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1．ミニッツ：合同評価報告書

MINUTES OF UNDERSTANDING OF THE JOINT EVALUATION ON THE JAPANESE TECHNICAL COOPERATION FOR THE IRRIGATION ENGINEERING SERVICE CENTER PROJECT IN THE REPUBLIC OF INDONESIA

With about four months left until the termination of the cooperation period of "The Irrigation Engineering Service Center Project in the Republic of Indonesia" (hereinafter referred to as "the Project") on June 9, 1999, which started on June 10, 1994, as stated in the Record of Discussions (hereinafter referred to as "R/D"), the Japanese Evaluation Team organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yukiharu HARADA visited the Republic of Indonesia in order to conduct an overall review and evaluation of the performance of the Project. In order to achieve this, a Joint Evaluation Team (hereinafter referred to as "the Team") was formed consisting of the aforementioned Japanese Team and the Indonesian Evaluation Team headed by Ir. Sunarto Sundjojo.

The Team conducted interviews with the Japanese experts and the Indonesia counterparts assigned to the Project, had a series of discussions with the Indonesian authorities concerned, made field surveys and exchanged views among themselves.

Ir. Budiman Arif, Director General of Water Resources Development, Ministry of Public Works, received and agreed with the contents of the joint evaluation report which was submitted by the Team (attached hereto).

Jakarta, February 26, 1999

原田幸治

Mr. Yukiharu HARADA
Leader
Japanese Evaluation Team
Japan International Cooperation Agency
Japan

Ir. Budiman Arif
Director General of
Water Resources Development
Ministry of Public Works
Republic of Indonesia

MINUTES OF THE JOINT EVALUATION ON THE JAPANESE TECHNICAL COOPERATION FOR THE IRRIGATION ENGINEERING SERVICE CENTER PROJECT IN THE REPUBLIC OF INDONESIA

With about four months left until the termination of the cooperation period of "The Irrigation Engineering Service Center Project in the Republic of Indonesia" (hereinafter referred to as "the Project") on June 9, 1999, which started on June 10, 1994, as stated in the Record of Discussions (hereinafter referred to as "R/D"), the Japanese Evaluation Team organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yukiharu HARADA visited the Republic of Indonesia in order to conduct an overall review and evaluation of the performance of the Project. In order to achieve this, a Joint Evaluation Team (hereinafter referred to as "the Team") was formed consisting of the aforementioned Japanese Team and the Indonesian Evaluation Team headed by Ir. Sunarto Sundjojo.

The Team conducted interviews with the Japanese experts and the Indonesian counterparts assigned to the Project, had a series of discussions with the Indonesian authorities concerned, made field surveys and exchanged views among themselves.

As a result, both the Team agreed to forward to their respective Governments a summary of the evaluation and recommendations which are referred to in the document attached hereto.

Jakarta, February 26, 1999

原田幸治

Mr. Yukiharu HARADA
Leader
Japanese Evaluation Team

Ir. Sunarto Sundjojo
Leader
Indonesian Evaluation Team

JOINT EVALUATION REPORT
ON THE JAPANESE TECHNICAL COOPERATION
FOR
THE IRRIGATION ENGINEERING SERVICE CENTER PROJECT
IN
THE REPUBLIC OF INDONESIA

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1 INTRODUCTION

The Government of Indonesia requested technical assistance from the Government of Japan to establish a center which would give advice, guidance, and training to engineers on construction techniques in irrigation and drainage.

A technical type cooperation project entitled "The Construction Guidance Service Center Project" (hereinafter refer to "the CGSC project") had been carried out for seven (7) years from April, 1981 to March, 1988 and for two (2) more years from May, 1990 to May, 1992

After the successful completion of the CGSC project, the Government of Indonesia requested from the Government of Japan further technical cooperation for the Irrigation Engineering Service Center Project in April 1991.

Both Governments have been undertaking the Project since June 1994 for five years.

In accordance with the Record of Discussions (hereinafter refer to "R/D") and Tentative Schedule of Implementation (hereinafter refer to "TSI") signed on March 8, 1994, the following activities have been implemented.

1-1 Investigation, Planning and Design (I.P&D)

(1) The Technical Guidelines

(2) Technical Knowledge and Method

1-2 Operation and Maintenance (O&M)

(1) Complementing existing O&M guidelines to be National Guidelines and their diffusion

(2) Examination and introduction of irrigation water management technology for efficient use of water resources

(3) Improvement of O&M information procedures as a model

1-3 Rehabilitation and Upgrading (R&U)

(1) Development of guidelines

(2) Case study and examination of the evaluation system for R&U planning

(3) Case study and examination of the canal lining works

1-4 System Development (SD)

(1) Technical calculation system

(2) Data base system

1-5 Training

(1) Preparation of training plan, curriculum and material

(2) Implementation of training

2 MEMBERS OF THE JOINT EVALUATION TEAM

(1) The Japanese Evaluation Team

Mr. Yukiharu HARADA : Leader
Director General, Planning Department, Kanto Regional Agricultural Administration Office, Ministry of Agriculture, Forestry and Fisheries

Mr. Kazuhiro WATANABE : Investigation, Planning and Design / System Development
Section Chief, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries

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Chief Technical Coordinator, Farmland Planning Division, Agriculture, Forestry and Fisheries Department, Yamagata Prefectural Government

Mr. Shigeru KOBAYASHI : Evaluation Analysis
Staff, Fisheries / Environmental Department, System Science Consultants INC.

Mr. Kento TOYAMA : Technical Cooperation
Staff, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, Japan International Cooperation Agency

(2) The Indonesian Evaluation Team

Ir. Sunarto Sundjojo : Leader
Chief of Sub Directorate for Involvement's Guidance of Private Sector and Community, Directorate of Utilization and Conservation of Water Resources, Directorate General of Water Resources Development, Ministry of Public Works

Ir. Bambang Waluyono : Investigation, Planning and Design / System Development
Senior Lecturer within Directorate General of Water Resources Development, Ministry of Public Works

Ir. Soeharto : Rehabilitation and Upgrading / Operation and Maintenance
Sub Director for East Region 1, Directorate of Construction Implementation Guidance

Ir. Suwardi : Evaluation Analysis
Chief of Section for Technical Services, Experimental Station for Irrigation

Ir. Agni Handoyoputro : Technical Cooperation
Sub Director for Development of Sectoral Program, Directorate of Planning & Programming

3 OBJECTIVES OF THE EVALUATION

(1) To make a comprehensive and objective evaluation of the achievement of the Project with regard to the contents of R/D, TSI and other official agreements concerned. The period of the Project which is the subject of the evaluation is 5 years from June 10, 1994 to June 9, 1999 (including the scheduled activities and output).

(2) To make recommendations and suggestions to the authorities of both Governments concerned with regard to the activities after the termination of the cooperation period of the Project.

4 EVALUATION OF THE PROJECT

4-1 ITEMS OF THE SURVEY

The Team conducted an evaluation investigation with regard to the following items based on R/D and TSI:

(1) Project input

1) Japanese Input
Dispatch of experts
Acceptance of trainees
Provision of machinery and equipment
Supplementary funds to cover local costs
Dispatch of study teams
Other

2) Indonesian Input
Provision of land, buildings and facilities
Allocation of budget
Assignment of counterparts and other personnel
Supply and replacement of machinery and equipment
Other

(2) Project activities and accomplishments

4-2 EVALUATION METHOD

(1) The survey was conducted by the Team which was composed of the Japanese Evaluation Team and the Indonesian Evaluation Team.

(2) The accomplishment of the activities of the Project was mainly evaluated according to the progress of TSI, adapting the Project Design Matrix (hereafter refer to PDM) of the Project (ANNEX 1).

(3) The evaluation was carried out mainly by means of interview and discussion with personnel concerned, and site survey.

5 RESULTS OF INVESTIGATION

5-1 ACCOMPLISHMENTS IN TERMS OF INPUT

5-1-1 JAPANESE INPUT

(1) Dispatch of experts

A total of 11 long-term experts have been dispatched. They include a team leader and two coordinators, as well as personnel with expertise in Investigation, Planning and Design, Operation and Maintenance, Rehabilitation and Upgrading and System Development.

In line with the R/D and the TSI, short-term experts were also dispatched as necessary. At present, 28 short-term experts have been dispatched to Indonesia. In addition, other two short-term experts will be dispatched in March and April 1999.

Japanese experts have been dispatched in accordance with the R/D and the TSI. Technical transfer has been favorably carried out (ANNEX 2).

(2) Acceptance of trainees

Training of counterpart personnel in Japan started in fiscal year 1994 (the Japanese fiscal year starts on April 1, ends on March 31, and is hereinafter refer to "FY". At present, 20 counterparts have been visited Japan to participate in technical training. All training has been efficiently implemented according to schedule. In addition, other two counterparts will visit Japan in March 1999 (ANNEX 3).

(3) Provision of machinery and equipment

Machinery and equipment were provided in order to carry out the Project activities effectively. All machinery and equipment provided or brought by the experts have contributed to the development and enhancement of the activities of the Project (ANNEX 4).

(4) Supplementary funds to cover local costs

The Japanese side paid part of the project management cost and local cost for training the staffs of IESC in order to implement the Project effectively.

The supplementary funds provided by the Japanese side (ANNEX 5).

(5) Dispatch of study teams

1) Preliminary Survey Team

The Preliminary Survey Team visited Indonesia from October 13 to October 25, 1992 in order to assess the feasibility of the technical cooperation of the requested project.

2) Long Term Survey Team

The Long Term Survey Team visited Indonesia from September 7 to October 4, 1993 in order to collect necessary background information and to formulate a tentative master plan of the proposed Project.

3) Implementation Survey Team

The Implementation Survey Team visited Indonesia from February 27 to March 9, 1994 in order to finalize the Master Plan and the TSI of the Project.

The R/D and the TSI were then signed on March 8, 1994.

4) **Consultation Study Team**

The Consultation Study Team visited Indonesia from March 7 to March 17, 1995 in order to formulate the detailed TSI as well as discussing the major issues related to the Project (Especially, the desirable measures to be taken by both Governments after there organization of Water Resources Development).

5) **Advisory Team (Mid-term evaluation)**

The Advisory Team visited Indonesia from December 9 to December 21, 1996 in order to evaluate the activities of the Project over the previous two and a half (2.5) years. This evaluation concluded that the project activities were behind the schedule due to the reorganization of Directorate General of Water Resources Development (hereafter refer to DGWRD), and the DTSI was formulated for the remaining duration of the Project.

5-1-2 INDONESIAN INPUT

(1) Provision of land, buildings and facilities

The Government of Indonesia provided land, buildings and facilities required for the Project with the R/D.

(2) Allocation of budget

The Indonesian side allocated 2,884 million rupiahs for the operational cost from 1994 up to now (ANNEX 6). Those budgets have been provided for salary, materials, machinery, equipment, transport and travel allowances and others.

(3) Assignment of counterparts and other personnel

Indonesian counterparts and other personnel under DGWRD and Experimental Station for Irrigation, Research and Development Agency in Bekasi were assigned for the implementation of the Project (ANNEX 7).

(4) Supply and replacement of machinery and equipment

The machinery and equipment are in good condition at present.

5-2 PROJECT ACTIVITIES AND ACCOMPLISHMENT

The project results of activities and its accomplishment by sector are as follows:

5-2-1 INVESTIGATION, PLANNING AND DESIGN (I.P&D)

(1) The technical guidelines

The "Guideline for Irrigation Investigation Planning" and the "Guideline for Design of Fill Type Dam Vol. I" were prepared, and have been diffused.

The "Guideline for Design of Fill Type Dam Vol. II" and the "Guideline for Countermeasure for Soft Soil" which was added at the Mid-term evaluation, were almost prepared, and will be disseminated during the project period.

(2) Technical Knowledge and Method

1) Technical analysis

Technical calculation programs were completed for both the "Water hammer for simple pipeline" and the "Water level calculation on canal by non-uniform flow". These programs have been diffused through the training for the middle-level engineers.

2) Case study

Seven kinds of survey were carried out for the case study, and six out of seven were completed. Only insufficient data was collected by the "Survey of seismic coefficient" at this stage. However, necessary techniques have already been transferred through those activities.

5-2-2 OPERATION AND MAINTENANCE (O&M)

(1) Complementary of existing O&M guidelines to be National Guidelines and their diffusion

"Basic Technical O&M guideline" was completed with signature of Director General of Water Resources Development, and spread through the seminars and middle-level engineers training.

(2) Examination and introduction of irrigation water management technology for efficient use of water resources

"Case study to know actual water management situation" was carried out in the Way Sekampung area and Jatiluhur area. This case study ended with incomplete result, due to insufficient data collection caused by abnormal weather.

The "Guidance paper for Increasing Irrigation Efficiency" will be prepared by the end of project period. In addition, the torrent intake structure was introduced, and constructed in three areas.

(3) Improvement of O&M information procedure as model

Computerized O&M information procedure (Irrigation information system) in Lampung province was established and handed over in December 1998. The monitoring and evaluation is carried out during the project period.

5-2-3 REHABILITATION AND UPGRADING (R&U)

(1) Development of guideline

The guidelines of "Open Canal" and "Head Work" were developed, and will be disseminated by the end of project period. The guideline of "Small Dam" was almost developed, and will be disseminated by the end of project period. Accordingly, "Technical specification of the R&U work" was prepared.

(2) Case study and examination for evaluation system for R&U planning

The "Evaluation system for R&U planning" was prepared based on the database system that was developed by System Development Field.

(3) Case study and examination of the canal lining work

The asphalt lining method was introduced into canal lining through the case study, and compared its effectiveness with other construction materials.

5-2-4 SYSTEM DEVELOPMENT (SD)

(1) Technical calculation system

Seven programs were developed, and two programs out of seven were developed by counterparts themselves. Most of the programs were diffused through the middle-level engineers training. The diffusing activities for remaining ("Stability analysis on head work" and "Stability analysis on invert T-type wall") will be carried out in March 1999.

(2) Data base system

The "Inventory system for main irrigation facilities" was developed, and inputted irrigation scheme data for 1,274 projects, and facilities information for 55 projects. In addition, the "Filing system for irrigation scheme map" were developed, and inputted detailed information of 12 projects.

The "Irrigation information system" was developed successfully to cover the initial target, and was handed over to Lampung province in December 1998. By using this system, information and decision can be sent every moment, data can be processed quickly and more accurately. Moreover, water condition/discharge in the field could be monitored directly. Therefore, this system is very useful for O&M. Through the monitoring survey, continuous data collection by provincial government was confirmed by the Team.

5-2-5 TRAINING

Training, workshops and seminars were carried out 58 times, and 2,392 engineers and technicians of both central and local government were participated. Through these activities, new technology was introduced by short-term experts, the developed guidelines and calculation programs were diffused.

6 RESULT OF EVALUATION

6-1 DEGREE OF GOAL ACHIEVEMENT

According to the Master Plan attached on the R/D signed on March 8, 1994, the project purpose is "The technical guideline(s) and manual(s) necessary for the appropriate implementation of irrigation projects will be continuously improved / developed and extended through the implementation of the training by DGWRD, MPW".

The Team set up the indicators for the evaluation as follows:

- DGWRD becomes able to implement the seminars and training by itself by the end of project period.
- DGWRD becomes able to make the future dissemination plan by itself by the end of project period.

The Team confirmed that most outputs are achieved, and seminars and training were carried out by DGWRD at the time of the evaluation study. Although some activities have not yet completed, all the activities would be achieved their objectives in the project period through the continuous activities focussing on these specific subjects.

In addition, DGWRD is preparing annual dissemination plan in 1999/2000 for the result of the Project.

In consideration of the achievements mentioned above, the Team concluded that the Project would achieve its purpose by the end of project period.

From the viewpoint of causal relationship between the output and the project purpose, each output positively contributed to the realization of the project purpose. The technical guidelines and manuals are one of the main components of the output. Through the preparation of these guidelines and manuals, counterparts of IESC were trained and improved their technical level. As the result of the On the Job Training, counterparts acquired technical skills for development and improvement of the guidelines and manuals. Materials of the training also prepared based on these guidelines and manuals, and some guidelines were used directly for the textbook. The counterparts took role of lecturers for these diffusing activities, and finally, they held the seminars and middle-level engineer training by themselves.

Even though all of outputs will be achieved in the project period, some activities have been behind the schedule. The main factors of the delay are as follows:

1) Reorganization of DGWRD was one of factors for about nine months delay of the Project. The DTSI was formulated for the remaining period at the Mid-term evaluation in 1996, and enormous endeavor was made for recovering the delay by both Indonesian and Japanese side.

2) The economic crisis since 1997 is also one of the factors which had influence on the smooth implementation of the Project such as budget disbursement to the Project.

As aforesaid, both materials and skilled person that is necessary to achieve the project purpose are gained through the output.

6-2 PROJECT IMPACT

6-2-1 IMPACT

(1) Technical Impact

The technical impacts of the Project are as follows:

1) Technical guidelines are developed and improved continuously by the counterparts and Task Force.

2) The staffs in model satellites as well as specific study areas well understand measuring, analysis methods and theories of each subject.

3) The developed programs are spread to engineers and technicians, and utilized in actual practices.

(2) Institutional impact

Through the activities by IESC, the importance of coordination between the irrigation sector and agriculture sector in central and provincial levels is recognized.

DGWRD is considering strengthening their capability for instruction on site level focussing on smaller scale irrigation schemes.

6-2-2 EXTENT OF IMPACT

(1) Project level

Results of the Project were spread not only to project sites, but also to various places in Indonesia through activities such as seminars and middle-level engineer training. There were 2,392 participants in the seminars during the project period. In addition, the results were diffused to neighboring countries through international training courses supported by IESC.

(2) Sector level

It had large impact on the irrigation sector to introduce new technology such as torrent intake structure and water level control gate. The torrent intake structure was introduced in Aceh and Sulawesi. In addition, result of introduction of torrent intake structure was reported at the annual scientific meeting of Indonesian Association of Hydraulic Engineers. The results of the Project were reported at the meeting of "International Commission on Irrigation and Drainage (ICID)" in Bali on June 1998.

Besides, the developed programming is introduced to private sector, and stimulated the irrigation sector.

(3) Regional level

Farmers in model satellite in Lampung, where the irrigation information system was introduced, received benefit of the system directly. The people in other area, where torrent intake structure were introduced, and the project sites of the Local Development Program received benefit from those activities.

(4) Macro level

The importance to apply the unified guidelines to irrigation works is recognized more concretely.

6-3 EFFICIENCY

6-3-1 TIMING OF INPUT

(1) Japanese side

- All kind of input, such as dispatch of expert and provision of machinery and equipment, were carried out on schedule from June 1994. As for training, 20 counterparts were participated, and other two will be participated on schedule for training in Japan.

(2) Indonesian side

- All lands and facilities in IESC, DGWRD and model satellite were utilized as scheduled.
- Due to reorganization of DGWRD, counterparts were appointed in February 1995, and activities were behind the schedule.
- Because of the economic crisis, it has been harder to fund the counter budget, such as counterpart activities, middle-level engineer training and maintenance of equipment, since late 1997.

6-3-2 RELATION BETWEEN INPUT AND OUTPUT

- As mentioned above, project activities were behind the schedule, due to delay in the appointment of counterparts at initial stage of the Project.

- All of the provided machinery and equipment were utilized efficiently and well maintained during project period.
- Some of project activities were hindered, because of counterparts change. The key staffs in DGWRD were swamped with emergency countermeasures to economic crisis from late 1997. This caused some obstructions against the Project implementation.
- Because JICA experts had to work with counterparts in both DGWRD and IESC, communication problem and maladjustment were occurred frequently between the officials in both offices.
- Some activities were carried out by plural fields (for example, development of computer network was cooperative activity for O&M and SD). Because of different command line for activity management, miscommunication and confusion was happened occasionally.

6-4 RELEVANCE

6-4-1 OVERALL GOAL

The Indonesian Government planned expansion of the irrigated area, efficient utilization of water, conservation of water resources, etc. concerning development of water resources and irrigation sector in the Sixth Five-Year National Development Plan (REPELITA VI). The overall goal of the Project is as follows;

- Irrigation projects are appropriately implemented as a total scale. After the construction of Irrigation system, facilities are maintained, managed, rehabilitated and upgraded appropriately.

This overall goal follows policy of the REPELITA VI above.

The Indonesian Government prepared the "Urgent Efforts To Increase Food Production Through Irrigation Developments (hereafter referred to Urgent Irrigation Program)". This program aims at the efficient utilization and expansion of irrigated area as the countermeasures against the economic crisis. The overall goal of the Project is also closely related to the Urgent Irrigation Program.

6-4-2 PROJECT PURPOSE

Due to lack of unifying guidelines and criteria in irrigation sector, the function of irrigation works were not fully effective. Therefore, the Project aims at developing / improving guidelines applicable, and it will contribute to improve the irrigation sector in Indonesia.

