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1. Minutes of Discussion

MINUTES OF DISCUSSION BETWEEN DGWRD AND JICA PRELIMINARY STUDY TEAM ON THE SCOPE OF WORK FOR NEGARA RIVER BASIN OVERALL IRRIGATION DEVELOPMENT PLAN STUDY IN SOUTH KALIMANTAN PROVINCE IN THE REPUBLIC OF INDONESIA

1. The Preliminary Study Team of Japan International Cooperation Agency (JICA) of the Government of Japan for the captioned study and the Directorate General of Water Resources Development (DGWRD), Ministry of Public Works, the Government of the Republic of Indonesia held a series of meetings and exchanged their views on the draft Scope of Work for the captioned study prepared by JICA.

2. The JICA Study Team headed by Mr. Takaya Endo, Director of Construction Planning and Coordination Office, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries (MAFF) stayed in Indonesia from July 20 to 30, 1987.

The Indonesian side was headed by Ir. Rachardjo Notosaputro, Director of Planning and Programming, DGWRD, Ministry of Public Works.

3. During the stay, the JICA Study Team conducted a field survey in the Negara River Basin in South Kalimantan.

4. A list of attendants in the meetings is attached in Annex.

5. The salient results of the meetings are as follows:

(1) The JICA Study Team and DGWRD agreed upon and signed the Scope of Work for the captioned study.

(2) Both sides agreed that the Japanese side would carry out an overall study on irrigation, drainage and reclamation as a project in the Negara River Basin in consideration of other water utilization and problems, basically on the existing data base.

(3) DGWRD suggested the JICA Study Team to carry out a flood control survey for the reason that flood and inundation are one of the main constraints to the development of the area. And then, both sides agreed that JICA would carry out the survey and incorporate the results in the overall plan, focussing on agricultural development aspect in the Negara River Basin.

(4) DGWRD told the JICA Study Team to put under consideration its suggestion that the study should be carried out as much as possible in Indonesia for the reason of technology transfer.

The JICA Study Team took note of it.

(5) DGWRD requested the JICA Study Team that JICA should provide the following equipment;

- | | |
|-------------------------------------|--------|
| 1) Four wheel drive vehicles | 3 sets |
| 2) Boat with outboard engine, 45 HP | 2 sets |
| 3) Climatological equipment | 2 sets |
| 4) Automatic water level recorder | 5 sets |
| 5) Automatic rainfall recorder | 5 sets |
| 6) Current meter | 2 sets |
| 7) Personal computer | 2 sets |

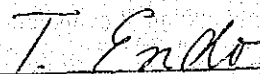
JICA Study Team took note of it.

- (6) Both sides agreed that JICA would take measures to provide vehicles necessary for the Study since DGWRD cannot provide any vehicle, and in this connection, DGWRD would take necessary measures to allocate budget for the maintenance and operation cost including fuel and driver's salary.

Jakarta, July 29, 1987



Ir. RACHARDJO NOTOSAPUTRO
 Director of Planning and
 Programming, DGWRD,
 Ministry of Public Works



Mr. TAKAYA ENDO
 Leader
 The Preliminary Study Team,
 Japan International
 Cooperation Agency

A List of Attendants

I. Indonesian side

1. Ir. Rachardjo Notosaputro	Direktur BPP
2. Ir. Soenarjo	Kasubdit P3, Dit. BPP
3. Ir. M. Sidharto	Kasubdit P2WS, Dit. BPP
4. Ir. Suharto	Kep. Seksi Survey, P2WS, BPP
5. Drs. Azis Bockings	Kasi Bautuan Bilateral ABLN
6. Ir. Bambang Pramono	Kep. Seksi Wilayah II. P2WS, BPP
7. Mr. Bambang Triyono	Staf Sub Dit. ABLN, BPP
8. Drs. Hilman Kosasih	Staf Sub Dit. P2WS, BPP
9. Mr. G. M. Putera	Staf Sub Dit. P2WS, BPP
10. Drs. Acep Suhub Husen	Staf Subag. ABLN Dit. BPP
11. Ir. Rachmat Norlias	Kepala Seksi Perencanaan, DPU Kalimantan Selatan
12. Ir. Ruchyat Kustomi	Kasi Wilayah I, P2WS
13. Mr. Irama	Staf Direktorat Rawa
14. Mr. Triwasono	Staf Direktorat Rawa
15. Mr. Rusdy	Staf Direktorat Rawa
16. Mr. Sutomo	Direktorat Irrigasi
17. Mr. Nordiansyah	Direktorat Irrigasi
18. Mr. Rusfai	Staf Sub Dit. P2WS, BPP
19. Mr. K. Kimura	JICA Irrigation Expert, BPP
20. Mr. N. Kayano	JICA Irrigation Expert, DPUP, Suoth Kalimantan

II. Japanese side

1. Mr. T. Endo	Team leader, MAFF
2. Mr. N. Baraki	Irrigation and Drainage, MAFF
3. Mr. T. Yoshida	Agriculture, MAFF
4. Mr. K. Kawaji	Coordination, JICA
5. Mr. N. Matsuda	JICA Indonesia Office

2. Scope of Work (S/W)

SCOPE OF WORK
FOR
NEGARA RIVER BASIN OVERALL IRRIGATION DEVELOPMENT PLAN STUDY
IN
THE REPUBLIC OF INDONESIA

AGREED UPON
BETWEEN

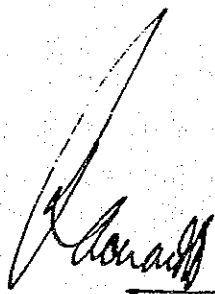
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

MINISTRY OF PUBLIC WORKS


A N D

JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, JULY 29, 1987



Ir. RACHARDJO NOTOSAPUTRO
Director of Planning and
Programming, DGWRD,
Ministry of Public Works.



