

付 属 資 料

1. 要請書
2. 実施細則(S / W)
3. 協議議事録(M / M)
4. 現地踏査メモ
5. PD法によるマニュアル作成法
6. 国家灌漑政策・開発戦略(NIPDS)
7. 質問票及び回答
8. 収集資料リスト

1. 要請書

Ref. No. G/J/2

4th October, 2000.

His Excellency the Ambassador,
Embassy of Japan,
Box 34190,
Lusaka,
ZAMBIA.

Your Excellency,

APPLICATION FOR JAPAN'S DEVELOPMENT STUDIES AID

Enclosed herewith, please find a copy of an application form for Development Studies Aid. The request is for a study in irrigation development and is titled "Capacity Building/Rehabilitation and Development of Irrigation Schemes.

We trust the submission is in order and look forward for your assistance.

I am, Your Excellency,



D.Y.C. Wirima

For: SECRETARY TO THE TREASURY

CC: JICA Office, Lilongwe 3.

: The Controller of Irrigation Services, Box 30797, Lilongwe 3.

Telephone: Lilongwe 752 122/751 177/750 595/751 130
Fax No: 751 459
e-mail: irrigation@sdnp.org.mw

Communications should be addressed to:
The Controller of Irrigation Services



DEPARTMENT OF IRRIGATION
P.O. BOX 30797
CAPITAL CITY
LILONGWE 3
MALAWI

REF. NO. CONF/DOI/06/31

4th October, 2000

The Secretary to the Treasury
P.O. Box 30049
Lilongwe 3

Attention: Mr. A. Mzoma


Dear Sir

APPLICATION FORM FOR JAPAN'S DEVELOPMENT STUDIES AID

Please receive 2 copies of an application form for Japan's Development Studies Aid.

The request is for a study in irrigation development and is titled "Capacity Building/Rehabilitation and Development of Irrigation Schemes.

We will be grateful for your assistance in further processing this request.


Dr. C. P. Mzembe
CONTROLLER OF IRRIGATION SERVICES

cc: The Resident Representative
JICA
P.O. Box 30321
Lilongwe 3

APPLICATION FORM FOR JAPAN'S DEVELOPMENT STUDIES

Date of entry: Month September year 2000

Applicant: the Government of the Republic of Malawi

1. Project digest

(1) Project Title: CAPACITY BUILDING/REHABILITATION AND DEVELOPMENT OF IRRIGATION SCHEMES

(2) Location: (province/country name) Malawi

(3) Implementing Agency

Name of the agency: Ministry of Agriculture and Irrigation, Department of Irrigation

Number of staff of the agency: Engineers: 10, Agronomists 8; Technicians 20

Budget allocated to the agency: MK3,400,000.00 for year 2000/2001

(4) Justification of the project

Present conditions of the sector:

The human population of Malawi is presently estimated to be 11 million, with an annual growth rate of 3.3%. About 48% of the population are under 15 years old and over 90% live in the rural areas. Over 85% of the labour force (of which women constitute 48%) are engaged in agriculture.

Out of the total arable land (just over 9 million ha) in Malawi, it is estimated that about 1.80 million smallholder families with an average farm size of 0.40 ha cultivate about 1.75 million ha. Smallholder farmers are engaged mainly in subsistence farming and cultivate maize as the dominant food crop, with tobacco as the major foreign exchange earner.

The smallholder agricultural sub-sector is characterised by subsistence, low productivity and vulnerability to natural vagaries such as drought. Irrigation development to mitigate effects of drought on crop production has hitherto targeted estate farms, especially those cultivating sugar cane and rice. The high frequency of drought occurrence, especially that of 1992 to 1994 highlighted the need to develop small-scale irrigation schemes that could be effectively managed. Of the total arable land under cultivation in Malawi, only 26,000 ha are under irrigation. The potential to put an additional 200,000 ha to irrigated agriculture exists.

