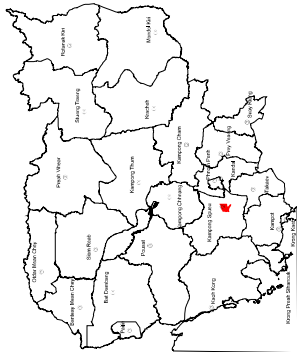
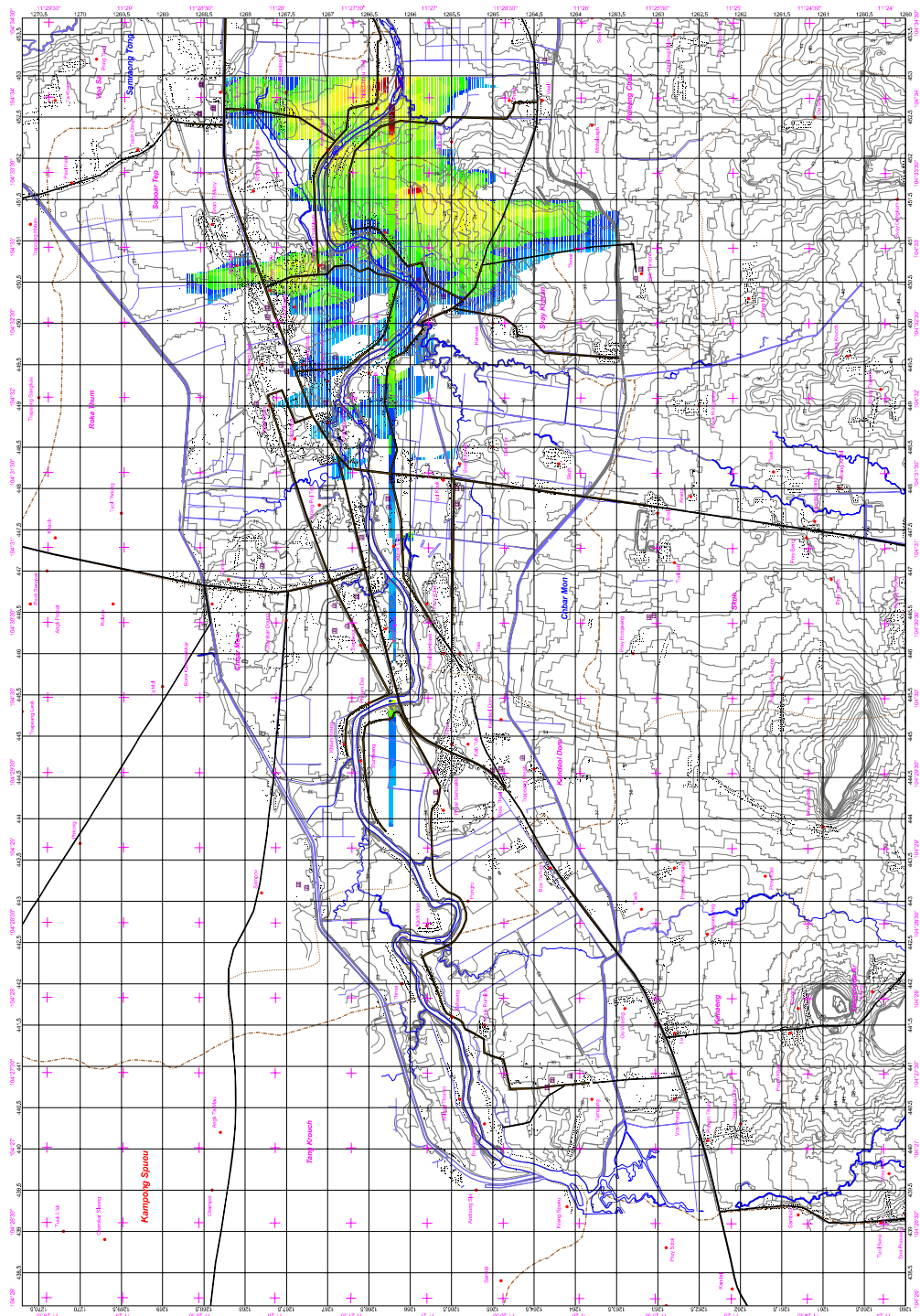