Mr. TAKAYA ENDO
Leader
The Preliminary Study Team
Japan International
Cooperation Agency.

I. INTRODUCTION

In response to the request of the Government of the Republic of Indonesia, the Government of Japan has decided to conduct Negara River Basin Overall Irrigation Development Study (hereinafter referred to as " The Study ") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as " JICA "), the official agency responsible for the implementation of technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the authorities of Indonesia.

The Directorate General of Water Resources Development, the Ministry of Public Works, Indonesia, (hereinafter referred to as " DGWRD ") shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document sets forth the scope of work with regard to the above-mentioned Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are :

- (1) To formulate a plan on the Negara River Basin Overall Irrigation Development in South Kalimantan, and
- (2) To make technology transfer to the Indonesian counterpart personnel in the course of the Study.

III. SCOPE OF THE STUDY

1. Study Area

The Study covers a planned area of about 11.500 Km² of the whole Negara River Basin and its affected area in South Kalimantan.

2. Contents of the Study

The Study will be composed of three phases as follows;

Phase - I Collection, review and analysis of relevant data and Information on the whole Negara River Basin.

A) Natural conditions

- a. Topography
- b. Meteorology and Hydrology
- c. Geology and Hydrogeology
- d. Pedology
- e. Inundation and Flood
- f. Upper Watershed Management and critical land.

B) Social and economic conditions

- a. Population
- b. Social organization
- c. Regional and national developmnet programmes
- d. Rural economy
- e. Social infrastructure
- f. Water usage facilities
- g. Others such as inland navigation and transmigration

C) Agricultural conditions

- a. Land Use
- b. Land tenure
- c. Irrigation and Drainage
- d. Farming and Cropping
- e. Inland fishery
- f. Agro-economy
- g. Processing, Marketing and Transportation
- h. Agricultural organization.

Phase - II Supplemental Survey and Formulation of a Basic Development Plan

- A) Supplemental survey in Indonesia based on the results of Phase-I study
- B) Identification and evaluation of the development potentials in the area
- C) Formulation of a basic development plan

Phase - III Formulation of the Overall Irrigation Development Plan

The Overall Irrigation Development Plan in the Negara River Basin will be formulated, taking into consideration the following components;

- a. Irrigation and drainage system
- b. Preliminary design for irrigation and drainage facilities
- c. Operation and maintenance system
- d. Land reclamation
- e. Water demand and supply (including drinking water)
- f. Mini-hydro electric power development sub-projects
- g. General layout of development sub-projects
- h. Prioritization of development sub-projects
- i. Project evaluation
- j. Environmental impact evaluation

IV. STUDY SCHEDULE

The whole study shall be conducted within 17 months as in the attached tentative schedule.

V. R E P O R T S

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

1. Inception Report
Thirty (30) copies at the beginning of Phase-I study in Indonesia.
2. Field Report (I)
Thirty (30) copies at the end of the field survey of Phase-I study
3. Progress Report
Thirty (30) copies at the beginning of the field survey of Phase-II study.
4. Field Report (II)
Thirty (30) copies at the end of the field survey of Phase-II study
5. Interim Report
Thirty (30) copies at the end of Phase-II study.
6. Field Report (III)
Thirty (30) copies at the end of the field survey of Phase-III study.
7. Draft Final Report
Fifty (50) copies at the end of Phase-III study
The Government of Indonesia shall, if any, present comments on the Draft Final Report to JICA within one (1) month after receiving the Draft Final Report.
8. Final Report
Fifty (50) copies within one (1) month after receipt of comments on the draft Final Report.

VI. UNDERTAKING OF THE GOVERNMENT OF INDONESIA

1. To facilitate smooth conduct of the Study, the Government of Indonesia will take necessary measures :
 - (1) To secure the safety of the Japanese study Team,
 - (2) To permit the members of the Japanese Study Team to enter, leave and sojourn in Indonesia for the duration

- of their assignment therein, and exempt them from alien registration requirements and consular fees,
- (3) To exempt the members of the Japanese Study Team from taxes, duties, fees and any other charges on equipment machinery and other materials brought into Indonesia for the conduct of the Study,
 - (4) To exempt the members of the Japanese Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese Study Team for their services in connection with the implementation of the Study,
 - (5) To provide necessary facilities to the Japanese Study Team for the remittances as well as the utilization of the funds introduced into Indonesia from Japan in connection with the implementation of the Study,
 - (6) To secure permission to take all data and documents related to the Study out of Indonesia to Japan by the Japanese Study Team,
 - (7) To provide medical services as needed. Its expenses will be chargeable on the members of the Japanese Study Team.
2. The Government of Indonesia shall bear claims, if any arises, against the members of the Japanese Study Team arising from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese Study Team.
3. DGWRD shall, at its own expenses, provide the Japanese Study Team with the following, in cooperation with other agencies concerned, if necessary;
- (1) Available data and information related to the Study,
 - (2) Counterpart personnel,
 - (3) Suitable offices with necessary equipment, in Banjarmasin and the Study area,
 - (4) Credentials or identification cards.