Women comprise 70% of the full time farmers and 25% of part time farmers, and head about 40% of the households. Government recognises the need to empower women especially in matters related to land rights, provision of credit and access to agricultural input services.

Sector development policy of the national/local government:

The National Irrigation Policy and Development Strategy (NIPDS) aims at contributing to poverty alleviation, improving agricultural production, and achieving national food sufficiency by targeting small-scale irrigation development. The policy emphasises the importance of beneficiary participation in the identification, design, construction, ownership and management of small-scale irrigation schemes, while the government serves as a facilitator in the development process.

Problems to be solved in the sector:

For the rapidly increasing number of resource-poor farmers who concentrate on maize mono-cropping, yields are typically low (1.10 tonnes/ha) and little or no soil restorative crop rotation and/or fallow is practised. Due to population pressure on land, farmers have moved into marginal lands, with the resultant low crop yields and degradation of land. Use of fertiliser has dropped drastically since the subsidy on it was removed and the use of manure and compost as alternative sources of plant nutrients is becoming common.

The problems of small-scale irrigation development in Malawi include the scarcity of relevant studies, lack of relevant technology and low human resource capacity.

Several donors have funded some studies on small-scale irrigation in Malawi on a piece-meal basis, and with little or no information on the feasibility for the development of high potential irrigation schemes. The proposed study intends to provide detailed feasibility studies of selected schemes in order to provide both a framework for an efficient development of the irrigation sub-sector and a benchmark for future support to the sub-sector.

For many years it has been said that Malawi was blessed with abundant water supplies. However, the recent droughts, which have been persistent, compounded by the rapid population growth, have resulted in serious reductions in water resources. The growing population has led to degradation of catchment areas, which has in turn resulted in increased run off, a reduction of flows in rivers and depleted groundwater reserves. Rainfall has been both erratic and insufficient. As a result of all these factors, the water level in Lake Malawi has dropped drastically, affecting such activities as generation of hydropower, fish-culture, navigation and industrial use. The study will analyse the potential for development of irrigation schemes based on perennial schemes and dams.

More than 700 small earth dams were constructed in the country in the 1950 and 60s. Most of these are currently out of use due to various problems such as siltation and breaching. The dams are important for water resources conservation, livestock watering, and irrigation of various crops especially tobacco nurseries. There is also potential for the construction of dams in or before the escarpment, to conserve water that can be released downstream for irrigation and other uses.

-Outline of the project:

The project will have two main components:

- *Feasibility studies for the construction or rehabilitation of irrigation schemes based on perennial rivers, the lake, or dams;*
- *Capacity building in the field of irrigation design and construction*

The study will be implemented in four phases:

Phase 1: Reconnaissance/pre-feasibility studies: field visits to collect and review available baseline data and information from previous studies, with a view to identifying the potential for small-scale irrigation development and dams rehabilitation/construction taking into consideration available land and water resources. Assessment of the in-country capacity for irrigation development, and designing a capacity building programme will also be done. Setting up of a database of the existing high potential irrigation sites, including sites based on perennial schemes, construction and or rehabilitation of dams. Mapping of these schemes on 1:50000 maps for further examination during subsequent phases.

Phase 2: Feasibility studies: screening of proposals identified in Phase I with a view to studying the feasibility of developing the potentially viable ones. All technical, social, economic, and environmental aspects will be examined.

Phase 3: Detailed design studies: more detailed investigations, including the determination of basic engineering design for infrastructures; relevant cost estimation and formulation of appropriate tender documents. Execution of the third phase of the study will be for feasible and cost-effective potential projects. Finally, at the end of the third phase of the study, the consultant will update the technical, financial and economic analyses of the projects. This will include, but not limited to the utilisation (e.g. fishing or cropping) options available, farm/crop budgets based on the alternative viable farm holdings, internal rates of return, as well as proposed organisation and management set-up and environmental impact assessment.

Phase 4: Implementation of the capacity building programme: This will include production of manuals, or adaptation of design manuals for irrigation structures to Malawi condition, support to training institutions such as Bunda College for training courses, facilities and materials, offshore staff training. Some parts of this phase may run concurrently with phase 2 and 3.

