

**SOUTHERN INSTITUTE OF WATER RESOURCES PLANNING
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
THE GOVERNMENT OF SOCIALIST REPUBLIC OF VIETNAM**

**THE PROJECT
FOR
CLIMATE CHANGE ADAPTATION
FOR SUSTAINABLE AGRICULTURE
AND RURAL DEVELOPMENT
IN THE COASTAL MEKONG DELTA
IN VIETNAM**

**FINAL REPORT
(APPENDIXES)**

APRIL 2013

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

**SANYU CONSULTANTS INC., JAPAN
NEWJEC Inc., JAPAN**

RD
JR
13-029

CONTENTS

COMPOSITION OF THE REPORT

MAIN REPORT MP (Vietnamese Version, English Version, Japanese Version)

MAIN REPORT PP (Vietnamese Version, English Version, Japanese Version)

APPENDIXES (English Version)

APPENDIX I IMPLEMENTATION ARRANGEMENT OF THE PROJECTI

I.1	JICA Team Members and Counterpart Personnel.	I-1-1
I.2	Person-Month Input for the Study.	I-2-1
I.3	Record of Discussions for the Project	I-3-3
I.4	Minutes of Meetings Concluded in the Process of the Project.....	I-4-9

APPENDIX II WATER RESOURCES II

II.1	Proposed Projects from 2011 – 2015 by SIWRP MP (2011).....	II-1-1
II.2	Proposed Projects from 2016 – 2020 by SIWRP MP (2011)	II-2-1
II.3	Proposed Projects from 2011 – 2015 by SIWRP MP (2011).....	II-3-1
II.4	Proposed Projects after 2030 by SIWRP MP (2011).....	II-4-1

APPENDIX III AGRICULTURE AND LAND USE.....III

CHAPTER 1 SALIENT FEATURE OF AGRICULTURE SECTOR..... III-1-1

1.1	Agro-Ecological Zones	III-1-1
1.2	Agricultural Land Use	III-1-2
1.3	Crop Production and Aquaculture Production of the Country	III-1-5
1.4	Perennial Crops.....	III-1-8

CHAPTER 2 AGRICULTURE AND AQUACULTURE IN THE PROJECT AREA III-2-1

2.1	Farming Systems in The Mekong Delta	III-2-1
2.2	Agriculture in the Project Area	III-2-1

CHAPTER 3 AGRICULTURE AND AQUACULTURE HOUSEHOLD SURVEY III-3-1

3.1	Outline of the Survey	III-3-1
3.2	Family Structure of he Sample Households.....	III-3-4
3.3	Water Sources for Agriculture and Aquaculture	III-3-5
3.4	Size of Farm Plot	III-3-9
3.5	Paddy Production.....	III-3-11
3.6	Fruits Production.....	III-3-24
3.7	Livestock Production	III-3-27
3.8	Net Income of Major Cropping Patterns per Model Household.....	III-3-29
3.9	Learning Opportunities for Agricultural Technologies	III-3-32
3.10	Occurrence of Periodical Flood and Saline Intrusion	III-3-33
3.11	People’s Reality on Climate Change.....	III-3-34

CHAPTER 4 LAND USE PLANNING..... III-4-1

4.1	Introduction.....	III-4-1
4.2	Characteristics of Main Commodities Prevailing in the Area.....	III-4-1

4.3	Issues and Constraints Considered.....	III-4-5
4.4	Land Use Planning and Mapping.....	III-4-7
APPENDIX IV AQUACULTURE		IV
CHAPTER 1 AQUACULTURE DEVELOPMENT PLAN IN VIETNAM		IV-1-1
1.1	Administrative Organization.....	IV-1-1
1.2	National Aquaculture Development Plan.....	IV-1-1
1.3	Provincial Aquaculture Development Plan	IV-1-2
CHAPTER 2 AQUACULTURE IN THE MEKONG DELTA AREA		IV-2-1
2.1	Aquaculture Production	IV-2-1
2.2	Shrimp Farm Management	IV-2-3
2.3	Marketing.....	IV-2-6
2.4	Shrimp Diseases.....	IV-2-7
CHAPTER 3 SHRIMP CULTURE HOUSEHOLD SURVEY		IV-3-1
3.1	Household Survey in 2011	IV-3-1
3.2	Household Survey in 2012.....	IV-3-10
CHAPTER 4 CHAPTER 3 DEVELOPMENT CONSTRAINTS.....		IV-4-1
4.1	Major Identified Constraints	IV-4-1
4.2	Constraints Possibly Happened due to Climate Change	IV-4-2
CHAPTER 5 NECESSARY ACTIONS TO BE TAKEN FOR SECURING SUSTAINABLE SHRIMP CULTURE		IV-5-1
5.1	Outline I.....	IV-5-1
5.2	Development of the Conversion Plan from Paddy Field to Shrimp Pond in Consideration of Effect of Climate Change.....	IV-5-2
5.3	Strengthening the Disease Investigation Capacity of DARD Laboratories	IV-5-3
5.4	Promotion of Shrimp Farmers' Organization.....	IV-5-4
APPENDIX V VILLAGE LEVEL WORKSHOP RESULTS.....		V
V.1	Problem Analysis	V-1-1
V.2	Trend Analysis	V-1-5
V.3	Issues Identification Associated with the Climate Change	V-1-7
V.4	Success Story and Village History	V-1-15
APPENDIX VI DESIGNING AND SURVEYS FOR FACILITIES		VI
VI.1	Bill of Quantities and Cost Estimation for Three Sluices in Tra Vinh	VI-1-1
VI.2	Bill of Quantities and Cost Estimation for Sluices in North Ben Tre.....	VI-2-1
VI.3	Drawings	VI-3-1
VI.4	Fishpass	VI-4-1
APPENDIX VII PROJECT EVALUATION		VII
CHAPTER 1 NORTH BEN TRE POLDER AREA IMPROVEMENT PROJECT		VII-1-1
1.1	Farm Budget.....	VII-1-1
1.2	Project Cost	VII-1-2

1.3	Project Cost and Benefit.....	VII-1-5
CHAPTER 2 TRA VINH FRESH WATER RECRUITMENT PROJECT		VII-2-1
2.1	Farm Budget.....	VII-2-1
2.2	Project Cost	VII-2-2
2.3	Project Cost and Benefit.....	VII-2-7
CHAPTER 3 SALINE INTRUSION PREVENTION SLUICE GATE CONSTRUCTION PROJECT		VII-3-1
3.1	Farm Budget.....	VII-3-1
3.2	List of Proposed Gates	VII-3-2
3.3	Dibursement of the Project Cost	VII-3-3
3.4	Project Cost and Benefit.....	VII-3-5
CHAPTER 4 TREND OF THE YIELD.....		VII-4-1
 APPENDIX VIII ENVIRONMENTAL AND SOCIAL CONSIDERATION.....		VIII
CHAPTER 1 ENVIRONMENTAL LEGISLATIVE AND INSTITUTIONAL		VIII-1-1
1.1	Organizations Concerning Environmental Protection	VIII-1-1
1.2	Laws Concerning Environmental Protection	VIII-1-2
1.3	National Standards for Environmental Protection	VIII-1-2
1.4	EIA in Vietnam	VIII-1-7
1.5	SEA in Vietnam.....	VIII-1-8
1.6	Gap between JICA Guideline and Vietnamese Legislative Frame	VIII-1-10
1.7	Laws related to Land Recovery and Resettlement.....	VIII-1-10
CHAPTER 2 STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE DEVELOPMENT OPTIONS.....		VIII-2-1
2.1	Objectives of the Development.....	VIII -2-1
2.2	Current Status in the Mekong Delta and Project Area	VIII -2-1
2.3	Examination of Direction to Cope with to the Climate Change	VIII -2-7
2.4	Proposed Alternatives	VIII -2-8
2.5	Examination of Proposed Options by Comparison.....	VIII -2-9
2.6	Points of Attention regarding Environmental Consideration	VIII -2-12
2.7	Proposed Methods of Environmental Study	VIII -2-13
2.8	Recommendations.....	VIII -2-13
CHAPTER 3 INITIAL ENVIRONMENTAL EXAMINATION OF THE IN-DEPTH STUDIES.....		VIII-3-1
3.1	Assignments of the In-depth Studies	VIII-3-1
3.2	IEE of the In-depth Studies.....	VIII-3-2
 APPENDIX IX SIMULATION MODEL AND REFERENCE		IX
CHAPTER 1 GLOBAL CIRCULATION MODEL (HADCM3).....		IX-1-1
CHAPTER 2 REGIONAL CIRCULATION MODEL (PRECIS).....		IX-2-1
CHAPTER 3 SIMULATION IN/AROUND MEKONG DELTA.....		IX-3-1
3.1	Simulation Program	IX-3-1
3.2	Boundary Condition for Saline Intrusion and Flood Inundation	IX-3-2
3.3	Model Calibration for Saline Intrusion and Flood Inundation.....	IX-3-4