6-4-3 PROJECT DESIGN

In consideration of logic and rationality of the project design, causal relationship are recognized between input and output, output and project purpose, respectively. All output positively contributed to the realization of the project purpose and omission was not recognized.

6-5 PROSPECTS FOR SUSTAINABILITY

6-5-1 PROSPECTS FOR SUSTAINABILITY

(1) Implementing agency

Directorate of Technical Guidance that was appointed as implementing agency is the most appropriate agency for the Project. There is no doubt in the anticipation that the activities of the Project currently implemented with main site at Bekasi and sub-site at DGWRD will be continuously carried on even after the termination of Japanese cooperation under the responsibility of DGWRD. In addition, DGWRD explained future plan to establish the permanent body which will serve as Irrigation Information and Engineering Center.

(2) Operation and management system of this Project

DGWRD prepared annual disseminating plan (1998/1999) for the results of the Project that targets 120 participants with the budget of 300 million rupiahs. These disseminating activities will be continued under the responsibility of DGWRD.

6-5-2 PROSPECTS FOR FINANCIAL SUSTAINABILITY

Necessary budget for continuing the project activities after project period will be arranged by DGWRD.

The field offices will take responsible for management of provided equipment which set up in model areas. The each office will manage the maintenance cost.

6-5-3 PROSPECTS FOR PHYSICAL AND TECHNOLOGICAL SUSTAINABILITY

(1) Contents of technical transfer and appropriateness of a technical level

Through the discussion and interview surveys, the Team concluded that the required technical level was also appropriate, with the consideration of technical level of Indonesian side and project period,

(2) Stability of transferred technique

All of the developed / improved technical methods were realized, and diffused by the counterparts. These counterparts lecture to engineers and technicians on the seminars and training of each field. DGWRD explained that this activity will be continued in the future, and they are preparing request letter to National Development Planning Agency (BAPPENAS) for the budget of diffusion of IESC activities in 1999/2000.

The Team concluded that stable formation is already established for the dissemination in DGWRD.

In addition, some technical methods which were the results of the Project, already introduced to private sector, and stimulated irrigation sector in Indonesia. For example, torrent intake structure was introduced and constructed in three local construction sites. In addition, result of case study was reported widely related technical societies such as Indonesian Association of Hydraulic Engineers.

(3) Development of successors

The participants of IESC seminars are conferred certification, and registered personnel record. This also becomes good incentive for participating seminars.

7 CONCLUSIONS AND RECOMMENDATIONS

7-1 SUMMARY OF EVALUATION

The Team discussed and evaluated the efficiency, effectiveness, impact, relevance and sustainability of the Project with DGWRD officials. Through the careful studies and discussions, the Team concluded that the Project would achieve its purpose during the project period. Most of the guidelines and manuals mentioned in DTSI were prepared, and most of the results were diffused through the seminars and training. Even though there are some subjects which are not completely achieved at this stage, necessary technical transfer is expected to be done by the end of project period.

On the other side, Indonesian Government considers to expand the IESC activities for assisting the Urgent Irrigation Program which is focusing on rather smaller scale irrigation systems / facilities closer to farm level.

7-2 URGENT IRRIGATION PROGRAM

7-2-1 Background

Since 1994, the national food production especially for rice has not been able to meet the increasing of the domestic consumption. The amount of rice import requirements was some 3 million tons (97/98) and more in 1998/1999.

The stability of the national food production has also been hampered by the conversion of irrigated area to non-agricultural use.

7-2-2 Contents and schedule of the project

The government of Indonesia has drawn up the "Urgent Effort to Increase Crop Production Through Irrigation Developments" for dealing the above situation. This plan is consisted of three programs and period of the programs is from 1998/1999 to 2000/2001. Each subject and its content is as follows:

(1) Increasing Cropping Intensity on Available Irrigation Schemes

The programs to increase cropping intensity through irrigation developments by some programs as follows.

1) Efficient O&M and rehabilitation of irrigation systems will increase a cropping area of some 233 thousands ha.

2) Upgrading irrigation systems will increase a cropping area of some 155 thousands ha.

3) Additional raw water supply will increase a cropping area of some 19 thousands ha.

(2) Adding Cropping Area (Rounding Up)

A cropping area of 571 thousands ha will be added through completing rice fields where available irrigation schemes exist.

(3) Developing Small-scale Irrigation (Ex-rain-fed Paddy Field)

Through small-scale irrigation developments on the rain-fed paddy fields, a cropping area of some 277 thousands ha will increase.

The total additional cropping area of some 1,255 million ha through the above programs at the end of third year will provide the additional production of some 6.36 million dry net paddy tons (be equivalent to 4.1 million milled rice tons). These activities need a financial cost of some 10.6 quintillion rupiahs.

7-2-3 Necessity of Assistance

DGWRD have to carry out so many projects successfully under the Urgent Irrigation Program in about next two years. Most of these projects are categorized to rather small scale irrigation scheme aiming at rehabilitation, and will be implemented mainly at the provincial level. On the other hand, decentralization is proceeding now, and the technical guidance to personnel at provincial level concerning small scale irrigation schemes on site is considered necessary to be improved, and the capability building for technical instruction in DGWRD is also very important in the future.

In this situation, DGWRD requested Japanese Government to continue the Project to assist DGWRD to urgently cope with the Urgent Irrigation Program.

7-3 RECOMMENDATION

(1) Sustainability

The team expected that the Project would make effort to finalize the remaining activities by June 1999.

To ensure the sustainability of the Project, Indonesian side should take measures for the subjects below;

1) To prepare the appropriate organization and structure such as "Irrigation Engineering Information Center", or to place the roles of IESC under the authority within the DGWRD for continuing the Project activities.
   The role of Irrigation Engineering Information Center (IEIC) among others are ;
   - To develop irrigation information service
   - To disseminate applied irrigation techniques
   - To develop measures for sustainable irrigation system
   - To take a role of training center for irrigation technology

2) To expand the IESC activities for focussing on the irrigation facilities closer to farm level. This would be necessary for assisting the Urgent Irrigation Program.

3) To ensure the role of DGWRD with the consideration of the decentralization policy of irrigation sector.

4) To obtain the budget constantly for continuing the Project activities.

5) To ensure necessary personnel and budget for maintaining and utilizing machinery and equipment provided by the Japanese Government.

(2) Follow-up cooperation

1) Necessity of follow-up cooperation

The Project is scheduled to terminate on June 9 1999. However, it is very important to support the implementation of the Urgent Irrigation Program by solving the technical problems on the site through utilizing outputs of the Project. In addition, it is also necessary to prepare the guidelines for developing irrigation system closer to farm level. Therefore, it is necessary to extend the cooperation period as follow-up of the Project.

2) Master Plan for follow-up cooperation

Through the careful discussions, follow-up period is two years for corresponding with the period of the Urgent Irrigation Program which is supporting the self-reliance movement of Paddy, Soybean, Corn 2001 (UPSUS GEMA PALAGUNG 2001) (ANNEX 8). The Team prepared Tentative Master Plan for follow-up assistance (ANNEX 9).

This Master Plan should be finalized before the current project termination by both Japanese and Indonesian side for smooth implementation of follow-up cooperation after the current project period.

3) Others Issues Necessary for the Implementation of the follow-up project

- DGWRD will ensure cooperation with related organization for the project to reflect proposal by Moving Advisory Team concretely on the targeted irrigation projects. In addition, DGWRD strive for coordination with authorities concerned such as local governments, as the occasion demands.
- DGWRD will take necessary measures to ensure that self-reliant operation of the project will be sustained during and after the period of Japanese technical cooperation.

Project title : Irrigation Engineering Service Center Project in the Republic of Indonesia
Project area : Bekasi, Republic of Indonesia　　Target Group : Irrigation Engineering Service Center

Duration : June 10, 1994 to June 9, 1999
Prepared by JICA Evaluation Team on February 15, 1999

Narrative Summary	Objectively Verifiable Indicators	Achievements	Important Assumption
【Overall Goal】 Irrigation projects are appropriately implemented as a total scale. After the construction of irrigation system, facilities are maintained, managed, rehabilitated and upgraded appropriately.	• The result of the Project will be spread in whole irrigation sector .	• IESC is required to develop technical guidelines for small scale and farm level irrigation system based on the result of this project.	• The irrigation development policy of the Indonesia Government remains unchanged.
【Project Purpose】 The technical guideline(s) and manual(s) necessary for the appropriate implementation of irrigation projects will be continuously improved / developed and extended through the implementation of the training by DGWRD, MPW.	• DGWRD becomes able to implement the seminars and training by itself in the project period. • DGWRD becomes able to make the future dissemination plan by itself in the project period.	• DGWRD has already implemented the seminars and training by itself continuously. • DGWRD was prepared annual dissemination plan(1998/99) for the result of the Project with the budget of 300 million rupiahs.	• The activities of IESC are continued by DGWRD.
【Output】 1 The technical standard(s), guideline(s) and manual(s) including related computer system in the fields of investigation, planning, design, operation and maintenance, and rehabilitation and upgrading are to be developed and improved; 2 The technical capability of IESC technical staff is to be enhanced ; 3 The training of capable irrigation technical staff in the field mentioned above 1. is to be implemented.	1 All of required guidelines and manuals are prepared by June 1999. 2-1 Technical staff of IESC are able to develop and improve the guidelines and manuals by their own. 2-2 The technicians of IESC work for lecture of seminar. 3 IESC hold continuos seminar on the field mentioned above No.1.	1 Most of required guidelines and manuals were developed and/or improved, and remaining also will be prepared by the end of the project period. 2-1 Diffusing activities of the guidelines and manuals have been carried out continuously by IESC. 2-2 Technicians of IESC worked for lecturers of seminar. 3 IESC held the several types of seminars 48 times, and 828 participants attended a lecture.	• Technicians in irrigation sector attend the lecture.
【Activities】 1-1 Technical standards (or guidelines and manuals) are improved for Investigation, Planning and Design. 1-1-1 Guidelines and manuals are developed, and improved. 1-1-2 Case study of basic methods in IPD sector is carried out. 1-2 Guidelines and/or manuals are improved for Operation and Maintenance. 1-2-1 Existing guidelines and/or manuals are improved. 1-2-2 Irrigation water management technologies are investigated and introduced. 1-3 Guidelines and/or manuals are developed for Rehabilitation and Upgrading. 1-3-1 Guidelines and/or manuals are developed. 1-3-2 Inventory and filing system are developed. 1-3-3 Canal lining work is studied. 1-4 Computer system is improved for supporting above activities. 1-4-1 Technical Calculation System is improved. 1-4-2 Data Base System is improved. 2-1 C/P training is carried out in Japan. 2-2 OJT is carried out for IESC staffs through the above activities (preparation of guidelines and manuals). 3-1 Training plan, Curriculum and Materials for seminars and training are prepared by each field cooperated with Experts. 3-2 Training is implemented for irrigation engineers.	【Input】 Japanese side Dispatch of Experts -Long Term Experts　361.3M/M ①Team Leader ②Coordinator ③Investigation, Planning and Design ④Operation and Management ⑤Rehabilitation and Upgrading ⑥System Development -Short Term Experts　28 subjects, 22.43MM Donate Implement & Others　JY 284,834 (X1,000) - Equipment　JY 167,558 - Shared Local Cost　JY 99,098 Overseas Training　20 staffs,　19.11MM	Indonesia side Organizational Inputs 1) Counterparts ①Project Director ②Project Manager ③Investigation, Planning and Design ④Operation and Management ⑤Rehabilitation and Upgrading ⑥System Development ⑦Administrative staff ⑧Accountant 2) Task force and Working Group Physical Inputs - Land, buildings and facilities necessary for the implementation of the Project in DGWRD headquarter, IESC, and the model satellites. - Office space for Japanese experts - Training space in IESC - Other land, building and facilities necessary for the implementation of the Project Financial Inputs　Rp 2,883,695 (x 1,000) - Local running cost　2,566,883 - Maintenance cost for equipment　17,920 - Cost for training of middle-level technicians　248,892	• Trained counterparts continue working for IESC. 【Preconditions】 • Task force and Working Group are established. • All of coordination was completed and appointed counterparts appropriately, in the case reorganization of DGWRD.

ANNEX 2. LIST OF JAPANESE EXPERTS DISPATCHED

1. Long-term Japanese Experts

No.	NAME	SPECIALITY	PERIOD
1	Mr. Masaki Shimizu	Leader	1994.6.14 ~ 1999.6.09
2	Mr. Michihiko Sakaki	Coordinator	1994.6.14 ~ 1997.3.25
3	Mr. Nobuki Marumo	Investigation, Planning and Desigr	1994.6.14 ~ 1997.6.13
4	Mr. Narihide Nagayo	Operation and Maintenance	1994.6.14 ~ 1997.8.13
5	Mr. Iwao Oki	Rehabilitation and Upgrading	1994.6.14 ~ 1997.6.13
6	Mr. Yasushi Hirashima	System Development	1994.6.14 ~ 1997.6.13
7	Mr. Noboru Takino	Coordinator	1997.5.15 ~ 1999.6.09
8	Mr. Terumi Iwaya	Investigation, Planning and Desigr	1997.6.03 ~ 1999.6.09
9	Mr. Masafumi Taguchi	Operation and Maintenance	1997.6.05 ~ 1999.6.09
10	Mr. Makoto Yoshizawa	Rehabilitation and Upgrading	1997.6.01 ~ 1997.6.09
11	Mr. Saburo Shibata	System Development	1997.6.01 ~ 1997.6.09

2. Short-term Japanese Experts

	NAME	SPECIALITY	PERIOD
1	Mr. Naritaka Kubo	Improvement of guidance or manuals for O & M,	1995.03.15 ~ 1995.04.12
2	Mr. Hideaki Tanaka	Improvement of technical Standard for I.P.D.	1995.04.02 ~ 1995.04.20
3	Mr. Teruo Yamamoto	Water Utilization System by Torrent Intake Structure	1995.09.17 ~ 1995.10.07
4	Mr. Teruhiko Ota	Design Mix & Construction Method for Hydraulic Asphalt	1995.09.17 ~ 1995.10.16
5	Mr. Naritaka Kubo	Evaluation System for Rehabilitation Upgrading	1995.09.20 ~ 1995.10.07
6	Mr. Hiroyuki Taruya	Sedimentation in Dam and River bed Viability	1995.09.24 ~ 1995.10.07
7	Mr. Kazutake Yato	System Development for Irrigation Information	1995.11.02 ~ 1995.11.30
8	Mr. Masami Ezaki	Operation and Maintenance Field	1996.01.16 ~ 1996.01.29
9	Mr. Akira Murakami	Analysis for Dam	1996.01.31 ~ 1996.02.10
10	Mr. Hajime Hasegawa	System Development for Irrigation Information	1996.03.24 ~ 1996.04.20
11	Mr. Hiroki Oue	Water Distribution Planning	1996.03.24 ~ 1996.04.20
12	Mr. Teruo Yamamoto	Planning & Design of Torrent Intake Structure	1996.10.27 ~ 1996.12.06
13	Mr. Susumu Masukawa	Structure Analysis for Dam by FEM	1996.11.22 ~ 1996.12.14
14	Mr. Hiroki Oue	Contemplation Method for Water Management Facilities	1996.11.24 ~ 1996.12.14
15	Mr. Hiroyuki Komoriya	Information System	1997.02.19 ~ 1997.03.20
16	Mr. Hiroyuki Taruya	Sedimentation in Dam and River Bed Viability	1997.03.09 ~ 1997.03.20
17	Mr. Seiei Sakaue	Planning for Water Management Facilities	1997.03.26 ~ 1997.04.23
18	Mr. Naoki Ogura	Adjustmant of Irrigation Gate	1997.05.27 ~ 1997.06.07
19	Mr. Nario Onjyo	Canal Asphalt Lining	1997.09.14 ~ 1997.09.25
20	Mr. Teruo Yamamoto	Hill Torent Intake Facility	1997.10.27 ~ 1997.11.21
21	Mr. Michimasa Menjyu	Dam Engineering Includes Hydraulic Structure Design Design Foundation & Geology	1997.11.04 ~ 1997.11.19
22	Mr. Masami Otsubo	Treatmen of Weak Foundation	1997.11.15 ~ 1997.11.29
23	Mr. Hiroyuki Suzuki	Calculation Program for Safety-Check of Inverted-T type Wall	1997.11.23 ~ 1997.12.20
24	Mr. Shigeo Yashima	Efficient Water Management Technology	1997.01.18 ~ 1997.02.07
25	Mr. Tetsuo Yaguchi	Economic Evaluation of irrigation Project	1998.07.05 ~ 1998.07.19
26	Mr. Ryo Matsusita	Information System and Data Base	1998.10.28 ~ 1998.11.27
27	Mr. Tetsuo Yamamoto	Hill Torent Intake Facility	1998.11.09 ~ 1998.12.15
28	Mr. Yoshihito Takami	Small Dam	1998.11.26 ~ 1998.12.09
29	Mr. Masami Otsubo	Treatmen of Weak Foundation	1999.03.08 ~ 1999.03.22
30	Mr. Tetsuo Fukuda	Efficient Water Management Technology	1999.04.08 ~ 1999.04.22

ANNEX.3 LIST OF COUNTERPART TRAINING IN JAPAN

NO.	NAME	SPECIALITY	PERIOD
1	Mr. M.Napitupulu, Dipl.HE	Irirgation and Drainage	1995.10.30 ~ 1995.11.20
2	Mr. Suwardi, Dipl.HE	Irirgation and Drainage	1995. 10.30 ~ 1995.11.20
3	Mr. A.T.M.Sitompul, M.Eng.	Irirgation and Drainage	1995.07.20 ~ 1995.08.20
4	Mr. Subari, BE	Rehabilitation & Upgrading Irrigation Infrastructure	1995.07.20 ~ 1995.08.20
5	Mr. Subari, ME	Irirgation and Drainage	1995.07.20 ~ 1995.08.20
6	Mr. Adi Pramudyo	Irirgation and Drainage	1995.08.20 ~ 1995.09.20
7	Mr. Bambang Sugiarto	Rehabilitation & Upgrading Irrigation Infrastructure	1996.01.20 ~ 1996.02.19
8	Mr. Danang Baskoro	Irirgation and Drainage	1996.01.20 ~ 1996.02.19
9	Mr. Muryadi Rahmanu, ME	Irirgation and Drainage	1996.05.28 ~ 1996.07.21
10	Mr. Bambang Waluyono	Irirgation and Drainage	1997.03.30 ~ 1997.04.13
11	Mr. Darwin Lubis	Irirgation and Drainage	1997.03.30 ~ 1997.04.13
12	Mr. Darmono	Irirgation and Drainage	1997.03.30 ~ 1997.04.13
13	Mr. Surya Dewanto	Irirgation and Drainage	1997.05.27 ~ 1997.07.20
14	Mr. Soekrasno	Irirgation and Drainage	1997.08.18 ~ 1997.09.14
15	Mr. Kamran Erang	Irirgation and Drainage	1997.08.18 ~ 1997.09.14
16	Mr. Hasan Maryadi	Irirgation and Drainage	1997.08.18 ~ 1997.09.14
17	Mr. Zainuddin	Irirgation and Drainage	1998.03.30 ~ 1998.04.29
18	Mr. Ketut Kaler	Irirgation and Drainage	1998.08.31 ~ 1998.09.27
19	Mr. Bambang Prihono	Irirgation and Drainage	1998.08.31 ~ 1998.09.20
20	Mr. Dicky Supodo	Irirgation and Drainage	1998.08.31 ~ 1998.09.20
21	Mr. Wayan Suyadnya	Irirgation and Drainage	1999.03.23 ~ 1999.04.04
22	Mr. Dianto	Irirgation and Drainage	1999.03.23 ~ 1999.04.22