-Purpose (short term objective) of the project:

The specific objective of the study is to ascertain the feasibility of development of high potential irrigation schemes in Malawi, and to enhance the capacity of the country to implement such projects.

-Goal (long-term objective) of the project:

The study will contribute to the Government's sector goal to reduce poverty among the population by improving their income opportunities and food security.

-Prospective beneficiaries:

Smallholder farmers in the rural areas of Malawi.

-The project's priority in the National Development Plan/Public Investment Program:

Irrigation development is high on the agenda of the nation's development, as the recent droughts have clearly shown that an assured food security situation can only be achieved through the development of the country's irrigation potential.

(5) Desirable or scheduled time of commencement of the project:

Month: May year: 2001

(6) Expected funding source and/or assistance (including external origin) for the project:

(7) Other relevant projects, if any:

DANIDA Agricultural Sector Support Programme, Phase II: this programme is supporting the development of district irrigation plans for seven districts in Mzuzu, Kasungu, and Lilongwe Agricultural Development Divisions;

Irrigation Study (financed by AfDB): a country wide study on the potential for irrigation development.

Smallholder irrigation project, funded by the African Development Bank. This study is localised in Blantyre and Shire Valley ADDs.

2. Terms of reference for the proposed study

(1) Necessity/Justification of the study:

Other studies carried out in this field included the following. (a) The National and Shire Irrigation Study, conducted by Huntings technical services in 1986; (b) Kasungu Water Resources study in 1992, (c) . The Department of Irrigation carried out a countrywide exercise in 1991 to identify, on a preliminary basis, sites which are suitable for dam construction. (d) The National Water Resources Masterplan, carried out in out in 1986.

All the above work was limited to inventories. No detailed assessment was done of the water resources to determine potential for utilisation for irrigation; none of the studies made economic or financial feasibilities of the potential developments.

The proposed study will result in fully designed proposals for the development or rehabilitation of high potential irrigation schemes, which will facilitate the involvement of the donor community in the provision of assistance for construction.

(2) Necessity/Justification of the Japanese Technical Cooperation

(3) Objectives of the study

The study will contribute to the Government's sector goal to reduce poverty amongst the rural population of Malawi through the enhancement of incomes and assured food security.

The specific objective of the study is to ascertain Malawi's high irrigation potential with a view to identifying and preparing viable rehabilitation or construction projects that will be technically, economically and financially feasible as well as socially and environmentally acceptable. The study will produce design proposals for the development of the irrigation potential of Malawi, and will lead to the implementation of a number of highly feasible schemes. The study will also lead to the improvement of the capacity of the DoI staff in irrigation through counterpart on-the-job training, and support to training institutions in the country.

The main beneficiaries of the study will be: (a) smallholder farmers in and around the who will have improved opportunities and facilities for irrigation, livestock watering, fish farming, domestic water supplies, and recreation; (b) staff of the DoI and other Departments (such as Water Dept), who will have increased capacity in dam construction and rehabilitation, and in the construction of irrigation works

(4) Areas to be covered by the study

The study will cover the whole country in phase one, but will in later phases concentrate in those areas where generally the water resources and potential for irrigation will be shown to be high.

(5) Scope of the study

- A. Data Collection and Review on potential sites in Malawi*
- B. Review of existing dams and schemes to study possibility of rehabilitation*
- C. Studies and Field Investigations at pre-feasibility level*
- D. Studies and field investigations at feasibility level*
- E. Assessment of Agricultural and fisheries Production from dams;*
- F. Engineering and Infrastructure Studies and Related Activities*
- G. Assessment of Marketing, Storage and Transportation*
- H. Socio-Cultural Aspects and Beneficiary Participation*

- I. *Institutional and Management Aspects*
- J. *Economic and Financial Analyses*
- K. *Environmental Impact Assessment*
- L. *Detailed design studies for highly feasible projects*
- M. *Development of selected number of high potential projects*
- N. *Development of training materials, especially design manuals*
- O. *Training of staff, in-country and offshore*
- P. *Support to training institutions such as Bunda College of Agriculture*
- Q. *Support to DoI in equipment and logistics for the development of schemes.*

(6) Study schedule

The expected date of commencement of the study is the second quarter of 2001.

