

附屬資料 2. 協議議事錄 (M/M)

MINUTES OF MEETING  
ON  
SCOPE OF WORK  
FOR  
THE FEASIBILITY STUDY  
ON  
THE GILIRANG IRRIGATION PROJECT

The preparatory study team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Harumi Saito, visited the Republic of Indonesia from March 7 to 21, 1993 for the purpose of discussing and confirming the Scope of Work for the Feasibility Study on the Gilirang Irrigation Project (hereinafter referred to as "the Study").

The team had a series of discussions with the officials concerned of the Directorate General of Water Resources Development, Ministry of Public Works (hereinafter referred to as "DGWRD") on the Scope of Work for the Study. The list of participants in a series of meetings is attached in the Annex.

As a result of the discussions, DGWRD and the Team agreed on the Scope of Work for the Study.

The following are the main issues discussed and agreed upon by both sides in relation to Scope of Work for the Study.

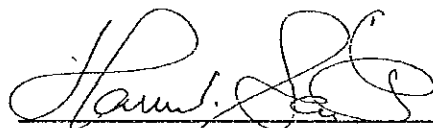
1. DGWRD shall carry out a household survey in consultation with the Japanese study team.
2. DGWRD shall carry out the Environmental Impact Assessment according to the Indonesian laws and regulations. The Japanese study team shall provide DGWRD with basic data and information on environmental issues in the course of the Study.
3. Article IV-1. mentioned in the Scope of Work, the topographic map shall be prepared in the scale of 1 / 5,000, for the area necessary for the Study.
4. In order to accelerate the electrification of dam and irrigation facilities, DGWRD requested that the possibility on mini-hydroelectricity by using the irrigation water from the Gilirang Dam, shall be examined in the Study.

5. DGWRD shall supply the Japanese study team offices equipped with electricity, water supply, and telephones in Jakarta, Sengkang and Watansoppeng.
6. DGWRD shall provide necessary numbers of counterpart personnel, who are governmental officials, during the whole Study period.
7. The steering committee organized by the Indonesian side shall give its comments on each preceding of the Final Report.
8. DGWRD requested that the following equipments necessary for the Study be procured by JICA and be donated to DGWRD after the termination of the Study.  
The Team promised to convey its request to the Government of Japan.
  - survey equipments for water discharge, etc.
9. DGWRD requested the counterpart training in Japan. The Team promised to convey its request to the Government of Japan.

Jakarta, 16 March, 1993.



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Director of Irrigation II,  
Directorate General of Water Resources Development,  
Ministry of Public Works



Mr. Harumi Saito  
Leader,  
Preparatory Study Team,  
Japan International Cooperation Agency

## LIST OF PARTICIPANTS

### Directorate General of Water Resources Development

|                     |   |
|---------------------|---|
| Mr. R. Zainuddin    | Chief of Subdirectorates of Planning & Design |
| Mr. M. Subianto     | Chief of Subdirectorates of O & M, DOI II     |
| Mr. Pudjiono K.     | DOI II  |
| Mr. S. Soekirno     | DOI II  |
| Mr. Kusumo Respatyo | DOI II  |
| Mr. Bambang Prihono | DOI II  |
| Mr. Agus Jati W.    | DOI II  |
| Mr. Tisna S.        | DOI II  |
| Mr. Suharto         | BPP   |
| Mr. Guridno         | BPP   |

### The Team

|                         |        |
|-------------------------|--------|
| Mr. Harumi Saito        | Leader |
| Mr. Toshiyasu Yamashita | Member |
| Mr. Kozo Sato           | Member |
| Mr. Mitsuru Takahashi   | Member |
| Mr. Yutaka Nozaki       | Member |
| Mr. Akira Shimizu       | Member |

### JICA Expert

|                     |        |
|---------------------|--------|
| Mr. Unosuke Uematsu | DOI II |
| Mr. Hiroshi Kudo    | DOI II |
| Mr. Toshiaki Saito  | BPP    |

附屬資料 3. 要 請 書 (T/R)

TERMS OF REFERENCE  
FOR  
FEASIBILITY STUDY  
ON  
THE GILIRANG IRRIGATION PROJECT

Ministry of Public Works  
Directorate General of Water Resources Department

TERMS OF REFERENCE FOR FEASIBILITY STUDY  
ON  
THE GILIRANG IRRIGATION PROJECT

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Appendix I Tentative Schedule

## I. BACKGROUND AND SUPPORTING INFORMATION

### 1. Justification of the Project

Agriculture is a key sector of the Indonesian economy, contributing about one-fourth of Gross Domestic Product (GDP) and providing employment to 55% of the labor force. It is however estimated that more than 40% of the rural population lives below the absolute poverty income level. Agricultural production is predominantly carried out by the county's nearly 20 million smallholder farmers.