ANNEX 4

List of Provided Machnery and Equipment

unit : 1,000 Jap

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization	
								Frequency	Maintenance
1994	Accompanied	General	1	Desk Top PC (IBM 2406-WVB 4 MB Memory),(PS/V)	265	1	Bekasi	A	A
1994	Accompanied	General	3	Desk Top PC (IBM 2406 - WVB),(PS/V)	201	2	Bekasi/Jakarta	A	A
1994	Accompanied	General	3	Printer: (Canon LBP - B406GII)	338	2	Bekasi/Jakarta	A	A
1994	Accompanied	General	4	Lap Top PC (Thinkpad 360CS 4MB 350HDD)	384	2	Bekasi/Jakarta	A	A
1994	Purchased in Indonesia	General	5	Car: DAIHATSU HILINE 4W	2,300	3	Bekasi	A	A
1994	Purchased in Indonesia	General	6	Photo Copy :NP-6060 with sorter	2,225	2	Bekasi/Jakarta	A	A
1994	Purchased in Indonesia	General	7	Printer: Cannon BJ-15 Pro	47	2	Bekasi/Jakarta	A	A
1994	Purchased in Indonesia	General	8	Fax: Panasonic KX-F2230B	58	2	Bekasi/Jakarta	A	A
1994	Purchased in Indonesia	General	9	UPS: Powercom 500 VA	42	6	Bekasi	A	A
1994	Purchased in Indonesia	O&M	10	Rainfall Recorder : (EL29-8001 Cooper Raingauge)	24	1	Lampung	A	A
1994	Purchased in Indonesia	O&M	11	Sunshine Recorder	31	1	Lampung	A	A
1994	Purchased in Indonesia	SD	12	Data Switch Box Printer Sharing :1 - 4	11	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	13	Printer: Desk Jet 550 Color	96	1	Bekasi	A	A
1994	Purchased in Indonesia	General	14	A-Link calculator: 2800S	22	3	Bekasi	A	A
1994	Purchased in Indonesia	General	15	Safety Box	25	1	Bekasi	A	A
1994	Purchased in Indonesia	General	16	AC (Sanyo SAP-C122)	139	3	Bekasi	A	A
1994	Purchased in Indonesia	SD	17	Server: IBM PC SERVER 455*2	848	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	18	UPS: Powercom 1KVA	134	1	Bekasi	A	A
1994	Purchased in Indonesia	O&M	19	Pan Evaporation: (EA506-250 EA506-252)	471	1	Lampung	A	A
1994	Purchased in Indonesia	O&M	20	Sunshine Recorder: EA505-461 Cambell Strockes shunshine 0-40 NorS	649	1	Lampung	A	A
1994	Purchased in Indonesia	General	21	Camera: Canon EOS 10 with Zoom EF-7-21/3.5-4.5	117	3	Bekasi	A	A
1994	Purchased in Indonesia	TR	22	Video Movie: Sony Video 8	146	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	23	Desk Top PC: IBM Value-Point,PS433,DX/SI	351	6	Bekasi	A	A
1994	Purchased in Indonesia	SD	24	Software:Microsoft Visual Basic Prof. ver 3.0 for Windows, MS Fortran	239	3	Bekasi	A	A
1994	Purchased in Indonesia	SD	25	Cabling System:Cable,Comcetrator, etc.	292	1	Bekasi	A	A
1994	Purchased in Indonesia	O&M	26	Metrological Box	164	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	27	Tape Back Up Wangtek 1GB	169	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	28	Modem :Multitec 2400V42BV9600/12000/14400 bps	193	1	Bekasi	A	A
1994	Purchased in Indonesia	TR	29	White Board with photocopy function	195	1	Bekasi	A	A
1994	Purchased in Indonesia	TR	30	Sound Slide Movie	271	1	Bekasi	A	A
1994	Purchased in Indonesia	SD	31	Printer: HP Laser Jet 4L	194	4	Bekasi	A	A
1994	Purchased in Indonesia	O&M	32	Current Meter :(EA530-260)	1,400	1	Lampung	A	A
1994	Purchased in Indonesia	IPD	33	Solar Panel etc.	156	1	Jatiluhur Dan	A	A
1994	Purchased in Indonesia	SD	34	Calcomp Digitizer: 3400 (A0)	561	1	Bekasi	A	A
1995	Purchased in Indonesia	IPD	35	Strong Motion Seismograph Kinemetric Ex USA (108000 Model Kinematics SSA-	1,664	2	Jatiluhur Dan	A	A
1995	Purchased in Indonesia	IPD	36	Watchman Gate :W=0.6m, B=0.5m	10,916	1	Bekasi	B	B
1995	Purchased in Indonesia	IPD	37	Recording rain Gauge & Evaporator: ERR - 101	2,403	1	Bekasi	A	A
1995	Purchased in Indonesia	TR	38	Desk Top PC (IBM PCI50-466 DX2) 16MB RAM 66MHz 540HD with	243	8	Bekasi/Jakarta	A	A
1995	Purchased in Indonesia	TR	39	Lap Top PC: (IBM thinkpad DX4-75), 16MB RAM 75MHz 540HD	533	6	Bekasi	A	A
1995	Purchased in Indonesia	IPD	40	Canal for Watchman Gate (W=0.6m, B=0.5, L=10m)	866	1	Bekasi	C	B
1995	Purchased in Indonesia	IPD	41	Parshall type level flow Recorder	499	2	Lampung	A	A

Note : Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandaned
Source : Report by JICA Experts (The third quarter of the ficical year of 1998)

List of Provided Machinery and Equipment

unit : 1,000 Japanese Yen

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1995	Purchased in Indonesia	IPD	42	Water Level Meter RR-240	243	1	Lampung	A	A	
1995	Purchased in Indonesia	IPD	43	Software 3011430 Analysis	610	1	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	IPD	44	Data Processor for SSA-2	254	1	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	SD	45	Desk Top PC IBM Multiscan PC-P90	674	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	46	Printer HP Design Jet 750C(A0)	935	1	Bekasi	A	A	
1995	Purchased in Indonesia	O&M	47	Midland Radio Transceiver, UHF/FM Frq 366-470MHz Supply 10A	156	9	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	48	Desk Top PC : (IBM - 300 486 DX2) 66 MHz 4MB 270MB HD With Monitor 14"	298	3	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	49	Desk Top PC : (IBM - 300 486 DX2) 66 MHz 4MB 270MB HD With Monitor 14"	298	8	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	50	Omnidirectional Whip Antenna 5dB with Connector and 50m Cable	914	9	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	51	Telematic Data Modem & Software	1,157	9	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	52	Desk Top PC IBM Multiscan PC-P90	869	1	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	SD	53	Software Map Info Ver 3.0 for Windows	335	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	54	Software Map Basic Ver 1.0 for Windows	225	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	55	Autocad Ver 13 for Windows MIKASA MVC-60	321	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	56	Vibrating Plate Compactor	423	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	57	Precition Balance OHAUSE 1600 G	133	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	58	Sieve for Asphalt Agregate(Coare Set Aggregate)	156	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	59	Winch Merk Maspal: (GM - 3 300 Kg)	195	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	60	Portable Tools Set	293	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	61	Sieve For Asphalt Aggregate: (Set Brass Sieve)	117	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	62	Cohesiometer ASTM-D 156	1,014	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	63	Asphalt asprayer 200 Lit (Sakai Type SAS 200L)	761	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	64	Winch Merk Maspal (GM - 5 500 Kg)	312	1	Bekasi	A	A	
1995	Purchased in Indonesia	TR	65	Computer Table	18	7	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	66	Software Micro-office pro. etc	50	1	Jakarta	B	A	
1995	Purchased in Indonesia	IPD	67	PMCIA Memory Card 1 MB	78	4	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	IPD	68	Software (Corel Draw Ver 6.0 for Windows)	87	1	Jakarta	B	A	
1995	Purchased in Indonesia	SD	69	Pen Solus	16	1	Bekasi	B	A	
1995	Purchased in Indonesia	TR	70	Printer Laser Jet 5L	79	7	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	71	UPS Powercom 500VA	47	9	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	72	Data Switch: Box 4.1 with Cable	9	8	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	73	UPS :Powercom 650 VA	41	1	Bekasi	A	A	
1995	Purchased in Indonesia	TR	74	Software Lotus 123 Ver 5.0 for Windows	43	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	75	Software Turbo Pascal Ver 7.0 for Windows	17	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	76	Software Novel Netware Connect	91	1	Bekasi	B	A	
1995	Purchased in Indonesia	SD	77	Software Norton PC Anyware 4.5	18	1	Bekasi	B	A	
1995	Purchased in Indonesia	O&M	78	UPS Powercom 500 VA	41	9	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	79	Printer Epson Lq-1170	76	9	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	80	Software Lotus 123	51	1	Lampung	A	A	
1995	Purchased in Indonesia	O&M	81	Handy Talky Motorola	74	64	Lampung	A	A	For constructing information
1995	Purchased in Indonesia	O&M	82	Printer HP Laser Jet 5L	82	3	Jakarta	A	A	

Note : Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandaned
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List of Provided Machinery and Equipment

unit : 1,000 Japanese Yen

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequeacy	Maintenance	
1995	Purchased in Indonesia	O&M	83	UPS: Powercom 500 VA	33	2	Jakarta	A	A	
1995	Purchased in Indonesia	R&U	84	Cylinder Mold BBC-119 15*30cm	19	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	85	Chain Rape Manual	97	1	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	86	Asphalt Compaction Mold (BBS Type BBP-3W2)	8	2	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	87	Cylinder Mold BBC-119 10*20cm	8	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	88	Cylinder Mold BBC-119 5*10cm	6	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	89	Briquette Mold BBS Type BCT-42	53	10	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	90	Plat Form (Cahaya Adil 50 Kgs	39	1	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	91	Standard Tripod	39	1	Bekasi	B	A	
1995	Accompanied with	SD	92	Software STATISCA	174	1	Bekasi	A	A	
1995	Accompanied with	SD	93	SCANNER GT-900Win	137	2	Bekasi Jakarta	A	A	
1995	Accompanied with	RU	94	Soil P H Meter PHS-120	119	1	Bekasi	B	A	
1995	Accompanied with	SD	95	Over Drive Processor ODP-100	26	3	Jakarta	A	A	
1995	Accompanied with	SD	96	Software NET SURFER	90	2	Jakarta	A	A	
1995	Accompanied with	SD	97	Software MARUKAIRI BILINGAL	27	1	Jakarta	A	A	
1995	Accompanied with	SD	98	Floppy Disk 10pcs/box	1	10	Jakarta	A	A	
1995	Accompanied with	SD	99	Software Norton UTILITIES 8.0	13	1	Bekasi	A	A	
1995	Accompanied with	SD	100	Hard Disk DSC-1024H	66	1	Bekasi	A	A	
1995	Accompanied with	SD	101	SCSI I/F Kit	17	1	Bekasi	A	A	
1995	Accompanied with	SD	102	Printer Cable Lepc60	3	2	Bekasi	A	A	
1995	Accompanied with	SD	103	CD-ROM CDS-4ES	21	2	Bekasi	A	A	
1995	Accompanied with	SD	104	I/F Board (The SCSI Master) 50p-50p	50	2	Bekasi	A	A	
1995	Accompanied with	SD	105	Hard Disk DSC1024S	35	2	Bekasi	A	A	
1995	Accompanied with	SD	106	SCSI I/F Kit for HD	17	2	Bekasi	A	A	
1995	Accompanied with	SD	107	Cable HDD-CD-ROM CSC-H03	3	2	Bekasi	A	A	
1995	Accompanied with	SD	108	Cable HDD-CD-ROM-Scanner	5	2	Bekasi	A	A	
1996	Purchased in Indonesia	General	109	Car SUZUKI ESCUDO 4x2	1,950	1	Bekasi	A	A	
1996	Purchased in Indonesia	JPD	110	Strong Motion Seismograph TERRA EX USA (GSR-32)	3,007	2	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	R&U	111	Winch Motor capacity 15kw Line pull 2000kg weight 600	2,655	1	Lampung	A	A	
1996	Purchased in Indonesia	O&M	112	Kenwood Radio Transceiver TK-768 freq. 150-174 MHz 30A	252	3	Lampung	A	A	For constructing information
1996	Purchased in Indonesia	O&M	113	Radio Modem & Software Tasco	787	3	Lampung	A	A	For constructing information
1996	Purchased in Indonesia	O&M	114	Omnidirectional Antenna : YAGI 9 Element 25m with connecter and 50m	959	3	Lampung	A	A	For constructing information
1996	Purchased in Indonesia	R&U	115	Marshall Test Aparatus Length: 75mm Load measurement Cap 5 Kg	449	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	116	Asphalt Compaction Machine: Tamper-falling device Roller System Driven by:	832	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	117	Asphalt Mixer 8/3 RPM Electric Motor 0.2 Kw 220V	647	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	118	Thin Film Oven Tester. Inside wide 600 mm, Right 381mm Electricity 3.5 Kw 220	515	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	119	Aggregate Test Sieves 8" diameter Opening 0.63 4.8 9.5 12.5 19.1 25.4 31.7 38.1	250	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	120	Stainless Penetration Portable cone Penetrometer. Cone 6.4cm2 Rod. steel.	449	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	121	Cutter (Asphalt) Inside dimension 101.6mm, lenght 300mm	198	3	Lampung	B	A	
1996	Purchased in Indonesia	R&U	122	Concrete Cutter. Inside dimension, 300mm. Net weight 8 Kg	108	2	Lampung	B	A	
1996	Purchased in Indonesia	R&U	123	Test Hammer	317	1	Lampung	B	A	

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List of Provided Machinery and Equipment

Unit : Thousand Japanese Yen

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1996	Purchased in Indonesia	R&U	124	Vibratory Plat Compactor Plat :37x43 cm, Weight 50 Kg, Max HP 3.5PS	387	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	125	Engine Sprayer Cap: 30 Lit/Min 3 ps/1500	839	1	Lampung	B	A	
1995	Purchased in Indonesia	R&U	126	Gas Voner	356	1	Lampung	B	A	
1995	Purchased in Indonesia	O&M	127	Counter Type Anemometer	101	1	Lampung	B	A	
1996	Purchased in Indonesia	TR	128	White-Board Electronic Model :KXB-550, Panasonic with 10 papars	256	1	Bekasi	B	A	
1995	Purchased in Indonesia	IPD	129	Optional Accessories Analysis Software	173	1	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	130	Optional Accesories PCMCIA Memory Card :4 MB	416	2	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	131	Optional Accesories Spare 4MB Flash Card	154	2	Central Java	A	A	Set up at Grokgak Dam
1995	Purchased in Indonesia	IPD	132	Optional Accesories PCMCIA Card Rader: for PC	221	1	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	133	Data Processor for GSR-12	343	1	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	134	Software: StopAV ;Windows 95	717	1	Central Java	A	A	Set up at Grokgak Dam
1995	Purchased in Indonesia	IPD	135	GPS Receiver Garmin, Ex USA, GPS-SRVYII	771	1	Central Java	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	136	Pershall Type Level Flow Recorder: PFR-0.5	341	4	Subang/Jakarta	B	A	2set in Subang another 2set in
1996	Purchased in Indonesia	IPD	137	Water Level Meter:RR-200 with Cartridge Pen	133	2	Subang/Jakarta	B	A	Set up at Subang and Slawesi
1995	Purchased in Indonesia	IPD	138	Water Level Measuring Servotype, SW-101,SWT 30AV	599	1	Slawesi	B	A	Set up at Slawesi
1996	Purchased in Indonesia	SD	139	External Tape Back Up Wangdat :1 GB + SCSI	145	1	Lampung	A	A	
1995	Purchased in Indonesia	SD	140	Anti-Virs Software :Mcafee Netshield Ver 2 3	106	2	Lan/Bekasi	B	A	
1995	Purchased in Indonesia	SD	141	PC Memory Borad: SS-2606-MF9	318	1	Jakarta	A	A	
1995	Purchased in Indonesia	R&U	142	Extraction Collar :(Made of Steel, 104.7 mm, Net weight 2 Kg Made of Steel,	2	1	Jakarta	A	A	
1995	Purchased in Indonesia	R&U	143	Concrete Cutter: Inside dimension 100mm, Net weight 6 Kg	95	2	Lampung	B	A	Set up at Lampung office
1995	Purchased in Indonesia	R&U	144	Specimen Extraction 99.3mm, weight 2 Kg	1	1	Lampung	B	A	Set up at Lampung office
1995	Purchased in Indonesia	R&U	145	Extractor Rod :1.4mm lenght, weight 2 Kg	1	1	Lampung	B	A	Set up at Lampung office
1995	Purchased in Indonesia	R&U	146	Tamper: 98.4mm, Dropping Height 457.2mm, Net weight 7 Kg	9	1	Lampung	B	A	Set up at Lampung office
1995	Purchased in Indonesia	R&U	147	Platform Dial Scale: 50 Kg, Cap. 0.1 Kg sensitivity	40	1	Lampung	B	A	Set up at Lampung office
1995	Purchased in Indonesia	R&U	148	Table Platform Scale: 50 Kg, Cap. o.5 Kg sensitivity	36	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	149	Precision Table Balance :1 Kg, Cap. 0.1g sens	40	2	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	150	Graduates : 100 cc	1	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	151	Pan: 1200 x 800 x 50 mm	8	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	152	Sample Pan :330 x 270 x 40 mm	3	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	153	Stainless bowl diameter: 150 mm	2	10	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	154	Stainless bowl diameter :210 mm	3	10	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	155	Hand Scoop	3	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	156	Mercury Thermometer, 0 - 300 degree C	2	2	Lampung	A	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	157	Mercury Thermometer 0 - 200 degree C	1	2	Lampung	A	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	158	Mercury Thermometer:-0 + 100 degree C	1	5	Lampung	A	A	Set up at Lampung office
1996	Purchased in Indonesia	O&M	159	Rain Gauge :Type Ordinary cap glass 100 ml reciving surface 100cm2	22	6	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	160	Max Min. Thermometer: OC - 50 c	2	1	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	161	Stopwatch	4	49	Lampung	B	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	162	Flot KF - F	2	50	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	163	Flot KF - 65, 50 cm	2	50	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	164	Flot KF - 124, 100 cm	2	50	Lampung	A	A	Set up at farm in Lampung

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List of Provided Machnery and Equipment

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1996	Purchased in Indonesia	O&M	165	Flat KF - 240, 200 cm	2	12	Lampung	A	A	Set up at Fare in Lampung
1996	Purchased in Indonesia	O&M	166	Flag KFF	1	162	Lampung	A	A	
1996	Purchased in Indonesia	IPD	167	Hand held GPS Receiver, Garmin, EX USA, GPS - 45 XL	98	1	Jakarta	B	A	
1996	Purchased in Indonesia	SD	168	8MB for PC Server	22	3	Lampung/Beka	A	A	
1996	Purchased in Indonesia	SD	169	8MB for PC Workstation	14	20	Lampung/Beka	A	A	
1996	Purchased in Indonesia	SD	170	Hard Disk : 2 GB IDE for Server	43	1	Lampung	A	A	
1996	Purchased in Indonesia	SD	171	Hard Disk: 2 GB IDE SCSI for Work Station	81	2	Bekasi/Lampun	A	A	
1996	Purchased in Indonesia	SD	172	Hard Disk :850MB IDE for Work Station	25	6	Bekasi/Lampun	A	A	
1996	Purchased in Indonesia	SD	173	Internal CD ROM :8 Speed SCSI for Server	59	1	Lampung	A	A	
1996	Purchased in Indonesia	SD	174	Internal CD ROM: 8 Speed IDE for Work Station	28	5	Lampung	A	A	
1996	Purchased in Indonesia	SD	175	Software: Microsoft Office Ver.4.3	72	2	Bekasi/Lampun	B	A	
1996	Purchased in Indonesia	SD	176	Software: Microsoft office Ver.4.3 Licence	53	9	Bekasi/Lampun	B	A	
1996	Accompanied with	SD	177	Software: PC Transerje DOS/V FD	45	1	Jakarta	A	A	
1996	Accompanied with	SD	178	Software: PC Transer/ej DOS/V FD	45	1	Jakarta	A	A	
1996	Accompanied with	SD	179	Software: Visual Hec-Pack	85	1	Bekasi	A	A	
1996	Accompanied with	SD	180	Software: Micro AVS	96	1	Bekasi	A	A	
1996	Accompanied with	SD	181	Software: Culvert Master	85	1	Bekasi	A	A	
1996	Accompanied with	SD	182	Software: Flow Master	39	1	Bekasi	A	A	
1996	Accompanied with	IPD	183	Software: MS-Word 97	12	1	Bekasi	A	A	
1996	Accompanied with	SD	184	Software: MS-Exell 97	29	1	Bekasi	A	A	
1996	Accompanied with	SD	185	Software: ICHITARO Ver 8	18	1	Bekasi	A	A	
1996	Accompanied with	TR	186	Digital Camera: "C-310L"Olympus (with Flash Merory & Case)	63	2	Bekasi	B	A	
1996	Accompanied with	TR	187	Connection Kit: Cik/	7	2	Bekasi	A	A	
1996	Accompanied with	TR	188	Tonner Cartridge: Ep-Ks	29	4	Bekasi	A	A	
1996	Accompanied with	TR	189	Increase Memory : 16MB	15	1	Bekasi	A	A	
1996	Accompanied with	TR	190	Tonner Cartridge: Ep-Ks	224	6	Bekasi	A	A	
1997	Purchased in Indonesia	General	191	Bus HINO FB2WG, 4,000cc,Diesel	3,626	1	Bekasi	A	A	
1997	Purchased in Indonesia	IPD	192	ECHOSOUNDER 000M,HYDROTRACT	3,316	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	SD	193	Scanner,Calcomp,A0-800dpi,color	3,535	1	Bekasi	B	A	
1997	Purchased in Indonesia	IPD	194	Universal Current Meter: (Hydological,Services,0SSB-1,CMC-20)	1,239	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	195	WATER LEVEL SYSTEM (Hydological,Services,AD375Q)	578	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	196	DATALOGGER for WATER LEVEL SENSER PRDL-3	260	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	197	ECHOSOUNDER optional Accessories : (Board	536	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	198	ECHOSOUNDER optional Accessories :	852	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	199	Communication Software	185	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	200	3D MAPPING SOFTWARE	215	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	IPD	201	INFLATEABLE BOAT WITH ENGINE SPD-10S Johnson	695	1	Central Java	A	A	Seu pu at Central Jawa and
1997	Purchased in Indonesia	R&D	202	Vacuum Pomp,Control ITALY,Model 86-D3001	151	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	203	Falling Head Permeability Test Model 38-T185/L2.3	328	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	204	Ultrasonic Tesster Model 58-E46	707	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	205	Hydrometer 151 H Model 22-T60/A	16	5	Lampung	A	A	