3.4	Boundary Condition for Water Mobilization	IX-3-11
3.5	Model Calibration for Water Mobilization	IX-3-12
3.6	Operation Rule for Water Mobilization	IX-3-12
3.7	Boundary Condition for Coastal Area Simulation	IX-3-14
3.8	Model Calibration for Coastal Area Simulation	IX-3-19
3.9	Proposed Coastal Line Protection identified from Simulation and Observation	IX-3-24

APPENDIX X NORTH BEN TRE PROJECT TOWARD CLIMATE CHANGE..... X

CHAPTER 1 RATIONALE AND GOAL OF THE PROJECT.....X-1-1

1.1	Rational of the Project	X-1-1
1.2	Objective and Outputs of the Project	X-1-1
1.3	The Project Area	X-1-1

CHAPTER 2 THE PROPOSED PROJECT AREAX-2-1

2.1	Spatial Settings and Demography	X-2-1
2.2	Meteorology, Hydrology and Irrigation & Drainage System.....	X-2-1
2.3	Major Livelihood in the Project Area	X-2-4
2.4	Impact by Climate Change.....	X-2-12

CHAPTER 3 THE PROJECT COMPONENTSX-3-1

3.1	Overall Project Component and Implementation Staging	X-3-1
3.2	Major Sluices and Medium Scale Sluices (Under Stage 1 and Stage 2).....	X-3-2
3.3	Minor Sluices (Under Stage 2 & Stage 3).....	X-3-7
3.4	New Intake Canal (Under Stage 1)	X-3-9
3.5	Canal System Improvement (Under Stage 1 for Dredging).....	X-3-10
3.6	Embankment (River) Dike (Stage 2 and Stage 3).....	X-3-11
3.7	Management Buildings (Stage 1, Stage 2 and Stage 3)	X-3-11
3.8	Design of the Sluice Gates for Saline Intrusion Prevention.....	X-3-11
3.9	Project Summary and Works applied for Loan Request	X-3-15

CHAPTER 4 PROJECT IMPLEMENTATION ARRANGEMENTS.....X-4-1

4.1	Institutional Framework.....	X-4-1
4.2	Specific Functions of Relevant Offices	X-4-1
4.3	Fund Flow	X-4-2
4.4	Results Monitoring and Evaluation	X-4-2

CHAPTER 5 PROJECT COST AND DISBURSEMENT SCHEDULEX-5-1

5.1	Project Cost.....	X-5-1
5.2	Disbursement Schedule for the Stage 1 Construction.....	X-5-3
5.3	Operation and Maintenance Costs	X-5-3

CHAPTER 6 SOCIAL AND ENVIRONMENTAL CONSIDERATION.....X-6-1

6.1	Framework of Compensation Policy, Land Clearance and Resettlement	X-6-1
6.2	Responsibilities for Land Clearance, Compensation & Resettlement	X-6-2
6.3	Environmental and Social Consideration.....	X-6-4
6.4	Resettlement.....	X-6-13
6.5	Conclusion and Recommendation	X-6-23

CHAPTER 7 PROJECT EVALUATIONX-7-1

7.1	Condition of Economic Evaluation of the Project	X-7-1
-----	---	-------

7.2	Project Cost.....	X-7-2
7.3	Project Benefit	X-7-4
7.4	Project Economic and Financial Evaluation	X-7-7
7.5	Sensitivity Analysis.....	X-7-8
7.6	Farm Budget Analysis.....	X-7-8
7.7	Project Indirect Benefit.....	X-7-9

APPENDIX-I

IMPLEMENTATION ARRANGEMENT OF THE PROJECT

APPENDIX I: IMPLEMENTATION ARRANGEMENT OF THE PROJECT

TABLE OF CONTENTS

I.1 JICA Team Members and Counterpart Personnel.I-1-1
I.2 Person-Month Input for the Study.I-2-1
I.3 Record of Discussions for the ProjectI-3-3
I.4 Minutes of Meetings Concluded in the Process of the Project.....I-4-9

I.1 JICA TEAM MEMBERS AND COUNTERPART PERSONNEL

I.1.1 JICA TEAM MEMBERS

Kosei HASHIGUCHI (Mr.)	Chief Advisor/ Rural Development
Motoyoshi HIKASA (Mr.)	Co-leader/ Irrigation & Drainage/ Rural Infrastructure
Hideki SAWA (Mr.)	Water Resources Management/ Climate Change
Hideaki HIRUTA (Mr.)	Agriculture/ Land Use Planning
Kota HIRAYAMA (Mr.)	Rural Society & Economy/ Project Evaluation
Rie KITAO (Ms.)	Environmental and Social Consideration
Motohisa WAKATSUKI (Mr.)	Facilities Design/ Cost Estimation
Miki TAKAHASHI (Ms.)	Secretary/ Agriculture (Paddy Cultivation)
Shigeru KOBAYASHI (Mr.)	Aquaculture

I.1.2 COUNTERPART PERSONNEL

SIWRP

Mr. Nguyen Xuan Hien	Director, Southern Institute for Water Resources Planning
Mr. Nguyen Ngoc Anh	(former) Director, SIWRP
Mr. Nguyen Huu Tan	Head of division, Technical and International Cooperation
Mr. Nguyen Huy Khoi	Deputy head of division, Technical and International Cooperation
Mr. Ho Trong Tien	Director, Climate Change and Disaster Response Centre
Mr. Nguyen Tri Phuc	Head of division, Human resources and Administration
Mr. Dang Thanh Lam	Director, Centre for Water Resources Consultant and Construction
Mr. Nghiem Dinh Thanh	Head of division, Cuu Long Delta Planning
Mr. Nguyen Thien Cam	Deputy head of Division, Cuu Long Delta Planning
Mr. Dinh Quang Vu Binh	Institute of Coastal and Offshore Engineering

Person-Month Schedule: The Project for Climate Change Adoption for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta in Vietnam

Expertise	Name	Year 2011						Year 2012						Year 2013			Yr 2011-2012		Yr 2012-2013		Total						
		Phase 1			Phase 2			Phase 3						Phase 1&2		Phase 2											
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mat	Field	Home	Field	Home	Field
Team Leader/ Rural Development Planning	Kosei HASHIGUCHI	■		■				■	■				■		■				■			7.00	0.30	2.80	0.30	9.80	0.60
Co-leader/ Irrigation & Drainage/ Rural Infrastructure	Motoyoshi HIKASA	■	■			■	■		■				■		■	■		■	■	■		6.50	0.30	4.80	1.00	11.30	1.30
Water Resources Management/ Climate Change	Hideki SAWA		■						■					■								2.00	0.00	1.00	0.00	3.00	0.00
Agriculture/ Land Use Planning	Hideaki HIRUTA		■						■					■								3.50	0.00	1.50	0.00	5.00	0.00
Rural Society & Economy/ Project Evaluation	Kota HIRAYAMA				■										■							1.50	0.00	2.00	0.00	3.50	0.00
Environmental and Social Consideration	Rie KITAO								■						■							1.50	0.00	1.50	0.00	3.00	0.00
Facilities Design/ Cost Estimation	Motohisa WAKATSUKI								■					■		■						2.00	0.00	4.00	0.00	6.00	0.00
Secretary/ Agriculture (Paddy Cultivation)	Miki TAKAHASHI	■							■						■							(2.00)	(0.00)	0.5 (3.00)	(0.00)	(5.50)	(0.00)
Aquaculture	Shigeru KOBAYASHI														■							0.00	0.00	1.50	0.00	1.50	0.00
Report		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		24.00	0.60	19.60	1.30	43.60	1.90
Study Stage		Phase 1 Draft MP Preparation, In-depth Study Planning, and SEA Preparation						Phase 2 Draft MP Formulation, Priority Project Identification, In-depth Study Implementation, Draft Guideline Preparation, and SEA Assistance						Phase 3 MP Finalization, In-depth Study Evaluation, Priority Project Formulation, and IEE Assistance for Priority Project						24.60		20.90		45.50			