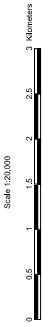
Attachment-2
Flood Hazard Maps

HAZARD MAP FOR 2 - YEAR RETURN PERIOD FOR THE TARGET AREA OF THE PREK THNOT RIVER BASIN



LEGEND

- POSSIBLE EVACUATION FACILITY**
 - Possible evacuation centers
 - Possible evacuation routes
- CONTOUR LINE**
 - Contour lines
- WATER COURSES**
 - Canal
 - Rivers
- ADMINISTRATIVE BOUNDARY**
 - Village
 - Commune boundary
 - District boundary
 - Provincial boundary
- ROAD**
 - Asphalt pavement Two Lanes Road
 - Asphalt pavement One Lane Road
 - Latex pavement Two Lanes Road
 - Latex pavement One Lane Road
 - Proposed Road in Dry Season
- ANNOTATION**
 - Village Name
 - Commune Name
 - District Name
 - Provincial Name
- LAND COVER**
 - Buildings
- FLOOD DEPTH (0.5 m interval)**
 - 7.0-7
 - 6.5-6.5
 - 6-5.5
 - 5.5-5
 - 5-4.5
 - 4.5-4
 - 4-3.5
 - 3.5-3
 - 3-2.5
 - 2.5-2
 - 2-1.5
 - 1.5-1
 - 1-0.5
 - 0.5-0
 - Not inundated
- COORDINATE SYSTEM**
 - Projection: UTM
 - Horizontal datum: Indian 1960
 - Vertical datum: Everest
 - Scale: 1:20,000
 - Units: Meter
 - Contouring: - analyzed by jICA study team
- DATA SOURCES**
 - Topographic map
 - Administrative and study boundary
 - Contour line
 - Horizontal Area
 - Provincial boundary
 - Possible evacuation routes & roads
 - analyzed by jICA study team



Date: 07 Dec 2007

HAZARD MAP FOR 10 - YEAR RETURN PERIOD FOR THE TARGET AREA OF THE PREK THNOT RIVER BASIN

LEGEND

POSSIBLE EVACUATION FACILITIES
 Possible evacuation centers
 Possible evacuation routes

CONTOUR LINE
 Contour line

WATER COURSES
 Canal
 River

ADMINISTRATIVE BOUNDARY
 Village
 Commune boundary
 District boundary
 Provincial boundary

ROAD
 Asphalt pavement Two Lanes Road
 Asphalt pavement One Lane Road
 Latex pavement Two Lanes Road
 Latex pavement One Lane Road
 Proprietary Road or Dry Season

ANNOTATION
 Village Name
 Commune Name
 District Name
 Provincial Name
 Kampong Spnuu

LAND COVER
 Buildings

FLOOD DEPTH (0.5 m interval)
 7.66-7
 6.6-6.5
 5.6-5.5
 4.6-4.5
 3.6-3.5
 2.6-2.5
 1.6-1.5
 0.6-0.5
 0.1-0.2
 Not inundated

DATA SOURCES
 Survey data for JICA study team
 Administrative and study boundary
 Contour line
 Hydrological data
 Historical maps
 Possible evacuation centers & roads
 - analyzed by JICA study team

COORDINATE SYSTEM
 UTM
 Projection datum: Indian 1960
 Spheroid: Everest
 Spheroid datum: Everest
 Grid Unit: Meter
 Contouring: JICA study team

JICA Study Team for the Study on Comprehensive Agricultural Development of the Prek Thnot River Basin

Scale: 1:20,000
 Date: 07 Dec 2007

VAT2-3

Attachment-3
Record of Workshops
(Environment)

Attachment-3: Record OF Workshops (Environment)

First Workshop on Introduction of “EIA”

1. Outline of Workshop

Date: February 6, 2006

Time: 9:00- 12:00

Venue: International Cooperation Office, MOWRAM

Materials: Questionnaire for self-assessment, Explanation paper of EIA,
Sub-decree on Environmental Impact Assessment Process (1999)