4. DGWRD will assist the Japanese Study Team to arrange accommodations.

VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take following measures :

- (1) To dispatch, at its own expense, study teams to Indonesia
- (2) To pursue technology transfer to the Indonesian counterpart personnel in the course of the Study in Indonesia as well as in Japan.
- (3) To provide equipment and materials necessary for the Study.

VIII. OTHERS

JICA and DGWRD will consult with each other in respect of any matter that may arise from or in connection with the Study.

TENTATIVE SCHEDULE

Phase	Phase I						Phase II					Phase III					
1st Month	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
WORK IN INDONESIA	=====					=====					=====		=====				⊙
WORK IN JAPAN	=====					=====			=====		=====		=====				
REPORTS	△ Inc.R	△ F/R(I)			△ P.R.				△ F/R(II)	△ F/R(III)	△ F/R(III)		△ D.F.R.			△ F.R.	

(Remarks) Inc.R.: Inception Report P.R.: Progress Report
 Int.R.: Interim Report D.F.R.: Draft Final Report
 F.R. : Final Report F/R : Field Report
 ⊙ Comments on D.F.R. by Indonesian side

===== : Field Work
 ===== : Home Office Work

3. 要請 Terms of Reference (T/R)

REPUBLIC OF INDONESIA
MINISTRY OF PUBLIC WORKS
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

TERMS OF REFERENCE
FOR
NEGARA RIVER BASIN
OVERALL IRRIGATION DEVELOPMENT PLAN STUDY

NOVEMBER 1985

1. Project Title : Negara River Basin Overall Irrigation. Development Plan Study.
2. Location : South Kalimantan.
3. Executing Agency : Directorate General of Water Resources Development Ministry of Public Works.
4. Objectives : To prepare an overall study on an integrated plan with irrigation development as the central one in the Negara River Basin.
5. Project Description : The proposed overall study area covers whole Negara River Basin of about 11,370 km².
 The Negara River Basin has potential favourable to agricultural development and others.
 As far as agricultural development is concerned, it is put now under such a condition as still developing because of poor irrigation and drainage system in this Basin.
 Due to the abovementioned circumstances, there is a strong and urgent request for developing this area by installing irrigation and drainage system in order to boost rice production and contribute to regional development for stability of life in this region.
 Fortunately mapping works for the above-mentioned study will be completed in March 1986, which will be made through cooperation of JICA.

And primary investigation such as fundamental soil investigation and collection of observation data on rainfall and others were also finished by the Ministry of Agriculture, Forestry and Fishery on May 1985.

As a result, next step forward is strongly and urgently requested.

6. Scope of assistance requested :

a. Expert services	: 93.8 M/M.	US \$ 996,480.-
b. Fellowship	: 10 M/M.	US \$ 40,000.-
c. Equipment	:	US \$ 128,000.-

Total Cost US \$ 1,164,480.-

± 1,160,000,-

7. Related to Project Aid : Topographic mapping Project (1983 - 1985).
 Mosaic photo map project (1983 - 1985).
 Primary investigation work (1983 - 1985).

TERMS OF REFERENCE FOR NEGARA RIVER BASIN
OVERALL IRRIGATION DEVELOPMENT PLAN STUDY.

1. BACKGROUND AND SUPPORTING INFORMATION.

1. Background of the project.

An increase of food production is one the important items of the National Development Plan of the Government of Republic of Indonesia.

With the progress of civilization, the heightening of living standards and the increase in the population, the consumption of rice increase nowadays, rapidly, especially in outer islands. Therefore, the implementation of development project for paddy cultivation with irrigation, drainage or reclamation facilities is strongly requested in the framework of the National Development Program.

With the progress of civilization and the improvement of living standards, the development and stabilization of domestic water supply in rural areas where the domestic water is supplied through irrigation canal network is strongly requested by inhabitants in rural areas.

On the other hand, overflowing and inundation by untrained rivers has been disturbing normal agribusiness and water utilization for irrigation, drainage, domestic water supply, hydropower etc.

2. Justification of the project.

The development of the Negara River Basin, Tributary of Barito River has been given a high priority by the Government of Republic of Indonesia, because this area has high potentiality of agricultural development that needs irrigation, drainage or reclamation, facilities and water resources utilization, and expects next step forward subsequent to the completion of mapping works and others.

2.1. Since 1972 the Government of Republic of Indonesia has made some investigation in some areas concerned with own budget, establishment of gauging stations, hydrological and geological study, land survey, increase Engineering staff, preparing and providing the necessary equipment, etc.

Such investigation and/or preparation works were used for the implementation of the Riam Kanan Irrigation Project, and those, in the near future, can be used for this study.

2.2. The reconnaissance study " Survey for Development of Barito River Basin " was prepared by the OTCA (Overseas Technical Cooperation Agency, former name of Japan International Cooperation Agency) in 1971.

2.3. According to the recommendation in the reconnaissance, the Government of Republic of Indonesia intended to carry out the " Land Reclamation and Irrigation Project in the Western Part of South Kalimantan ".

As the first step of the implementation for the project, the terms of reference on the project " Photo mapping for Negara River Basin " was prepared by the Directorate General of Water Resources Development, Ministry of Public Works, and the Government of Japan (JICA) is performing this project since the fiscal year 1983/1984.

Namely, two (2) Mapping Projects have been executed covering South Kalimantan Province.

