers visited durin the site visits in the potential areas.
- o. The technical sta o the private companies could participate in the pro ects actively even or a e days.
- o, not. I do not have any idea on ho to develop cooperation.
- Yes. There is continuous contact ith the private sector and sharin o in ormation.
- At the moment, only one irm is interested in turbot culture. nou h cooperation and in ormation sharin is not attained yet. avin the establishment located in Milas is a disadvanta e. More communication could be established.
- I do not kno private ish culture companies very ell.
- There is an economic cooperation ith the private companies. o ever, this relation continues only in the economic sense. There is no exchan e o technical kno led e. Since the company ith hich e have bilateral cooperation is the bi est ish rearin company, the cooperation developed ith this company is enou h. Additionally, there is little sharin o kno led e ith some small scale companies.

1.7 Are there any ma or actors that acilitated and/or hampered the e iciency or implementation o activities o the Pro ect

Facilitatin Factors:

- 1) The Institute conducts production activities. 2) The Institute is in close contact ith the ish culture enterprises.
- 1) Technical uidance and solution oriented approach o the JICA experts (especially Mr. ezaki) 2) Good ill and devoted e orts o the Turkish counterparts.
- Those rom amon st the Turkish counterparts ho did not leave the pro ect and their tremendous e orts.
- 1) Mr. ezaki is a very e ective actor or the execution o the pro ect. e ish him and expect continuous success. 2) Technical uidance o the experts. 3) Cooperation o the pro ect sta
- 1) Cooperation bet een the Japanese and the Turkish experts, 2) illin ness o the Turkish experts to be success ul
- 1) Technical uidance o the experts, 2) Cooperation o those ho are orkin in the pro ect
- avin experienced Japanese experts
- 1) Ideas and assistance provided by the Japanese Counterparts, 2) Assistance provided by the Turkish counterparts.

amperin Factors:

- 1) People do not have the custom to consume. 2) The enterprises are resistant in embracin the culturin techni ues that they are not amiliar ith. 3) Remoteness to the ish market
- 1) Since the ish studied in the pro ect is a bottom ish, it can et diseased very easily. 2) eatin o the ater in summer and red tide. 3) Turbidity o the ater due to over precipitation causes hu e problems
- The chan e in the ater temperature is too much or the evenin s and the ater used in the production could not be directly provided rom the natural source.
- Lack o sta ,
- 1) ater turbidity in inter season, 2) Red tide, 3) ater temperature increases up to 20 22˚C. Parasitic and bacterial diseases are re uently seen in turbot ish. Pro ect sta cannot speak n lish.
- 1) Turbid ater in inter time and red tide, 2) Canal ater provided rom the open area, increasin ater temperature durin summer (20 21 ˚C)
- 1) Di iculty to communicate ith the Japanese experts, 2) Lack o materials, e uipments and sta
- 1) e cannot speak n lish, 2) There is no e ort to increase motivation o hard orkin and success ul sta
- 1) Our ideas are not iven necessary importance. 2) e cannot et or anized in a ood ay.
- 1) Lack o experts to consult in the areas demanded or planned, 2) Most o the sta has no academic experience

2. Impact

Is there any other positive or ne ative impact produced by the Pro ect I there is, please describe belo .

xample o impact

- ith the pro ect, the interest to turbot ish has increased. It has helped indin the ne markets. In terms o marketin , since acceptin the ne ish in the market mi ht be di icult, this causes under pricin o ish.
- It as proven to the private sector that the culture o turbot can be realized in the Mediterranean Sea and there is an opportunity to train experts.
- Problems arisin rom the ater intake in luence the Pro ect ne atively. In summer, the ater ets armer and red tide happens. Dan er o turbidity due to over precipitation durin inter time causes problem. All these problems cause continuous stress on the ish and on us.
- As a positive e ect, the kno led e and experiences o the Turkish counterparts have increased. As a ne ative e ect,

lack o communication and the problems related to that.

- 1) I am not kno led eable on the sub ect researched. 2) I am inexperienced on the research theme. 3) Frailty. 4) I could not pro ress mysel
- 1) Personal development
- I am o the idea that the motivation o the counterparts is decreasin each passin day

3. Sustainability of the Project

3.1 ill the seedlin supply system by AKSAM be continued appropriately a ter the completion o the Pro ect Please describe your comments.

Comments

- It shall be continued because the activities that are done and on oin ithin the pro ect implementation could be evaluated as indicators or this.
- In case the pro ect reaches its ob ective, AKSAM shall continue to provide the uveniles.
- A ter the completion o the pro ect, the sustainability can be obtained by means o the cooperation bet een the t o institutes.
- AKSAM's unction is not to provide uveniles. Provision o uveniles is outside the pro ect area.
- It could be continued because the acilities are physically adapted or turbot ish culture. Besides, the Turkish experts are also trained in this pro ect.
- It ould also be di icult to sustain it ith this number o sta . The number o sta should be increased and special teams should be ormed in order to conduct pro essional orks and the re uired conditions should also be provided to them. Other ise, it ould be very di icult.
- ven thou h AKSAM has enou h capacity in terms o sta and acility or this kind o continuation, so ar this issue has not been discussed properly.
- I there ould be a market or turbot until the end o the pro ect and i it ould be pro itable, it could be continued.
- I do not think that it shall be a problem
- I ade uate conditions and the sales o the uveniles are provided, AKSAM can provide uveniles.
- I think it shall be continued because a ter bein ac uainted ith the ish, rearin o that ish shall not be a problem at all. As a result o the activities carried out and at the same time the observations made or the ish in uestion, e are no capable o interpretin the behavior o the ish. Also the re uirements o the ish are kno n. The production o the ish can be continued at this sta e on condition that it shall be economical.

3.2 ill technical instruction to private a uaculture companies by AKSAM be continued appropriately ill in ormation provision and in ormation sharin bet een AKSAM and private a uaculture companies be continued appropriately Please describe your comments.