Time	Contents
9:00-9:30	Introduction
9:30-10:30	What is “EIA”?
10:30-11:00	EIA procedure in Cambodia
11:00-12:00	Discussion on Master Plan of environment

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- Two participants have not experience neither environmental study nor EIA related activities including preparation of TOR, supervision, review and monitoring so far. They have not inspected any EIA document.
- EIA Office of MAFF was provided several trainings including the 6-week training of trainers about EIA under the project of ADB. However she expressed insufficient of practical experience and skill to carry out EIA study as executing agency.
- Participants understood concept of EIA and EIA procedure in Cambodia through the workshop. However, it seems difficult for them to consider how to proceed EIA study as executing agency realistically when new development project will be planned.
- As for consideration of Master Plan on environment, it was suggested that practical training on EIA should be provided as a first step so as to understand concrete procedure of the EIA study.

Second Workshop on IEE

1. Outline of Workshop

Date: February 9, 2006

Time: 9:00- 12:00

Venue: International Cooperation Office, MOWRAM

Materials: draft Master Plan,

Time	Contents
9:00-9:30	Explanation of draft Master Plan (by JICA Study Team)
9:30-10:00	Discussion on screening of the Master Plan
10:00-11:00	Practice of IEE for the selected projects
11:00-11:30	Results of IEE (presented by counterpart)
11:30-12:00	Conclusion

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- As a screening process of various projects in the draft Master Plan, participants found that Lower South Main Canal Irrigated Agricultural Improvement Project requires EIA study under the sub-decree on EIA process in Cambodia, while others don't require.
- As a practice of initial environmental examination (IEE), Lower South Main Canal Irrigated Agricultural Improvement Project and Community Inland Fisheries Development Project were selected. Participants conducted IEE toward two selected projects and considered environmental mitigation measures on trial.
- Each participant presented its results and discussed among them.

Third Workshop of Field Survey

1. Outline of Workshop

Date: January 26, 2007

Time: 7:00- 12:00

Venue: Field of Feasibility Study Area

Materials: Practice sheet of field survey result,
Location map of Feasibility Study Project,
Construction methods of intake gate and regulator
Monitoring and Evaluation Sheet (Questionnaire)

Time	Contents
7:00	Departure (MOWRAM) Explanation of Feasibility Study Projects (including construction method)
8:30-9:30	Roleng Chrey Regulator
9:30-10:30	North Main Canal (Andong Sla Intake Gate)
10:30-11:30	South Main Canal (Vat Krouch Intake Gate)
11:30-12:00	Conclusion

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- Participants visited three sites of the Feasibility Study Project and observed current condition of each site. They also discussed with the gate operator.
- Concrete construction process of each of gate and regulator were explained by the JICA Study Team so as to consider environmental impact during the construction phase.
- Participants wrote up findings from the field survey and summarized anticipated negative impacts and its mitigation measures.
- It was suggested that more detailed explanation of the project contents would be helpful.
- Participants answered satisfaction of the workshop contents in monitoring and evaluation sheet. They expressed that it was good time to watch the real site of the project area so that they can consider environmental impact easily.

Fourth Workshop on Review of IEE (F/S)

1. Outline of Workshop

Date: February 5, 2007

Time: 8:00- 11:30

Venue: EIA Office, MAFF

Materials: Practice sheet of Summarization of Initial Environmental Examination,
Monitoring and Evaluation Sheet (Questionnaire)

Time	Contents
8:00-8:15	Report of Public Consultation Meeting on Feb 1, 2007 (Report by JICA Study Team)
8:15-8:30	Brief Explanation of Feasibility Study (by JICA Study Team)
8:30-9:00	Discussion on result of data collection by field survey
9:00-11:00	Practice of environmental/social impact by F/S and mitigation/ monitoring measure Presentation of the results (by counterpart)
11:00-11:30	Conclusion and next schedule (by JICA Study Team)

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- The JICA Study Team reported the results of public consultation meeting held on February 1, 2007. It was reported that around 60 relevant persons attended the meeting and the JICA Study Team explained development plans of two projects including environment. It was also explained that the importance of information disclosure to the relevant people of the project during planning phase.
- Participants presented the result of field survey conducted on January 26, 2007.
- Participants summarized environmental and social impact by two of Feasibility Study Projects and mitigation measures.
- Participants answered satisfaction of the workshop contents in monitoring and evaluation sheet.