One is the Topographic Mapping Project of 1 : 50,000 in scale covering an area of approximately 6,500 km² in upstream area of the Negara River Basin, and the other is the Aerial Photography consisting of 1 : 20,000 in scale, Aerial photography in dry season covering an area of approximately 6,300 km², Aerial photography in rainy season covering an area of approximately 1,200 km² in down stream area of the Negara River Basin and 1 : 10,000 in scale Mosaic Photo Map covering an area of approximately 1,200 km² centering around Amuntai Area.

2.4. With the abovementioned background, the Government of Indonesia requested the Government of Japan to carry out the Negara River Basin Overall Irrigation Development Plan Study mainly for agricultural development in the framework of technical assistance.

2.5. Land and swampy areas on the Negara River Basin have potential for agricultural development are as follows :

Tabalong Swamp Area.	19,400 ha.
West Amuntai Swamp Area.	42,800 ha.
East Amuntai Swamp Area.	67,500 ha.
West Negara Swamp Area.	126,300 ha.
East Negara Swamp Area.	50,600 ha.
Tapin Swamp Area.	15,600 ha.
North Muning Swamp Area.	50,400 ha.
Upland Area.	281,000 ha.

3. Project Title.

The title of this project is :

" NEGARA RIVER BASIN OVERALL IRRIGATION DEVELOPMENT PLAN STUDY.

4. Study Area.

The areas of the overall study are shown in the figure attached

- Overall Study Area. 11,369 km².

5. Institutional Framework.

Directorate General of Water Resources Development (DGWRD), Ministry of Public Works takes responsibility for the proposed overall study.

The Directorate of Planning and Programming with its field office will undertake the field survey and study needed.

In view of considerable difficulties inherently for this kind of studies, a special assistance will be required.

6. Proceeding studies.

The Directorate of Planning and Programming has done some basic survey and study on the development of the partly related study area under the technical assistance of external sources.

Main papers and reports relevant to the project are listed below :

- The reconnaissance study " Survey for Development of Barito River Basin " OTCA - 1971.
- Mapping and Leveling networks (1/50,000 topographic maps) covering Lower Barito River Basin about 16,900 km², OTCA 1974.
- Findings of field Survey on the Barito River Basin in South Kalimantan, ADCA (Agricultural Development Consultants Association) 1979.
- Salinity intrusion investigation on Martapura River and Barito River, D.P.M.A. 1979.
- Land resources of the Lower Barito Basin South Kalimantan, D.P.P. 1979.
- Geological investigation on Amandit weir site, D.P.P. 1981.
- Water quality and sediment transport investigation on Balangan River and Pitap River, D.P.M.A. 1984.
- Geological investigation on Pitap weir site, D.P.P. 1982.
- Geological investigation on Balangan Dam Site, D.P.P. 1982.
- Land suitability survey on Amuntai swamp Area, D.P.P. 1982.
- Reconnaissance Survey on the Potentiality and Necessary Measures in the Negara River Basin, JALDA (Japan Agricultural Land Development Agency) 1983.
- Nationwide Study of Coastal and Near Coastal Swamp Land in Sumatera, Kalimantan and Irian Jaya, Nedeco/Euro Consult Biec. 1984.
- Mosaic Photo Map Project of the Down Stream Area in the Negara River Basin, JICA-1983/1985.
- Topographic Mapping Project of the Upstream Area in the Negara River Basin, JICA - 1983/1985.
- Fundamentary investigation in the Negara River Basin, Government of Japan - 1983/1985.

II. OBJECTIVES OF THE STUDY.

The objectives of the study are as follows :

1. To prepare an overall study on irrigation, drainage and reclamation as a project in the Negara River Basin with consideration of other water utilization and problems.
2. To up-grade technical capability of the Indonesia counterparts who are responsible for the implementation of the water-resources-development facilities.

III. SCOPE OF STUDY.

The task to be undertaken by the study team consists of following mater :

1. Overall study.

1.1. To review data and information collected or processed by various kinds of agencies before the study is under taken.

- Hydrology.
- Meteorology.
- Agriculture.
- Soils.
- Agro-economy.
- Topographic maps.
- Land reclamation etc.
- Geology and soil mechanics.

1.2. To examine, to establish, to upgrade, to enlarge and to strengthen the existing investigation system and supervisor, and carry out the field investigation and survey including the following items :

1). Hydrology and Meteorology Survey.

- To carry out observation and data collection for estimation of water balance.
- To carry out observation of inside and outside water level at the necessary points in the swamp.
- To prepare reliable estimates of water requirements and water availability including ground water resources
- To carry out a survey of sediments discharge.

- 2). Soil and Land capability survey.
 - To carry out soil survey in the promising irrigation project area, i.e. soil profile survey at a density of about one pit per 500 ha, physical and chemical analysis for representative soils.
 - To prepare soil classification maps.
- 3). Geological and soil mechanical survey.
 - Geological analysis of foundation at the prospective dam sites and intake weir sites.
 - Boring tests at those dam sites.
 - Tests of bearing capacity at the major structure sites for various facilities.
 - Soil mechanical tests for embankment.
- 4). Preliminary engineering study.
 - To prepare preliminary design and cost estimation for irrigation, drainage and reclamation facilities.
 - To prepare study and cost estimation for sediments control.
- 5). Construction material Survey.
 - Availability and quantities of concrete aggregates, masonry, embankment materials and other construction materials.
 - Market survey of prices and wages for cost estimation and investigation for construction method.
- 6). Irrigation and drainage survey.
 - Survey of existing irrigation and drainage system.
- 7). Agriculture and agro-economic survey.
 - Farm budget survey for representative farmers.
 - Preparation of and land use map.
 - Analysis of farming practice and production and existing institutional support systems.
 - Data collection on current market flows and prices of agricultural products.
 - Selection of crop and formation of cropping pattern.
 - Establishing improved farming practice and assessment of farmer's economy.