Comments

- The institute shall sustain all types o technical support or turbot culturin enterprises that shall be established at the urther sta es ithin the urisdiction area o the Institute.
- As lon as the Institute exists, it shall continue this activity.
- As lon as the private companies ould need, technical in ormation could be iven.
- It could be continued. O course, i the private producers decide to culture this ish but I think there is not a private

sector that has the enthusiasm and appropriate acilities to culture turbot ish.

- It ould also be di icult to sustain it ith this number o sta . The number o sta should be increased and special teams should be ormed in order to conduct pro essional orks and the re uired conditions should also be provided to them. Other ise, it ould be very di icult.
- The sta o the Institute is al ays ready to share their kno led e ith the producers. The Institute al ays or anizes in ormative meetin s or the armers.
- I demanded, it could be continued.
- From time to time, the institute is already makin in ormative meetin s or the armers. Additionally, any armer can et in ormation rom AKSAM on the culturin o any ish. There is no problem on that.

3.3 Can MARA secure necessary bud et or promotin Kalkan culture utilizin outcomes o the Pro ect a ter the completion o the Pro ect

(1) MARA can secure necessary bud et.

(8) MARA can secure certain bud et, but not so su iciently.

(1) MARA can not secure bud et at all.

(4) 回答無し

Comments

- I do not think that the MARA shall provide bud et. And it is not the task o MARA. It can provide support only or those ho are involved in ish culture.
- This issue is not only dependent on the initiative o the MARA. The initiative o the Government is also important.
- MARA should separate a special bud et or promotin Kalkan culture. So ar the institute (AKSAM) has had to direct some und separated to actually other spendin to ards Kalkan Culture Pro ect e. . settin up experiment unit, ne pipe line or ater supply' procurement o enerator.
- Apart rom the technical assistance, the enterprises could be promoted to culture turbot ish, i there ould be partial provision o uveniles.

3.4 ill developed technolo ies on Kalkan culture under the Pro ect be accepted by private a uaculture companies Are technical level and cost or Kalkan culture acceptable or them Please describe your comments.

Comments

- As is kno n, turbot has a hi h economic value. In case there ould be an appropriate market or the turbot ish obtained rom the culturin activities, the cost and the technical level o culturin shall be at an acceptable level.
- That depends on the location o the enterprises and the conditions.
- First investment cost seems to be hi h. Operational cost seems to be hi h. Since the replacement o ater should be realized in line ith the daily ater re uirement o turbot, this seems to be a actor to increase the costs because electricity in our country is so expensive. And that is hy I do not believe that the investments based on electricity shall be pro itable. Moreover, since the culture o turbot shall be realized or the ist time, it ould be di icult to come up ith any prediction about its price. Additionally, Turkish consumers o turbot ish pre er the ish ei hin over 2 k or more. I think rearin turbot ish at this size ould increase the costs.
- I think there is not a company that is technically capable and that ould accept these technolo ies.
- I do not think that there is enou h kno led e on this issue. I do not believe that the private ish culture companies ould accept the technolo ies at this level.

- Yes. There is a clear need in Turkish a uaculture or ne species. That's hy private companies are illin to culture alternate species includin Kalkan, indicatin that the developed technolo ies ill be accepted. Considerin the production cost o one k o Kalkan and culture techni ues are not so di erent rom the marine species such as sea bream and sea bass. In addition to this, the price o Kalkan is hi her than the others, allo in its culture more acceptable.
- Acceptable. o ever, transition rom sea bass and sea bream that have already established markets, to turbot culture shall not be easy
- I think it shall be accepted
- I do not think that the o ners o the arms shall culture this ish as opposed to the cost o culture and e ort. o ever, I believe that bi scale companies shall culture this ish in addition to the other important species. I am sure that the technolo ies and technical kno led e developed ithin this pro ect shall exactly be accepted by all the other companies and o ners o the arms.

3.5 hat are ma or actors that ill acilitate or hamper the sustainability o this pro ect

Comments

- It is hinderin that inland production has hi her ener y expenses compared to the ca e system. Creatin appropriate Market shall be a acilitatin e ect.
- The bi est problem is diseases and the developments on the ay to solution in luence the pro ect.
- Due to the ater re uirement o turbot ish, electricity expenses shall be hi h. The irst investment cost is hi h. Turbot production is not idespread over the country except or certain re ions. The price o turbot is very hi h at the moment, but I do not have any idea about hat the price shall be hen the production increases.
- The level o demand rom the consumers or cultured turbot ish and the price shall be the most important problems to a ect the sustainability o this pro ect.
- 1. The vie point o the MARA and AKSAM is a hinderin and also a acilitatin actor. The importance attached to this issue should be analyzed pro essionally. It is important to see the extent o a areness o the senior mana ement concernin the importance o the issue. 2. In rastructure, electricity costs and pollution o the natural ater resource are the hinderin actors. 3. Lack o sta is another important actor to hinder the sustainability o the pro ect.
- Investment cost, Operational costs based on electricity
- Monetary impossibilities could be a hinderin actor.
- Lack o acceptance o this ish by the people mi ht ive an end to the pro ect.

4. Project Implementation Process

4.1 ave JCC (Joint Coordinatin Committee) meetin s been held at appropriate timin ith appropriate themes

	ery appropriate	Appropriate	ot appropriate	回答無し
1) Timin	2	10	1	1
2) Themes	3	9	0	2

Comments

- The Pro ect evaluation meetin s are realized every six moths. There ore, JCC meetin s could also be done every six months. o ever, yearly meetin s are enou h ort his pro ect.

4.2 ave periodical or re ular meetin s amon Turkish counterparts and Japanese experts unctioned ell

(4) Functioned very ell.

(8) Functioned to some extent.

(1) Did not unction ell.