Fifth Workshop on Preparation of TOR

1. Outline of Workshop

Date: February 13, 2007

Time: 9:00- 12:00

Venue: EIA Office, MAFF

Materials: Draft TOR of EIA study for Irrigated Agriculture Improvement model Project,
Draft Progress Report (2) (environment section)
Monitoring and Evaluation Sheet (Questionnaire)

Time	Contents
9:00-9:30	Summary of results of IEE toward F/S Projects
9:30-10:30	What is "terms of reference (TOR)" Preparation of TOR (Explanation by JICA Study Team)
10:30-11:30	Step of preparation of TOR (practice)
11:30-12:00	Summary

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- The JICA Study Team explained terms of reference for environmental impact assessment study (objective, contents, responsibility, etc)
- Participants answered the most part of i) framework of EIA, ii) scoping, iii) impact analysis, and iv) mitigation measures through the fifth times of workshop in monitoring and evaluation sheet. Participants also answered satisfaction of the fifth times of workshop contents and materials as a whole in monitoring and evaluation sheet.
- It was suggested that it would be helpful to acquire knowledge of environmental management and monitoring plan.

Sixth Workshop on Suggestion

1. Outline of Workshop

Date: July 16, 2007

Time: 9:30- 11:30

Venue: EIA Office, MAFF

Materials: Draft Progress Report (3) (environment section)

Time	Contents
9:30-11:00	Noteworthy items of environmental consideration at planning and construction phase of water resource development project
11:00-11:30	Evaluation of the activities under the Study

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office

3. Results

- Noteworthy items of environmental consideration at planning and construction phase of water resource development project were explained based on the progress report (3) and the participants basically understood those items.
- Counterpart from MAFF mentioned that
-

Three-day Workshop on Environmental Management and Monitoring

Day 1

1. Outline of Workshop

Date: July 4, 2007

Time: 8:30- 12:00

Venue: PDOWRAM of Kampong Spue Province

Materials: Workshop schedule, Questionnaire (assessment),
Handout for “Environmental Management Plan”

Time	Contents
8:30-8:45	Introduction, Self-introduction (all participants)
8:45-8:55	Explanation of the overview of the workshop, objectives, goal, schedule
8:55-9:10	Questionnaire
9:10-10:15	Overview of the environmental management and monitoring -- Break --
1030:-12:00	Clarification of items to be managed and monitored - Negative impacts and its mitigation measures in case of water resource development

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office
PDOWRAM	Mr. Nop Prin, Water Supply and Sanitation Office Mr.Chea Sochan, Administrative Office Mr. Mon Sithar, Meteorology and Hydrology Office Mr. Choun Bunthoeun, Administrative Office Mr. Ouch Sarum, Administrative Office Mr. Ouch Neak, Administrative Office Mr. Seng Thol, Irrigation Office Mr. Prum Thoeun, Irrigation Office Mr. Mey Nou, Roleng Chrey Gate Operator
PDA	Ms. Chea Dany, Agronomy Office Mr. Ping Tith, Agronomy Office Mr. Choek Sim,

Total: 14 people

3. Results

About Participants;

- Almost all participants except the counterpart from MAFF and one staff of PDA have had no experience to engage in any environmental work so far. One staff of PDA has engaged in integrated pest management project for four years.
- In addition that, most participants have had little knowledge about “environmental management and monitoring” and “EIA”. Some participants have never heard the term.
- Almost all participants answered that they are interested in the activities of environmental management and monitoring.

- PDA staffs answered that they had experiences to face the problems of diseases and insects infestation and they tried to use chemical and natural pesticide for handling.

Workshop with discussion;

- Participants actively had a listen to the facilitator's explanation in whole.
- Participants actively discussed about negative impacts and its mitigation measures related to water resource development project by dividing physical environment, ecological environment and social environment. (Classification of the environment follows Sub-decree on Environmental Impact Assessment in Cambodia.)