8). Flood influence study.

- To study influence on agricultural land and villages in rural area caused by flood and inundation.
- To study the possibility of flood control and give its general conception.
- To prepare an allocation plan of high water discharge of the Negara River.

9). Hydro-electric power survey.

- To investigation the possible and promising sites for construction of the hydro-electric power station.

10). Carry out the following analysis and study.

- Delineation of agricultural development area.
- Preparation for improvement plan of existing small scale irrigation project with poor water resources.
- Preparation for general layout of development projects.
- Alternative study on drainage system.
- Other water utilization study.
- Estimation of project cost and operation and maintenance cost.
- Estimation of project benefit.
- Project evaluation and selection of priority of project.
- Environmental impact study.

IV. EXTERNAL AND GOVERNMENT INPUT.

1. External Input.

- 1.1. The overall study will be under taken by an experienced multi-disciplinary team of foreign experts working closely with Indonesia

counterpart personnel supplied by the Government of the Republic of Indonesia.

The transfer of technical knowledge through the investigation, data analysis and design of the project into Indonesia counterparts will form an important core of the project.

1.2. Term to be required for the Overall study is estimated to be 12 months.

1.3. Foreign expert required would be as follows.

- Team Leader (1). 12^M/M.
Should be an irrigation and drainage engineer with long experience in planning, design, and construction of irrigation schemes, hydraulic structure and multi-purpose water resources development project and will be responsible for smoothness of implementation of the study.
- Irrigation Engineer (2) 20.⁶ M/M.
Should have experience in planning, design and construction of irrigation scheme and drainage system.
- Hydrologist (1). 9.³ M/M.
Should have experience in hydrologic aspect of planning and design of water resources development project.
- Pedologist (1). 3.³ M/M.
Should have experience in planning of irrigation and drainage.
- Irrigation and Polder Engineer (1) 4.³ M/M.
Should have experience in planning and design of polder irrigation and reclamation scheme.
- Geologist (1) 5 M/M.
Should have experience in investigation of foundation of structure, geophysical and geo-electrical prospecting.

- Agronomist (1). 4 M/M.
Should have experience in planning of agricultural development projects.
- Agroeconomist (1). 5.3 M/M.
Should have experience in evaluating agricultural development projects.
- Topographical surveyor and design engineer (2) 14 M/M.
Should have experience in topographic survey, river survey and design in irrigation facilities.
- Soil mechanic engineer (1) 4 M/M.
Should have experience in soil mechanic tests needed for engineering works.
- Specialists as required such as experts in Dam Engineering, Flood control engineering, Hydro-power Engineering, Ground water engineering, Environmental assessment, Domestic water supply, Fishery, Regional Development Planner, etc. 12 M/M.
- T o t a l. 93.8 M/M.

1.4. Equipment :

- Four wheel drive vehicles. 3 sets.
- Boat with outboard engine, 45 HP 2 sets.
- Climatological equipment. 2 sets.
- Automatic water level recorder. 5 sets.
- Automatic rainfall recorder. 5 sets.
- Soil test equipment. 2 sets.
- Current meter. 2 sets.
- Theodolite complete with accessories . . . 2 sets.
- Automatic level. 2 sets.
- Plane table survey instrument 2 sets.
- N.N.S.S. observation instrument. 2 sets.
- Other surveying instrument. 1 sets.

- Pocket calculator. 6 sets.
- Photocopy machine. 1 sets.
- Sediment samplers. 2 sets.
- Other equipment needed for the study. 1 sets.

2. GOVERNMENT INPUT.

Items of undertaking are as follows.

- 1). To provide counterparts and supporting personnel as necessary.
- 2). To provide necessary office space with furniture in the project area due to the local condition and to bear its running costs including water, electricity and telephone charges.
- 3). To provide necessary stationeries and other materials which are locally available.
- 4). To made arrangements with the vehicles for the execution of study.
- 5). To provide relevant data, information, reports, etc for the conduct of the field survey.
- 6). To carry out supplementary levelling survey needed for the study if necessary.
- 7). To carry out supplementary pedological investigation needed for the study if necessary.
- 8). To exempt taxes, duties, fees and other charge imposed on instruments, material required for study and on the personal effects of the expert.
- 9). To arrange for the quick and smooth customs clearance of the instruments and other material listed in page.
- 10). To undertake necessary measures to secure the safety of the experts.
- 11). To arrange the medical services for the expert during stay in Indonesia if necessary.

WORKING SCHEDULE.

MAIN WORKING ITEMS.	0	1	2	3	4	5	6	7	8	9	10	11	12
<u>OVERALL STUDY.</u>													
1. Hydrology and Meteorology Survey.													
2. Topographic Survey.													
3. Soil and land capability Survey.													
4. Agriculture and Agro-economic Survey.													
5. Irrigation and drainage Survey.													
6. Geological and soil mechanical Survey.													
7. Flood Influence Study.													
8. Construction Material Survey.													
9. Hydro-electric power Survey.													
10. Preliminary Engineering Study.													
11. General layout of Development Plan.													
12. Cost Estimation.													
13. Benefit Estimation.													
14. Construction Plan.													
15. Economical Evaluation.													
16. Reporting.													
- Inception Report.													
- Quarterly Report.													
- Interim Report.													
- Draft of Final Report.													
- Final Report.													