(1) 回答無し

Comments/Reasons

- Thanks to these meetin s, e obtain very use ul in ormation rom some experts.
- Fre uent and len thy meetin s reduce the e iciency.
- Sometimes the meetin s are unnecessarily or anized. e do not have time le t because o the meetin s. Lon and continuous meetin s cause aste o time and reduce motivation. amely, they are not unctional all the time.
- I am de initely a ainst the participation o every Turkish expert in the meetin s, i the theme o the meetin is not their area o expertise. hat does an economy expert have to do ith the meetin on ish diseases Or i a Turkish expert o ish diseases has more important thin s to do, s/he should not de initely participate in the economy courses and the Japanese experts should not orce the Turkish experts on that issue.

4.3 as technical trans er rom Japanese experts to Turkish counterparts been conducted appropriately I there is room or improvement, please describe it.

(2) ery appropriate

(8) Appropriate

(2) ot so appropriate

(2) 回答無し

Comments/Reasons

- Trans er o kno led e is realized in eneral. Sometimes, there mi ht be some lack o communication and some misunderstandin s mi ht happen. In these situations, e are sometimes sub ected to too much o criticism. They are older than us. And since e respect their accumulation o kno led e and since they are our uests, e do not ive an o ensive ans er. Sometimes, our n lish is not enou h to respond. Since the assi nments o the Japanese experts and the Turkish counterparts are not clearly understood, there mi ht be certain problems.
- Disease roup could not realize a ood technical trans er. Since the Japanese experts have expertise on ood, e icient technical trans er could not be realized.
- I do not believe that technical trans er as realized in patholo y in a ood manner. The lack o n lish capability o both sides caused some misunderstandin s and the endeavors ere hindered and remained ruitless. Lon and re uent meetin s have been realized but e iciency as not achieved. I pre er an experienced expert on the diseases.
- e are eak in patholo y and eedin matters.
- The Japanese experts have trans erred their expertise kno led e to the Turkish experts.

4.4 o ar have you chan ed your motivation and con idence throu h your participation in this pro ect Please choose one appropriate ans er belo .

1) Your motivation or orkin :

(3) as increased very much.

(9) as increased to some extent.

(1) Are same as be ore.

(1) ere reduced.

2) Your con idence:

(5) as increased very much.

(6) as increased to some extent.

(2) Are same as be ore.

(0) ere reduced.

(1) その他

3) as the Pro ect produced any other positive/ne ative e ects/impact on you I yes, please describe belo .

- orkin in an international pro ect has contributed to the increase o our experiences in the scienti ic studies and has been a model or the other pro ects.
- It has also positive and ne ative e ects. Our vie point to ards the incidents/ problems becomes solution oriented. Sometimes, since e shy a ay rom the criticisms o the Japanese experts, e avoid providin solutions.
- Yes, orkin in an international pro ect and bein success ul has raised my sel con idence or the other pro ects and I think I am e uipped ith much technical kno led e concernin turbot ish.
- I had positive e ects on me in terms o appreciatin the ork lo , and importance o communication, planned ork and the importance o ollo up etc. especially, appreciatin the continuous evaluation o the results obtained and the lessons learned in order not to make the same mistakes or continuous improvement.
- The pro ect so ar has increased my motivation and kno led e in lat ish culture.
- I think rom time to time the orkin conditions ere heavy and it has in luenced my health ne atively. Besides this, I should also say that it has many positive impacts. I think it has contributed a lot to my personal development.
- It is my irst research. I have learned so many thin s. At least, I raised my sel con idence.
- For me, the most important impact o the pro ect is that it has encoura ed me to make my Master's de ree.
- Since I have orked in the roup hich is outside my expertise, the activities seemed to me a bit obli ation and aste o time.

5. Others

5.1 Please eel ree to ive comments on the Pro ect, issues and lessons related to the Pro ect, or the problems that should be solved.

- Turbot ish is very sensitive to the diseases. There are many basic problems on diseases that need to be solved.
- The bi est problem o ours is that e cannot express ourselves and that our n lish is not enou h. I think the bi est shortcomin in the pro ect as that e ere not or anized by our leader and e could not et or anized.
- Since some experts in the pro ect have orked in the areas outside their expertise, they could not be involved into the areas related to their expertise. That is hy, the participants could have been consulted as to hat they could have done else. Additionally, the Japanese experts could have brou ht di erent books rom abroad to contribute to the library. It could have been better, i more speci ic courses ould have been iven by the laboratory experts.