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1997	Purchased in Indonesia	R&U	206	Centrifuge Model:75-B22/C	545	1	Lampung	A	A	
1997	Purchased in Indonesia	SD	207	Internal CD-ROM NEC 24*IDE	19	8	Bekasi	B	A	
1997	Purchased in Indonesia	SD	208	External CD-ROM PIOEER,25*SCSI+SCSI Card	75	3	Bekasi	B	A	
1997	Purchased in Indonesia	SD	209	Scanner+SCSI Board HEWLETT PACKRD 4CSE	166	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	210	Mo+Cable+Driver+SCSI/Desktop FUJIT SU 640Mb	143	3	Bekasi	B	A	
1997	Purchased in Indonesia	SD	211	Mo+Cable+Driver+SCSI/Desktop FUJIT SU 640Mb	119	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	212	Data/FAX Modem 33.6bps for Desktop	36	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	213	Data FAX Modem 33.6bps for Laptop	33	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	214	OCR Software: Omunipage Ver7	97	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	215	OS Software: Windows95	26	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	216	OCR Software: Omunipage Ver7	97	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	217	OS Software: Windows95	26	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	218	Software Microsoft Office 97	84	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	219	Software Word Perfect for Windows95	55	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	220	Software Map Profiesional,Mapinfor,Ver.4.10	286	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	221	RAM 32Mb for IBM PC	21	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	222	APC UPS: 1KVA	110	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	223	Desk Top PC: IBM 300PL Pentium-200MMX	357	6	Bekasi	B	A	
1997	Purchased in Indonesia	SD	224	Monitor,Display CD-ROM,SVGA Philips 20	188	6	Bekasi	B	A	
1997	Purchased in Indonesia	SD	225	UPS APS,650VA Smart	58	6	Bekasi	B	A	
1997	Purchased in Indonesia	TR	226	Projector TOSHIBA TLP411	1,058	1	Bekasi	A	A	
1997	Purchased in Indonesia	TR	227	GPS GARMIN 45XL	104	3	Bekasi	A	A	
1997	Accompanied	SD	228	Desk Top PC APTIVA 2178-N79	295	1	Jakarta	A	A	
1997	Accompanied	O&M	229	Lap Top PC MN-6350D,SF,UXP Mebius Note	250	1	Jakarta	A	A	
1997	Accompanied	R&U	230	Lap Top PC Thinkpad 535	318	1	Jakarta	A	A	
1997	Accompanied	IPD	231	Lap Top PC Thinkpad 760E	423	1	Jakarta	A	A	
1997	Accompanied	TR	232	LAP TOP PC Power Book 1400CS/117	370	1	Bekasi	B	A	
1997	Accompanied	O&M	233	Software Mapinfo professional,Version4.1	220	1	Bekasi	A	A	
1997	Accompanied	O&M	234	Software Map Basic	230	1	Bekasi	A	A	
1997	Accompanied	SD	235	Intel Over Drive Processor: DX4-100	13	7	Bekasi/Lampun	A	A	
1997	Accompanied	TR	236	Software MAC Light 2	8	1	Bekasi	B	A	
1997	Accompanied	TR	237	Software MAC EXCEL	37	1	Bekasi	B	A	
1997	Accompanied	TR	238	Transformer	24	2	Bekasi/Jakarta	A	A	
1997	Accompanied	SD	239	Memory Board :32MB	24	1	Bekasi	A	A	
1997	Accompanied	SD	240	MO Drive: LMO-640S2	65	1	Bekasi	A	A	
1997	Accompanied	R&U	241	Portable CD-Rom Drive	30	1	Jakarta	A	A	
1997	Accompanied	R&U	242	Cap Set for Track Point	1	1	Jakarta	A	A	
1997	Accompanied	R&U	243	Color Printer: BJC-240J	27	1	Jakarta	A	A	
1997	Accompanied	R&U	244	BF Cartridge	2	10	Jakarta	A	A	
1997	Accompanied	R&U	245	Printer Cable	1	1	Jakarta	A	A	
1997	Accompanied	R&U	246	Mouse	3	1	Jakarta	A	A	

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1997	Accompanied	RU	247	Keybord	3	1	Jakarta	A	A	
1997	Accompanied	RU	248	Software MS-OFFICE 97	54	1	Jakarta	A	A	
1997	Accompanied	RU	249	Transformer	4	2	Jakarta	A	A	
1997	Accompanied	RU	250	3.5 FLOPPY DISK50 PCS/Box	2	1	Jakarta	A	A	
1997	Accompanied	IPD	251	Software MS-WORD97	12	1	Jakarta	A	A	
1997	Accompanied	IPD	252	Software MS-EXCEL	30	1	Jakarta	A	A	
1997	Accompanied	IPD	253	Software ICHITARO Ver8	4	1	Jakarta	A	A	
1997	Accompanied with	SD	254	Memory Board 16MB ADV-16M144F	17	1	Bekasi	A	A	
1997	Accompanied with	SD	255	CD-ROM Drive: KXL-810AN	39	1	Bekasi	B	A	
1997	Accompanied with	SD	256	TONNER CARTRIDGE: EP-V	15	1	Bekasi	A	A	
1997	Accompanied with	SD	257	Printer Driver: NET HAWK SP-LITE 3	13	1	Bekasi	A	A	
1997	Accompanied with	SD	258	3.5 FLOPPY DISK	8	10	Bekasi	A	A	
1997	Accompanied with	TR	259	Software MAC OSS	20	1	Bekasi	A	A	
1997	Accompanied with	IPD	260	Mockup Sample "WATCH MAN" with Pole & Plate	100	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	261	Printer: LBP-430 AC100V	95	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	262	SCSI Board : AHA2940J	31	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	263	Power Supply : BX500II 300W AC100V	28	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	264	Transformer SE1500 220 240/100V 15A	21	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	265	Modem Card DF-3314 Ex	68	2	Bekasi	A	A	
1997	Purchased in Indonesia	IPD	266	Life Jacket	13	4	Central Jawa	A	A	Set up at Serimo Dam
1997	Purchased in Indonesia	IPD	267	Handy Talky	46	2	Central Jawa	A	A	Set up at Serimo Dam
1997	Purchased in Indonesia	SD	268	MO Disket 640Mb	7	50	Bekasi	A	A	
1997	Purchased in Indonesia	SD	269	OS Software Microsoft PLUS	1	6	Bekasi	A	A	
1998	Accompanied with	SD	270	Software MapinforMini Ver 1.0	117	1	Bekasi	A	A	
1998	Accompanied with	O&M	271	Portable Digital Water-temperature Meter UC-35	263	2	Jakarta	B	A	
1998	Accompanied with	SD	272	Software DRIVE IMAGE Ver 2.0	13	1	Bekasi	A	A	
1998	Accompanied with	SD	273	Software VISUAL BASIC PRO Ver 5.0	96	1	Bekasi	A	A	
1998	Accompanied with	SD	274	Software CLEAN SWEEP DELUXE(J)	10	1	Bekasi	A	A	
1998	Accompanied with	SD	275	Software WORD PERFECT SUITE 8(J)	39	1	Bekasi	A	A	
1998	Accompanied with	SD	276	Software WINDOWS 98(J)	25	1	Bekasi	A	A	
1998	Accompanied with	SD	277	Software PULS 98(J)	6	1	Bekasi	A	A	
1998	Accompanied with	IPD	278	Software SYSTEXT COMMANDER Ver 8(J)	10	1	Bekasi	A	A	
1998	Accompanied with	IPD	279	ZIP DESK Spec box	11	2	Bekasi	A	A	
1998	Accompanied with	SD	280	MO Disk 10pcs box	2	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	281	Leazer Jet Printer HP-4000N	199	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	282	IBM PC 300PL6562 Pentium 233Mhz	362	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	283	PC:Thinkpad 380 ED	289	6	Jakarta	A	A	
1998	Purchased in Indonesia	SD	284	Displac NEC	174	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	285	Additional Memory	24	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	286	UPS APS 650VA Smart	54	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	287	Hard Disk External 4Gb	64	4	Bekasi, Jakarta	A	A	

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1998	Purchased in Indonesia	SD	288	Backup drive Jaza 1 Gb	51	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	289	Windows NT Server4.0	147	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	290	3 COM 10 Base T Hub,12ports	69	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	291	Intel Router for LAN	155	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	292	Back Office Software	352	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	293	Extent RAM 32Mb for 380ED	13	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	294	Extend Memory for Lap Top	17	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	295	Battery Pack for IBM Thinkpod	42	1	Bekasi	A	A	
1998	Purchased in Indonesia	O&M	296	LCD Projector LitePro735 Infocus	1,122	2	Jakarta	A	A	
1998	Purchased in Indonesia	TR	297	Wireless Amplifire SH-360N2	99	1	Bekasi	A	A	
1998	Purchased in Indonesia	TR	298	Electical Screen	196	1	Bekasi	A	A	
1998	Purchased in Indonesia	TR	299	Copy Printer	831	1	Bekasi	A	A	
1998	Purchased in Indonesia	IPD	300	Paresall Flume Water Level Recorder PR-200 Ikeda	287	4				To be provid on March 99
1998	Purchased in Indonesia	IPD	301	Water Level Recorder PR-200 Ikeda	159	2				To be provid on March 99
1998	Purchased in Indonesia	IPD	302	Irrigation Pump SHE-80X Kosin	150	1				To be provid on March 99
1998	Purchased in Indonesia	O&M	303	Hand HELD Flow Meter CC/N FP109	164	2				To be provid on March 99
1998	Purchased in Indonesia	O&M	304	Water Level Recorder AUS/IML Hydrological Service	654	7		-		To be provid on March 99
1998	Purchased in Indonesia	R&U	305	Unconfined Compression Test Appiaratus Hand Operated 50KN CBR Model 34-	523	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	306	Anti-Friction Guide Bracket Model:34-T104/1	17	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	307	Adjustable Dial Gauge Holder Model:34-T104/7	18	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	308	Dial Gauge Holder 300/0.01mmModel 86-D1257	32	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	309	Load Ring 1KN Cap Model 82-T1001	93	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	310	Upper and lower Platens Model:34-T104/4	58	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	311	Extension Collar Model:34-T104/9	7	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	312	Direct Shear Appratus Motorized Direct Residual Shear Machine	1,118	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	313	Shere Box Assembly Model 27-T215A	109	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	314	Sample Cutter Model 27-T215/7	24	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	315	Extrusion Dolly Model:27-T215/8	4	1				To ee provid on March 99
1998	Purchased in Indonesia	R&U	316	Load Ring Model 82-T1002/SA	98	1				To ee provid on March 99
1998	Purchased in Indonesia	R&U	317	Dial Gauges Model 86-D1255	9	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	318	Set of Slotted Steel Weight	57	1				To ee provid on March 99
1998	Purchased in Indonesia	R&U	319	Beam Loading Device Model:27-T225/A	100	1				To ee provid on March 99
1998	Purchased in Indonesia	R&U	320	Test Forms Model 89-T2303	7	1				To ee provid on March 99
1998	Purchased in Indonesia	R&U	321	Test Forms Model 89-T2306	7	1				To ee provid on March 99

Note : Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandaned
Source : Report by JICA Experts (The third quarter of the ficical year of 1993)

ANNEX 5. LIST OF SUPPLUMENTALY FUNDS TO COVER LOCAL COST

(unit:1,000 Yen)

	ITEM	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	Total
1	Local Running Cost	4,996	6,863	6,030	4,900	6,415		29,204
2	Special Local Running Cost	1,500						1,500
3	Cost for technical Exchange		2,058					2,058
4	Cost for Emergency measures		527					527
5	Cost for Enlightenment and extension		6,069	5,957	5,854	6,000		23,880
6	Cost for Development of Proper technology		2,343	6,819	8,000			17,162
7	Cost for maintenance of highly sophisticated equipment			1,932	1,161	1,014		4,107
8	Cost for Training of Middle level technicians			9,000	5,785	5,875		20,660
	TOTAL	6,496	17,860	29,738	25,700	19,304		99,098

ANNEX 6. ALLOCATION BUDGET BY INDONESIA GOVERNMENT

(unit:1,000 Rupia)

	ITEM	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	Total
1	Local Running Cost	455,667	333,465	507,235	588,962	585,093		2,470,422
	Cost for maintenance of highly sophisticated equipment				★7,920	★10,000		
	Cost for Training of Middle level technicians				★30,978	★267,914		
2	Additional budget	32,381	0	0	0	380,892		413,273
	TOTAL	488,048	333,465	507,235	588,962	965,985		2,883,695

Note: ★ is included in "Local Running Cost"

ANNEX 7 LIST OF COUNTERPART MEMBER FOR IESC PROJECT
BASED ON DECREE NO. 62/KPTS/At/1998

October 1, 1998

NO	FIELD	NAME	POSITION	FROM-TO	FULL TIME / PART TIME	PLACE
1	2	3	4	5	6	7
1	Team Leader	Ir. M.Napitupulu, Dipl.HE	Director of Technical Guidance	1994 - 1998	Administrative Counterpart	Jakarta
2	ditto	Ir .Kaman Moch. Ma'mun	Chief of Balai Irigasi	1994 - 1998	Part Time Counterpart	Bekasi
3	ditto	Ir. A.T.M. Sitompul, M.Eng	Project Manager of IESC	1994 - 1998	Full Time Counterpart	Bekasi
4	Coordinator	Drs. Naswir. B.	Chief of Section Directorate of Technical Guidance	1994 - 1998	Part Time Counterpart	Jakarta
5	ditto	Drs. Kamran Erang	Chief of Section IESC Project	1994 - 1998	Full Time Counterpart	Bekasi
6	S I D.	Ir. Soetanto. M, Dipl. HE	Chief of Large Structure Sub Directorate of Technical Guidance	1998	Administrative Counterpart	Jakarta
7	ditto	Ir. Adi Pramudyo	Staf of Technical Guidance	1994 - 1998	Full Time Counterpart	Jakarta
8	ditto	Ir.M. Moqorobbin	Staf of IESC Project	1998	Full Time Counterpart	Jakarta
9	ditto	Muryadi Rachmanu, ME	Staf of IESC Project	1996 - 1998	Full Time Counterpart	Bekasi
10	O & M	Ir. Soekrasno S. Hardjono, Dipl. HE	Chief of Irrigation Sub. Directorate of Technical Guidance	1998	Administrative Counterpart	Jakarta
11	ditto	Ir. Danang Baskoro	Staf of Technical Guidance	1994 - 1998	Full Time Counterpart	Jakarta
12	ditto	Subari, ME	Staf of IESC Project	1994 - 1998	Full Time Counterpart	Bekasi
13	ditto	Teguh Pamungkas, BE	Staf of IESC Project	1994 - 1998	Part Time Counterpart	Bekasi

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NO	FIELD	NAME	POSITION	FROM-TO	FULL TIME / PART TIME	PLACE
1	2	3	4	5	6	7
14	R & U	Ir. Satriyo Untung, M.Eng	Chief of River Sub. Directorate of Technical Guidance	1994 - 1998	Administrative Counterpart	Jakarta
15	ditto	Subari, BE	Staf of IESC Project	1994 - 1998	Full Time Counterpart	Bekasi
16	SD	Ir.Wahyu Hartomo,Dipl.HE	Chief of Ground Water Sub. Directorate of Technical Guidance	1994 - 1998	Administrative Counterpart	Jakarta
17	ditto	Ir. D i a n t o	Staf of IESC Project	1994 - 1998	Full Time Counterpart	Bekasi
18	ditto	Hasan Maryadi, BE	Staf of Directorate of Planning & Programming	1996 - 1998	Full Time Counterpart	Jakarta
19	ditto	Ir. Suwardi, Dipl. HE	Staf of IESC Project	1994 - 1998	Part Time Counterpart	Bekasi
20	ditto	Wintang Anggrani, SH	Staf of IESC Project	1994 - 1998	Part Time Counterpart	Bekasi
21	ditto	Midiah Sulastry	Staf of IESC Project	1996 - 1998	Part Time Counterpart	Bekasi

LIST OF WORKING GROUP MEMBER IESC PROJECT

BASED ON DECREE NO. 62/KPTS/A/1998

October 1, 1998

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	SID	Ir. Soetanto. M, Dipl. HE	Chief of Large Structure Sub. Directorate of Technical Guidance (DOTG)	1996 - 1998	Jakarta
2	ditto	Ir.Adi Pramudyo	Staf Directorate of Technical Guidance	1994 - 1998	Jakarta
3	ditto	Ir.M. Muqorobbin	Staf of IESC Project	1998	Bekasi
4	ditto	Ir. Bhree Susantini	Researcher of Research Institute For Water Resources Development	1997 - 1998	Bandung
5	ditto	Ir.M. Tampubolon	Chief of East Region Section Irrigation Sub. Directorate of Technical Guidance	1994 - 1998	Jakarta
6	ditto	Ir. Rusli Rais, Dipl.. HE	Staf of Large Structure Sub. Directorate of Technical Guidance	1996 - 1998	Jakarta
7	ditto	Ir. Is Prasetyo, Msc	Chief of Irr. Section Sub. Directorate For West Region II of Implementation	1994 - 1998	Jakarta
8	ditto	DR.Ir.Chairil Abdini, MSc.	Guidance For West Region Chief of General Planning sub Directorate	1998	Jakarta
9	ditto	Ir. Soenardjo, Dipl. HE	Chief of Irr. Section Sub. Directorate For East Region III of Implementation Guidance For East Region	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
10	SID	Ir.Drs. Syamsuddin.M, Dipl. HE	Chief of Irr. Section Sub. Directorate For Central Region II of Implementation Guidance For Central Region	1996 - 1998	Jakarta
11	ditto	Ir.Asbarinsyah	Chief of Dissemination Monitoring & Evaluation Section of Irr. Sub. Directorate of Technical Guidance	1996 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1.	O & M	Ir. Soekrasno S. Hardjono, Dipl. HE	Chief of Irrigation Sub. Directorate of Technical Guidance (DOTG)	1998	Jakarta
2.	ditto	Ir.Danang Baskoro	Staf of IESC Project	1994 - 1998	Jakarta
3.	ditto	Subari, ME	Staf of IESC Project	1994 - 1998	Jakarta
4.	ditto	Dr. Ir.M. Amron, MSc	Chief of Guidance For Water Management &Utilization Sub. Directorate of Water Utilization & Concevation	1994 - 1998	Jakarta
5.	ditto	Ir. T. Sutopo, MSc	Lecturer For O & M Dep. of Public Work	1996 - 1998	Jakarta
6.	ditto	Ir.Ishak Hasan	Project Manager of Training Division, DGWRD	1995 - 1998	Jakarta
7.	ditto	Ir. Emir Faridz	Staf Directorate of Water Utilization & Concervation	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	R & U	Ir. B. Waluyono, Dipl. HE	Lecturer of Dep.of Public Work	1996 - 1998	Jakarta
2	ditto	Ir. Darmono,Dipl. HE	Staf of Directorate of Technical Guidance	1996 - 1998	Jakarta
3	ditto	Subari, BE	Staf of IESC Project	1994 - 1998	Bekasi
4	ditto	Ir. Gatot Soenarjo	Lecturer of Dep. of Public Work	1996 - 1998	Jakarta
5	ditto	Ir. Soekrasno,Dipl.HE	Staf of IESC Project	1997 - 1998	Jakarta
6	ditto	Ir .M .Tampubolon, Dipl. HE, M.Eng	Chief of East region Section IRR. Sub. Directorate of Technical Guidance	1994 - 1998	Jakarta
7	ditto	Pantas Hutagalung,ME	Staf of IESC Project	1998	Bekasi
8	ditto	Ir.P. Chr. Sitohang	Staf of IESC Project	1994 - 1998	Bekasi