ASSIGNMENT SCHEDULE.

ASSIGNMENT OF EXPERT (NUMBER).	0 1 2 3 4 5 6 7 8 9 10 11 12												ALLOCATION		TOTAL	
													In Indonesia	In Japan		
Team leader. (1)														7.3	4.7	12.0
Irrigation Engineer. (2)														12.6	0	20.6
Hydrologist. (1)														6.3	3	9.3
Pedologist. (1)														2.3	1	3.3
Irrigation and Polder Engineer. (1)														2.3	2	4.3
Soil Mechanic Engineer. (1)														3	1	4
Geologist. (1)														3	2	5
Agronomist. (1)														2	2	4
Agro-economist. (1)														2.3	3	5.3
Topographical surveyor and Design Engineer. (2)														6	8	14
Specialists (Expert in Dam Engineering, Flood Control Engineering, Hydro-power Engineering, Environmental Assessment, Domestic water supply, Regional Development planner, Hydro-geologist).														8	4	12
T O T A L														55.1	38.7	93.8

===== Work in Indonesia.

===== Work in Japan.

----- Work in Indonesia as required.

FOREIGN COST FOR OVERALL STUDY IN THE NEGARA
RIVER BASIN.

(¥ 1,000)..

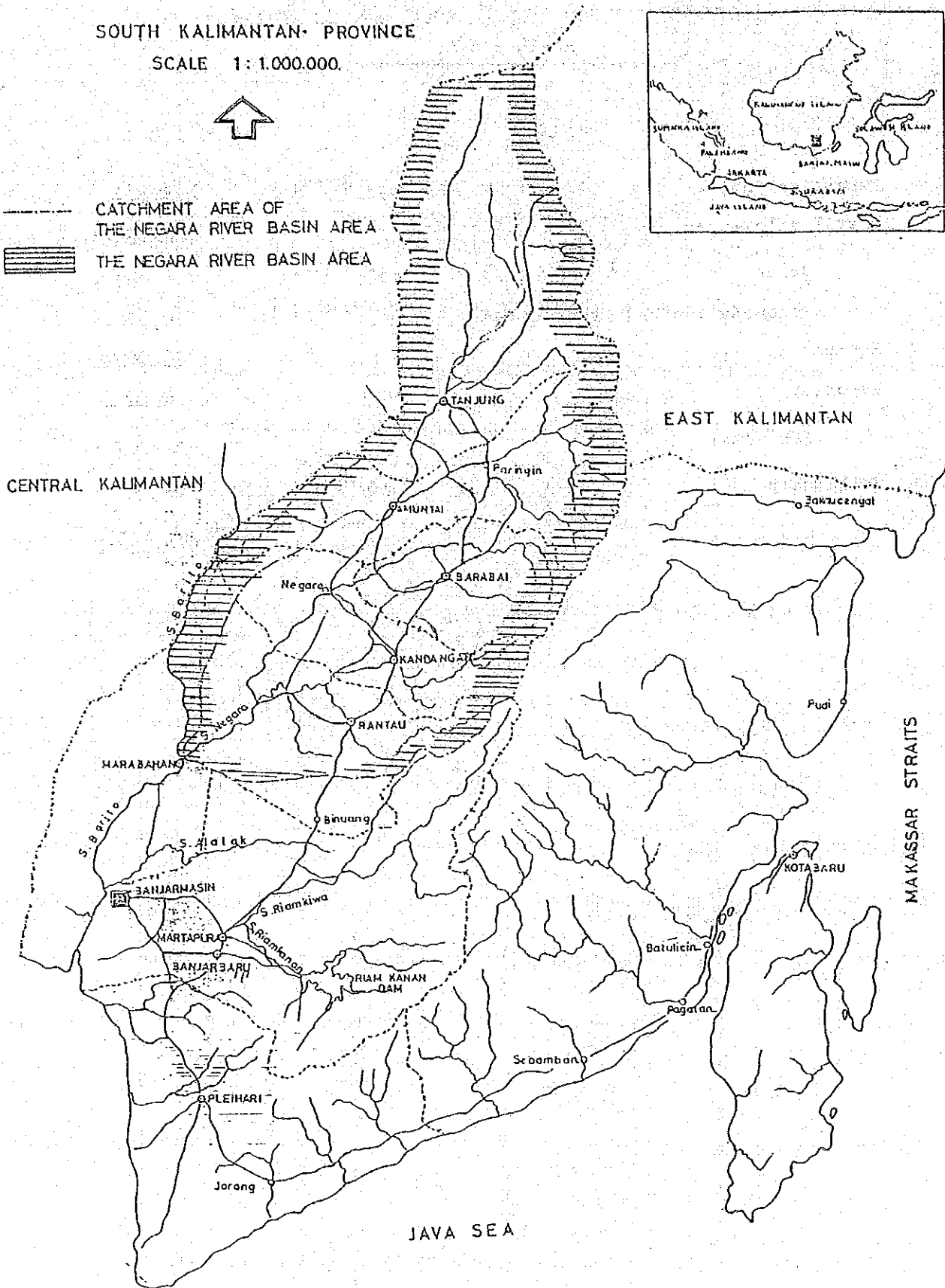
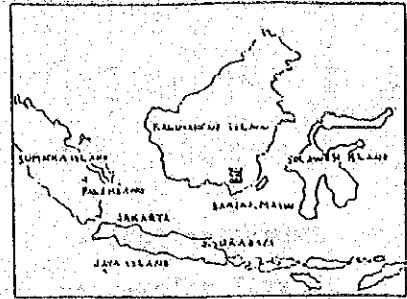
Expertization.	93.8 M/M	<u>225,120.-</u>
Travel Allowances.		<u>24,000.-</u>
Japan	38.7 M/M	4,000.-
Accommodation and other expense	55.1 M/M	20,000.-
Equipment.		<u>25,000.-</u>
Reports.		<u>6,000.-</u>
Sub Total		<u>281,120.-</u>
Fellowship.	10 M/M	<u>10,000.-</u>
T o t a l		<u><u>291,120.-</u></u>
1 US \$ = 250 ¥	1,164,480.-	≠ <u><u>1,160,000.-US\$</u></u>