以上

６．民間養殖業者向け質問票回答集計

No.	一般情報			質問1	質問2	質問3　（カルカン養殖セミナーに関して）			
	氏名	企業名	住所	カルカン養殖への関心の高さ	カルカン養殖に必要な情報	セミナー出席有無	セミナー満足度	満足した点	満足しなかった点
1	Ayhan GÜL	Ayhan GÜL	Avşar Köyü, Milas	ある程度ある	I want to see and learn Kalkan culture. I would like to see the results of demonstration. I can culture Kalkan in one pond to see the result. I want to know about rearing conditions.	有り	非常に高い	It was very favorable and we got information. I hope these kinds of activities will go on.	Demonstration should be done. One farm should be chosen to culture Kalkan.Kalkan culture should be experimented under the control of Project team.
2	Günay HALAZOĞLU	Cansan Aquaculture Limited Company	Yaşyer Köyü, Milas	高い	Ponds,water and feed should be supported.I have concrete tanks. I can use two of my concrete tanks for Kalkan culture. If I am satisfied with the result, I can use one of my big tanks to culture Kalkan.	有り	非常に高い	Every body was instructed. Instructions are generally comprehensive.There is interest for this alternative species.	Attendants couldn't understand very well. They want more information.
3	Mehmet BİLGİNER	ARBE Aquaculture	Eskideğirmen mevkii, Savran Köyü, Milas	ある程度ある	I want to try Kalkan culture in one or two ponds. I need some information, like feeding, structure of ponds,how much water, oxygen is needed. What is stocking density? How many m² of area is needed? I think stocking density is important.	有り	非常に高い	I got information on a subject that we don't know anything about. I started to be interested in Kalkan culture after this seminar. I think it will be a profitable species for us. All explanations were satisfying.	No answer
4	Muammer KARADEMİR	Akuvatur Aquaculture Anonym Company	Avşar Köyü, Milas	ある程度ある	Biological structure of Kalkan, Information on disease, Production protocol	有り	高い	The seminar encouraged people for the new projects, and we gathered different points of view.	No answer
5	Mustafa KAÇAR	Mustafa KAÇAR	Yaşyer Köyü, Milas	ある程度ある	I don't have any idea but if I want to culture, I would like to get necessary information.	有り	高い	Information on Kalkan culture	No unsatisfied issues
6	Nasuh ATICI	Nasuh ATICI	Savran Köyü, Milas	ある程度ある	Manual will be better. I don't have any information on Kalkan culture.I want much information and I want to culture Kalkan because of having convenient place to culture Kalkan. How much does it cost to shade 1000m² ? I want to know feed cost (FCR).	有り	非常に高い	I have had information about a species, Kalkan which is different from sea bass and sea bream. I believe that I can culture Kalkan here.	No unsatisfied issues
7	Okan ERALP (Manager) Selim BİLGİN (Aquaculture engineer)	Şeray Construction, Land Estate Limited Company	Savran Köyü, Milas	ある程度ある	We need all kind of information to culture Kalkan. The most improtant is diseases. We experimented before but we couldn't understand diseases and adaptation.2500 juvenile died. We need all information from structure of ponds to feeding. We are too much inexperienced.I would like to attend the	無し			
8	Salim TANIŞ	Mehmet TANIŞ-I	Ekinambarı Köyü, Milas	ある程度ある	I need information on rearing techniques and marketting. Rearing demonstration should be done and at least in one farm Kalkan culture should be experimented in	無し			
9	Şerafettin YILMAZER	Şerafettin YILMAZER	Ekinambarı Köyü, Milas	高い	Last year owners of two farms (Kılıç and Şeray) brought Kalkan juveniles but Kalkan juveniles died. I want to know the reason. I want to learn about juvenile transfer, feeding, FCR and growth stages of Kalkan. I have a tank (30m²).I want to trial Kalkan	有り	高い	I learned that problem of obtaining juvenile has been solved. I have rough information on Kalkan culture.	They say that there are problems of Kalkan culture. I want to have a certificate to culture Kalkan.I need support.
10	Serkan İLGAZ	Kılıç Deniz	Kıyıkışla Mevkii, Milas	高い	Obtaining juvenile,adequate feed and determing optimum rearing conditions	有り	非常に高い	I found too much technical	No answer
11	Yaşar GÜL	Yaşar GÜL	Avşar Köyü, Milas	高い	I don't have any idea on Kalkan culture. Rearing demonstration should be done and everybody should see the result. Can it be cultured here? Is water condition convenient? I heard that Kalkan is cold water fish. I can not construct concrete tanks because of not having enough economical situation.	無し			

No.	一般情報			質問1	質問2	質問3　（カルカン養殖セミナーに関して）			
	氏名	企業名	住所	カルカン養殖への関心の高さ	カルカン養殖に必要な情報	セミナー出席有無	セミナー満足度	満足した点	満足しなかった点
12	Sedat ZENCİR	Sedat ZENCİR	Ekinambarı Köyü, Milas	高い	Rearing water of my farm has ben measured for one year and water temperature increases in July and August.	有り	非常に高い	I got information on rearing techniques and juvenile transfer	Price of Kalkan should be examined /determined and Kalkan should be introduced.We have already produced sea bass and sea bream.Although we culture fish in earthen ponds our sales prices are higher than prices of sea products .There should be a better introduction to increase prices
13	Kemal TOĞUŞ	Toğuş Toprak havuz	Yaşyer Köyü, Milas	解らない	No necessary information	有り	高い	Only I got information	
14	Emre ŞEN	AKUADAN Su Ürünleri Ltd.Şti.	Menteşe Cad. 44/3 Milas/ MUĞLA	解らない	We need to have information on if our earhten ponds are convenient or not to culture Kalkan.	有り	非常に高い	The point which makes us happy is that our area is convenient to culture Kalkan and that is your sensetive approach to this	
15	Cihan ŞİMŞEK		Avşar Köyü, Milas	解らない	No necessary information	無し			
16	Metin AKSU		Avşar Köyü, Milas	ある程度ある	Demonstration can be done on one of farms, and we can help to share information among farmers .	無し			
17	Mehmet YİĞİT	Yiğit Su Ürünleri	Ekinambarı Köyü, Milas	ある程度ある	We want to see the results of rearing /culture conditions that is practised in this area from juvenile	有り	高い		
18	Maksut YILMAZ		Avşar Köyü, Milas	ある程度ある	I need to have information on culture techniques. We need to be introduced a demonstration of Kalkan	無し			
19	Rıza DERELİ		Akyol Köyü, Milas	高い	We need to have information on culture techniques.Our facility is convenient to culture	無し			
20	Mehmet YİĞİT		Akyol Köyü, Milas	高い	I need to have any information on Kalkan culture techniques.	無し			
21	Mehmet KARA		Baharlı Köyü	高い	We need detailed information from Kalkan culture conditions (growth performance, diseases) to market share.	有り	不満足		Detailed information on marketting, diseases, etc. and preventions against these diseases wasn't given to us satisfactorily.
22	Mustafa BAYAR		Ekinambarı Köyü, Milas	ある程度ある	I don't have any idea.I want to see the demonstration of Kalkan culture.	有り	非常に高い	I got basic information	No unsatisfied issues
23	Mutlu BAYAR		Ekinambarı Köyü, Milas	ある程度ある	I don't have any idea.I want to see the demonstration of Kalkan culture in the area.	無し			
24	Mustafa ÖNER	Öner Su Ürünleri	Bahçe Yeni Köy, Milas	ある程度ある	Kalkan hasn't been cultured in this area.So, I don't have any information on Kalkan culture.For example; optimum water depth,water temperature,salinity... If necessary information is given to farmers, many of the farmers will evaluate this different species, Kalkan which is most important subject for us.If we are informed on kalkan culture, we will be happy.	無し			
25	Durdu Ayşe İNCEOĞLU (Oğuz İNCEOĞLU		Köy önü Mevkii Avşar Köyü, Milas	高い	We are examining culture techniques. Other technique equipments are available.	有り	非常に高い	I was happy with your presentation and information I got on marketting.	MARA doesn't directly support us for basic facilities, (especially to familial farms).
26	Aşkın KABAK	Reyyan Balık ve Su Ürünleri Ltd.Şti.	Ekinambarı Köyü, Milas	ある程度ある	There should be a pilot region and demonstration should be done. Furthermore, support should be given for obtaining juvenile and rearing Kalkan.	無し			
27	Abidin KIRAN	Kıran Ticaret	Sanayi Sitesi 7. Cadde No:33 Milas ?????	高い	We need to have any information on Kalkan culture techniques.	無し			
28	Ercan CENGİZ	Ercan Cengız Balık Çiftliği İşletmesi	Ekinambarı Köyü, Milas	高い	It will be very helpful if you demonstrate Kalkan culture in this area and support us with information and technical equipments	有り	非常に高い	I am very happy to get information at the seminar that our area is convenient for flatfish culture. If we are given support to, demonstration of Kalkan culture can be done at my farm.	