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	SD	DR. Ir. M. Basuki H, MSc	Chief of Sub. Directorate For Evaluation, Implementation Utilization & Program	1994 - 1998	Jakarta
2	ditto	Hasan Maryadi, BSc	Staf of Directorate of Planning & Programming	1996 - 1998	Jakarta
3	ditto	Ir. Narayana Swani	Lecturer of Dep. of Public Work	1996 - 1998	Jakarta
4	ditto	Ir. A.T.M. Sitompul, M.Eng	Project Manager of IESC	1996 - 1997	Bekasi
5	ditto	Djoko Sasongko, MSc	Chief of Dissemination Monitoring & Evaluation Region River Sub. Directorate of Technical Guidance	1994 - 1998	Jakarta
6	ditto	Ato Suwarso, ME	Chief of Planning & Evaluation Section Sub. Directorate For General Planning, Directorate of Planning of Programming	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1.	TR	Ir.Eddy A.Djayadireja, M.Eng	Chief of Personnel Administration Division, DGWRD	1998	Jakarta
2.	ditto	Drs. Kamran Erang	Staf of IESC Project	1994 - 1998	Bekasi
3.	ditto	Ir. Ishak Hasan	Project Manager of Training Division, DGWRD	1994 - 1998	Jakarta
4.	ditto	Drs. I Wayan Suyadnya	Chief of Planning & Developing Sub. Division, DGWRD	1996 - 1998	Jakarta
5.	ditto	Maulana Rahim, BE	Staf of IESC Project	1994 - 1998	Bekasi

LIST OF TASK FORCE MEMBER FOR IESC PROJECT
BASED ON DECREE NO. 62/KPTS/At/1998

October 1, 1998

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	SID	Ir. Dicky Supodo, Dipl.HE	Chief of Central Region Section of Large Structure Sub Directorate of Technical Guidance	1994 - 1998	Jakarta
2	ditto	Ir. Muqorobin	Staf of IESC Project	1998	Bekasi
3	ditto	Ir. Adi Pramudyo	Staf of Directorate of Technical Guidance	1994 - 1998	Jakarta
4	ditto	Kusumo Respatyo, ME	Chief of East Region Section of Large Structure, Sub Directorate of Technical Guidance	1994 - 1998	Jakarta
5	ditto	Ir Soedaryanto, MS, MSc.	Chief of West Region Section of Groundwater Sub. Directorate of Technical Guidance	1994 - 1998	Jakarta
6	ditto	Ir. Ketut Suryata	Chief of Dissemination Monitoring & Evaluation Section of Large Structure Sub-Directorate of Technical Guidance	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
7	SID	Muryadi, ME	Staf of Large Structure Sub Directorate of Technical Guidance	1994 - 1998	Jakarta
8	ditto	Ir. Ridwan Rahman, Dip. SI	Staf of Directorate of Water Utilization and Conservation	1994 - 1998	Jakarta
9	ditto	Ir. Prabowo Praktiknyo, ME	Staf Directorate of Swampy and Coastal Sub Directorate of Technical Guidance	1996 - 1998	Jakarta
10	ditto	Ir Subekti	Staf Directorate of Water Utilization and Conservation	1996 - 1998	Jakarta
11	ditto	Ir. Robert Sitohang, Dip. HE	Staf Directorate of Technical Guidance	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	SID	Ir. Zainuddin, ME	Staf of Large Structure Sub Directorate of Technical Guidance	1994 - 1998	Jakarta
2	ditto	Ir . Soewarno, Dip. HE	Staf of Directorate of Large Structure of Technical Guidance	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	O & M	Ir.Soekrasno S.Hardjono, Dipl. HE	Chief of Irrigation Sub Directorate of Technical Guidance (DOTG)	1998	Jakarta
2	ditto	Subari, ME	Staf of IESC Project	1994 - 1998	Jakarta
3	ditto	Ir. Danang Baskoro	Staf Directorate of Technical Guidance	1994 - 1998	Jakarta
4	ditto	Teguh Pamungkas, BE	Staf of IESC Project	1994 - 1998	Jakarta
5	ditto	Ir. Asbarinsyah	Chief of Dissemination Monitoring & Evaluation Section of Irr. Sub-Directorate of Technical Guidance	1996 - 1998	Jakarta
6	ditto	Ir. Darwin Lubis, Dip. HE	Chief of West Region Section of Irr. Sub-Directorate of Technical Guidance	1994 - 1998	Jakarta
7	ditto	Ir. Bambang Prihono, Dip. HE	Chief of Central Region Section of Irr. Sub-Directorate of Technical Guidance	1994 - 1998	Jakarta

NO.	FIELD	NAME	POSITION	FROM-TO	PLACE
1	2	3	4	5	6
1	R & U	Ir. Satriyo Untung, M.Eng	Chief of River Sub Directorate of Technical Guidance	1996 - 1998	Jakarta
2	ditto	Subari, BE	Staf of IESC Project	1994 - 1998	Jakarta
3	ditto	Ir. Darmono,Dip. HE	Staf Directorate of Technical Guidance	1996 - 1998	Jakarta
4	ditto	Ir. M.Tampubolon,Dip.HE, ME	Chief of East Region Section of Irr. Sub-Directorate of Technical Guidance	1994 - 1998	Jakarta
5	SD	Ir. Wahyu Hartomo, Dip. HE	Chief of Ground Water Sub-Directorate of Technical Guidance	1994 - 1998	Jakarta
6	ditto	Ir. A.T.M. Sitompul, M.Eng	Project Manager of IESC	1994 - 1998	Jakarta
7	ditto	Ir. Dianto	Staf IESC Project	1994 - 1998	Jakarta
8	ditto	Wintang Anggraini, SH	Staf IESC Project	1994 - 1998	Jakarta
9	ditto	Hasan Maryadi, BSc.	Staf IESC Project	1996 - 1998	Jakarta

ANNEX 8 PROGRAM WATER RESOURCES SECTOR SUPPORTING FOR GEMAPALAGUNG 2001

No	PROGRAMME/ACTIVITY	Supporting to GPLG	1998/1999		SPL INP 22		1999/2000		2000/2001		Target Total (Ha)	Target Gema Palagung 2001
			Target (Ha)	Cost (Rp. Juta)	Target (Ha)	Cost (Rp. Juta)	Target (Ha)	Cost (Rp. Juta)	Target (Ha)	Cost (Rp. Juta)		
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Development & Management Irrigation Scheme Program											
	a. Operation & Maintenance Irrigation Scheme		4.830.000	127.756	-	-	4.830.000	135.240	5.000.000	200.000	5.000.000	
		(PMI)										PMI
											-	11.243.051
	b. Rehabilitation Irrigation Scheme		435.529	277.000	323.275	264.070	347.400	190.800	98.580	78.864	1.204.784	
		(PMI)										
	c. New Irrigation Development		81.629	255.000	33.705	72.127	101.450	355.075	15.000	63.000	234.784	
		(PIP)	50.000				*40.000*		*35.000*			*125.000*
	d. Rehabilitation & Development Small Irrigation		11.509	5.760	84.949	144.783	108.650	76.055	106.800	163.200	313.908	
		(PIP)					*70.000*		*70.000*			*140.000*
	e. Land Consolidation		54.886	32.000	30.593	64.578	40.925	81.850	7.800	17.160	134.204	
		(PBL)	25.000				*50.000*		*35.000*			*110.000*
2	Development & Management Swamp Area Program											
	a. Operation & Maintenance of Swamp Scheme		1.470.000	38.820	-	-	1.470.000	41.160	1.470.000	44.100	1.470.000	
		(PMI)										
	b. Rehabilitation & Developing Swamp Scheme		115.751	222.000	82.472	86.720	100.000	120.000	16.796	20.155	315.019	
		(PIP)	35.000				75.000		90.000			200.000
	c. Utilization of Swamp Area											
		(PBL)					*55.000*		*50.000*			*105.000*
3	Utilization of WUA				9.000	88.000						
	TOTAL			958.336		720.278		1.000.160		586.479		

Note
PMI : Developing of Intensification Quality
PIP : Developing of Intensity Crop
PBL : Additional of Potensial Area
* Output Activity of DIP 1998/99 efective ASEP 1999 (to support Gemapalagung in 1999)
* Ouput Activity of SPL & DIP 1999/2000 efective ASEP 2000 (to support Gemapalagung in 2000)
* Output Activity of Fiscal Year 2000/2001 efective ASEP 2001 (to support Gemapalagung in 2001)
Colom 12 & 13 composition between achievement of Water Resources Activities (colom 12) with Gemapalagung Target of Water Resources Contribution (colom 13)
Juta = 1,000,000.

ANNEX. 9

TENTATIVE MASTER PLAN OF FOLLOW-UP COOPERATION FOR THE IRRIGATION ENGINEERING SERVICE CENTER PROJECT IN THE REPUBLIC OF INDONESIA

1. OVERALL GOAL

Food production, income level of farmers and job opportunity is increased in rural area.

The irrigation project which based on the UPSUS GEMA PALAGUNG 2001 by Ministry of Agriculture and "Urgent Irrigation Program" by Ministry of Public Works is propelled rationally and effectively.

2. PROJECT PURPOSE

Technical support and adaptation of technical guidelines and manuals are carried out for effective implementation of irrigation projects in the Model provinces.

3. OUTPUT

1) Planning methods for irrigation projects are improved.

2) Technical guidance concerning the small scale irrigation schemes is carried out.

3) The "Manual for Urgent Irrigation Works" is prepared.
(This manual is prepared based on the library on design & construction works and operation & maintenance / rehabilitation works for small scale irrigation facilities)

4) The output mentioned above is spread widely through the Moving Advisory Team (MAT) and seminars.

4. IMPLEMENTATION

1) Main office of the project is provided in the DGWRD, MPW.

2) The project activities are carried out mainly in West Jawa province and Central Jawa province.

3) MAT is organized by JICA experts and counterparts. MAT holds the meeting with related provincial officials and personnel concerned (if necessary) to solve the technical subjects concerning irrigation project sites, and proposes solutions to Head of Provincial Water Resources Services and Director General of Water Resources Development.

5. Activities

1) Investigation & Planning

- To improve the project site selection method.
- To implement the technical guidance for planning method for small scale irrigation schemes.
- To investigate the planning methods in consideration of farmer's aspiration.

2) Design & Construction

- To make advice for technical subjects on design & construction through the MAT in the field.
- To prepare the library on the design & construction works for small scale irrigation facilities

3) Operation & Maintenance / Rehabilitation

- To make advice for technical subjects on operation & maintenance / rehabilitation through the MAT in the field.
- To prepare the library on the operation & maintenance / rehabilitation works for small scale irrigation facilities.

4) Project management

- To enhance the relationship and synergy with other related organizations.
- To instruct the collection and analysis methods of the information for the implemented project.

6. Input by Japanese side

1) Long Term Expert
- Team Leader / Project Management
- Coordinator
- Investigation & Planning (One year only)
- Design & Construction
- Operation & Maintenance / Rehabilitation

2) Short Term Expert (as the occasion demands)

3) Acceptance of the Counterparts (as the occasion demands)

4) Provision of Machinery and Equipment (as the occasion demands)

7. Input by Indonesian side

1) In charge of Operation and Management of the project and counterparts
- Project Director
- Project Manager
- Counterparts (Appropriate officials to conduct these activities in DGWRD and Provincial Water Resources Services)
- Other administrative personnel

2) Land, building and facilities
- Main office of the project in the DGWRD
- Office spaces in the model provinces
- Training space in IESC (Bekasi)

8. Joint Coordinating Committee

1) Function

The Joint Coordinating Committee will meet at least once a year and whenever the need arises. Functions of the committee are follows;

- To give the direction and guidance to the activities carried out by the Project and to coordinate inter-related activities within DGWRD.
- To review and approve the Annual Work Plan of the Project.
- To review the overall progress of the technical cooperation program as well as the achievement of the Annual Work Plan.
- To review and exchange view on major issues arising from or in connection with the technical cooperation program.

2) Composition

Chairperson

Director General of Water Resources Development, MPW

Vice Chairperson

Secretary of DGWRD, MPW

Indonesian side

Director of the Directorate of Planning and Programming, DGWRD, MPW
Director of the Directorate of Technical Guidance, DGWRD, MPW
Director of the Directorate of Utilization and Conservation of Water Resources, DGWRD, MPW
Director of the Directorate of Implementation Guidance for Central Region, DGWRD, MPW
Representative of the Research Institute of Water Resource Development, MPW
Representative of the Center for Data Processing and Mapping (PUSDATA), MPW.
Representative of the Provincial Water Resources Services in West Java Province
Representative of the Provincial Water Resources Services in Central Java Province
Representative of the Ministry of Agriculture
Representative of the National Development Planning Agency (BAPPENAS)
Representative of the Ministry of Finance

Japanese side

Team Leader
Other Japanese Experts including personnel dispatched by JICA
Representative of the JICA Indonesia Office
Note: Official(s) of the Embassy of Japan and OECF Indonesia Office may attend the Joint Coordinating Committee as observer(s).

TSI上の活動内容				備　考	94	95	96	97	98	99
1. 技術基準、ガイドライン及びマニュアルの開発と改良 （ランポン、南スラウェシ他でのケーススタディーの実施） (1) 調査・計画・設計 1) 灌漑調査計画基準の改良 （最終案の作成） 2) 灌漑施設設計基準の改良 （フィルタイプ・ダム：最終案作成、水路：第一次案作成、データ収集・解析：頭首工他）				R/D：実施協議 C/T：計画打ち合わせ A/T：中間評価						
計画打ち合わせ調査時	進捗状況	中間評価時	今後の課題	備　考	94	95	96	97	98	99
【技術指針】										
① 灌漑計画技術指針	TF一次原稿案完了 WGによる見直し中	① 灌漑計画技術指針	水文関係の強化 経済分析の強化	最終原稿に向け作業中						
② フィルタイプ・ダム技術指針	TF一次原稿案作成中 進捗率30%	② フィルタイプ・ダム技術指針	追加調査必要 水文、水収支の強化	最終原稿に向け作業中		開発			普及	
③ 水利構造物技術指針	作業未着手	削除	関連資料の提供に止める	「イ」側による追加調査必要 「イ」側で実施する						
④ 積算設計	作業未着手	削除		(7冊の「イ」側基準の見直し) TSIに記載なし。今後の活動計画からみて困難						
		⑤ 軟弱地盤対策指針	基礎的調査設計手法の指針	「イ」側要望により追加						
【技術計算】		① 水撃圧解析	プログラム作成指導済み	「イ」側要望により追加						
		② 排水路不定流解析	プログラム作成指導済み	技術計算の普及に努める ○上						
【事例研究】										
① 圃場用水量調査	モデルサテライトで実施中	① 圃場用水量調査	各事例研究は研修の一環として継続実施	機材不足(1セットのみ)						
② 湿度係数調査	グヤティフール・ダムで調査中	② 湿度係数調査	同上	「イ」側による全国的展開必要						
③ 流出解析調査	マニュアル案作成済み	③ 流出解析調査	同上	実地調査必要						
④ 流出解析手法研究	プログラム完成	④ 流出解析手法研究	同上	タンクモデル、貯留関数法等実施						
⑤ 流砂量の研究	既存データで解析済み	⑤ 流砂量の研究	同上	期間中データ収集に努める						
⑥ 有限要素法の研究	事例研究実施中	⑥ 有限要素法の研究	同上							
		⑦ 水位調整ゲートの研究	同上	円滑な水配分に資するため追加され、実施中						

【備　考】
1. 技術計算分野についてはSDと共同で開発している。
2. 技術指針の基準化については、今後「イ」側による公式な承認過程を経て成される。
3. 水文関係、有限要素法、軟弱地盤対策に関し、「イ」側に基礎的なものから応用的なものまでの技術移転を希望。

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TSI上の活動内容				備　考	94	95	96	97	98	99
(2) 維持・管理のためのｶﾞｲﾄﾞﾗｲﾝ、ﾏﾆｭｱﾙの改良 (ﾗﾝｶﾝ等でのｹｰｽｽﾀﾃﾞｨｰの実施) 1) 水管理、灌漑施設に関する技術基準の改善 2) 水管理計画ﾏﾆｭｱﾙの改善				R/D C/T A/T						
計画打ち合わせ調査時	進捗状況	中間評価時	今後の課題	備　考	94	95	96	97	98	99
【既存ｶﾞｲﾄﾞﾗｲﾝの見直し、改訂及び研修教材】 (1) 維持管理基礎技術ｶﾞｲﾄﾞﾗｲﾝ	TF一次原稿完了 ﾜｰｸｼｮｯﾌﾟによる検討中	(1) 維持管理基礎技術ｶﾞｲﾄﾞﾗｲﾝ	97/3以降、最終確認計	最終原稿に向け作業中		開発				
【水管理計画ﾏﾆｭｱﾙの改良】 (1) ﾃｸﾆｶﾙ灌漑地区 (2) セミ・テクニカル灌漑地区 (3) ｼﾝﾌﾟﾙ灌漑地区	- - -	削除 削除 削除		水資源管理利用局の専管業務となり除外 同上 同上						
【ｶﾞｲﾄﾞﾗｲﾝの使用及び普及】 (1) ｶﾞｲﾄﾞﾗｲﾝの使用・普及	作業未着手	(1) ｶﾞｲﾄﾞﾗｲﾝの使用・普及	97年度から実施予定	TFﾒﾝﾊﾞｰ中心としたｾﾐﾅｰを通じ普及を図る					普及	
【水資源利用効率化のための水管理技術の検討及び紹介】 (1) 水管理実態調査のためのｹｰｽｽﾀﾃﾞｨｰの実施 (2) 灌漑効率向上のためのｶﾞｲﾄﾞﾗｲﾝの作成 (3) 深層取水工の紹介	ﾜｲ・ｽｶﾝﾎﾟﾝ地区での水管理実態調査 作業未着手 計画設計技術書の作成 ｾﾐﾅｰによる普及活動実施	(1) 水管理実態調査のためのｹｰｽｽﾀﾃﾞｨｰの実施 (2) 灌漑効率向上のためのｶﾞｲﾄﾞﾗｲﾝの作成 (3) 深層取水工の紹介	ﾃﾞｰﾀの信頼性向上に努める 水管理実態調査法手取りまとめる 深層取水工ﾏﾆｭｱﾙの作成予定	灌漑効率向上のためのｶﾞｲﾄﾞﾗｲﾝへ反映させる IESCの成果として施工実績あり				開発+普及同時進行	
【維持管理情報伝達手法の改良】 (1) 維持管理情報様式の電算化、情報ｼｽﾃﾑ高機能 (2) ｹｰｽｽﾀﾃﾞｨｰ地域への維持管理情報ｼｽﾃﾑの導入 (3) ﾓﾆﾀﾘﾝｸﾞ及び評価	水管理情報ｼｰﾄの改良 ｼｽﾃﾑ設計、ﾌﾟﾛｸﾞﾗﾑ開発 ﾜｲ・ｽｶﾝﾎﾟﾝ地区への導入完了 96年9月以降、ﾓﾆﾀﾘﾝｸﾞ開始	(1) 維持管理情報様式の電算化、情報ｼｽﾃﾑ高機能 (2) ｹｰｽｽﾀﾃﾞｨｰ地域への維持管理情報ｼｽﾃﾑの導入 (3) ﾓﾆﾀﾘﾝｸﾞ及び評価	ﾌﾟﾛｸﾞﾗﾑの改良 ｸﾞﾗﾌｨｯｸｼｽﾃﾑの開発 効果的適用のための技術指導 ｼｽﾃﾑの安定化と効果的適用	ﾓﾃﾞﾙ・ﾌﾟﾛｼﾞｪｸﾄを通じた普及が望まれる 同上 同上						

【備　考】
1. 維持管理情報伝達手法の改良に関わる全ての業務は、ｼｽﾃﾑ開発分野との協力業務として実施している。
2. 維持管理情報伝達手法の改良に関しては、O/M部門としては水管理情報の電算化に特化することとし、施設の老朽化・破損等の現場情報については修復・更新分野で対処するものとする。

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(3) 修復・更新のためのｶﾞｲﾄﾞﾗｲﾝ、ﾏﾆｭｱﾙの改良
（修復技術の試験のためのｹｰｽｽﾀﾃﾞｨｰ及び修復・更新計画のための評価ｼｽﾃﾑの実施）