■ Work in Vietnam
□ Work in Japan

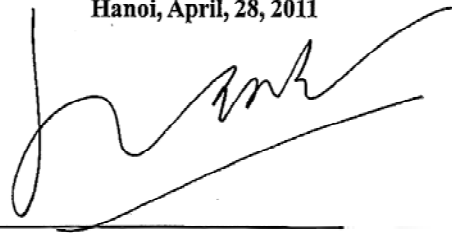
I.3 RECORD OF DISCUSSIONS FOR THE PROJECT

**Scope of Work
for
The Project for Climate Change Adaptation
for
Sustainable Agriculture and Rural Development
in the Coastal Mekong Delta in Vietnam
agreed upon between
Southern Institute for Water Resources Planning
and
Japan International Cooperation Agency**

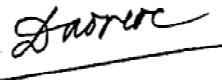
Hanoi, April, 28, 2011



Mr. Motonori Tsuno
Chief Representative
JICA Vietnam office
Japan International Cooperation
Agency (JICA)



Mr. Nguyen Ngoc Anh
Director
Southern Institute for Water
Resources Planning (SIWRP)



(Witnessed by)

Prof. Dr. Dao Xuan Hoc
Deputy Minister
Ministry of Agriculture and Rural
Development (MARD)

1. Introduction

In response to the official request of the Government of Socialist Republic of Vietnam (hereinafter referred to “the Government of Vietnam”), the Government of Japan decided to conduct the Project for Climate Change Adaptation for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta in Vietnam (hereinafter referred to as “the Project”) in accordance with relevant laws and regulation in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as “JICA”), the official agency responsible for the implementation of ODA loans, grant aid and technical cooperation of the Government of Japan, will jointly undertake the Project with the authorities concerned of the Government of Vietnam.

The present document sets forth the Scope of Work with regard to the Project.

2. Objective and outputs of the Project

(1) Objective of the Project

Climate change adaptation solutions for agriculture and rural development in the coastal areas in the Mekong Delta are proposed.

(2) Outputs of the Project

Climate change impact prediction (mid to long term, 2020-2050) and assessment is conducted.

Climate change adaptation Master Plan is formulated and priority project plans based on the Master Plan are suggested.

Through the Project, capacity for climate change adaptation planning and implementation for agriculture and rural development of Southern Institute for Water Resources Planning (hereinafter referred to as “SIWRP”) is strengthened.

3. Project area

Coastal areas in the Mekong Delta (including Tien Giang, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Ca Mau and Kien Giang provinces)

4. Scope of the Project

(1) Climate change adaptation Master Plan (hereinafter referred to as “CCA MP”)

CCA MP will be made by updating and supplementing existing master plans (including Integrated Water Resource Master Plan) and by integrating the effects of climate change.

- a Review and evaluation of existing project/action plans
- b Consolidation of information, including agricultural, hydro-meteorology, oceanography and socio-economic data
- c Review of mid to long-term (2020-2050) impact predictions of climate change by utilizing existing climate change and hydrological modeling
- d Assessment of vulnerability in the field of agriculture and rural development caused by salinity intrusion, lack of fresh water, inundation, acid water and coastal erosion
- e Proposal and evaluation of Climate Change adaptation

i. Suggestions for climate change adaptation options based on the result of climate change and hydrodynamic models.

ii. Evaluation of climate change adaptation by hydrodynamic models

iii. Suggestions of Structural measures and non-structural measures

f Pilot Projects (In-depth Study)

Through the Pilot Projects, the Project shall examine and verify the climate change adaptation options more in depth. The purpose of Pilot Projects is to suggest methods for concrete planning and design for CCA MP.

Planning for water resource management at the grass-roots level in various cropping (rice, fruit, shrimp, etc) areas to take measures against flood, drought, acid water and salinity intrusion, will also be conducted.

The number of sites will be no greater than 3 sites.

(2) Priority Project Plans

Based on the Master Plan, Priority Project Plans for climate change adaptation will be suggested in the target areas. In the Priority Project Plans, principal issues such as the objectives, size of projects, outcomes and operational structures will be considered.

5. Project schedule

The Project will be carried out in accordance with the attached tentative schedule (Annex-1).

6. Implementing structure

The counterpart organization of the Project is SIWRP. Coordination with other agencies will be conducted by SIWRP as required.

Steering Committee is established by Japanese and Vietnamese sides for smooth implementation of the Project. (At least 2 Steering Committee meetings shall be held during the Project.)

7. Reports

JICA shall prepare and submit following reports in English and Vietnamese to the Government of Vietnam.

(1) Inception Report

Thirty (30) copies (twenty (20) copies in English and ten (10) copies in Vietnamese) will be submitted at the commencement of the Project in Vietnam. This report will contain the schedule and methodology of the Project.

(2) Progress Report

Thirty (30) copies (twenty (20) copies in English and ten (10) copies in Vietnamese) will be submitted at the time of sixth (6th) months after the commencement of the Project in Vietnam.

17
4

(3) Interim Report

Thirty (30) copies (twenty (20) copies in English and ten (10) copies in Vietnamese) will be submitted at the time of about twelfth (12th) months after the commencement of the Project in Vietnam. This report will summarize the findings of the first stage of the Project and include the draft of CCA MP.

(4) Draft Final Report:

Forty (40) copies (thirty (30) copies in English and ten (10) copies in Vietnamese) will be submitted at the end of the last work period in Vietnam. The Government of Vietnam shall submit its comments within one (1) month after the receipt of the Draft Final Report.

(5) Final Report:

Fifty (50) copies (thirty (30) copies in English and twenty (20) copies in Vietnamese) will be submitted within one (1) month after the receipt of the comments on the Draft Final Report.

8. Undertaking by Vietnamese side

(1) To facilitate the smooth implementation of the Project, SIWRP will follow the "Agreement on Technical Cooperation between the Government of Japan and the Government of the Socialist Republic of Vietnam", signed on October 20, 1998.

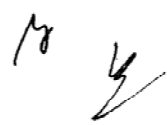
(2) The Government of Vietnam shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Project, except when such claims arise from gross negligence or willful misconduct on the part of the team.

(3) MARD, SIWRP shall act as a counterpart agency to the Team and also as a coordinating body with other relevant organizations for the smooth implementation of the Project, on behalf of the Government of Vietnam.

(4) MARD, SIWRP shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:

- a Security-related information on as well as measures to ensure the safety of the Team;
- b Information on as well as support in obtaining medical service;
- c Available data (including maps and photographs) and information related to the Study;
- d Counterpart personnel;
- e Suitable office space with necessary equipment; and
- f Credentials or identification cards.

(5) SIWRP shall take a responsibility for conducting Strategic Environmental Assessment (SEA), the environmental screening and Initial Environmental Evaluation



(IEE). JICA assists collection of the data and analysis necessary for SEA, environmental screening and IEE.

9. Undertaking of JICA

For the implementation of the Project, JICA shall take the following measures.

- (1) To dispatch, as its own expenses, the team to Vietnam.
- (2) To pursue technology transfer to counterpart personnel in the course of the Project.

17

2

Annex-1

TENTATIVE SCHEDULE

Months	1st year												2nd year											
Master Plan	←————→																							
① Preparation	◆																							
② Studies	←————→																							
③ Finalizing	←————→																							
③ Pilot Project	←————→																							
Priority project plans	←————→																							
Technical transfer	←————→																							

Handwritten signature

I.4 MINUTES OF MEETINGS CONCLUDED IN THE PROCESS OF THE PROJECT

No.	Title	Page
1	Minutes of Meeting	I-4-2
2	Minutes of Meeting on Inception Report	I-4-7
3	Minutes of Meeting on Progress Report No.1	I-4-15
4	Minutes of Meeting on Progress Report No.2	I-4-22
5	Minutes of Meeting on Draft Final Report	I-4-28

Minutes of Meeting
on
The Project for Climate Change Adaptation
for Sustainable Agriculture and Rural Development
in the Coastal Mekong Delta
agreed upon between
Southern Institute for Water Resources Planning
and
Japan International Cooperation Agency

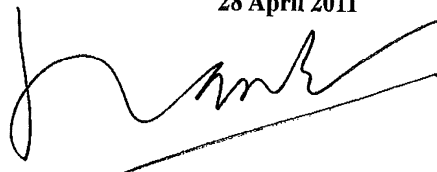
In response to the official request made by the Government of the Socialist Republic of Vietnam, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the detail planning survey teams from 5th January to 25th January 2011 and from 27th February to 7th March 2011 (hereinafter referred to as "the Team"), headed by Mr. Yoshiyuki Goya to discuss the scope of work (hereinafter referred to as "the S/W") for "The Project for Climate Change Adaptation for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta" (hereinafter referred to as "the Project").