7．PDM３和訳版とトルコ語版

(1)　PDM3 和訳版

プロジェクト名：カレイ類養殖プロジェクト
協力期間：日本人専門家派遣から 3 年半（2007 年 7 月 1 日から 2010 年 12 月 31 日まで）
プロジェクト実施機関：　地中海水産研究・生産・研修センター（AKSAM）及び農業省Ｔ　Ｇ　Ｍ
プロジェクト対象地域：　カルカン養殖に適した地域（特にトルコ南西部）
ターゲットグループ：　AKSAM 研究員及び民間養殖業者

改訂日：合同調整会議（2009 年 2 月 26 日）

プロジェクト要約	指　　標	指標データ入手手段	外部条件
【上位目標】 トルコにおいて養殖事業が多様化する。	1. 養殖業者が養殖多様化のためのデータと技術を利用可能となる（普及サービス）。 2. カルカンの試験養殖を開始したあるいはカルカン養殖事業を開始した民間養殖業者数（10 社） 3. 養殖カルカンの生産量（100ｔ/年）	1. 農業省、AKSAM 及びＳ　MA のウェブサイトのコンテンツ 2. 市場調査 3. カルカン養殖を開始した養殖業者のモニタリング	
【プロジェクト目標】 カルカンの陸上養殖モデルが開発される。	1. カルカン養殖について技術指導ができるスタッフ数（10 人、非定量） 2. 開発されたカルカン養殖モデルに関する養殖ガイドライン 3. カルカン養殖普及計画	1. 関係者へのアンケート（注 1） 2. 養殖ガイドライン 3. カルカン養殖普及計画書	・ 世界的な金融危機がトルコ経済に深刻な影響を及ぼさない。 ・ カルカン養殖にかかるトルコの国家方針に変更が生じない。 ・ カルカンの価格が暴落しない。
【成果】 1. カルカンの養殖技術が開発される。 2. 事業化に適した生産規模が検討される。 3. 養殖普及にかかる情報の収集・発信体制が整う。 4. カルカン養殖のトレーサビリティー体制が整う。	1-1　平均体重 1k　時点におけるカルカンの生残率（75％） 1-2　モデル養殖池のカルカン生産量（700k ／水槽/Crop)（カルカン平均重量 1.0k　以上） 2-1　規模の異なる提案されたカルカン養殖モデル 3-1　広報活動の実績（セミナー、ニュースレター、　P 等） 3-2　カルカン養殖マニュアルが発行される。 4-1　カルカン飼育管理履歴情報が AKSAM ウェブサイトで公開される。	1-1　P/J による各種報告書 1-2　P/J による各種報告書 2-1　カルカン養殖ガイドライン 3-1　作成された広報媒体 3-2　カルカン養殖マニュアル 4-1　AKSAM ウェブサイト	・ Ｓ　MA　の養殖・魚病研究機能が著しく低下しない。 ・ 養殖業者がカルカン養殖への関心を失わない。 ・ 重大な影響を及ぼす魚病が発生しない。

【活動】	**【投入】**		
	< トルコ側 >	< 日本側>	
1-1. 水管理方法を検証する。 1-2. 実用配合飼料の栄養価を検証する。 1-3. 魚病検査体制を強化する。 1-4. カルカン養殖マニュアルを準備する。 2-1. カルカン養殖に興味のある養殖業者の基本情報を整理・分類する。 2-2. 市場調査を通し、カルカンの消費者反応をサイズ別に分析する。 2-3. 養殖量と施設規模に応じた養殖モデルを検討する。	1.　C/P（養殖部門 10 人、魚病 4 人） 2.　Ｓ　MA　の協力（技術研修、人事交流　等） 3.　ポンプ、パイプ、　　等必要資機材 4.　施設補強工事 5.　土地、建物、P/J 事務所　等.	1.　専門家（4 分野程度：　養殖技術、飼料開発、魚病、水産経済/マーケッティング、等） 2.　C/P 研修（必要に応じ 3 名以下） 3.　専門家携行機材	・ プロジェクト関係者が離職しない。 ・ 養殖業者が大量に離職しない。 ・ Ｓ　MA　から高品位、充分量の稚魚が AKSAM へ供給される。