SOUTH KALIMANTAN PROVINCE

SCALE 1:1,000,000.



- CATCHMENT AREA OF THE NEGARA RIVER BASIN AREA
- ▨ THE NEGARA RIVER BASIN AREA



4. 収集資料リスト

資料名 (原名) # (訳名)	出所
1. Long Term Water Resources Development Plan (Year 2000) January, 1986	公共事業省 水資源総局
2. Hasil Pencatatar Data Arr Stasiun : Tratau	DPU, Kantor Wilayar Propinsi Kalimavtam Lelatan
3. Final Report Penelitian Kualitas Air Dan Sediment Transport Sugai Bnlangan Dan Sungai Pitap Di Kabupaten Dati II Hulu Sungai Utara Maret 1984	D, P, M, A, D, P, U,
4. Laporan Pekerjaan Penyelidikan Geologi Pada Rencan Bendng S, Amandit Kab, Dati II H, S, S, Kalimantan Selatan Maret 1980及び Mei 1981	D, P, U, 南カリマンタン州
5. Land Resources of the Lower Barito Basin South Kalimantan July 1979	D, P, U, 水資源総局
6. Final Report Suruai Kapabilitas Tanah Di Wilayah Amuntai Kabupaten Hulu Surgai Utara Propinsi Kasimantar Selatan	D, P, U, 南カリマンタン州
7. Laporan Penelitian Kualitas Air Dan Sediment Transport Sugai Negara Kalimantan Selatan Jnli 1980	D, P, M, A, D, P, U,
8. Final Report	D, P, M, A,

資料名 (原名) # (訳名)	出 所
<p>Penelitian Pemanfaatan Air Suvgai Balangan Untuk Tanaman Padi Di Kabupaten Dati II Hulu Suvgai Utara Maret 1984</p>	<p>D, P, U,</p>
<p>9. Laporan Terakhir Penyelidikan Geologi Teknik Rencan Bendwngan Sei Patap 200M, Kalimantan Selatan April 1983</p>	<p>D, P, U, 南カリマンタン州</p>
<p>10. Laporan Perelitian Salinity Intrassior Suvgai Martapna Dan Suvgai Barito Kalimantan Selatan April 1979</p>	<p>D, P, M, A, P, P, U,</p>
<p>11. Laporan Akhir Penyelidikan Kajabilitas Tanah Wilayah Amurtai Kabupaten Halu Sungai Utarc Propinsi Kalimantan Selatm Oktoobsr 1981</p>	<p>D, P, U, 南カリマンタン州</p>
<p>12. Laporan Penyelidikan Geologi Teknik Dan Mekamika Tavah (Lanjutan) Calon Bendangan Suvgai Balangan Keb, Dnti II H, S, U, -Kelimantan Selaton Febrwari 1983</p>	<p>D, P, U, 南カリマンタン州</p>
<p>13. Laporan Utama Studi Kelayakan Teknik Perencanaan Pengembargan Irigasi Wilayah BT, Alai 1984/1985</p>	<p>D, P, U,</p>

資料名 (原名) " (訳名)	出所
14. Laporan Akhir Pekerjaan: Penyelidikan Geologi Teknik Dan Mekanika Tawah Pada Lokasi Rencona Benduvg Batang Alai (200M) 1985/1986	D,P,U, 南カリマンタン州
15. Laporan Pekerjaan Penyelidikan Geologi Pada Reneava Benduvg S, Amandit (Lanjutan) Kab Dcti II H,S,S, Kalimantan Selatan Maret 1981	D,P,U, 南カリマンタン州