The study will be carried out in four phases

Phase I: 3 months from the beginning of mobilisation;

Phase II: 4 months duration from end of phase 1.

Phase III, 4 months duration from end of Phase II.

Phase IV will run concurrently with phase 2 and 3.

(7) Expected major outputs of the study

- i. *Detailed design studies for the construction of new high potential schemes, based on rivers, lakes, or dams..*
- ii. *Detailed design studies for the rehabilitation of schemes, including mechanisation and dams*
- iii. *Development and/or adaptation of design manuals for irrigation structures such as headworks; These manuals will be used in the in-country training courses.*
- iv. *Staff of the DoI trained in dam irrigation design, rehabilitation, and construction. The training will include on-the job training of counter-part staff, staff training courses held at selected institutions, off-shore tours, staff short courses overseas.*
- v. *A five-year training programme will be produced and supported. This will provide basic training to staff in irrigation related fields.*
- vi. *Facilities at Bunda College of Agriculture and NRC improved, to enhance the provision of training in irrigation. This will include: improved irrigation laboratories; setting up of irrigation demonstration farms; provision of equipment for computer aided design systems;*

- vii. *The Department of Irrigation's capacity to design and implement schemes will be enhanced through the provision of office equipment and mobility.*

(8) Possibility to be implemented/Expected funding resources:

There are no sources currently available for achieving the above outputs.

(9) Request of the study to other donor agencies, if any:

This study proposal has not been submitted to any other donor. No donor is currently engaged in a similar project in the country.

Other studies carried out in this field included the following:

- (i) National and Shire irrigation study, 1986*
- (ii) Inventory of registered dams, National Water Resources Masterplan, financed by UNDP, 1986.*
- (iii) Dam potential study, by DoI, 1991;*
- (iv) Kasungu Water Resources study in 1992, financed by IFAD*

All the above work was limited to inventories. No detailed financial or economic feasibility assessment was done to determine potential for utilisation such as irrigation. Most of the projects under implementation, such as the Smallholder Flood Plains Develop Programme, have targeted technology transfer in selected ADDs only.

(10) Other relevant information:

3. Facilities and information for the study

(1) Assignment of counterpart personnel of the implementing agency for the study:

*2No. Irrigation Engineers, MSc in Irrigation Engineering, BSc Civil Engineering.
2No. Irrigation Agronomists, MSc in Irrigation Agronomy/Water Management
1No. Dams specialist, MSc Water Resources Engineering*

(2) Available data, information, documents, maps, etc related to the study:

- 1:50,000 topographic maps of Malawi*
- 1:250,000 maps of Malawi*
- National and Shire Irrigation Study*
- National Water Resources Masterplan*
- Weather data for all met stations: rainfall, wind, temperature, humidity*
- Agro-climatic zones*
- Soils maps for the whole country*

- *Land use maps for the whole country*
- *Smallholder Irrigation Schemes : descriptions*
- *National Irrigation Policy and Development Studies*

(3) Information of security condition in the study area:

Malawi is a secure country and it is safe to travel in all parts of the country. The country is not at war, and is not experiencing any breakdown in security, or any uncontrollable incidences of bunditry.