The Team held a series of meeting with Southern Institute for Water Resources Planning (hereinafter referred to as "SIWRP") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD") and as a result from the discussions, both sides prepared the S/W for the Project as summarized as Annex-1.

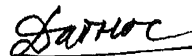
28 April 2011



Mr. Motonori Tsuno
Chef Representative
Vietnam office
Japan International Cooperation
Agency (JICA)



Mr. Nguyen Ngoc Anh
Director
Southern Institute for Water
Resources Planning (SIWRP)



(Witnessed by)
Prof. Dr. Dao Xuan Hoc
Deputy Minister
Ministry of Agriculture and Rural
Development (MARD)

Annex-1

As the result from the meetings, both sides confirmed the followings.

1. Name of the Project

Name of the Project was changed as follows.

Original: The Project for Climate Change Adaptation in Mekong Delta Region in Vietnam

Corrected: The Project for Climate Change Adaptation for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta in Vietnam

2. Responsible Ministry

Ministry of Agriculture and Rural Development (MARD)

3. Implementing Agency

Southern Institute for Water Resources Planning (SIWRP)

4. The Concept of Environmental and Social Consideration based on JICA's Guideline

SIWRP agreed to abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

SIWRP shall take a responsibility for conducting Strategic Environmental Assessment (SEA), the environmental screening and Initial Environmental Evaluation (IEE). JICA assists collection of the data and analysis necessary for SEA, environmental screening and IEE.

5. The issues for agriculture and rural development in the Mekong Delta Region

The coastal areas suffer from serious lack of stable irrigation water, difficulties in accessing fresh water and salinity intrusion from the ocean. As this situation hinders the efforts to improve agricultural production and might raise water conflicts among water users, immediate actions are needed to take measures to these issues to contribute to the sustainable agriculture and rural development.

In addition, other issues such as acid sulfate, inundation and lack of safety domestic water had been observed by the planning survey teams.

Coastal erosion is also one of the major issues as it contributes to the loss of agriculture land and housing area.

The effects of climate change might further accelerate the problems mentioned above, especially in the coastal Mekong Delta, due to sea level rise and insufficient rain triggered by Climate Change.

6. Climate Change Adaptation Master Plan (hereinafter referred to as "CCA MP")

CCA MP will be made by updating and supplementing the existing Master Plan (Integrated Water Resource Master Plan) drafted by the Vietnamese side by integrating Climate Change effects. From this, Climate change adaptation planning and choosing

priority projects to implement the plan will also be considered.

CCA MP shall be the basis of drafting development plans in rural and agricultural development sectors.

Some of the issues to be raised in the Project will be as follows:

- (1) Review of existing projects/action plans and mid to long-term(2020-2050) impact prediction of climate change
In the Project, reports made by Mekong River Commission, Ministry of Natural Resources and Environment, Ministry of Agricultural and Rural Development in Vietnam and other related organizations will be reviewed.
- (2) Utilization of existing climate change and hydrodynamic models
 - a Tidal level prediction
Tidal level prediction developed by SIWRP will be used.
 - b Upstream inflow to Mekong Delta
Upstream inflow estimated by SIWRP will be used.
 - c Change of rain fall and temperature
MONRE's data from their simulation will be used.
 - d Flood, drought and salinity intrusion
Models by SIWRP will be used.
- (3) Evaluation and proposing climate change adaptation options
 - a After evaluating the existing climate change and hydrodynamic models, climate change adaptation options will be suggested.
 - b Evaluation of climate change adaptation by hydrodynamic models
 - c In the project, structural and non-structural measures will be suggested
 - i) Structural measures
ex: dike, sluice, canal, water supply station, etc.,
 - ii) Non-structural measures
 - Protect and develop coastal mangrove forests, especially protected forests, to reduce and protect from the impacts of climate change effects.
 - Select cropping calendars, cropping patterns and crop diversification, which take the most likely climate change impacts into account.
 - Efficient use of water resources and exploitation of additional sources of water in dry season.
 - Enhancement of functions of farmers associations..

7. Pilot Project (In-depth Study)

In the Pilot Projects, the Project shall examine and verify the climate change adaptation options more in depth. The purpose of Pilot Projects is to suggest methods for concrete planning and design for CCA MP.

Planning for water resource management at the grass-roots level in various cropping (rice, fruit, shrimp, etc) areas to take measures against flood, drought, acid water and salinity intrusion, will also be conducted. The number of sites will be no

greater than 3 sites.

8. Priority Project Plans

Priority Project Plans will be selected among the projects that will be proposed in the CCA MP. After the selection of the Priority Project Plans, further study will be conducted.

ex: Among of proposal projects,

Priority projects shall carry out the following tasks:

- (1) Selection of priority areas and projects
- (2) Measurement of landscape or survey of structure base, if necessary
- (3) Designing
- (4) Formulation of operation and maintenance plans of the structures
- (5) Cost estimation and benefit analysis
- (6) Assessment of environmental impacts

9. Others

(1) Steering Committee


Steering Committee will be established together with the Japanese and Vietnamese sides to conduct smooth implementation of the Project. The members of the Steering Committee shall be decided before the Project commencement.

(2) Equipment List

SIWRP will submit the equipment list supported for implementation the Project upon consultations with JICA (Annex-2)

(3) Study tour

SIWRP will be able to request a study tour to Japan for learning advance technology for CCA.



Annex-2

Equipments Requested by SIWRP

No	Equipment	Amount
A	Office Equipment Support for Modeling team	
1	Desktop Computer	10
2	Laptop	5
3	Color Printer A4-A3	1
4	Color printer A0	1
B	Equipment support for Hydro-meteorology survey	
1	Flow meter	5
2	Acoustic Doppler Current Profiler (ADCP)	1
C	Equipment support for Topography survey	
1	Leveling Apparatus	1
2	Electronic Total Station	1
3	Handle GPS	5
D	Equipment support for Environmental Monitoring	
1	pH meter	2
2	Conductivity meter	2
3	Spectrophotometer	1
4	Gas chromatography	1
E	Transport	
	4 wheel car (7 seat)	1
	Total	

**MINUTES OF MEETING
ON
INCEPTION REPORT
ON
THE PROJECT FOR CLIMATE CHANGE ADAPTATION
FOR SUSTAINABLE AGRICULTURE AND RURAL
DEVELOPMENT
IN THE COASTAL MEKONG DELTA
IN
THE SOCIALIST REPUBLIC OF VIETNAM**

**AGREED UPON BETWEEN
SOUTHERN INSTITUTE FOR WATER RESOURCES PLANNING,
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
AND
JICA PROJECT TEAM,
JAPAN INTERNATIONAL COOPERATION AGENCY**

Ho Chi Minh, 11th August, 2011



Mr. Nguyen Ngoc Anh
Director,
Southern Institute for Water Resources Planning,
Ministry of Agriculture and Rural Development
(MARD)



Mr. Kosei HASHIGUCHI
Leader / Rural Development Planning
JICA Project Team,
Japan International Cooperation Agency
(JICA)

In response to an official request from the Government of Socialist Republic of Vietnam, Japan International Cooperation Agency (JICA) decided to conduct the Project for Climate Change Adaptation for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta in Vietnam (the Project), concluding in the Scope of Work (SW) signed on April 28, 2011 between the Detailed Planning Survey Team of JICA and the relevant Vietnamese authorities of Ministry of Agriculture and Rural Development (MARD).