資料名 (原名) # (訳名)	内 容	出 所
DAFTAR: INVENTARISASI POS HIDROMETEOROLOGI PROVINS DATI I KALIMANTAN SELATAN 南カリマンタン州気象観測所の概要	南カリマンタン州の総合気 象観測所別の場所、観測器 機タイプ、観測開始時点、 経緯度、設置機関、標高等 の一覧	州公共事業部
DAFTAR INVENTARISASI POS HIDROMETRI (AUTOMATIC WATER LEVEL RECORDER) PROVINSI DATI I KALIMANTAN SELATAN 南カリマンタン州自記水位計の概要	南カリマンタン州内の自記 水位計の設置場所、設置河 川、設置機関、経緯度、機 種、標高、観測開始時点等 の一覧	州公共事業部
DAFTAR: INVENTARISASI POS HIDROMETRI (STAFF GAUGE) PROP. DATI I KALIMANTAN SELATAN 南カリマンタン州スタッフゲージ観測所の概要	南カリマンタン州内に設置 されたスタッフゲージ観測 所の設置場所、機種、観測 開始年、経緯度、設置機関 標高等の一覧	州公共事業部
DAFTAR: INVENTARISASI POS HUJAN OTOMATIC (A. R. R.) PROVINSI DATI I KALIMANTAN SELATAN 南カリマンタン州自記雨量計の概要	南カリマンタン州内に設置 された自記雨量計の機種、 観測開始時点、経緯度、設 置機関、標高、観測状況等 の一覧	州公共事業部
DAFTAR: INVENTARISASI POS HUJAN BIASA PROPINSI DATI I KAL. SELATAN	読み取り式雨量計について の自記雨量計と同様の事項 の一覧	州公共事業部
DAFTAR IKHTISAR TINGGI DUGA (BENCH MARK) DARI TAKISUNG FEIL (TP)	南カリマンタン州内のタキ ソン基準点に基づくベンチ マークの位置及び標高等の 一覧	州公共事業部

資料名 (原名) # (訳名)	内 容	出 所
<p>地図類</p> <ul style="list-style-type: none"> ○各種視測所位置図 ○ベンチマーク位置図 ○流域内区分図及びダムサイト位置図 		州公共事業団
<p>KALIMANTAN SELATAN DALAM A. GKA 1986 南カリマンタン州統計資料の抜粋</p>	土地利用、農業生産等	南カリマンタン州
<p>SELAYANG PANDANG KALIMANTAN SELATAN 南カリマンタン州の概況</p>	自然条件、人口、産業等	
<p>Area Harvested, Production, and Average Production of Rice Field Plant during the First, the Second, the Third and First Year of the Fourth of Five Year Development (Pelita), 1969-1985, in South of Kalimantan 南カリマンタン州における米の収穫面積、生産 量、単収</p>		
<p>An Actual Results of Population and Harvested Area, Production, Consumption and Surplus of Rice during 1980-1984, and Forecast at the year 1985 in Kaliman- tan Selatan. And Forecast of Population un- til at the Year 2000 in South Kalimantan and Indonesia 南カリマンタン州における人口、米の収穫面積、 需給の1980~1984年までの実績及び1985 年の見込、さらに2000年までの人口見込(南 カリマンタン州、インドネシア全体)</p>		
<p>Inventarisasi Iuas arerl Potensial yang</p>	かんがいプロジェクト地区	D, P, U,

資料名 (原名) # (訳名)	内 容	出 所
<p>dikelo la DPU Propinsi Dati J Kalimantan Selatan Opname September 1984</p> <p>HASIL PENCATATAN DATA AWLR STASIUN: NEGARA (AMUNTAI) 自記水位計データ (ネガラ河アムンタイ地点)</p> <p>同種のデータが南カリマンタン州全体で48地点のうちネガラ河流域で25地点作成されている。</p>	<p>のかんがい面積 (計画と実績)</p> <p>ネガラ河アムンタイ地点の1977.4~1986.12の期間の水位、流量データ</p>	<p>南カリマンタン州 公共事業部</p>
<p>HASIL PENCATATAN DATA STAFF GAUGE STASIUN: KELUA スタッフゲージ (読取り式) 水位データ (ネガラ河ケルア地点)</p> <p>同種のデータが南カリマンタン州全体で24地点のうちネガラ河流域で17地点作成されている。</p>	<p>ネガラ河流域ケルア地点の1977.4~1986.3の期間の水位読み取りデータ</p>	<p>同 上</p>
<p>HASIL PENCATATAN DATA HUJAN BIASA STASIUN: MU'UI, BARABAI 自記雨量計データ (バラバイ・ムーイ地点)</p> <p>同種のデータが南カリマンタン州全体で33地点、うちネガラ河流域で16地点作成されている。</p> <p>その他読み取り式雨量計データが南カリマンタン州で30地点うちネガラ河流域で23地点で州公共事業部により、また18地点で農業部により作成されている。</p>	<p>ネガラ河流域バラバイ・ムーイ地点の1977.4~1986.12の期間の自記雨量計データ</p>	<p>同 上</p>
<p>HASIL PENCATATAN DATA KILIMATOLOGI STASIUN: TATAKAN 総合気象観測所データ (バリト河タタカン)</p>	<p>バリト河タタカン気象観測所の1976.4~1986.12の期間の気温、湿度、蒸発量、日雨量、時間雨量等の</p>	<p>南カリマンタン州 公共事業部</p>

資料名 (原名) # (訳名)	内 容	出 所
<p>同種のデータが南カリマンタ州全体で15地点、うちネガラ河流域で7地点につき州公共事業部で、その他に1地点で州農業部により作成されている。</p> <p>HASIL PENCATATAN KWALITAS AIL SUNGAI-SUNGAI DIKALIMANTAN SELATAN 南カリマンタン州河川水質調査結果</p>	<p>データ</p> <p>ネガラ河中流部の数ヶ所において、PH, D, O, 水温、電気伝導度、塩分濃度等について1985.11~1986.10の期間で雨期に月1回程度測定したデータ</p>	<p>南カリマンタン州公共事業部</p>

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