The Government's overall economic development strategy is founded on major interventions in activities affecting all key areas of the smallholder food crop section. The main aims of the Government's strategy in food crop sector development are :

- (a) to strengthen self sufficiency of staple foods and to increase agricultural production;
- (b) to extend rural work force with employment opportunities;
- (c) to achieve balanced regional development;
- (d) to increase farmers' income; and
- (e) to vitalize farmers' organization such KUD and WUAs.

To achieve the aims above, Repelita V (1989/90 - 1993/94) a principal strategy for development of agricultural sector has been established to promote (a) intensification, (b) extensification (especially in the east of Java), (c) diversification, and (d) rehabilitation.

In recent year, however, the Government had shifted its major emphasis from irrigation projects in Java to new irrigation schemes outside of Java. Central South Sulawesi is one of the most promising area among the eastern region to develop new irrigation schemes because of their higher development potential and availability of overall study and reliable data and information.

It is recognized that the Gilirang Irrigation Project will support the Government's current development goals in the agricultural sector, which include consolidating rice productivity gains and broadening the agricultural

base, creating rural employment opportunities, and balancing regional development.

## 2. Feasibility Study on the Gilirang Irrigation Project

### 2.1 *Explanation of the Project Area*

#### 2.1.1 *Location*

The study area of 10,000 ha net is located in the northeastern part of the South Sulawesi, extending from hilly terrace to low-lying areas near the sea coast along the Gilirang river.

#### 2.1.2 *The Study Area*

The area consists mainly of rainfed paddy fields. The Gilirang river, main source for irrigation, flow eastward interesting the irrigable area of 10,000 ha. Climate in the study area is tropical monsoon type with two distinct seasons. The annual rainfall is 2,000 mm. Soil is of fine textured and suitable for paddy cultivation.

The present agriculture in the study area is single cropping of paddy under rainfed. The farmer's income level is one of the lowest in Central South Sulawesi. There is pressing needs to increase farmers' income through irrigation development.

### 2.2. *Objectives of the Study*

The objectives of the Study are :

- (1) to prepare topographic maps to be used for the feasibility study;
- (2) to formulate a optimum plan on the Gilirang irrigation development in Central South Sulawesi, and verify the technical and economic feasibility of the Project; and
- (3) to make technology transfer to the Indonesian counterpart personnel in the course of the Study.

### 2.3 *Concept of the Study*

The feasibility study on the Gilirang Irrigation Project will be conducted following the basic concepts below :

- (a) alternative development ideas will be fully assessed to minimize development costs;
- (b) development plan will be formulated taking special attention to realize efficient water management after implementation;
- (c) crop diversification will be considered as much as possible;
- (d) improvement of farming practices and post harvest situation will be studied with special attention; and
- (e) strengthening of farmers' organization and water users' association is considered.

### 2.4 *Steps of the Study*

The feasibility study will be carried out for ful-filling the above concept in accordance with the following study steps.

- (a) topographic mapping for irrigation area and the Gilirang dam and reservoir area;
- (b) field investigations, including topographic survey, geological investigation, hydrological survey, soil survey and environmental survey;
- (c) identification of existing problems and constraints against productive agriculture;
- (d) assessment of land water development potential;
- (e) formulation of alternative development plans paying attention to economic development,
- (f) environmental assessment in relation with development activities;
- (g) formulation of optimum development plan; and
- (h) evaluation of the proposed development plan.



### 3. Institutional Frame work

#### 3.1 *Coordination for the Study*

The Directorate General of Water Resources Development (DGWRD), the Ministry of Public Works, will be the executing agency for the feasibility study of the Project. The Directorate of Programming and Planning (DOPP) will have a direct responsibility for the study works and provide counterparts and logistic support necessary for the satisfactory execution of the study. Liaison of coordination at the site with other ministries, administrations, agencies and local governments concerned will be managed by DOPP.

#### 3.2 *Connection between the Project and REPELITA V*

The Government continues to give higher priority to the development of irrigation in Repelita V. It is also noticed, however, that the Government shifted its major emphasis from high-cost surface irrigation projects in Java, to new cost effective schemes in the outer islands.