1) 修復・更新事業のためのｶﾞｲﾄﾞﾗｲﾝ、ﾏﾆｭｱﾙの開発

R/D
C/T
A/T

計画打ち合わせ調査時	実施状況	中間評価時	今後の課題	備　考
【ｶﾞｲﾄﾞﾗｲﾝ作成】				
① ﾀﾞﾑ （ﾀﾞﾑ本体、余水吐、ｹﾞｰﾄ）	作業未着手	① ﾀﾞﾑ （ﾀﾞﾑ本体、余水吐、ｹﾞｰﾄ）	97年度央からﾃﾞｰﾀ収集開始予定	完了、実施地区から関係図書及びﾃﾞｰﾀ収集予定
② 頭首工 （堰、取水口）	96年10月以降、ﾃﾞｰﾀ収集開始	② 頭首工 （堰、取水口）	97年度で完了予定	「イ」側の継続したﾃﾞｰﾀ収集努力が必要
③ 水路工（開水路、落差工、ｻｲﾌｫﾝ、ｶﾙﾊﾞｰﾄ水路橋）	TF第一次原稿案作成	③ 水路工（開水路、落差工、ｻｲﾌｫﾝ、ｶﾙﾊﾞｰﾄ水路橋）	96年度中に完了予定	IESCとしては本成果をもって完了する
④ 工事示方書案の作成	水路工についてﾃﾞｰﾀ収集	④ 工事示方書案の作成	上記工事に関する示方書案を作成する	
【ｲﾝﾍﾞﾝﾄﾘｰ及びﾌｧｲﾘﾝｸﾞ・ｼｽﾃﾑ】				
① 評価ｼｽﾃﾑ・ｹｰｽｽﾀﾃﾞｨｰ	評価法の試案完成 進捗率80%	① 評価ｼｽﾃﾑ・ｹｰｽｽﾀﾃﾞｨｰ	ﾓﾃﾞﾙ地区を選定し検証予定 97年度完了予定	構造物劣化評価目安案の作成
【水路修復工法の検討】				
① 材料試験	室内材料試験完了 （主としてｱｽﾌｧﾙﾄ材料）	① 材料試験	ﾗﾝﾎﾟﾝ州における試験施工予定	施工後のﾓﾆﾀｰは「イ」側が実施

94 95 96 97 98 99

材料試験　試験施工　モニター

【備　考】
1. ｲﾝﾍﾞﾝﾄﾘｰ・ｼｽﾃﾑ開発はSD分野で行い、RU分野では、これを修復・更新に活用できるようにﾌｧｲﾘﾝｸﾞ・ｼｽﾃﾑを含めて応用編を作成する。
2. 開水路のﾃﾞｰﾀ収集は、中央ｼﾞｬﾜ、西ｼﾞｬﾜ、ｽﾏﾄﾗ及び中央ｽﾗｳｪｼの各州から収集。（1ﾌﾟﾛｼﾞｪｸﾄ例）
3. 構造物劣化評価ｼｽﾃﾑに関しては、IESCとしては、ｹｰｽｽﾀﾃﾞｨｰまでとし、それ以後は「イ」側の実態にあったｼｽﾃﾑを、「イ」側により実施するものとする。

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(4) 調査・計画・設計、修復・更新、維持管理のためのシステム開発の改良

1) 技術計算システムの改良
(調査・計画・設計分野と協力して行われる)

a) 構造計算
(フィルタイプ・ダム他)

b) 水理計算
(水位計算等)

2) データベース・システムの改良

a) 主要灌漑施設のインベントリーシステム
(修復・更新分野と共同して開発)

b) 灌漑計画図のファイリング・システム
(修復・更新分野と共同して開発)

c) 維持管理のための灌漑情報システム
(O/M分野と共同して開発。ランポンがモデルケース)

R/D
C/T
A/T

計画打ち合わせ調査時	現時状況	中間評価時	今後の課題	備考	94	95	96	97	98	99
【技術計算プログラム】										
① 構造計算プログラム		① 構造計算プログラム		Visual Basic による開発						
フィルタイプ・ダム安定計算	プログラム開発完了 マニュアルもほぼ完成	フィルタイプ・ダム安定計算	システムの普及に努める	システム運用段階でのバグのチェックが必要			開発		普及	
コンクリート・ダム安定計算	修正作業中	削除		「イ」側でより要望の高いフィルタイプ・ダムに修正した						
擁壁工安定計算	プログラム開発完了 マニュアルもほぼ完成	擁壁工安定計算	システムの普及に努める	システム運用段階でのバグのチェックが必要						
		② 重力式護壁安定計算	96年度プログラム開発 97年度マニュアル完成予定	「イ」側要望により追加 システム完成後普及に努める						
		③ 逆T式擁壁安定計算	97年度プログラム・マニュアル開発	「イ」側要望により追加 システム完成後普及に努める						
		④ 改良型濁流取水工	プログラム開発完了 システムの普及に努める	維持管理分野でのセミナーを通じて開発要望が高まった						
② 水理計算プログラム		② 水理計算プログラム								
水路の水位計算	等流/不等流プログラム開発完了。マニュアルもほぼ完了	水路の水位計算	システムの普及に努める	システム運用段階でのバグのチェックが必要						
水路の断面計算	プログラム開発完了 マニュアルもほぼ完了	水路の断面計算	システムの普及に努める	システム運用段階でのバグのチェックが必要						
管網水理計算		削除		「イ」側の希望と今後の普及内容に鑑み削除						
サイフォンの断面計算		削除		同上						
【データベース・システム】										
① 主要灌漑施設検索システム	実施設計完了 システム開発中	① 主要灌漑施設検索システム	96年度中システム開発完了予定	開発終了後は、修復・更新分野が活用						
② 灌漑計画図ファイリング・システム	既存システムの入手済み サンプル・マップ調査中	② 灌漑計画図ファイリング・システム	97年度システム開発予定	プロジェクト期間中に数地区のサンプル・データを入力						
③ 維持管理のための灌漑情報システム	ランポンにおいてO/M部門と共同開発中、システム開発済	③ 維持管理のための灌漑情報システム	96年度システム開発完了予定 96年度中にシステム拡充	電算機及び基本データ収集に関する訓練が更に必要						

【備考】

1. SD分野は、調査・計画・設計、維持管理及び修復・更新分野と密接に関連し、相互に協力し合っている。
2. 特に、ランポン州のウイ・スカンポン地区を担当している「イ」側スタッフは、電算機の扱いに慣れておらず、更なる訓練が必要である。
3. 灌漑情報システムに対する「イ」側の評価は高く、灌漑効率の向上に寄与する観点から期待されている。

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ISI上の活動内容				備　考	94	95	96	97	98	99
2. 研 修 (1) 研修計画、カリキュラム、研修材料の準備 (2) 研修の実施				R/D C/T A/T	———	———	———	———	———	———
計画打ち合わせ調査時	現時状況	中間評価時	今後の課題	備　考	94	95	96	97	98	99
【研修活動の方針と実施】 ① 各分野で開発された ガイドライン、マニュアル等を 公共事業省及び州政府 の関連技術者へ普及する ② 各分野の活動成果を 材料としている ③ 日本人専門家は、必要 に応じて助言・指導を行う ④ 3年目からの研修を目指す	① IESC主催のセミナー開催 10回 参加者数　1,036 名 ② IESC主催の研修開催 4回 参加者数　51 名 ③ 他機関主催の研修 2 カ所 参加者数　9 名	①～④ 変更無し	予算の確保と「イ」側の負担増を求める	95年度までのセミナーは、主に啓蒙普及によった。 96年度以降の日本側の予算負担は、主に中堅技術者養成対策費及び啓蒙普及費による 区分野とも、セミナー開催を中心に啓蒙普及に努める	………	………	………	………	………	………
					———	———	———	———	———	———
						準備				
							実施			
⑤ TCDCはIESCの活動には 含まれない	TCDCに専門家が毎年1～2 名ずつ講師として参加	TCDCをIESCの活動に含め られないが、現実として 巻き込まれざるを得ない。	活動の成果及びPRの場として 積極的に利用する							

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３．供与機材リスト

表1　機材リスト　（1994年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1994	Accompanied	General	1	Desk Top PC (IBM 2406-WVB 4 MB Memory),(PS/V)	265	1	Bekasi	A	A	
1994	Accompanied	General	2	Desk Top PC (IBM 2406 - WVB),(PS/V)	201	2	Bekasi/Jakarta	A	A	
1994	Accompanied	General	3	Printer: (Canon LBP - B406(Gf))	358	2	Bekasi/Jakarta	A	A	
1994	Accompanied	General	4	Lap Top PC (Thinkpad 360CS 4MB 350HDD)	314	2	Bekasi/Jakarta	A	A	
1994	Purchased in Indonesia	General	5	Car: DAIHATSU HILINE 4W	3,300	3	Bekasi	A	A	
1994	Purchased in Indonesia	General	6	Photo Copy :NP-6060 with sorter	2,225	2	Bekasi/Jakarta	A	A	
1994	Purchased in Indonesia	General	7	Printer: Canaon BJ-15 Pro	47	2	Bekasi/Jakarta	A	A	
1994	Purchased in Indonesia	General	8	Fax: Panasonic KX-F2230B	58	2	Bekasi/Jakarta	A	A	
1994	Purchased in Indonesia	General	9	UPS: Powercom 500 VA	43	6	Bekasi	A	A	
1994	Purchased in Indonesia	O&M	10	Rainfall Recorder : (EL29-5001 Cooper Rainwater)	24	1	Lampung	A	A	
1994	Purchased in Indonesia	O&M	11	Sunshine Recorder	21	1	Lampung	A	A	
1994	Purchased in Indonesia	SD	12	Data Switch Box Printer Sharing : 1 - 4	11	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	13	Printer: Desk Jet 560 Color	96	1	Bekasi	A	A	
1994	Purchased in Indonesia	General	14	A-Link calculator 2830S	22	3	Bekasi	A	A	
1994	Purchased in Indonesia	General	15	Safety Box	25	1	Bekasi	A	A	
1994	Purchased in Indonesia	General	16	AC(Sanyo SAP-C122)	139	3	Bekasi	A	A	
1994	Purchased in Indonesia	SD	17	Server: IBM PC SERVER 486*2	848	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	18	UPS: Powercom 1KVA	354	1	Bekasi	A	A	
1994	Purchased in Indonesia	O&M	19	Pan Evaporation (EA506-350 EA506-352)	471	1	Lampung	A	A	set up at experiment farm
1994	Purchased in Indonesia	O&M	20	Sunshine Recorder: EA505-062 Cambell Stocks sunshine 0-49 Nos	640	1	Lampung	A	A	set up at experiment farm
1994	Purchased in Indonesia	General	21	Camera: Canon EOS 10 with Zoom EF-7-21/3.5-4.5	111	3	Bekasi	A	A	
1994	Purchased in Indonesia	TR	22	Video Movie: Sony Video 8	145	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	23	Desk Top PC: IBM Value Point PS433 D/X/S1	351	6	Bekasi	A	A	
1994	Purchased in Indonesia	SD	24	Software Microsoft Visual Basic Prof. ver 3.0 for Windows, MS Fortran Compiler	339	3	Bekasi	A	A	
1994	Purchased in Indonesia	SD	25	Cabling System Cable Connecterator, etc.	292	1	Bekasi	A	A	
1994	Purchased in Indonesia	O&M	26	Metrological Box	154	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	27	Tape Back Up Wangtek 8GB	169	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	28	Modem :Multitec 2400/4800/9600/12000/14400 bps	193	1	Bekasi	A	A	
1994	Purchased in Indonesia	TR	29	White Board with photocopy function	135	1	Bekasi	A	A	
1994	Purchased in Indonesia	TR	30	Sound Slide Movie	271	1	Bekasi	A	A	
1994	Purchased in Indonesia	SD	31	Printer: HP Laser Jet 4L	104	4	Bekasi	A	A	
1994	Purchased in Indonesia	O&M	32	Current Meter (EA520-260)	1,406	1	Lampung	A	A	
1994	Purchased in Indonesia	IPD	33	Solar Panel etc.	136	1	Jatiluhur Dam	A	A	For the seismometer
1994	Purchased in Indonesia	SD	34	Calcomp Digitizer 3400 (A0)	561	1	Bekasi	A	A	

Note : Frequency　A:everyday　B:often　C:sometimes　D:seldom use
Maintenance　A:very good　B:good　C:not good　D:abandoned
Source: Report by JICA Experts (The third quarter of the ficical year of 1938)

表1　機材リスト　（1995年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1995	Purchased in Indonesia	IPD	35	Strong Motion Seismograph Kinemetric: Ex USA (108300 Model Kinematics SSA-2)	1,664	1	Jatiluhur Dam	A	A	
1995	Purchased in Indonesia	IPD	36	Watchman Gate :W=0.6m, B=0.5m	15,346	1	Bekasi	B	B	Set up in the Bakasi center
1995	Purchased in Indonesia	IPD	37	Recording rain Gauge & Evaporator ERR - 101	2,403	1	Bekasi	A	A	
1995	Purchased in Indonesia	TR	38	Desk Top PC (IBM-PC130-456 DX2) 16MB RAM 66MHz 540HD with Monitor 14"	243	1	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	39	Lap Top PC (IBM thinkpad DX4-75), 16MB RAM 75MHz-540HD	533	6	Bekasi	A	A	
1995	Purchased in Indonesia	IPD	40	Canal for Watchman Gate (W=0.6m, B=0.5, L=10m)	856	1	Bekasi	C	B	Set up in the Bakasi center (in the Canal)
1995	Purchased in Indonesia	IPD	41	Parshall type level flow Recorder	409	2	Lampung	A	A	Set up at experiment farm
1995	Purchased in Indonesia	IPD	42	Water Level Meter RR-200	243	1	Lampung	A	A	
1995	Purchased in Indonesia	IPD	43	Software 301(440 Analysis	610	1	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	IPD	44	Data Processor for SSA-2	354	1	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	SD	45	Desk Top PC:IBM Maltiscan PC-P90	674	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	46	Printer HP Design Jet 750C(A0)	935	1	Bekasi	A	A	
1995	Purchased in Indonesia	O&M	47	Midland Radio Transceiver UHF/FM Frq 406-470MHz Supply 13A	156	9	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	48	Desk Top PC : (IBM - 300 486 DX2) 66 MHz 4MB 270MB HD With Monitor 14"	298	3	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	49	Desk Top PC : (IBM - 300 486 DX2) 66 MHz 4MB 270MB HD With Monitor 14"	298	1	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	50	Omnidirectional Whip Antenna 5dB with Connector and 50m Cable	914	9	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	51	Telematic Data Modem & Software	1,157	9	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	52	Desk Top PC:IBM Maltiscan PC-P90	869	1	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	SD	53	Software Map-Info Ver 3.0 for Windows	335	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	54	Software Map-Basic Ver 1.0 for Windows	335	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	55	Autocad: Ver 13 for Windows MIKASA MVC-60	321	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	56	Vibrating Plate Compactor	423	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	57	Precition Balance OHAUSE 1600 O	133	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	58	Sieve for Asphalt Aggregate(Coare Set Aggregate)	156	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	59	Winch Merk Maxpull (GM - 3 300 Kg)	195	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	60	Portable Tools Set	293	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	61	Sieve For Asphalt Aggregate (Set Brass Sieve)	117	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	62	Cohesiometer ASTM-D 156	1,814	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	63	Asphalt sprayer 200 Lt (Sakai Type SAS 200L)	761	1	Bekasi	A	A	
1995	Purchased in Indonesia	R&U	64	Winch Merk Maxpull (GM - 5 500 Kg)	312	1	Bekasi	A	A	
1995	Purchased in Indonesia	TR	65	Computer Table	38	7	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	66	Software Micro-office pro, etc	50	1	Jakarta	B	A	
1995	Purchased in Indonesia	IPD	67	PMCIA Memory Card 1 MB	78	4	Jatiluhur Dam	A	A	For the seismometer
1995	Purchased in Indonesia	IPD	68	Software (Corel Draw Ver 6.0 for Windows)	87	1	Jakarta	B	A	
1995	Purchased in Indonesia	SD	69	Pen Stylus	16	1	Bekasi	B	A	
1995	Purchased in Indonesia	TR	70	Printer Laser Jet 5L	79	7	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	71	UPS Powercom 500VA	47	9	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	72	Data Switch Box 4,1 with Cable	9	8	Bekasi/Jakarta	A	A	
1995	Purchased in Indonesia	TR	73	UPS Powercom 650 VA	41	1	Bekasi	A	A	

Note： Frequency　A:everytime　B:often　C:sometimes　D:seldom use
Maintenance　A:very good　B:good　C:not good　D:abandoned
Source: Report by JICA Experts (The third quarter of the fiscal year of 1333)

表1 機材リスト （1995年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1995	Purchased in Indonesia	TR	74	Software Lotus 123 Ver 5.0 for Windows	33	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	75	Software Turbo Pascal Ver.7.0 for Windows	12	1	Bekasi	A	A	
1995	Purchased in Indonesia	SD	76	Software Novel Netware Connect	91	1	Bekasi	B	A	
1995	Purchased in Indonesia	SD	77	Software Norton PC Anywere 4.5	15	1	Bekasi	B	A	
1995	Purchased in Indonesia	O&M	78	UPS : Powercom 500 VA	41	9	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	79	Printer Epson Lq-1170	75	9	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	80	Software Lotus 123	51	1	Lampung	A	A	
1995	Purchased in Indonesia	O&M	81	Handy Talky: Motorola	74	64	Lampung	A	A	For constructing information system
1995	Purchased in Indonesia	O&M	82	Printer HP Laser Jet 5L	83	3	Jakarta	A	A	
1995	Purchased in Indonesia	O&M	83	UPS: Powercom 500 VA	33	2	Jakarta	A	A	
1995	Purchased in Indonesia	R&U	84	Cylinder Mold BBC-119 15*30cm	10	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	85	Chain Rope Manual	93	1	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	86	Asphalt Compaction Mold (BBS Type BBS-30-2)	8	2	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	87	Cylinder Mold BBC-119 10*20cm	8	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	88	Cylinder Mold: BBC-119 5*10cm	6	20	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	89	Briquette Mold BBS Type BCT-42	51	10	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	90	Flat Form Cobiva A60 50 Kgs	29	1	Bekasi	B	A	
1995	Purchased in Indonesia	R&U	91	Standard Frigod	39	1	Bekasi	B	A	
1995	Accompanied with S.T.E.	SD	92	Software STATISCA	174	1	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	93	SCANNER GT-900Win	137	2	Bekasi/Jakarta	A	A	
1995	Accompanied with S.T.E.	RU	94	Soil PH Meter PHS-120	110	1	Bekasi	B	A	
1995	Accompanied with S.T.E.	SD	95	Over Drive Processor ODP-100	26	3	Jakarta	A	A	
1995	Accompanied with S.T.E.	SD	96	Software NET SURFER	90	2	Jakarta	A	A	
1995	Accompanied with S.T.E.	SD	97	Software MARUKABRI BILINGAL	27	1	Jakarta	A	A	
1995	Accompanied with S.T.E.	SD	98	Floppy Disk 10pcs/box	1	10	Jakarta	A	A	
1995	Accompanied with S.T.E.	SD	99	Software Norton UTILITIES 8.0	13	1	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	100	Hard Disk OSC-10240	66	1	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	101	SCSI I/F Kit	12	1	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	102	Printer Cable Lpc60	5	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	103	CD-ROM CDS-4ES	21	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	104	I/F Board (The SCSI Master) 50p-50p	50	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	105	Hard Disk DSC10345	35	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	106	SCSI I/F Kit for HD	12	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	107	Cable HDD-CD-ROM CSC-H03	3	3	Bekasi	A	A	
1995	Accompanied with S.T.E.	SD	108	Cable HDD-CD-ROM-Scanner	5	3	Bekasi	A	A	

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Source: Report by JICA Experts (The third quarter of the fiscal year of 1995)