2-4. それぞれの養殖モデルに応じた養殖ガイドラインを作成する。 3-1. カルカン養殖にかかる技術セミナーを開催する。 3-2. 養殖試験結果を養殖業者に発信する。 3-3. 養殖業者を対象としたニーズ調査を定期的に行う。 3-4. プロジェクトチーム（トルコ側カウンターパートとJICA専門家）が、農業農村開発省により調整下、S MA 及びAKSAMと協力しつつ、カルカン養殖普及計画を作成する。 4. カルカン養殖について、食品安全性の確保について学ぶ。	6. P/J関係者の出張旅費、光熱費、施設維持管理費、養殖用消耗品、等	4. その他、養殖用消耗品等	**【前提条件】** ・ P/Jで使用するカルカンが大量斃死しない。

AKSAM: 地中海水産研究・生産・研修センター、Mediterranean Fisheries Research, Production and Trainin Institute（英語略名：MFRPT）

MARA: 農業村落省、Ministry o A riculture and Rural A airs、S MA ：中央水産研究所、Central Fisheries Research Institute（英語略名：CFRI）

注1：カウンターパートがカルカン養殖について技術指導ができる能力を有しているかどうかの判断は、AKSAMの副所長（技術担当）、カウンターパート・リーダー、日本人専門家による評価ならびにカウンターパート自身による自己評価を総合して行う。採点項目や配点については、今後、プロジェクトチームが決める。

(2) PDM3 トルコ語版

Teklif Edilen Proje Tasarım Matrisi (PDM-3)

Proje başlığı: Yassı Balık Yetiştiriciliği Projesi

Proje Süresi: İlk Japon Uzmanın görevlendirilmesi ile başlayan 3,5 yıllık sure (1 Temmuz 2007 ve 31 Aralık 2010 arası).

Yürürlüğe Koyan Kurum: AKSAM-Beymelek/TÜGEM/TKB

Hedef Bölge: Güney Batı Türkiye'yi de içine alan Kalkan yetiştiriciliğine uygun bölgeler

Hedef Gruplar: AKSAM Araştırmacıları ve Özel Su Ürünleri Şirketleri　　Revizyon tarihi: 26 Şubat 2009 tarihli JCC toplantısı

Konu Özeti	Objektif olarak doğrulanabilir göstergeler	Doğrulama Yöntemleri	Önemli Varsayımlar
[Genel Hedef] Türkiye'de Su ürünleri endüstrisi çeşitlendirilecek**.**	1. Özel sektör için faydalı bilgi ve teknoloji çeşitlendirme mevcuttur. (genişletme hizmeti) 2. Kalkan yetiştiriciliği denemesine başlayan veya Kalkan yetiştiriciliği işine başlayan özel şirket sayısı.(10 şirket) 3. Yetiştirilen Kalkan miktarı.(100 ton/yıl)	1. TKB, AKSAM ve SÜMAE'nin web sitelerinin içeriği 2. Pazar araştırması 3. Kalkan yetiştiriciliği ile tanışan özel su ürünleri yetiştirici firmalarının izlenmesi	
[Projenin amacı] Karasal tesislerde Kalkan yetiştiriciliği modelleri geliştirilir.	1. Kalkan yetiştiriciliği teknikleriyle ilgili bilgi verebilecek personel sayısı (10 kişi) 2. Geliştirilen Kalkan yetiştiriciliği modellerine ilişkin yetiştiricilik rehberleri 3. Kalkan yetiştiriciliği genişletme planı	1. İlgili kişiler için anketler*1 2. Geliştirilen Kalkan yetiştiricilik modellerine ilişkin yetiştiricilik rehberleri 3. Kalkan yetiştiriciliği genişletme planına ilişkin doküman	- Dünya genelindeki mali kriz Türk ekonomisini kayda değer biçimde etkilemeyecek. - Ulusal Kalkan yetiştiriciliği stratejisi değişmeyecek. - Kalkan fiyatı aniden düşmeyecek.
[Çıktılar] 1-Kalkan yetiştiricilik teknikleri geliştirilir 2-Ticari seviyede üretim ölçeği belirlenir 3-Yaygınlaştırma aktiviteleri için bilgi toplama ve iletişim başlamaya hazırdır. 4. Kalkan yetiştiriciliğine ilişkin izlenebilirlik sisteminin kurulması	1-1 Kalkan ağırlığının ortalama 1,0 kg olduğu dönemde kalkanın yaşama oranı (%75) 1-2 Model yetiştiricilikte Kalkan üretiminin miktarı.(700kg/ tank/ürün) 2-1 Farklı üretim ölçeklerinde kalkan yetiştiriciliği modellerinin teklif edilmesi 3-1 Tanıtım kayıtları (Seminerler, haberler, web sitesi vs.) 3-2 Kalkan yetiştiriciliği için teknik el kitapları basılır. 4-1 Kalkan büyütme ve yönetim bilgilerinin AKSAM'ın web sitesinde yayınlanması	1-1 Proje tarafından yazılan raporlar 1-2 Proje tarafından hazırlanan raporlar 2-1 Kalkan yetiştiriciliği rehberi 3-1 Proje tarafından yayınlanan materyaller 3-2 Kalkan yetiştiriciliği kılavuzu 4-1 AKSAM'ın web sitesi	- SUMAE'de su ürünleri yetiştiriciliği işlev ve tecrübeleri ile hastalık konusundaki araştırmalar önemli ölçüde azalmayacak. - Özel su ürünleri yetiştiricisi şirketler Kalkan yetiştiriciliği konusunda ilgilerini kaybetmeyecekler. - Ciddi balık hastalıkları görülmeyecek.
[Aktiviteler] 1-1 Su yönetimi tekniklerini belirlemek 1-2 Pratik beslenme şekillerinin besleme değerini belirlemek	**[Girdi]** (Girdi Bilgi)	< Japon tarafı >	- Projeyle ilgili kişiler konuyla ilgili