Day 2

1. Outline of Workshop

Date: July 6, 2007

Time: 8:30- 14:30

Venue: PDOWRAM of Kampong Spue Province

Materials: Handout for water quality monitoring,
Map of Prek Thnot River basin (with general information)

Time	Contents
8:30-8:40	Introduction of the day
8:40-10:30	Study on monitoring of water quality -- Break --
10:45-12:00	Study on watershed management -- Lunch --
13:15-14:30	Field study on water sampling/ water quality checking

2. Participation

Organization	Name
MOWRAM	Mr. Tith Bone, Vice Chief of International Cooperation Office
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office
PDOWRAM	Mr. Nop Prin, Water Supply and Sanitation Office Mr. Chea Sochan, Administrative Office Mr. Mon Sithar, Meteorology and Hydrology Office Mr. Choun Bunthoeun, Administrative Office Mr. Ouch Sarum, Administrative Office Mr. Ouch Neak, Administrative Office Mr. Seng Thol, Irrigation Office Mr. Prum Thoeun, Irrigation Office Mr. Mey Nou, Roleng Chrey Gate Operator
PDA	Ms. Chea Dany, Agronomy Office Mr. Choek Sim,

Total: 13 people

3. Results

- At the study on monitoring of water quality, participants actively asked questions which

included i) solution method when water pollution was identified especially regarding drinking water from well and canals, ii) negative impact of polluted water toward human body, iii) simple method to check the water quality without any equipments.

- At the study on watershed management, participants realized that all stakeholders which were not only agriculture-related but also forestry, residential people and industry-related should participated in watershed management approach.
- At the field study, participants visited North Main Canal in the Target Area of the Study. They checked color and appearance of water by visual observation and odor at first. Following that, sampling the water for physical, chemical, and biological items was demonstrated and two participants tried to sample the water. In addition, brief measure of water quality was demonstrated by using pH measure, temperature measure and simple kits brought from Japan, which were checked pH, COD, PO₄ and NH₄. The result of the quality was as follows;

Color	Odor	Appearance	Temperature	pH	COD	PO ₄	NH ₄
Ocher	Non	Bad	27.8°C	6.8* 6.5-7.0**	20-50 mg/l	1-2 mg/l	0.2-0.5 mg/l

Note: * measured by pH measure, ** measured by simple kits

Day 3

Date: July 9, 2007

Time: 8:30- 11:45

Venue: PDOWRAM of Kampong Spue Province

Materials: Handout for today's topics, Questionnaire for evaluation

Time	Contents
8:30-8:40	Introduction of the day
8:40-10:10	Study on management of agricultural activities (fertilizer use, water use)
-- Break --	
10:25-11:30	Study on monitoring of people's life (resettlement, health, community, etc)
11:30-11:45	Summary of the Workshop - Question by participants - Feedback

2. Participation

Organization	Name
MAFF	Ms. Pheng Sophada, Vice Chief of EIA Office
PDOWRAM	Mr. Nop Prin, Water Supply and Sanitation Office
	Mr. Chea Sochan, Administrative Office
	Mr. Mon Sithar, Meteorology and Hydrology Office
	Mr. Choun Bunthoeun, Administrative Office
	Mr. Ouch Sarum, Administrative Office
	Mr. Ouch Neak, Administrative Office
	Mr. Seng Thol, Irrigation Office
	Mr. Prum Thoeun, Irrigation Office
	Mr. Mey Nou, Roleng Chrey Gate Operator
PDA	Ms. Chea Dany, Agronomy Office

Organization	Name
	Mr. Ping Tith, Agronomy Office
	Mr. Choek Sim,

Total: 13 people

3. Results

- Participants especially PDA staff were interested in the management of agricultural activities. They discussed on how to train and motivate the farmers. It was suggested that not only training but also follow-up training and monitoring after the training should be conducted for continuous effort by the farmers.
- As for people's life, it was suggested that not only the people who targeted for resettlement but also the people who lose the land for work by the project should be followed and monitored at the operation phase.
- All participants answered that they were satisfied with the three-day workshop contents in the evaluation questionnaire which was answered in the last time of the workshop. On the other hand, most participants answered that they wanted to receive more workshop regarding environment management in next time. Each of them has clear interest related to environment to be learned, which includes environmental pollution caused by agricultural waste and health management by water canal quality.