表1 機材リスト （1996年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization Frequency	Utilization Maintenance	Remarks
1996	Purchased in Indonesia	General	109	Car SUZUKI ESCUDO 4x2	1,950	1	Bekasi	A	A	
1996	Purchased in Indonesia	IPD	110	Strong Motion Seismograph:TERRA, EX USA (GSR-12)	3,007	2	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	R&U	111	Winch Motor capacity 15kw Line pull 2000kg weight 600	2,086	1	Lampung	A	A	
1996	Purchased in Indonesia	O&M	112	Kenwood Radio Transceiver: TK-708 freq. 150-174 MHz 30A	252	3	Lampung	A	A	For constructing information system
1996	Purchased in Indonesia	O&M	113	Radio Modem & Software Tasco	787	3	Lampung	A	A	For constructing information system
1996	Purchased in Indonesia	O&M	114	Omnidirectional Antenna :YAGI 9 Element 25m with connector and 50m cable	959	3	Lampung	A	A	For constructing information system
1996	Purchased in Indonesia	R&U	115	Marshall Test Aparatus Length 75mm,Load measurement Cap3.5t Proving Ring	449	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	116	Asphalt Compaction Machine: Tamfer-falling device Roller System Driven by electrive Composition 1 set	932	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	117	Asphalt Mixer :80 RPM Electric Motor 0.3 Kw 220V	647	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	118	Thin Film Oven Tester: Inside wide 600 mm, hight 500 mm Electicity 2.5 Kw 220 V	515	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	119	Aggregate Test Sieves 8" diameter Opening 9.52, 15.9, 19.1, 25.4, 31.7, 38.1, 50.8, 63.5, 76.2, 101.6 mm	250	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	120	Statistic Penetration Portable cone Penetrometer ,Cone 6.4cm2 Rod, steel, dia 16mm, long 500mm, Nett weight	449	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	121	Cutter :(Asphalt) Inside dimension 101.6mm, lenght 300mm	198	3	Lampung	B	A	
1996	Purchased in Indonesia	R&U	122	Concrete Cutter: Inside dimension, 500mm, Net weight 8 Kg	108	2	Lampung	B	A	
1996	Purchased in Indonesia	R&U	123	Test Hammer	317	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	124	Vibratory Plat Compactor Plat :37x43 cm, Weight 50 Kg, Max HP 3.5PS	387	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	125	Engine Sprayer Cap: 30 Lit/Min 3 ps/1500	839	1	Lampung	B	A	
1996	Purchased in Indonesia	R&U	126	Gas Vonce	356	1	Lampung	B	A	
1996	Purchased in Indonesia	O&M	127	Counter Type Anemometer	101	1	Lampung	B	A	
1996	Purchased in Indonesia	TR	128	White-Board Electronic Model ,KXB-530, Panasonic with 10 papers	256	1	Bekasi	B	A	
1996	Purchased in Indonesia	IPD	129	Optional Accessories Analysis Software	173	1	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	130	Optional Accesories PCMCIA Memory Card :4 MB	416	2	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	131	Optional Accesories Spare 4MB Flash Card	154	2	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	132	Optional Accesories PCMCIA Card Rader: for PC	221	1	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	133	Data Processor for GSR-12	343	1	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	134	Software: Stop/W : Windows 95	717	1	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	135	GPS Receiver Garmin, Ex USA, GPS-SRVYII	771	1	Central Jawa	A	A	Set up at Grokgak Dam
1996	Purchased in Indonesia	IPD	136	Parshall Type Level Flow Recorder: PFR-0 5	341	4	Subang/Jakarta	B	A	2set in Subang, another 2set in Slawesi
1996	Purchased in Indonesia	IPD	137	Water Level Meter RR-200 with Cartridge Pen	133	2	Subang/Jakarta	B	A	Set up at Subang and Slawesi
1996	Purchased in Indonesia	IPD	138	Water Level Measuring Servotype :SW-101,SWT 30W	599	1	Slawesi	B	A	Set up at Slawesi
1996	Purchased in Indonesia	SD	139	External Tape Back Up Wangdat : 1 GB + SCSI	145	1	Lampung	A	A	
1996	Purchased in Indonesia	SD	140	Unti-Vires Software :Mcafee Netshield Ver 2.3	106	2	Lan/Bekasi	B	A	
1996	Purchased in Indonesia	SD	141	PC Memory Borad: SS-2606-MF9	318	1	Jakarta	A	A	
1996	Purchased in Indonesia	R&U	142	Extraction Collar :(Made of Steel, 104.7 mm, Net weight 2 Kg Made of Steel, 104.7mm, Nett weight 2 Kg)	2	1	Jakarta	A	A	
1996	Purchased in Indonesia	R&U	143	Concrete Cutter: Inside dimension 100mm, Net weight 6 Kg	95	2	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	144	Spaciment Extraction :99.2mm, weight 2 Kg	1	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	145	Extractor Rod :170mm lenght, weight 2 Kg	1	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	146	Tamper: 98.4mm, Dropping Height 457.2mm, Net weight 7 Kg	9	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	147	Platform Dial Scale 50 Kg, Cap. 0.1 Kg sensitivity	40	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	148	Table Platform Scale: 50 Kg, Cap. a 5 Kg sensitivity	36	1	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	149	Precision Table Balance : 1 Kg, Cap. 0 1g sens	40	2	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	150	Graduates : 100 cc	1	5	Lampung	B	A	Set up at Lampung office

Note: Frequency A:everytime B:often C:sometimes D:seldom use
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Source: Report by JICA Experts (The third quarter of the fiscal year of 1993)

表1　機材リスト　(1996年JICA供与機材)

unit:¥1,000

1996	Purchased in Indonesia	R&U	151	Pan: 1200 x 800 x 50 mm	1	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	152	Sample Pan: 350 x 270 x 40 mm	2	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	153	Stainless bowl diameter: 150 mm	2	10	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	154	Stainless bowl diameter: 210 mm	3	10	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	155	Hand Scope	3	5	Lampung	B	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	156	Mercury Thermometer: 0 - 300 degree C	2	2	Lampung	A	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	157	Mercury Thermometer: 0 - 200 degree C	1	3	Lampung	A	A	Set up at Lampung office
1996	Purchased in Indonesia	R&U	158	Mercury Thermometer: 0 - 100 degree C	1	5	Lampung	A	A	Set up at Lampung office
1995	Purchased in Indonesia	O&M	159	Rain Gauge :Type Ordinary cap glass 100 ml reciving surface 100cm2	22	6	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	160	Max.Min. Thermometer OC - 50 c	2	1	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	161	Stopwatch	4	40	Lampung	B	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	162	Plot KF - F	2	50	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	163	Plot KF - 65, 50 cm	2	50	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	164	Plot KF - 120, 100 cm	2	50	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	165	Plot KF - 240, 200 cm	2	12	Lampung	A	A	Set up at farm in Lampung
1996	Purchased in Indonesia	O&M	166	Flag: KFF	1	162	Lampung	A	A	
1996	Purchased in Indonesia	IPD	167	Hand held GPS Receiver: Garmin, EX USA, GPS - 45 XL	98	1	Jakarta	B	A	
1996	Purchased in Indonesia	SD	168	RMB for PC Server	22	3	Lampung/Bekasi	A	A	
1996	Purchased in Indonesia	SD	169	RMB for PC Workstation	14	20	Lampung/Bekasi	A	A	
1996	Purchased in Indonesia	SD	170	Hard Disk : 2 GB IDE for Server	43	1	Lampung	A	A	
1996	Purchased in Indonesia	SD	171	Hard Disk: 2 GB IDE SCSI for Work Station	91	2	Bekasi/Lampung	A	A	
1996	Purchased in Indonesia	SD	172	Hard Disk :850MB IDE for Work Station	35	6	Bekasi/Lampung	A	A	
1996	Purchased in Indonesia	SD	173	Internal CD ROM : 8 Speed SCSI for Server	59	1	Lampung	A	A	
1996	Purchased in Indonesia	SD	174	Internal CD ROM: 8 Speed IDE for Work Station	28	5	Lampung	A	A	
1996	Purchased in Indonesia	SD	175	Software: Microsoft Office Ver.4.3	72	2	Bekasi/Lampung	B	A	
1996	Purchased in Indonesia	SD	176	Software: Microsoft office Ver 4.3 License	32	9	Bekasi/Lampung	B	A	
1996	Accompanied with S.T.E.	SD	177	Software: PC Transcrip DOS/V FD	45	1	Jakarta	A	A	
1996	Accompanied with S.T.E.	SD	178	Software: PC Transcrip DOS/V FD	45	1	Jakarta	A	A	
1996	Accompanied with S.T.E.	SD	179	Software: Visual Rec-Pack	85	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	SD	180	Software: Micro AVS	96	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	SD	181	Software: Calcupt Master	85	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	SD	182	Software: Flow Master	20	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	IPD	183	Software: MS-Word 97	13	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	SD	184	Software: MS-Expll 97	29	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	SD	185	Software: ICHITARO Ver 8	18	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	TR	186	Digital Camera: "C-400L"Olympus (with Flash Memory & Case)	63	2	Bekasi	B	A	
1996	Accompanied with S.T.E.	TR	187	Connection Kit: C&F	7	2	Bekasi	A	A	
1996	Accompanied with S.T.E.	TR	188	Toner Cartridge: Ep-Ka	29	4	Bekasi	A	A	
1996	Accompanied with S.T.E.	TR	189	Increase Memory : 16MB	15	1	Bekasi	A	A	
1996	Accompanied with S.T.E.	TR	190	Toner Cartridge: Ep-Ka	224	8	Bekasi	A	A	

Note : Frequency　A:everytime　B:often　C:sometimes　D:seldom use
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Source: Report by JICA Experts (The third quarter of the ficical year of 1998)

表1 機材リスト （1997年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1997	Purchased in Indonesia	General	191	Bus HINO FB2WG 4,000cc Diesel	3,626	1	Bekasi	A	A	
1997	Purchased in Indonesia	IPD	192	ECHOSOUNDER ODOM HYDROTRACT	3,316	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	SD	193	Scanner Canoscan A8-830doi color	3,575	1	Bekasi	B	A	
1997	Purchased in Indonesia	IPD	194	Universal Current Meter (Hydrological Services 0SS9-1 CMC-20)	1,229	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	195	WATER LEVEL SYSTEM (Hydrological Services AD3750)	578	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	196	DATALOGGER for WATER LEVEL SENSER PRDL-3	260	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	197	ECHOSOUNDER optional Accessories - (Board for optional transducer)	556	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	198	ECHOSOUNDER optional Accessories - (Ruggedized Notebook)	852	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	199	Communication Software	585	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	200	3D MAPPING SOFTWARE	215	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	IPD	201	INFLATEABLE BOAT WITH ENGINE SPD-168 Johnson Engine 3.3HP	695	1	Central Java	A	A	Seu pu at Central Java and Sermo Dam
1997	Purchased in Indonesia	R&D	202	Vacuum Pump Control ITALY Model M-D2001	151	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	203	Falling Head Permeability Test Model 39-T185/1,2,3	328	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	204	Ultrasonic Tester Model 58-E46	207	1	Lampung	A	A	
1997	Purchased in Indonesia	R&D	205	Hydrometer 151 H Model 32-T40A	46	5	Lampung	A	A	
1997	Purchased in Indonesia	R&D	206	Centrifuge Model 25-B22-C	345	1	Lampung	A	A	
1997	Purchased in Indonesia	SD	207	Internal CD-ROM NEC 24*IDE	19	8	Bekasi	B	A	
1997	Purchased in Indonesia	SD	208	External CD-ROM PIOEER 25*SCSI+SCSI Card	75	3	Bekasi	B	A	
1997	Purchased in Indonesia	SD	209	Scanner+SCSI Board HEWLETT PACKRD 4CS6	166	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	210	Mo+Cablet+Driver+SCSI/Desktop FUJITSU 640Mb	143	3	Bekasi	B	A	
1997	Purchased in Indonesia	SD	211	Mo+Cablet+Driver+SCSI/Desktop FUJITSU 64 1Mb	119	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	212	Data/FAX Modem 33 6bps for Desktop	26	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	213	Data/FAX Modem 33 6bps for Laptop	35	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	214	OCR Software Omnipage Ver7	97	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	215	OS Software Windows95	26	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	216	OCR Software Omnipage Ver7	97	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	217	OS Software Windows95	26	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	218	Software Microsoft Office 97	84	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	219	Software Word Perfect for Windows95	55	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	220	Software Map Professional Mapinfor Ver 4.10	256	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	221	RAM 32Mb for IBM PC	21	2	Bekasi	B	A	
1997	Purchased in Indonesia	SD	222	APC UPS: 1KVA	110	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	223	Desk Top PC: IBM 300PL Pentium-200MMX	387	6	Bekasi	B	A	
1997	Purchased in Indonesia	SD	224	Monitor Display CD-ROM SVGA Philips 20	188	6	Bekasi	B	A	
1997	Purchased in Indonesia	SD	225	UPS: APS 650VA Smart	58	6	Bekasi	B	A	
1997	Purchased in Indonesia	TR	226	Projector TOSHIBA TLP-411	1,058	1	Bekasi	A	A	
1997	Purchased in Indonesia	TR	227	GPS: GARMIN 45XL	104	3	Bekasi	A	A	
1997	Accompanied	SD	228	Desk Top PC APTIVA 2178-N70	295	1	Jakarta	A	A	
1997	Accompanied	O&M	229	Lap Top PC MN-6550D SHARP Mobile Note	250	1	Jakarta	A	A	

Note : Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandoned

Source: Report by JICA Experts (The third quarter of the fiscal year of 1933)

表1 機材リスト (1997年JICA供与機材)

unit:¥1,000

1997	Accompanied	R&U	230	Lap Top PC Thinkpad 535	318	1	Jakarta	A	A	
1997	Accompanied	IPD	231	Lap Top PC Thinkpad 760E	433	1	Jakarta	A	A	
1997	Accompanied	TR	232	LAP TOP PC Power Book 1400CS/117	370	1	Bekasi	B	A	
1997	Accompanied	O&M	233	Software Mapinfo professional Version 4.1	330	1	Bekasi	A	A	
1997	Accompanied	O&M	234	Software Map Basic	230	1	Bekasi	A	A	
1997	Accompanied	SD	235	Intel Over Drive Processor DX4-100	12	2	Bekasi Lampung	A	A	
1997	Accompanied	TR	236	Software: MAC Light 2	8	1	Bekasi	B	A	
1997	Accompanied	TR	237	Software: MAC EXCEL	37	1	Bekasi	B	A	
1997	Accompanied	TR	238	Transformer	24	2	Bekasi/Jakarta	A	A	
1997	Accompanied	SD	239	Memory Board 32MB	24	1	Bekasi	A	A	
1997	Accompanied	SD	240	MO Drive LMO-640S2	65	1	Bekasi	A	A	
1997	Accompanied	RU	241	Portable CD-Rom Drive	30	1	Jakarta	A	A	
1997	Accompanied	RU	242	Cap Set for Track Point	1	1	Jakarta	A	A	
1997	Accompanied	RU	243	Color Printer BJC-240J	37	1	Jakarta	A	A	
1997	Accompanied	RU	244	BJ Catridges	2	10	Jakarta	A	A	
1997	Accompanied	RU	245	Printer Cable	1	1	Jakarta	A	A	
1997	Accompanied	RU	246	Mouse	2	1	Jakarta	A	A	
1997	Accompanied	RU	247	Keybord	5	1	Jakarta	A	A	
1997	Accompanied	RU	248	Software MS-OFFICE 97	64	1	Jakarta	A	A	
1997	Accompanied	RU	249	Transformer	4	2	Jakarta	A	A	
1997	Accompanied	RU	250	3.5 FLOPPY DISK 50 PCS/Box	2	1	Jakarta	A	A	
1997	Accompanied	IPD	251	Software MS-WORD97	12	1	Jakarta	A	A	
1997	Accompanied	IPD	252	Software MS-EXCEL	30	1	Jakarta	A	A	
1997	Accompanied	IPD	253	Software ICHTARO Ver 8	4	1	Jakarta	A	A	
1997	Accompanied with S.T.E.	SD	254	Memory Board 16MB ADV-16M144F	11	1	Bekasi	A	A	
1997	Accompanied with S.T.E.	SD	255	CD-ROM Drive KXL-810AN	39	1	Bekasi	B	A	
1997	Accompanied with S.T.E.	SD	256	TONNER CARTRIDGE: EP-V	15	1	Bekasi	A	A	
1997	Accompanied with S.T.E.	SD	257	Printer Driver: NET HAWK SP-LITE 3	15	1	Bekasi	A	A	
1997	Accompanied with S.T.E.	SD	258	3.5 FLOPPY DISK	8	10	Bekasi	A	A	
1997	Accompanied with S.T.E.	TR	259	Software MAC OS8	20	1	Bekasi	A	A	
1997	Accompanied with S.T.E.	IPD	260	Mockup Sample "WATCH MAN" with Pole & Plate	100	1	Bekasi	B	A	
1997	Purchased in Indonesia	SD	261	Printer LBP-430 AC100V	98	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	262	SCSI Board: AHA2940J	31	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	263	Power Supply: BX500III 300W AC100V	28	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	264	Tranformer SE1500 220 240/100V 15A	21	1	Bekasi	A	A	
1997	Purchased in Indonesia	SD	265	Modem Card: DF-3314 Ex	68	2	Bekasi	A	A	
1997	Purchased in Indonesia	IPD	266	Life Jacket	13	4	Central Jawa	A	A	Set up at Saguling Dam
1997	Purchased in Indonesia	IPD	267	Handy Talky	45	2	Central Jawa	A	A	Set up at Saguling Dam
1997	Purchased in Indonesia	SD	268	MO Disket 640Mb	7	30	Bekasi	A	A	
1997	Purchased in Indonesia	SD	269	OS Software Microsoft PLUS	1	6	Bekasi	A	A	

Note: Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandoned
Source: Report by JICA Experts (The third quarter of the ficical year of 1998)

表1 機材リスト （1998年JICA供与機材）

unit:¥1,000

Year	Type of Provision	Field	No. of Equip	Item (Spec.)	Unit Price	Quan	Setting Place	Utilization		Remarks
								Frequency	Maintenance	
1998	Accompanied with S.T.E.	SD	270	Software Macinfor Mini Ver.1.0	117	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	O&M	271	Portable Digital Water-temperature Meter UC-35	263	2	Jakarta	B	A	
1998	Accompanied with S.T.E.	SD	272	Software DRIVE IMAGE Ver.2.0	13	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	273	Software VISUAL BASIC PRO Ver.5.0	96	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	274	Software CLEAN SWEEP DELUXE(J)	10	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	275	Software WORD PERFECT SUITE 8(J)	39	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	276	Software WINDOWS 98(J)	25	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	277	Software PULS 98(J)	6	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	IPD	278	Software SYSTEM COMMANDER Ver.4(J)	10	1	Bekasi	A	A	
1998	Accompanied with S.T.E.	IPD	279	ZIP DESK Spec/box	14	2	Bekasi	A	A	
1998	Accompanied with S.T.E.	SD	280	MO Disk 10pcs/box	3	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	281	Leazer Jet Printer HP4000N	199	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	282	IBM PC 300PL6562 Pentium 233Mhz	362	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	283	PC Thinkpad 380 ED	280	6	Jakarta	A	A	
1998	Purchased in Indonesia	SD	284	Qisplay NEC	134	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	285	Additional Memory	24	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	286	UPS APS 650VA Smart	54	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	287	Hard Disk External 6.4Gb	64	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	289	Backing drive Para 1 Gb	51	4	Bekasi, Jakarta	A	A	
1998	Purchased in Indonesia	SD	289	Windows NT Server 5.0	147	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	290	3 COM 10 Base T Hub 12ports	60	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	291	Intel Router for LAN	155	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	292	Back Office Software	352	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	293	Extent RAM 32Mb for 380ED	13	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	294	Extend Memory for Lap Top	17	1	Bekasi	A	A	
1998	Purchased in Indonesia	SD	295	Battery Pack for IBM Thinkpad	42	1	Bekasi	A	A	
1998	Purchased in Indonesia	O&M	296	LCD Projector LitePro735 Infocus	1,123	2	Jakarta	A	A	
1998	Purchased in Indonesia	TR	297	Wireless Amplifire SH-360N2	99	1	Bekasi	A	A	
1998	Purchased in Indonesia	TR	298	Electical Screen	106	1	Bekasi	A	A	
1998	Purchased in Indonesia	TR	299	Copy Printer	831	1	Bekasi	A	A	
1998	Purchased in Indonesia	IPD	300	Parasall Flume Water Level Recorder PR-200 Ikeda	287	4				To be provid on March 99
1998	Purchased in Indonesia	IPD	301	Water Level Recorder PR-200 Ikeda	159	2				To be provid on March 99
1998	Purchased in Indonesia	IPD	302	Irrigation Pump SHE-80X Kosin	150	1				To be provid on March 99
1998	Purchased in Indonesia	O&M	303	Hand HELD Flow Meter CC/N FP100	164	2				To be provid on March 99
1998	Purchased in Indonesia	O&M	304	Water Level Recorder AUS/1M Hydrological Service	654	7				To be provid on March 99
1998	Purchased in Indonesia	R&U	305	Unconfined Compression Test Apparatus Hand Operated 60KN CBR Model:34-T104	523	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	306	Anti-Friction Guide Bracket Model:34-T104/1	13	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	307	Adjustable Dial Gauge Holder Model:34-T104/7	18	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	308	Qial Gauge Holder 30x0.01mmModel:86-D1257	32	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	309	Load Ring 1KN Cap Model:82-T100/1	93	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	310	Upper and lower Platens Model:34-T104/3	58	1				To be provid on March 99
1998	Purchased in Indonesia	R&U	311	Extension Collar Model:34-T104/9	7	1				To be provid on March 99

Note: Frequency A:everytime B:often C:sometimes D:seldom use
Maintenance A:very good B:good C:not good D:abandoned

Source: Report by JICA Experts (The third quarter of the fiscal year of 1998)