Following the SW agreed upon between the both parties, JICA fielded a Project Team to Vietnam on August 1, 2011 for the implementation of the Project. The Project Team is headed by Mr. Kosei HASHIGUCHI of Sanyu Consultants Inc., and consists of eight members, of whom two members arrived in Ho Chi Minh on August 1, 2011. The Team submitted twenty (20) copies of English version Inception Report (ICR) and ten (10) copies of Vietnamese version ICR to the counterpart organization; Southern Institute for Water Resources Planning (SIWRP) on August 5, 2011.

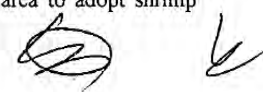
Following the ICR submission, the kick-off meeting was held on August 11, 2011 between the Team and SIWRP and other relevant organizations to discuss the contents of the Report. In the meeting, the Director of SIWRP made an opening speech and members of the meeting were introduced (refer to the attachment for the participants). The Team Leader explained outline of the Project, e.g. rationale, objectives, approaches and operation plan, etc., and both sides exchanged comments, opinions, and suggestions as summarized below:

- 1.1) **Relevant Master Plans:** A representative of Center for Economic Research commented that there have been numbers of studies and master plans on Mekong Delta Region; for example, a master plan has been formulated during the period from 1989 to 1993 by Netherlands government, socio economic development plan in the Mekong Delta Region during the period between 1998 and 2010, another Master Plan on socio economic development for year 2011 – 2020, then the latest master plan approved by the prime minister in 2009 for the area of Kien Giang, Ca Mau, An Giang, Hau Giang and Bac Lieu on economic development, other master plans for irrigation and transportation as well.
- 1.2) He continued that the area economic development progressed rapidly mainly based on rice, fish and shrimp production. On the other hand, irrigation and transportation development may threaten ecology and environment in the Mekong Delta. In lower parts of the Mekong Delta the river is of an open estuary. At the river mouth, rice has been intensively cultivated and it should now be upgraded, he continued. Water use of upstream country of Mekong Delta may also affect the water use of this region. Natural condition of Mekong Delta is suitable for agriculture and aquaculture: if there should be some impact on water resources there should also impact on economic development in the area.
- 1.3) He further mentioned that in the year 2000 Vietnam became a rice exporting country and the contribution came mostly from the Mekong Delta. As population grows in the coastal area of Mekong Delta, aquaculture production is rapidly increasing due mainly to the salinity intrusion taking place in there. There are however some areas severely affected by the saline water on rice cultivation. It is therefore very important to formulate a cropping pattern adaptable to this changing situation in the coastal area of Mekong Delta.
- 1.4) He concluded that he appreciates this project; this project focuses on 7 coastal provinces and the success of this project will contribute not only to coastal area but also to whole Mekong Delta. Regarding the seven coastal provinces, the Project should consider social issues as well as economic issues; he emphasized that strategies relating to economic development and environmental issues are important as the Mekong Delta is important for development of Vietnam country. He also indicated number of priority projects identified by the Vietnam



government, e.g., sea dike project connected to Vung Tau-Go Cong, two seaports each in Tra Vinh and Soc Trang and number of port projects in Kien Giang province. Aforementioned issues related to the Project should be examined by the Project, and his organization is ready to cooperate.

- 1.5) *The JICA Team Leader replied that since this is inception stage, he can hardly reply to all of questions but the Team will try to incorporate all the comments given to the Team through this study. He then acknowledged that there have been number of master plans formulated to date. There have been a lot of projects and programs proposed in those master plans but some of them must have not been implemented yet while some of them already been implemented. Some of the implemented project may have yielded good outcomes and some of them may not have. Therefore, the first step of this Master Plan formulation is to review all the relevant plans formulated, and projects and programs so far implemented. Then, those projects which have not yet been implemented have to be incorporated in the development framework of the Master Plan if deemed still necessary. Similar projects having created good results should be given higher priority and incorporated in the Master Plan as well.*
- 1.6) *The Leader replied about the case of seaport project as saying that it may be difficult to undertake seaport project in this Project. This is because the Project centers on and prioritizes agriculture and rural development in the coastal regions. However, the development framework is of comprehensive one so that the seaport project can show up in the framework as one of the long-listed projects.*
- 2.1) **New Version of Climate Change Scenarios:** A representative of Sub-institute of Hydrometeorology and Environment of South Vietnam commented that the objective and strategy of this Project are very important and schedule of two years seems to be suitable. The institute belongs to MONRE and the office prepared climate change scenarios in 2009 and updated them in 2011. Climate change scenarios and time frame mentioned in the ICR presentation are very important because they are the foundation of the planning.
- 2.2) He continued that it is appreciated if the Team employs updated scenarios and models of climate change in the Project. His institution developed new version of the climate change scenarios with international institutions, and then the results have been forwarded to the Headquarters for approval. There are in fact quite different opinions and models made by scientists and experts of not only Vietnamese organizations but also international organizations. With reference to views of scientist, the Project should look at different studies and models; not only approved ones but also other study results.
- 2.3) A representative of Institute of Agricultural Science commented that there are two important issues mentioned in the presentation; one is climate change scenarios which the Project is going to refer and review. There are a lot of scenarios and models created by different scientists and experts but some of them are based on huge areas including many countries. According to her institution's prediction, it is sometimes not suitable to use them for Mekong Delta region in Vietnam. It is recommended that review of scenarios shall be done not only by the Team but also by different scientists and experts.
- 2.4) She continued that the other one is to create a scenario in particular area by using exiting data; Scenario should focus on a smaller area and short time period, not long time period. Changes of rainfall and temperature are also important issues for agriculture since increase of temperature will affect crop production and thereby agriculture very much. Switching rice and shrimp cultivation can increase farmland fertility but it increases salt content in farmland, and it may be difficult to wash it out. In case of sea level rise, it is suitable for the area to adopt shrimp



cultivation.

- 2.5) *Responding to above comments on the simulation in the presentation, the Team Leader replied that it was based on the version one simulation carried out by MONRE. On 10th August 2011, the Team visited one of branch offices of MONRE Headquarters (HQs) in Hanoi and was given information on new version of climate change simulation with PRECIS model so called version two. The simulation results have already been forwarded to the MONRE HQs and will be approved and published in September. The Team will incorporate not only the version one result but also the version two simulation results in addition to other available simulation results. According to the information from MONRE, the PRECIS simulation provides more precise results e.g. by provincial level with time span of one decade, so that the Team believes that the simulation results could provide detail area specific and time specific prediction.*
- 2.6) *The Team Leader further added that since it is inception stage examples shown in the presentation are not yet concrete one. The Team is, for example, going to submit adjusted cropping pattern(s) with reference to the prediction of climate change. As for temperature and rainfall, it is one of important issues that, e.g., increase of temperature affects paddy yield to some extent. Many institutes have carried out simulation of temperature increase, tidal level increase, and so forth. Important thing for the Team is to know actual magnitude of the impact of, for example, rise in temperature versus paddy yield. The Team is going to conduct statistical analysis with reference to existing data in past years and try to find some correlation between actual paddy yield and temperature change. If a correlation between the temperature change and the paddy yield is found, it makes the Team to know future scenario of paddy yield according to the temperature rise, and the Team can estimate economic loss of paddy production as well. Based on this, the Team is also to recommend some changes or adjustment of the cropping patterns where possible.*
- 3.1) **Natural Adaptation:** A representative of Department for Agriculture and Rural Development (DARD) of Bac Lieu Province commented that sea level rise will affect severely the province so his organization pays much attention on this Project. He continued that the government has already invested in countermeasures against sea level rise, but some of them were not good opportunity for farmers so it resulted in waist of money. Taking into this account, methodology of this Project should identify suitable cropping patterns and also appropriate measures and solutions for coastal area to adapt climate change. The priority project shall not be much expensive but be suitable for Vietnamese context. The priority projects should also be the ones which can be easily maintained. On the tidal level increase, the speed is not so rapid, and rather it is slow and long process in environment. There could therefore be question about structural measures to separate sea water and fresh water.
- 3.2) *The Team Leader replied that the natural adaptation measures are very import and the Team is going to undertake both structural measures and non-structural measures. Natural adaptation may take longer time whereby people need lead time before the adjustment to the climate change. To give or afford some time to the people before the utilization of the natural measures, structural measures can be one of the options which can give people the lead time whereby the people can gradually adapt the natural measures.*
- 3.3) *The Team Leader continued that some of the projects shall deal with non-structural measures such as agriculture e.g. change of cropping patterns. Non-structural measures mainly come from agriculture, e.g., compost manure could reduce impact of saline water to some extent, and farmers may try on-farm pumping irrigation in their farm. On farm pumping can not only supplement irrigation water but also leach out salt from the farmland. The Project will review existing cropping patterns, and then with reference to the review of existing climate change*

simulation results, adjustment or change of cropping patterns will be proposed. Change of cropping patterns is to include introduction of shrimp aquaculture as well.