4. Global Issues (environment, women in development, poverty etc)

(1) Enviromental components (such as pollution control, water supply, sewage, environmental management, forestry, biodiversity) of the project, if any:

- *An environmental impact assessment will be undertaken, in line with guidelines of GOM and relevant International Organisations (such the ICID). The study will therefore include collection and analysis of environmental baseline data, identification of impacts (both positive and negative) and their evaluation, design of mitigating measures, and an environmental management and monitoring plan.*

(2) Anticipated environmental impacts (both natural and social) by the project:

The scheme construction and rehabilitation projects are likely to generate impacts that can have significant effects on the immediate and off-site environments. These may range from:

- *disturbance to the hydrology of dambos in which the projects are situated;*
- *disruption to water sharing arrangements currently being used by the communities;*
- *an increase in the prevalence of vector-borne diseases (such as malaria, onchocerciasis, schistosomiasis, etc.);*
- *environment issues such as catchment degradation;*
- *animal intensities, and the impacts that these may have on the irrigation sites (especially dams);*
- *soil erosion and sedimentation in the catchment areas where the project sites are located;*
- *hydrological changes to the project sites;*
- *contamination due to fertilizer and pesticide application;*
- *effects on quality of water in downstream receptors; and*
- *re-settlement of affected population.*

(3) Women as main beneficiary or not.

Women will benefit directly from the implementation of the proposed study in the following ways:

- *Readily available water resources for domestic chores (either directly from the dams, or improved water points around the schemes)*
- *Readily available food, especially protein from fish, and vegetables, from enhanced farming and irrigation activities. This will improve health and reduce malnutrition and sickness of children, which is a major pre-occupation of women;*

The existing socio-cultural situation shall be studied in detail to ensure that the beneficiaries, and in particular women, are fully aware of the project and will participate in it. The involvement of women beneficiaries in the formative stages of the proposed development projects is considered very important.

- (4) Project components which require special consideration for women (such as gender difference, women specific role, women's participation) if any:**

Mobilisation: The study will require full participation of women in farmer-oriented workshops/meetings which will be organised after the inception and planning reports have been produced to enable beneficiaries to participate fully in the project preparation process.

Implementation stage: The role of women in the implementation of the physical works and any other related activities of the project shall be studied and proposals made for their equitable participation in the projects. The final design shall make specific proposals for women's involvement to safeguard their rights in any future development.

- (5) Anticipated impacts on women caused by the project, if any:**

The development of schemes can lead to an increase on the workload of women, since in some schemes women and children contribute more to cultivation activities such as transplanting and weeding. The Study will make proposals to ensure that adequate consultations and provisions are put in place to avoid this situation as much as possible. One way is the introduction of small-scale mechanisation in the schemes.

- (6) Poverty alleviation components of the project, if any:**

Implementation of the project will lead to:

- a. *improved food availability in and around the schemes;*
- b. *improved cash incomes directly from the produce of the schemes, for scheme farmers;*
- c. *increased opportunities for employment for surrounding farmers and population;*
- d. *improved access : improved roads to schemes will lead to improved access by services such as buyers, public transport.*

- e. *Improved provision of health services and recreation. Irrigation schemes in Malawi tend to become centres of rural growth.*

(7) Any constraints against the low income people caused by the project.

Low income people involved in the project may have problems obtaining enough credit in the initial stages of the project to facilitate the growing of crops. The study will make proposals on how to support the schemes in the first years of production to ensure success until the farmers can manage the schemes on their own.

5. Undertakings of the Government of Malawi.

In order to facilitate the smooth and efficient conduct of the Study, the Government of Malawi shall take necessary measures:

- (1) to secure the safety of the Study Team,
- (2) to permit the members of the Study Team to enter, leave and sojourn in Malawi in connection with their assignment therein, and exempt them from foreign registration requirements and consular fees,
- (3) to exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of Malawi for the conduct of the Study,
- (4) to exempt the Study Team from income tax and charges of any kind imposed on or in connection with the implementation of the Study,
- (5) to provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced in Malawi from Japan in connection with the implementation of the Study,
- (6) to secure permission for entry into private properties or restricted areas for the conduct of the Study,
- (7) to secure permission for the Study to take all data, documents and necessary materials related to the Study out of Malawi to Japan, and,
- (8) to provide medical services as needed. Its expenses will be chargeable to members of the Study Team,
- (9) The Government of Malawi shall bear claims if any arise against member(s) of the Japanese Study Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Study Team,

- (10) Department of Irrigation in the Ministry of Agriculture and Irrigation, shall act as counterpart agency to the Japanese Study Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study,
- (11) Department of Irrigation in the Ministry of Agriculture and Irrigation will, as the executing agency of the project, take responsibilities that may arise from the products of the Study.
*In the case that Detail Design Study is requested.