To achieve the target of rice production determined in Repelita V, development of new irrigation area of 400,000 ha net is required in addition to rehabilitation and upgrading of existing irrigation schemes. Such new development should be promoted in the eastern region as much as possible following the strategy in Repelita V.

Due to its higher development potential area in Central South Sulawesi, Gilirang Irrigation Project will certainly support Repelita V in the agricultural sector.

### 4. Follow up to the Project

#### 4.1 *Previous Activities*

Central South Sulawesi is one of the large rice granaries in Indonesia. The expansion and improvement of irrigated paddy field in this region are one of the Government strategy for the stabilization of rice production.

To assess the development potential and to formulate promising irrigation projects, the Master Plan Study for the Central South Sulawesi Water Resources Development was conducted by the Japan International Cooperation Agency (JICA) in 1980, and 9 irrigation projects were identified for implementation. Of them, 3 projects with higher priority were subsequently promoted to the further stage with Japanese Government assistance as follows (F/S = feasibility study, D/D = detailed design):

- |                                 |  |
|---------------------------------|--|
| (1) Langkeme Irrigation Project | F/S completed by JICA in 1981<br>D/D completed in 1985 (OECD)<br>Construction is on-going (1988- )<br>(with OECD financed) |
| (2) Bila Irrigation Project     | F/S completed by JICA in 1982<br>D/D completed in 1988 (OECD)  |
| (3) Sanrego Irrigation Project  | F/S completed by JICA in 1983<br>D/D & Construction completed<br>(The World Bank's assistance)                             |

#### 4.2 *Expected Study Results*

Through the Study the following results will be obtained :

- (a) Formulation of an optimum development plan;
- (b) Preparation of the preliminary design of main structures;
- (c) Preparation of an implementation schedule;
- (d) Estimation of project costs and benefits;
- (e) Evaluation of economic feasibility and viability of the project; and
- (f) Preparation of an operation and maintenance plan for the project.

#### 4.3 *Follow up Activity of the Project*

Based on the results above, the detailed design work and construction works covering the following component of the project and activities will be implemented as the follow up activity.

- (a) Construction of the Gilirang dam (35 m high, 110 MCM storage, rockfill type);
- (b) Construction of main and secondary canal networks (173 km in total length);
- (c) Construction of a drainage canal network;
- (d) Construction of an farm road network;
- (e) On-farm development (10,000 ha);
- (f) Improvement of rural infrastructure;
- (g) Improvement of farming practices; and
- (h) Improvement of post harvest system.

## II. OBJECTIVES OF THE PROJECT

The implementation of the Gilirang Irrigation Project is required for the attainment of not only the target in Repelita V but also equalization of socio-economic development in the Central South Sulawesi.

### 1. *Immediate Objectives*

Through the implementation of the project, the following immediate objectives will be achieved .

- (a) to provide a stable water supply to the existing rainfed paddy field through construction of dam;
- (b) to apply the technical irrigation system through construction of irrigation/drainage facilities for an efficient use of storage water in the dam;
- (c) to improve the infrastructures in the project area, including farm road;
- (d) to improve farm practices and a post harvest system for achieving the effective agricultural development; and
- (e) to provide employment opportunities for local professionals and laborers during construction of the project.

### 2. *Long Term Objectives*

In conformity with the national strategy for development of agricultural sector, the long term objectives of the Project was determined as follows :

- (a) to realize the year-round irrigation aiming to increase crop production, especially rice, and to contribute to support the national self sufficiency;
- (b) to improve the present poor economic position;
- (c) to improve the present income disparity;
- (d) to increase employment opportunities; and
- (e) to uplift the rural living standard.

### III. PLAN OF OPERATIONS

#### 1. Scope of the Study

##### 1.1 *Study Area*

The Study covers an irrigation area of about 10,000 ha net along the Gilirang river and areas related to the Study in Central South Sulawesi.

##### 1.2 *Contents of the Study*

The Study will be composed of two stages as follows :

###### 1.2.1 Stage - I : Preparation of Topographic Map

Topographic maps on a scale of 1:5,000 with contour interval of 0.5 m shall be prepared for the area of 250 km<sup>2</sup> in and around the project area. For the Gilirang dam site, topographic maps shall be prepared on a scale of 1:5,000 with contour interval of 0.5 m. In addition, topographic maps covering the proposed reservoir area shall be prepared on a scale of 1:2,000 with contour interval of 5 m.