- 4.1) **Detail Methodology and Groundwater:** A representative of Southern Institute for Water Resources Research commented about ICR; objectives of the Project are clear but the methodology for implementation is not that level. He appreciates the approach to come up with the Master Plan and then to identify priority project for implementation, but the methodology should be elaborated some more. He continued that how climate change affect infrastructure and irrigation structure shall also be mentioned in detail. His organizations are undertaking the project on Ground water in Mekong Delta affected by Climate change and sea level rise and his organization is willing to cooperate with this Project in this matter..
- 4.2) *The Leader replied that since this is the inception stage such details may not be enough clear. However the Team will be able to show such details in the upcoming reports such as progress report No.1, No.2, and interim report. As the study goes on, such details will be elaborated in the reports. As for the groundwater, if one of the in-depth studies is to explore the groundwater issue, there should be collaboration between the Team and the Southern Institute for Water Resources Research in order to harmonize the survey results.*
- 5.1) **Integrated Approach and Stakeholder Participation:** A representative of Southern Sub-Institute for Forest Inventory & Planning commented that under climate change scenarios the coastal area is important because there is mangrove forest along the coast. Projects, funded by international organizations in Mekong Delta, each project is funded from two to six million for implementation. In addition, Ca Mau province has received a 13 million Euro for a project from GTZ to upgrade sea-dike and to expand mangrove forest with some small projects for coastal area protection, and a project relating to CDM.
- 5.2) He continued that he appreciates the methodology of the Project and framework approach in formulating the Master Plan. He received ICR and this meeting made him clear about methodology and approach to formulate the Master Plan. He further said that the Master Plan should refer to natural condition, socio-economic condition. These conditions should be elaborated in the project formulation. Further, he emphasized involvement of participants are very important from different cadres of stakeholders; farmers, different organizations, and so on. Farmer's opinions are of course very important and an integrated use of national resources is also important; use of saline water, use of fresh water, and so on. Then, integrated management is also important in terms of water use, land use, natural forest use, and others. The approach of the Project should therefore be integrated.
- 5.3) *The Team Leader replied on the stakeholder participation as apart from this ICR meeting, the Team is going to hold a participatory workshop to which the Team invites key stakeholders from each province relating to the Projects. Stakeholders, participants of the workshop, can give the Team their priority projects at provincial level, and then the Team is going to visit some villages and have a village level meeting asking the villagers how they have been affected by climate change. The Team is thus going to conduct stepwise stakeholder workshop whereby opinions from different level's participants will be incorporated in the Master Plan. For the prioritization, the Team is going to establish its own prioritization first, and then ideas of prioritization of the government officers and farmers will be incorporated and synchronized with the ones by the Team. One of the ideas for the prioritization may be to give higher priority to the projects which can cope with an impact by climate change taking place in larger area with rapid timeframe.*
- 6.1) **Aquaculture:** A representative of Sub-Institute of Aquaculture Planning for South Vietnam

commented that this Project will have some solutions such as irrigation structures and some agriculture measures, i.e. rice production measures. These measures and infrastructures may affect aquaculture. Irrigation system in Mekong Delta is mainly served for agriculture, and therefore this Project should keep a balance between aquaculture development and agriculture development. In some aquaculture, suitable salinity is not only from sea water but also from fresh water. The structure measures should therefore be multi-functional for this purpose. In addition, pollution from aquaculture is now a serious problem in Mekong Delta. It will be one of the issues in the Project to have good water quality suitable for aquaculture.

- 6.2) *The Team Leader responded on the above comment by suggesting paddy – shrimp cultivation switching, which may be one of candidate in-depth studies. Farmers may prefer shrimp cultivation to crop cultivation from economic viewpoint, but continuous mono-culture of shrimp may have some risks of diseases and pollution due to chemical use and excessive feed residue. To reduce such risks, some farmers may introduce paddy cultivation during rainy season and shrimp culture in dry season. The farmers who prefer such switch cultivation may have a guideline; how they can practice switching cultivation and how difficult to do it. The Team is to explore such practice and may incorporate it in the Master Plan in order to, as an example, keep a balance between aquaculture and agriculture development. In addition, if there is such case where a paddy cultivation farmer and a shrimp cultivation farmer are located side by side, water control tool such as sluice gate should be introduced to avoid risks each other.*

Deputy Director of Southern Institute for Water Resources Planning remarked on this meeting and concluded that Vietnamese side has agreed with the main content of this ICR and cooperates in this Project. He also emphasized that the most importance is a good cooperation among the Japanese study team and line agencies, especially 7 provinces in coastal area of MKD, and it would be contribute to the success of this project. He expected that this project will help to enhance the technical skill for Vietnamese counterpart and bring the advanced technology and lesson learnt from Japan to apply for the MKD. He further thanked all the participants of the meeting to share time, exchange opinions, and have good discussions.



Participants to the Inception Report Presentation Meeting, 11th August, 2011**Southern Institute for Water Resources Planning**

Mr. Nguyen Ngoc Anh	Director
Mr. Nguyen Xuan Hien	Deputy Director
Mr. Luong Quang Xo	Deputy Director
Mr. Nguyen Huu Tan	Head of Technical and International Cooperation Division
Mr. Pham Anh Tuan	Head of Planning & General Affairs Division
Mr. Pham Xuan Phuong	Head of Mekong Delta Planning Division
Mr. Pham Van Manh	Head of Topographic and Geology Division
Mr. Nguyen Dinh Tien	Head of Hydrologic & Water Resources Division
Mr. Nguyen Xuan Phong	Head of Division for Dong Nai Basin Planning
Mr. Nguyen Tri Phuc	Head of Human Resources & Administrative Division
Mr. Nguyen Tran Huy Tuan	Head of Financial & Accounting Division
Mr. Dang Thanh Lam	Director of WR Consultant Centre
Mr. Pham Gia Hien	Director of WQE Centre
Mr. Tran Minh Khoi	Deputy Director of WQE Centre
Mr. Nguyen Huy Khoi	Deputy Head of Technical and International Cooperation Division
Mr. Tran Duc Vinh	Deputy Head of MD Planning Division
Mr. Nguyen Tat Dat	Deputy Head of Planning & General Affairs Division
Mr. Nghiem Dinh Thanh	Deputy Head of MD Planning Division
Mr. Tran Hau Vi	Deputy Director of WR Consultant Centre
Ms. Dao Thu Ha	Deputy Director of WQE Centre
Mr. Nguyen Nam Thang	Staff of CC-DM Centre

Other Organizations/Institutes

Mr. To Quang Toan	Deputy Head of T&TCD, Southern Institute for Water Resources Research
Mr. Le Xuan Bao	Deputy Director, Water Resources University-2nd Base
Ms. Phan Thi Cong	Deputy Head, Dept. of Soil Sci., Inst. of Agri. Sci. for Southern Vietnam (SV)
Mr. Bui Tran Vuong	Deputy Head, Division for Water Resources Planning & Investigation for SV
Mr. Nguyen Ngoc Bich	Deputy Head of Planning Dept, Sub-National Inst. of Agri. Planning & Projection
Mr. Tran Minh Lam	Deputy head of TK-BD, Sub-Institute of Aquaculture Planning for SV
Mr. Pham Trong Thinh	Director, Southern Sub-Institute for Forest Inventory & Planning
Mr. Bao Thanh	Deputy Director, Sub-Institute of Hydrometeorology and Environment of SV
Mr. Tran Sinh	Director, South Vietnam Economic Studies Centre
Ms. Nguyen Trinh Nhat Hang	Head, Cropping Technology, Southern Fruit Research Institute
Mr. Tran Hoang Ba	Deputy Director, Dept. for Agri. and Rural Development, Tien Giang Province
Mr. Tran Hoang Nhat Nam	Department for Agriculture and Rural Development, Tien Giang Province
Mr. Huynh Phuoc Hai	Deputy Head, Water Resources Department, Tien Giang Province
Mr. Nguyen Van Truong	Head, Department for Flood Control and Water Resources, Tra Vinh Province