1-3 Balık patolojisi inceleme sisteminin güçlendirilmesi 1-4 Kalkan kültürü için teknik rehberler hazırlamak 2-1 Kalkan yetiştiriciliğine ilgi duyan özel şirketler konusunda temel bilgileri toplamak ve analiz etmek 2-2 Tüketicilerin değişik kalkan boyutları ile ilgili reaksiyonlarını analiz etmek için pazar araştırması yapmak 2-3 Tesis ölçeği ve üretimin miktarına göre farklı kültür modellerini incelemek 2-4 Her model için kültür rehberleri geliştirmek 3-1 Kalkan yetiştiriciliği konusunda seminerler vermek 3-2 Özel su ürünleri yetiştirici şirketler için deney sonuçlarının yayınlanması 3-3 Özel sektörlerin talepleri doğrultusunda periyodik araştırmalar yapmak 3-4 Proje ekibi tarafından (Türk eş uzmanlar ve JICA uzmanları) TKB'nin koordinasyonunda ve SÜMAE ile AKSAM'ın işbirliği ile, Kalkan yetiştiriciliğine yönelik bir genişletme planının hazırlanması 4- Kalkan yetiştiriciliği için gıda güvenlik sisteminin araştırılması	< Türk tarafı > 1- Eş uzmanlar (10 kişi su ürünleri yetiştiriciliği alanıyla ilgili, 4 kişi patoloji alanında) 2- Teknik eğitim, personel değişimi gibi konularda AKSAM'la SUMAE'nin işbirliği 3- Pompa, boru, stabilizasyon makinaları, vs. donanım 4- Güçlendirilmiş tesis 5- Arazi, yetiştiricilik tesisleri, laboratuarlar, proje bürosu vs. 6- Proje üyelerinin iş seyahatleri, elektrik vb. giderler, makinalar ve tesisin bakımı, Kalkan yetiştiriciliği için bazı giderler gibi diğer masraflar vs.	1- Uzmanlar (4 alanda; su ürünleri yetiştiriciliği, beslenme, patoloji, su ürünleri ekonomisi/pazarlama 2- Eş uzmanlar için Japonya'da eğitim (gerekirse maksimum 3) 3- Japon uzmanlar için donanım 4- Diğerleri (Denemeler için bazı sarf malzemeleri vs.)	kuruluşlardan ayrılmayacaklar. - Özel su ürünleri yetiştiricisi şirketler büyük oranda işlerini terk etmeyecekler. **[Ön koşul]** - Projede toplu ölüm gerçekleşmez. - SUMAE yeterli sayıda kaliteli yavruyu AKSAM'a verir.

AKSAM: Akdeniz Su ürünleri Araştırma, Üretim ve Eğitim Enstitüsü (İngilizce MFRPT)

TKB: Tarım ve Köyişleri Bakanlığı, SÜMAE: Merkez Su ürünleri Araştırma Enstitüsü (İngilizce CFRI)

*1: Kalkan yetiştiriciliği konusunda eş uzmanların teknik kapasitesinin değerlendirilmesi müdür yardımcı (teknik alanlardan sorumlu), eş uzmanların lideri, JICA uzmanları ve eş uzmanlar tarafından (öz değerlendirme) yapılacaktır. Değerlendirme için ayrıntılı öğeleri ve puan dağılımını proje ekibi belirleyecektir.

8. トルコ国「カレイ類養殖」PDM2 和訳版

承認時期 ： 合同調整会議（2008年2月6日）
協力期間：2007年7月1日から2010年12月31日
プロジェクト実施期間：地中海水産研究･生産･研修センター（AKSAM）
プロジェクト対象地域：カルカン養殖に適した地域（特にトルコ南西部）
ターゲットグループ：AKSAM研究員及び養殖業者

承認日：2008年2月6日

プロジェクトの要約	指標	入手手段	外部条件
【上位目標】 トルコにおいて養殖事業が多様化する。	・ 養殖業者が養殖多様化のためのデータと技術を利用可能となる。 ・ カルカン養殖を事業化した養殖業者数（15社） ・ カルカンの生産量（300 t/年） ・ カルカン流通量全体に対する養殖物の比率（重量として20 %） ・ 国の普及サービスの稼働状況	・ 漁業統計 ・ 市場調査 ・ カルカン養殖を開始した養殖業者のモニタリング ・ 関係者へのアンケート	
【プロジェクト目標】 カルカンの陸上養殖モデルが開発される。	・ カルカン養殖について技術指導ができるスタッフ数（10人，非定量） ・ 実際に カルカン養殖の基礎試験を開始した民間養殖業者（3 社）	・ 関係者へのアンケート ・ プロジェクトによる各種報告	・カルカン養殖にかかるトルコの国家方針に変更が生じない。 ・カルカンの価格が 暴落しない。
【成果】 1. カルカンの養殖技術が開発される。 2. 事業化に適した生産規模が検討される。 3. 養殖普及にかかる情報の収集・発信体制が整う。	・ 出荷までの生残率（70 %） ・ モデル養殖池のカルカン生産量 （700kg/年） ・ 提案された養殖モデルの数（3 件） ・ 上記モデルについて祖利益を推定する。 ・ 広報活動の実績（セミナー、ニュースレター、HP等） ・ カルカン養殖マニュアルを発行する。	・ P/Jによる各種報告書 ・ 養殖モデル毎の養殖マニュアル ・ 関係者へのアンケート ・ 作成された広報媒体	・SUMAEの養殖・魚病研究機能が著しく低下しない。 ・養殖業者がカルカン養殖への関心を失わない。 ・重大な影響を及ぼす魚病が発生しない。
【活動】 1-1. 水管理方法を検証する。 1-2. 実用配合飼料の栄養価を検証する。 1-3. 魚病検査体制を強化する。 1-4. カルカン養殖マニュアルを準備する。 2-1. カルカン養殖に興味のある養殖業者の基本情報を整理・分類する。 2-2. 市場調査を通し、カルカンの消費者反応をサイズ別に分析する。 2-3. 養殖量と施設規模に応じた養殖モデルを検討する。 2-4. それぞれの養殖モデルに応じた養殖ガイドラインを作成する。 3-1. カルカン養殖にかかる技術セミナーを開催する。 3-2. 養殖試験結果を養殖業者に発信する。 3-3. 養殖業者を対象としたニーズ調査を定期的に行う。 3-4. カルカン養殖普及における関係機関の役割分担を再整理する。 4. カルカン養殖について、食料安全保障を学ぶ。	**【投入】** 〈 トルコ側 〉 1. C/P （養殖部門10人、魚病 4人） 2. SUMAE の協力（技術研修、人事交流 等） 3. ポンプ、パイプ、UV等 必要資機材 4. 施設補強工事 5. 土地、建物、P/J事務所 等 6. P/J関係者の出張旅費、光熱費、施設維持管理費、養殖用消耗品、等 〈 日本側〉 1. 専門家（3分野程度；養殖技術、飼料開発、水産経済／マーケッティング、等 2. C/P研修（必要に応じ3名以下） 3. 専門家携行機材 4. その他、養殖用消耗品等		・プロジェクト関係者が離職しない。 ・養殖業者が大量に離職しない。 **【前提条件】** ・P/Jで使用するカルカンが大量斃死しない。 ・ SUMAEから高品位、充分量の稚魚がAKSAMへ供給される。