###### 1.2.2 Stage - II : Feasibility Study

The Study will cover the following items :

- A) Collection and review of relevant existing data and information including :
  - (a) Topography, (b) Meteorology, (c) Hydrology, (d) Geology, (e) Soils, (f) Present land use, (g) Irrigation and drainage, (h) Agriculture, (i) Agro-economy and regional economy, (j) Social organization and institution, (k) Rural infrastructure, (l) Regional and national development programs, and (m) Others.

- B) Field Surveys including :
  - (a) Topographic survey
  - (b) Hydrological survey
  - (c) Geological survey
  - (d) Soil-mechanical survey
  - (e) Construction material survey
  - (f) Agricultural survey
  - (g) Agro-economic survey
  - (h) Irrigation and drainage survey
  - (i) Cost survey
  - (j) Environmental survey
- C) Identification of existing problems and constraints against productive agriculture
- D) Assessment of land and water development potential based on analysis of collected data and information
- E) Environmental assessment for development plans
- F) Formulation of an optimum development plan based on alternative study including :
  - a. Water resources development plan
  - b. Agricultural development plan
  - c. Irrigation and drainage development plan
- G) Preliminary design of main structures
- H) Preparation of an implementation schedule
- I) Estimation of project costs and benefits
- J) Evaluation of economic feasibility and financial viability of the project
- K) Preparation of an operation and maintenance plan for the project

## 2. Study Schedule

The whole study shall be conducted within 17 months as shown in the tentative schedule (Appendix I) including preparation of topographic maps for 6 months, field investigations for 6 months and home study for 5 months covering above all the activities.

## 3. Reports

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

(a) Inception Report

Thirty (30) copies at the beginning of the feasibility study

(b) Interim Report

Thirty (30) copies at the end of the field works in Indonesia

(c) Draft Final Report

Fifty (50) copies within three (3) months after the end of the field works. The Government of Indonesia shall, if any, present comments on this Report to JICA within one (1) month after receiving the Report.

(d) Final Report

Fifty (50) copies within one (1) month after receipt of comments from the Government of Indonesia on the Draft Final Report.

#### IV CONTRIBUTION OF THE PROJECT

##### 1. External Contributions

(1) Aid expected : Official technical assistant program on grant basis of the Japanese Government because the previous master plan study and follow-up have been totally conducted by Japanese assistance.

##### (2) Expertise inputs :

|                                     | <u>Estimated M/M</u> |
|-------------------------------------|----------------------|
| (1) Team Leader                     | 3                    |
| (2) Irrigation/Drainage Engineer    | 11                   |
| (3) Dam Engineer                    | 11                   |
| (4) Hydrologist                     | 6                    |
| (5) Engineering Geologist           | 5                    |
| (6) Soil-mechanical Engineer        | 5                    |
| (7) Irrigation Design Engineer      | 9                    |
| (8) Hydraulic Structural Engineer   | 6                    |
| (9) Agronomist                      | 11                   |
| (10) Pedologist                     | 5                    |
| (11) Agro-economist                 | 5                    |
| (12) Construction Planner/Estimator | 4                    |
| (13) Environmentalist               | 4                    |
| (14) Project Economist              | 3                    |
| <u>Total</u>                        | <u>88 M/M</u>        |

##### (3) Fund estimated for the study

|  |                      |
|--|----------------------|
| (a) Experts services (88 M/M)                  | US\$ 880,000         |
| (b) Preparation of topo maps                   | US\$500,000          |
| (c) Field investigations (boring, etc.) others | US\$275,000          |
| <u>Total Cost</u>                              | <u>US\$1,655,000</u> |



## 2. *Undertaking of JICA*

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

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

## 3. *Indonesian Government Contribution*

- (1) To facilitate smooth conduct of the Study, the Government of Indonesia will take necessary measures :
  - (a) to secure the safety of the Japanese Study Team,
  - (b) 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,
  - (c) 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,
  - (d) 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,
  - (e) To provide necessary facilities to the Japanese Study Team to the remittances as well as the utilization of the funds introduce into Indonesia to Japan by the Japanese Study Team, and

# TENTATIVE SCHEDULE

|                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| I. Topographic Mapping |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| II. Feasibility Study  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| (1) Work in Indonesia  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| (2) Work in Japan      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| III. Report            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Inception Report       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Interim Report         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Draft Final Report     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Final Report           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |





JICA