Mr. Luong Ngoc Lan	Head, Department for Agriculture and Rural Development, Bac Lieu Province
Mr. Le Dong Duong	Head, Aquaculture Department, Bac Lieu Province
Mr. Truong Van Phuong	Deputy Head, Water Resources Department, Bac Lieu Province
Mr. Nguyen Long Hoai	Head, Water Resources Department, Ca Mau Province
Mr. Cao Van Nam	Head, Water Resources Department, Kien Giang Province
Mr. Nguyen Tan Phuong	Technical Staff of Water Resources Department, Kien Giang Province
Mr. Nguyen Thanh Nhanh	Soc Trang Province
Mr. Tran Huu Hiep	Head of Economic and Social Department, South-Western Steering
Mr. Le Quoc Tuan	Dean, Faculty of Environment and Resources, Nong Lam University
Mr. Nguyen Kim Loi	Director, RCCC-NLU, Nong Lam University

JICA Liaison Office in HCHM

Mr. Vo Ngoc Hieu	Senior Assistant
------------------	------------------

JICA Study Team

Mr. Kosei Hashiguchi	Team Leader / Rural Development Planning
Dr. Motoyohsi Hikasa	Co-leader / Irrigation & Drainage / Rural Infrastructure
Ms. Miki Takahashi	Secretary / Agriculture (Paddy Cultivation)



**MINUTES OF MEETING
ON
PROGRESS REPORT NO.1
ON
THE PROJECT FOR CLIMATE CHANGE ADAPTATION
FOR SUSTAINABLE AGRICULTURE AND RURAL
DEVELOPMENT
IN THE COASTAL MEKONG DELTA
IN
THE SOCIALIST REPUBLIC OF VIETNAM**

**AGREED UPON BETWEEN
SOUTHERN INSTITUTE FOR WATER RESOURCES PLANNING,
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
AND
JICA PROJECT TEAM,
JAPAN INTERNATIONAL COOPERATION AGENCY**

Ho Chi Minh, 13th December, 2011



Mr. Nguyen Ngoc Anh, *AN*
Director,
Southern Institute for Water Resources Planning,
Ministry of Agriculture and Rural Development
(MARD)

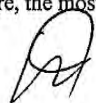
K. H. Hashiguchi
Mr. Kosei HASHIGUCHI
Leader / Rural Development Planning
JICA Project Team,
Japan International Cooperation Agency
(JICA)

In response to an official request from the Government of Socialist Republic of Vietnam, Japan International Cooperation Agency (JICA) decided to conduct the Project for Climate Change Adaptation for Sustainable Agriculture and Rural Development in the Coastal Mekong Delta in Vietnam (the Project), concluding in the Scope of Work (SW) signed on April 28, 2011 between the relevant Vietnamese authorities of Ministry of Agriculture and Rural Development (MARD) and the Detailed Planning Survey Team of JICA.

Following the SW agreed upon between the both parties, JICA fielded a Project Team to Vietnam in August 2011 for the implementation of the Project. The Project Team is headed by Mr. Kosci HASHIGUCHI of Sanyu Consultants Inc., and consists of eight members, of whom two members arrived in Ho Chi Minh on August 1, 2011. The Team submitted Inception Report (ICR), and the kick-off meeting was held on August 11, 2011 between the Team and SIWRP and other relevant organizations to discuss the contents of the Report.

Following the kick-off meeting, the Team has carried out collection of data and information, a series of field surveys, preparation for vulnerability assessment, household survey, and workshops at both province and village level. Through these studies, the Team has prepared the Progress Report 1, and the meeting was held on December 13, 2011 to discuss the contents of the Report. In the meeting, the Deputy Director of SIWRP made an opening speech and members of the meeting were introduced (refer to the attachment for the participants). The Team Leader explained the status of the project area, priority issues in climate change, Master Plan Framework, pre-identification of priority projects, and following activities, etc., and both sides exchanged comments, opinions, and suggestions as summarized below:

- 1.1) A representative of Southern Institute for Water Resources Planning commented that we agree "Saline Intrusion" as the first priority issue; however, "Sea Level Rise" should be given the second priority instead of "Drought". That is because the study area is on the coastal regions. He also mentioned that the project of tidal sluice gate construction is categorized mid priority in the example of project design matrix, but this project is placed in the category of top priority projects with reference to the development framework.
- 1.2) *The JICA Team Leader answered that the priorities are based on the result of workshops with governmental officers and villagers. Governmental officers actually mentioned "Sea Level Rise" as one of top priority issues, while villagers did not mention about the "Sea Level Rise". This is probably because majority of people are not living in the coastal area. Villagers listed up priority issues "Drought" and "Saline Intrusion" instead of Sea Level Rise. Thus, this result of workshops takes into account of priority issues in the development framework. He also mentioned that the development framework is still in a draft form. It means that if there is necessity of change, it can be changed. In fact, one of the advantages of the framework is the flexibility to be changed without much difficulty dependent on the situation. If the central government and other relevant organizations think that it should be changed, it can be changed based on the discussion and agreement. He also explained that Project design matrix is just an example whereby if there is discrepancy between the example of the project design matrix and the framework, the latter should be referred.*
- 1.3) A representative of Institute for Water and Environment Research commented that it is good to formulate the projects based on the workshops; however, the Team must identify the aspect which has the strongest influence of climate change. For example, data of salinity level looks not much fluctuated. This is because some effects will not be caused by climate change, but by human activities. Therefore, the most important influence of climate change should be identified



through studies in the future.

- 1.4) *The Team Leader replied that the vulnerability assessment can identify which aspect is affected or caused by climate change the most. Taking saline intrusion and/or flood for instance, the most vulnerable area, which is the areas showing the highest salinity level and/or deepest flood level, can be identified by the assessment.*
- 1.5) *The Team Leader also told that as pointed out, salinity level may not be so fluctuated. It is because that this shows only a short period of data, but the monitoring still continues. Our basic idea is "no regret investment" which means we should not invest huge amount at one time at a place. Although sea water intrusion may not be serious problem at this moment, monitoring should keep going and we can suggest investment project based on such monitoring data. An example is that sluice gate should be placed one by one moving upstream according to the monitoring results of the salinity level, and should not be built at once.*
- 1.6) A representative of Institute for Water and Environment Research also pointed out that non-structural measures are few, and it may only focus on cropping adjustment. Probably, there are some other measures such as insurance, although implantation of insurance programme may be difficult to work in connection with climate change since damages/losses take place in a slow time, different from disaster situation.
- 1.7) *The Team Leader answered that there are non-structural measures in the development framework abbreviated as 'NS'. As for the insurance programme, the Team will refer to examples in other countries. Also, he mentioned that the Team will be able to collaborate with research centers to incorporate other ideas especially related to aquaculture sector.*
- 1.8) A representative of Southern Institute for Water Resources Planning suggested that name of the project in Tra Vinh Province should be reconsidered. This is because it does not represent of the project objective. In addition, he recommended that hydraulic simulation should be done to check the ability of water intake and the operation of sluice gates in order to make the project more effective. He also added that Introduction of new varieties of paddy or crops which adapt to saline soil, acid soil and under inundation condition. He mentioned that Japan may have good experience of introduction of new varieties because Japan has cutting edge biotechnology.
- 1.9) A representative of Institute for Water and Environment Research questioned that there are any benefits of climate change.
- 1.10) *The Team Leader replied that one of the benefits is to introduce shrimp farming in conjunction with saline intrusion. In particular, combination of paddy and shrimp cultivation seems to be sustainable. There are lots of examples that shrimp culture ended in environmental devastation e.g. Taiwan, Thailand, Indonesia, etc. However, looking into the current practice of shrimp culture in the coastal areas of Mekong Delta, most of the culture has been sustainably carried out though there are some cases wherein the culture should have been ceased for, say, 1-2 years due to some virus related diseases. And, even in those cases, the culture resumed after 2-3 years, and especially paddy-shrimp rotation culture has a high ability in terms of sustainability.*
- 1.11) A representative of Research Institute for Aquaculture No.2 mentioned that shrimp farming is very profitable, but at the same time, it is very risky. We should start to think about other kind of brackish aquaculture. He also pointed out that there are no socio-economic projects, and proposed projects look somewhat general. In addition, we need to know the direction; first, we should know the general direction of the policy, for example, we have to decide whether we need to protect the land from saline water or we just let them intrude.