AKSAM: 地中海水産研究・生産・研修センター、 Mediterranean Fisheries Research, Production and Training Institute (英語略名：MFRPT)
MARA: 農業村落省、Ministry of Agriculture and Rural Affairs
SUMAE: 中央水産研究所：Central Fisheries Research Institute（英語略名：CFRI）

PDM2 for the Project on "Flatfish Culture"

Project Design Matrix for the Project on "Flatfish Culture"
Project Term: 3.5 years from first dispatch of the Japanese expert (Planned Jul/2007 to Dec/2010)
Implementation Agency: AKSAM-Beymelek / TUGEM / MARA
Target Area: Favorable areas for Kalkan culture, including South-Western Turkey **Ver. 1.1**
Target Groups: Researchers of AKSAM and private aquaculture companies **Date: 6/Feb/2008**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
[Overall Goal] Aquaculture industry becomes diversified in Turkey.	- Useful data and technology for diversification are available for private sector - Number of private aquaculture companies which have introduced Kalkan culture (15 companies) - Amount of cultured Kalkan (300 t/year) - Percentage of cultured Kalkan in all Kalkan production (20 % in weight) - Operation situation of the extension service	- Fisheries statistics - Market research - Monitoring of private aquaculture companies which have introduced Kalkan culture - Questionnaires for concerned person	
[Project Purpose] Culture models of Kalkan in on-land facilities are developed.	- Number of staff who are able to instruct the techniques of Kalkan culture (10 persons) - Number of private companies which started initial Kalkan culture activities (3 companies)	- Questionnaires for concerned person - Reports made by the Project	- The national strategy of Kalkan culture is not changed. - Price of Kalkan does not decrease sharply.
[Outputs] 1 Techniques of Kalkan culture are developed. 2 Production scales at commercial level are identified. 3 Collection and transmission of information for extension activities are ready to initiate.	- Survival rate of Kalkan at shipment (70 %) - Amount of Kalkan production in the model culture (700 kg/tank/year) - Suggested Kalkan culture models (3 models) - Gross profit of each of the above model is estimated - Record of publicities (Seminar, Newsletters, HP, etc.) - Technical manuals for Kalkan cultures are published.	- Reports made by the Project - Kalkan culture manuals for each model - Questionnaires for concerned persons - Publication materials made by the Project	- Function and skills of aquaculture and research on pathology are not significantly reduced in SUMAE . - Private aquaculture companies do not lose their interest for Kalkan culture. - Serious fish disease does not occur.
[Activities] 1-1. Identify water management techniques 1-2. Identify nutritional value of the practical diets 1-3. Reinforce the fish pathology examination system 1-4. Prepare technical manuals for Kalkan culture 2-1 Collect and analyze basic information of private aquaculture companies which have interests in Kalkan culture 2-2 Conduct market research to analyze consumers' reaction for different Kalkan sizes 2-3 Examine different culture models by amount of production and scale of 3-1 Hold technical seminars of Kalkan culture 3-2 Publish the results of experiments for private aquaculture companies 3-3 Implement periodical survey on the private aquaculture companies' demand 3-4 Reconfirm roles of concerned organizations for Kalkan culture extension 4. Study Food security system for Kalkan culture	**[Input]** < Turkish side > 1 Counterparts (10 persons in aquaculture field, 4 persons in pathology field) 2 SUMAE's cooperation, such as technical training, human exchange to AKSAM, etc. 3 Equipments, such as pumps, pipes, stabilization machineries, etc. 4 Strengthened facility 5 Land, culture facilities, laboratories, project office, etc. 6 Other expense, such as business trips of Project members, utility charge, maintenance of facilities and machineries, some	< Japanese side > 1 Experts (about 3 fields; aquaculture, diet development, fisheries economy / marketing) 2 Training in Japan for counterparts (maximum 3 if necessary) 3 Equipments for Japanese experts 4 Others (some consumables for experiments, etc.)	- Concerned persons in the Project do not leave the relevant organizations. - Private aquaculture companies do not leave their job in large numbers. **[Pre-condition]** - Mass mortality does not occurr in the Project. - SUMAE provides sufficient number of high quality juveniles to AKSAM.

AKSAM: Mediterranean Fisheries Research, Production and Training Institute (MFRPT in English)
MARA: Ministry of Agriculture and Rural Affairs
SUMAE: Central Fisheries Research Institute (CFRI in English)

９．PO（和訳版）

Plan of Operation

Revised: Feb. 26, 2009