表1　機材リスト　（1998年JICA供与機材）

unit:¥1,000

1998	Purchased in Indonesia	R&D	312	Direct Shear Apparatus Motorized Direct Residual Shear Machine	3,318	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	313	Shere Box Assembly Model:27-T215A	109	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	314	Sample Cutter Model:27-T213A7	24	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	315	Extrusion Dolly Model:27-T215A8	4	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	316	Load Ring Model:82-T1002/SA	98	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	317	Dial Gauge Model:86-D1255	9	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	318	Set of Slotted Steel Weight	57	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	319	Beam Loading Divice Model:27-T225A	100	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	320	Test Forms Model:89-T2305	7	1				To be provid on March 99
1998	Purchased in Indonesia	R&D	321	Test Forms Model:89-T2306	7	1				To be provid on March 99

4．マニュアル・ガイドラインリスト

表2　マニュアル・ガイドラインリスト
Systen Development Field　(1/2)

マニュアル・ガイドライン　タイトル	作成年次
Visual System of Irrigation Information System (VIIS) Ver.3.0 (System Program)	Nov.95
Manual for Visual System of Irrigation Information System (VIIS) (In English)	Nov.95
Calculation of Canal Discharge by Manning Formula Ver.1.0 (System Program)	May.96
Manual for Calculation of Canal Discharge by Manning Formula Ver.1.0 (In English)	May.96
Calculation of Canal Depth Water by Manning Formula Ver.1.0 (System Program)	May.96
Manual for Calculation of Canal Depth Water by Manning Formula Ver.1.0 (In English)	May.96
Manual Sistem Monitoring Data Pengatur Air Di Way Sekampung (In Indonesian)	May.96
Stability Analysis on Fill Dam (System Program)	Oct.96
Manual for Stability Analysis on Fill Dam Ver.1.0 (In English)	Oct.96
Manual Stabilitas Bendungan Tipe Urugan Ver.1.0 (In Indonesian)	Oct.96
Stability Analysis on Head Work Ver.1.0 (System Program)	Oct.96
Manual Stabilitas Bendung Ver.1.0 (In Indonesian)	Oct.96
Water Level Calculation on Canal By Non Uniform Flow Ver.2 (System Program)	Oct.96
Manual for Water Level Calculation on Canal By Non Uniform Flow Ver.2 (In English)	Oct.96
Manual Perhitungan Tinggi Muka Air Di Saluran Irigasi Aliran Tidak seragam Ver.2.0 (In Indonesian)	Oct.96
Calculation of Dimension of Canal Ver.1.0 (System program)	Oct.96
Manual Perhitungan Dimensi Saluran Ver.1.0 (In Indonesian)	Oct.96
Manual Perhitungan debit saluran Irigasi (Dengan rumus"Manning") Ver.1.0 (In Indonesian)	Oct.96
Manual Perhitungan Tinggi Muka Air Di Saluran Irigasi (Dengan rumus"Manning") Ver.1.0 (In Indonesian)	Oct.96
Calculation of Modified Torrent Intake Structure Ver.1.0 (System Program)	Nov.96
Manual for Calculation of Modified Torrent Intake Structure Ver.1.0 (In English)	Nov.96
Manual Perhitungan Banguan Torrent Intake (Modifikasi) Ver.1.0 (In Indonesian)	Nov.96
Stability Analysis on Gravity Retaining Wall Ver.2.2 (System Program)	Mar.97
Manual for Stability Analysis on Gravity Retaining Wall Ver.2.2 (In English)	Mar.97
Irrigation Information System for O&M Ver.2 (System Program)	Mar.97

Systen Development Field (2/2)

マニュアル・ガイドライン タイトル	作成年次
Petunjak Pemakaian Sistem Informasi Irigasi Ver.2.0 (Manual: In Indonesian)	Mar.97
Inventory System for Main Irrigation Facilities (System Program)	Mar.97
Buku Petunjuk Pengoperasian Program sistem Inventarisasi Vntuk Fasilitas Utama jaringan Irigasi (Sifuji) (In Indonesian)	Mar.97
Referensi Teknik Program Sistem Inventarisasi Untuk Fasilitas Utama Jaringan Irigasi (In Indonesian)	Mar.97
Graphic System for IIS (System Program)	Oct.97
Petunjuk Pemakaian Sistem Infomasi Gratik Irigasi Ver.1.0 (Manual: In Indonesian)	Oct.97
Stability Analysis on Inverted T-Type Retaining Wall Ver.2.2 (System Program)	Dec.97
Manual for Stability Analysis on Inverted T-Type Retaining Wall Ver.2.2 (In English)	Dec.97
Manual Analisa stabilitas Dinding Penahan Tanah Tipe Gravitasi Ver.1.0 (In Indonesian)	Jan.98
Manual Analisa Stabilitas Dinding Penahan Tanah T-Terbalik Ver.1.0 (In Indonesian)	Jan.98
Irrigation Information System for O&M (IIS) Ver.3.01 (System Program)	Dec.98
Visual System of Irrigation Information System (VIIS) Ver.4.0 (System Program)	Dec.98
Irrigation Information System for O&M. Irrigation Scheme of Way Sekampung 1/2	Dec.98
Irrigation Information System for O&M. Irrigation Scheme of Way Sekampung 2/2	Dec.98
The Printed out DATA on Inventory system for Main Irrigation Facilities	Dec.98
The printed out DATA on Visual System of Irrigation Information System (VIIS)	Dec.98
Filing System of Irrigation Scheme Map (SADJI) (System Program)	Feb.99
User's Guide SADJI (Filing System of Irrigation Scheme Map Program) (In English)	Feb.99
Panduan Penggunaah Program Aplikasi SADJI (Sistem Arsip Data Jaringan Irigasi) (In Indonesian)	Feb.99
Technical Reference of Filing System Irrigation scheme Map (In English)	Feb.99
Technical Reference of Filing System Irrigation scheme Map (In Indonesian)	Feb.99
Panduan Penggunaan MapInfo (In Indonesian)	Feb.99
FINAL REPORT of FILING SYSTEM OF IRRIGATION SCHEME MAP (In English)	Feb.99
The printed out DATA on Filing System of Irrigation Scheme Map (SADJI)	Feb.99

O/M Field

マニュアル・ガイドライン　タイトル	作成年次
Visual System of Irrigation Information System for O&M	Nov.95
Prosiding seminar "Torrent Intake Structure and Operation & Maintenance of Irrigation Systems"	Nov.95
Irrigattion Informatiion System for O/M	Mar.96
Petunjuk Pemakaian Sistem Informasi Irigasi	Mar.96
Pedoman Umum Operasi & Pemeliharaan Jaringan Irigasi	Mar.96
Blangko Operasi Di Daerah Irigasi VVay Sekampung	May.96
Operation Form of Way Sekampung Irrigatoin Scheme	May.96
Sistem Monitoring Data Pengatur Air Di Way Sekampung	May.96
Way Sekampung Water Regulation Data Monitoring System	May.96
Improvement of Irrigation Water Management Information System in Way Sekampung Irrigation Area for efficient irrigation water use	Jun.96
Prosiding Lokakarya "Operasi dan Pemeliharaan Jaringan Irigasi"	Jun.96
Basic Concept of the composition of Irrigation. Water & Irrigation Efficiency for Paddy Field Irrigation	Oct.96
Laporan "Bendung Pada Sungai Berbatu Beraliran Deras"	Dec.96
Report on Water Balance Analysis in Way Sekampung Irrigation Area as Case Study	Dec.96
Laporan "Analisis Neraca Air Di Daerah Irigasi Sekampung Lokasi Model Area"	Dec.96
Sistem Informasi Irigasi dan Sistem Informasi Grafik Irigasi Way Sekampung	Mar.97
Petujuk Pemakain Sistem Informasi Grafic Irigasi	Mar.97
Petujuk Pemakaian Sistem Informasi Irrigai	Mar.97
Berberapa Masalah dan Cara Mengatasi Pada Sistem Informasi Irigasi Di Way Sekampung	Apr.97
Pembagian dan Pengaturan Air dengan Bantuan Sistem Komunikasi dan Komputer	Apr.97
Sistem Monitoring Pengaturan Air di Way Sekampung	Apr.97
Proses dan Prosedur Pengelolaan Air Irigasi de Way Sekampung	Apr.97
Laporan "Pelatihan Sistem Informasi Irrigasi Way Sekampung"	May.97
Report on Irrigation Water Management Case Study	May.97
灌漑効率向上のためのガイドライン (Guideline for Irrigation Efficiency Improvement)	May.97
Pedoman Umum Operasi & Pemeliharaan Jaringan Irigasi	Jun.97
Buku Acuan Operasi & Pemeliharaan Jaringan Irigasi	Jul.97
General Guidance of Irrigation Network Operation and Maintenance	Jul.97
Reference Book of the Torrent Intake Structures	Jul.97
Work Report	Aug.97
灌漑情報システムの概要（Outline of Irrigatiion Information System)	Aug.97
Work Report	

IPD FIELD

マニュアル・ガイドライン　タイトル	作成年次
PROSIDING (RESERVOIR OPERATION AND SEDIMENTATION)	Sep.94
EARTQUAKE RESISTANT DESIGN AND SEISMIC ANALYSIS of FILL DAM	Nov.96
WORK REPORT (Nobuki Marumo)- May 1997	May.97
STABILITAS LERENG	May.97
SLOPE STABILITY for Soft - Soil	Jul.98
CASE STUDIES of DAM AND FOUNDATION IN JAPAN	Jul.98
PEDOMAN STUDI KELAYAKAN PEGEMBANGAN IRIGASI	Feb.99
PANDUAN SID BENDUNGAN TIPE URUGAN VOL. I SURVAI DAN INVESTIGASI	Feb.99
PANDUAN PERENCANAAN BENDUNGAN URUGAN VOL. II DESAIN & SPILLWAY	Jun.99
SOFT - SOIL GUIDE - LINE	Jun.99

R/U Field

マニュアル・ガイドライン　タイトル	作成年次
GUIDANCE REPORT OF CANAL ASPHALT LINING	Oct.97
PUDOMAN TEKNIS REHABILITASI & UPGRADING JARINGAN IRRIGASI	Mar.98
PUDOMAN TEKNIS REHABILITASI DAN UPGRADING BENDUNGAN /SMALL DAM	Mar.99
SPESIFIKASI TEKNIK UNTUK PEKERJAAN REHABILITASI & UPGRADING	Mar.99

5．プロジェクト組織体制

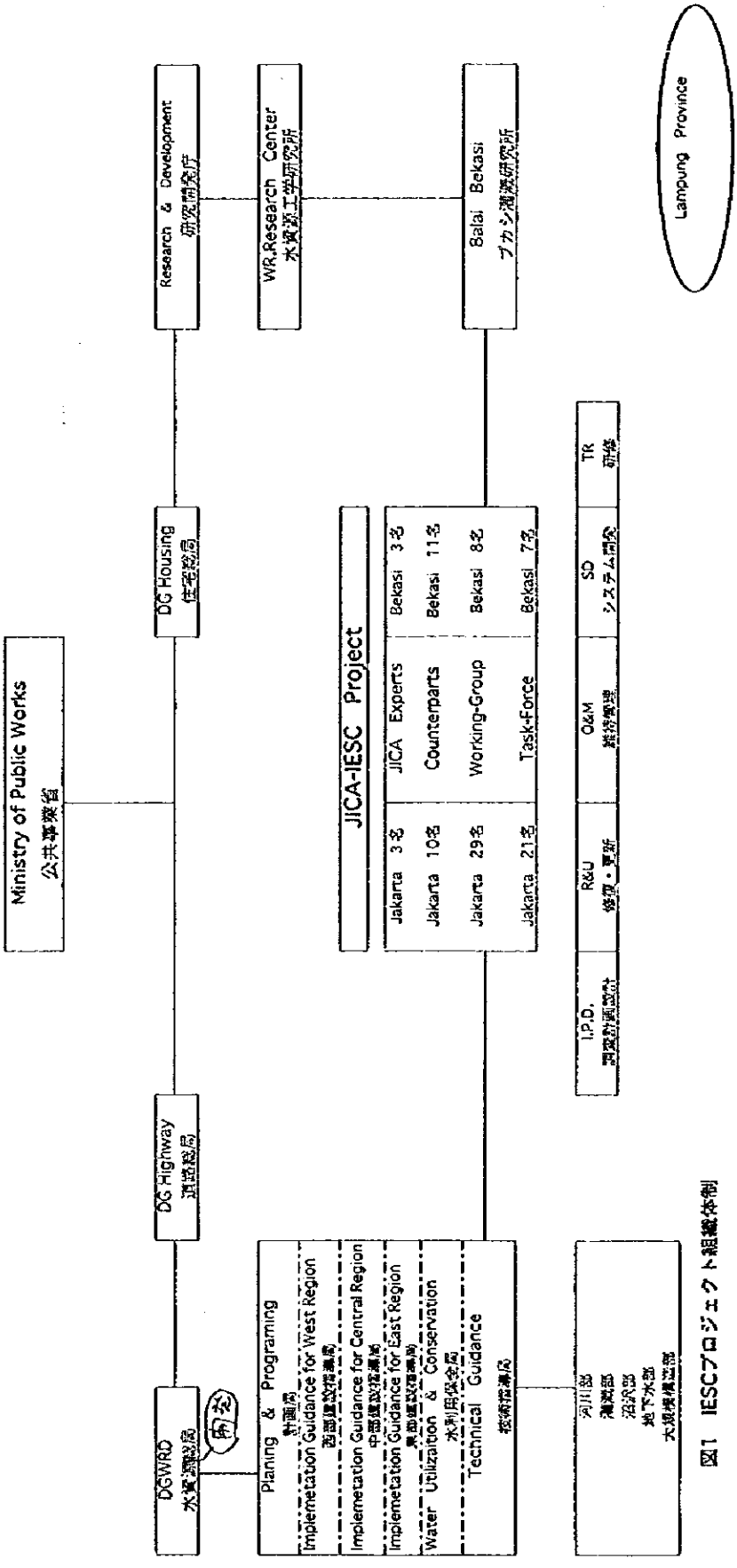

図1 IESCプロジェクト組織体制

6．要約表

評価調査結果要約表

案件概要	国名：インドネシア		案件名：インドネシア灌漑排水技術改善計画
	分野：農林水産業		援助形態：プロジェクト方式技術協力
	所轄部署：農開部農技協課		協力金額（無償のみ）：
	協力期間	(R/D):94.6.10～99.6.9 (延長): (F/U) :99.6.10～01.6.30 (E/N)（無償）	先方関係機関：公共事業省水資源開発総局 (DGRWD)
			我が方協力機関：農林水産省
			他の関連協力：

・協力の背景と概要

インドネシアは１９８０年代以降、農業の生産性を向上させて食糧の安定供給を図るため、数多くの水資源開発と灌漑事業を実施してきた。これら水資源開発と灌漑事業に積極的に取り組むため、インドネシア政府は我が国に様々な協力を求めてきた。このため、我が国は１９８１年から７年間、無償資金協力とプロジェクト方式技術協力の連携で「灌漑排水施工技術センター」計画を実施し、プロジェクト終了後も個別専門家の派遣、アフターケア協力を重ねて、センター活動の強化充実を支援してきた。しかし、施工管理以外の灌漑技術分野では、基準などが十分統一されておらず、灌漑事業全体の経済性、効率性、効果に適切さを欠く面が見られた。また、施設の維持・管理、修復・更新事業について、適切な技術基準の整備が求められていた。

こうした背景からインドネシア政府は、これまでの施工を中心としてきた「灌漑排水施工技術センター（Construction Guidance Service Center：CGSC）」を、灌漑技術全般を対象とする「灌漑排水技術センター（Irrigation Engineering Service Center：IESC）」に改組して、調査、計画、設計から施設の維持管理まで、一貫した技術体制を整備し、関係者の技術水準向上を図りたいとして、１９９１年４月から新たなプロジェクト方式技術協力を我が国に要請してきた。

・協力内容

（上位目標）

灌漑事業が適切に実施される。

灌漑システムや施設が適切に維持・管理・修復・更新される。

（プロジェクト目標）

灌漑事業の適切な実施に必要な技術的ガイドライン・マニュアルが作成され、研修を通じて普及される。

（成果）

IESC 技術者の技術力が向上する。

調査・計画・設計・維持・管理・修復・更新に係る基準、ガイドライン、マニュアルの見直し、改良と開発がなされる。（コンピューターシステム含む）

上記に関し、研修が実施される。

（投入）（評価時点）

日本側：

長期専門家派遣	１１名	機材供与	１８５，７３６千円
短期専門家派遣	３０名	ローカルコスト負担	９９，４１０千円
研修員受入れ	２２名	その他	円

相手国側：

カウンターパート配置	２１名	機材購入	
土地・施設提供		ローカルコスト負担	2,883,695 ルピア
その他			

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調査期間	1999年2月16日～1999年2月27日　評価種類：終了時評価

1．評価の目的

プロジェクト開始から、協力期間の５年目に入り、プロジェクト目的達成段階にあることから、両国評価チームによる合同評価により、プロジェクトの当初計画の妥当性をはじめ、双方の投入実績、アウトプット目標の達成状況、実施の効果、さらには協力終了後のあり方について調査・検討を行うことを目的とする。

2．評価結果の要約

（1）実施の効率性

DGRWDの組織改編でC／Pの配置が遅れはしたが、その他の投入は、日本側、インドネシア側ともに計画どおり実施された。

（2）目標達成度

IESCの技術職員の技術力向上については、当初目標を達成した。調査・計画・設計、維持・管理、修復・更新のためのガイドラインやマニュアル、コンピューターシステムの大半が開発・改善され、プロジェクト終了時までには残された部分も完成して、目標を達成する見込みである。研修についても、着実に実施されている。

（3）効果

本プロジェクトの技術移転により、C／Pの技術力は著しく向上した。さらに、合理的な思考や日本式の対応方式も伝わっており、これらが州・県の関係職員、地域の農民にまで及ぶことが期待される。しかし、本プロジェクト活動を恒常的に継続する運営母体「灌漑技術情報センター」の設立には至らなかった。

（4）計画の妥当性

本プロジェクトはインドネシアの第２次２５カ年計画、第６次５ヶ年計画の目的に添ったもので、妥当であった。しかし、プロジェクト期間中にインドネシア国の食糧増産の必要性が高まる事態となり、終了時評価時点でも、インドネシアの緊急灌漑３ヶ年計画への対応をもとめられており、本プロジェクトの目標は、インドネシアのニーズに充分応えているものと判断される。

（5）自立発展性

組織的には、「灌漑情報技術センター」等の設立が課題である。インドネシア政府は厳しい財政事情にもかかわらず、本プロジェクトにかなりの予算を投じてきた。ただ、経済危機をまだ克服しきっていないので、予算措置に遅れが出る可能性はある。技術力はほぼ適切に移転され、今後も継続して活動ができると思われる。

3．効果発現に貢献した要因

（1）我が方に起因する要因

日本側の専門家派遣、機材供与は計画通り行われた。

（2）相手方に起因する要因

供与機材はプロジェクト実施期間中、効率よく活用され、メンテ面から見ても問題は認められなかった。

4．問題点及び問題を惹起した要因

（1） 我が方に起因する要因

また、活動項目で複数分野の共同作業となっていたものがある（例：コンピュータネットワークの構築は維持・管理分野とシステム開発分野で行なう）。この場合、作業監理等の命令系統が異なるため、混乱が生じ易かった。

（2） 相手方に起因する要因

DGRWD の組織改編に伴う C/P の配置の遅れ、イ国の経済危機によるローカルコストの支出の遅れの他に、一部の C/P でプロジェクトを離れる者、イ国財政困難の緊急事態への対応に忙殺される者がおり、プロジェクト活動に支障があった。

5．教訓（新規案件、現在実地中の他の案件へのフィードバック）

具体的な指標（目標数値等）の設定は、評価のみならず活動全体の投入バランスの適正化にも繋がる。C/P 側との早期の指標確認が重要であると考えられる。

プロジェクト当初に導入された PC 類は既に 5 年間が経過しており、能力的にも 2 世代前の OS(Windows3.1) を動かすのがやっとの状況である。今後、システムの拡張の際には機材の更新も必要となり、C/P 側による特別な予算措置が必要となる。減価償却期間の早い PC 類を多数投入するようなケーススタディでは、プロジェクトの規模を現地サイドの機材の更新が可能な範囲も考慮に入れ検討する必要があると思われる。

6．提言（評価対象案件へのフィードバック（延長、フォローアップ協力の必要性等））

IESC が「緊急灌漑3カ年計画」に適切に対応し、本プロジェクトで整備したガイドラインやマニュアルを活用するために、2年間のフォローアップ協力が必要となる。

「灌漑情報技術センター」設立の構想は本プロジェクトの当初からあったものの、プロジェクト期間中には実現に至らなかった。インドネシアだけではセンター設立に必要な計画を全て準備できないため、組織・制度面の策定等については専門家による支援も検討する必要があると思われる。