- 1.12) *The Team Leader answered that projects/programmes will be elaborated through series of discussions in a form called simplified project design matrix. The Team will consider diversification of brackish aquaculture through cooperated activities with research institutes. The Team Leader also replied that as pointed out, the project list may be of general, but this is very basic project list and still draft so we can sophisticate the project list in the future taking into account what the participants in the meeting has suggested.*
- 1.13) A representative of Institute for Water and Environment Research asked that how the Team can incorporate capacity development into the vulnerability assessment. New approach of vulnerability assessment is to consider not only damage and losses, but also the aspects of capacity development.
- 1.14) *The Team Leader answered that our vulnerability assessment is basically to focus on damage and losses. The Team would take a conventional way of vulnerability assessment. However, the Team Leader mentioned that the Team will think about capacity development in the process of vulnerability assessment as much as possible. The detail will be considered in the following activities.*
- 1.15) A representative of Research Institute for Aquaculture No.2 introduced a workshop to be held in January 2012 in Can Tho University. The subject is climate change effect on aquaculture. The workshop will be held on 6th of January, 2012.
- 1.16) *The Team Leader expressed the appreciation of the notice. He replied that one of our members will attend the workshop upon invitation, and he requested the SIWRP to arrange the invitation for the team with the detail information of the workshop.*
- 1.17) A representative of Southern Institute for Water Resources Research commented that the approach of this project is qualified and the Team will be able to finalize priority issues and measures to cope with climate change. He also added that projects listed in the development framework are suitable in accordance with the provincial condition. However, he added that we should consider carefully how to implement these projects. He continued that the SIWRP has been studying for four years in Bac Lieu Province, and he also has the idea of project in Tiep Nhat (Soc Trang Province). Therefore, the team and the SIWRP will be able to share the detailed information later.
- 1.18) *The Team Leader replied that the Team will consider the above comments in the following activities by corresponding with the SIWRR.*
- 1.19) A representative of Institute of Coastal and Offshore Engineering commented that the main objectives of the Master Plan should be introduced at the beginning. Also, he added that there are environmental pollutions in the Mekong Delta. We should consider the issues when we study the coastal Mekong Delta. He continued that for seashore improvement and protection project, protection of sea dyke is just one part of the project, so that we should also consider mangrove reforestation. In addition, it is very sensitive about the project in Ca Mau. This is because I wonder fresh water will be available from Mekong River. Finally, he remarked that it will be good if there is a combination of sea dykes and roads.
- 1.20) *Regarding environmental pollution, the Team Leader explained that health problem was identified in the five villages out of six villages where workshop was held. One of the reasons of this is using large amount of chemical fertilizers and chemicals in paddy agriculture. In fact, farmers in Mekong Delta use chemical fertilizer much higher than farmers in other countries such as Philippines and Thailand. From this point of view, we suggested "Low Input Agricultural Promotion" project to deal with such health problems mentioned in the village*



workshops. In addition, there is an idea that promoting rotation of paddy and shrimp culture because under the combination of shrimp-paddy farming, the farmers cannot use chemicals for paddy contributing to environmentally friendly agriculture.

- 1.21) A representative of Southern Institute for Water Resources Planning mentioned that saline area can cultivate only 2 paddy crops in rainy season. It will be better if we can find out none-structural measure to help people cultivate 3 paddy crops or 2 paddy crops and 1 upland crop. Also, we should consider that shrimp cultivation has a lot of risks, and also farmers face unstable market price.
- 1.22) A representative of Institute for Water and Environment Research commented that environmental degradation should come up in the development framework. For none-structural measures, he mentioned that it is not clearly stated about the roles of none-structural measures. It should be divided into adaptation area based on area features. On the other hand, the Team focuses on how to deal with the problems, but we should also consider about advantages in the area.
- 1.23) *The Team Leader replied that the Team will explore the advantages and incorporate them into the Master Plan. At this moment, the Team thinks shrimp culture introduction could be the most advantage in adapting to the climate change, especially saline intrusion.*
- 1.24) A participant commented that we should consider the schedule of the Master Plan. He asked if the schedule of the Master Plan is suitable for Mekong Delta development. He also expressed consideration with the proposed project in Tra Vinh Province. If hydraulic works in this province are uncompleted, salinity intrusion will take place in a big river named Mang Thit; therefore, he gave the concern to the effectiveness of the priority project in Tra Vinh.
- 1.25) The deputy Director of Southern Institute for Water Resources Planning commented that causes and effects should be considered carefully in the Climate Change Adaptation Framework. For example, climate change and sea level rise will cause saline intrusion, drought and inundation, etc. He also suggested that “urgent” and “not conflict with the future development” should also be included in the selection criteria of the priority projects.
- 1.26) He also added comments on the project in the development framework. He considered effectiveness of the project in Tra Vinh because the canal extension towards upstream area, i.e. into Vinh Long Province can not convey fresh water to Tra Vinh. For the project in Bac Lieu Province, he asked the Team to reconsider the project purpose because the purpose in this area should be to transfer fresh water to the shrimp cultivation area. Such project has been studied by Dr. Tang Duc Thang from Southern Institute for Water Resources Research, but it is not yet concretely decided because there are many different views. Also, he gave a concern on the feasibility of the project in Ca Mau so that it needs to be considered in the following activities.
- 1.27) He mentioned that we should reconsider the priority issues in the development framework. This is because priority issues are at moment on the records of provincial and village workshops. He also commented that the upstream dams are mainly for generating electricity and thereby increasing water flow during dry season; however, water flow in the dry season may increase only in the years when there were high floods in the rainy season. In normal flood year and dry year, they will prioritize for electricity, whereby the flow is expected to decrease.
- 1.28) He mentioned that for the sustainable development of the coastal Mekong delta, a great important content should be considered in the project is ecology system such as mangrove forest, fresh water eco-system in U Minh Thuong and U Minh Ha conservation areas.

1.29) He also expected that this project will bring the advanced technology and lessons learn from Japan to apply for the Mekong delta.

1.30) *The Team Leader replied that the Team will consider the above comments in the following activities.*

Deputy Director of Southern Institute for Water Resources Planning remarked on this meeting, and thanked all the participants of the meeting to share time, exchange opinions, and have good discussions.



Participants to the Progress Report Presentation Meeting, 13rd December, 2011**Southern Institute for Water Resources Planning**

Mr. Nguyen Xuan Hien	Deputy Director
Mr. Nguyen Huu Tan	Head of Technical and International Cooperation Division
Mr. Phan Nghiem Dinh Thanh	Head of Mekong Delta Planning Division
Mr. Pham Anh Tuan	Head of Planning Division
Mr. Nguyen Dinh Tien	Head of Hydrologic & Water Resources Division
Ms. Nguyen Thu Ha	Technical and International Cooperation Division
Mr. Le Viet Minh	Mekong Delta Planning Division
Ms. Dang Thi Thuy Hang	Climate Change and Disaster Responses Centre

Other Organizations/Institutes

Mr. Tang Duc Thang	Director of Southern Institute for Water Resources Research
Mr. Nguyen van Trong	Deputy Director, Research Institute for Aquaculture No.2
Mr. Le Xuan Bao	Deputy Director, Institute for Water and Environmental Research
Mr. Pham Ngoc	Institute for Water and Environmental Research
Mr. Pham Trong Thinh	Director Sub-FIPI, Southern Sub-Institute for Forest Inventory and Planning
Mr. Hoang Van Huan	Director of Institute for Coastal and Offshore Engineering

JICA Liaison Office in HCM

Ms. Phan Thi Thanh Truc	Senior Assistant
-------------------------	------------------

JICA Study Team

Mr. Kosei Hashiguchi	Team Leader / Rural Development Planning
Dr. Motoyohsi Hikasa	Co-leader / Irrigation & Drainage / Rural Infrastructure
Mr. Kota Hirayama	Agricultural Society and Economy/ Project Evaluation