The Government of Malawi assures that the matters referred to in this form will be ensured for the smooth conduct of the Development Study by the Japanese Study Team.

Signed:

Title :

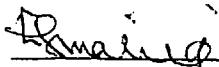
On behalf of the Government of Malawi

Date: _____

2. 実施細則 (S / W)

Scope of Work
for
The Study on
The Capacity Building and Development
for Smallholder Irrigation Schemes in the Republic of Malawi
agreed upon between
The Ministry of Agriculture and Irrigation
and
The Japan International Cooperation Agency

Lilongwe, November 5, 2001



Dr. E. S. Malindi
Principal Secretary
Ministry of Agriculture and Irrigation



Mr. Yoshihiro OZAWA
Leader
The Preparatory Study Team
Japan International Cooperation Agency

I. INTRODUCTION

In response to the request of the Government of the Republic of Malawi (hereinafter referred to as "GOM"), the Government of Japan decided to conduct the Study on the Capacity Building and Development for Smallholder Irrigation Schemes in the Republic of Malawi (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

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

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

II. OBJECTIVES OF THE STUDY

The overall goal of the Study is to contribute to poverty alleviation of smallholder farmers through irrigation development.

The objectives of the Study are as follows;

- (1) To establish a package of methodologies for self-help smallholder irrigation development,
- (2) To enhance technical and administrative capacity in irrigation development.

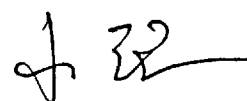
III. STUDY AREA

The Study shall cover the whole country of the Republic of Malawi.

IV. SCOPE OF THE STUDY

In order to achieve the objectives above, the Study shall consist of the following items:
(Phase I)

1. Identification of potential for self-help smallholder irrigation development
 - 1.1 Review the existing projects, studies and the national / regional development plans relevant to the Study
 - 1.2 Collect and review the existing data and information relevant to the Study
 - 1.3 Formulate an inventory of irrigation schemes and sites with high potential for irrigation development
2. Formulation of draft methodologies for self-help smallholder irrigation development
 - 2.1 Classify the irrigation schemes and sites with high potential for irrigation development
 - 2.2 Conduct field surveys of the selected sites to collect information for technical, socio-cultural, institutional, economical/financial, and environmental aspects
 - 2.3 Conduct the Initial Environment Examination (IEE), if required
 - 2.4 Formulate draft methodologies for self-help smallholder irrigation development based on the following items;



- (1) Formation of farmers' organization
 - (2) Planning and designing
 - (3) Implementation
 - (4) Operation, maintenance and management
- 2.5 Select some typical sites for verification studies

(Phase II)

3. Establishment of a package of methodologies for self-help smallholder irrigation development

3.1 Conduct the verification studies for typical projects on the following items;

- (1) Formation of farmer's organization
- (2) Planning and designing
- (3) Implementation
- (4) Operation, maintenance and management

3.2 Verify the rationality and effectiveness of the draft methodologies for self-help smallholder irrigation development

3.3 Finalize the package of methodologies for self-help smallholder irrigation development

4. Capacity building

- 4.1 Conduct On-the-Job Training through the verification studies
- 4.2 Produce training materials and field manuals
- 4.3 Conduct workshop(s) / seminar(s)

V. STUDY SCHEDULE

The Study shall be carried out in accordance with the Tentative Work Schedule attached in Annex.

VI. REPORTS

JICA shall prepare and submit the following reports, written in English, to GOM;

Inception Report:	Twenty (20) copies at the commencement of the Study
Progress Report(s):	Twenty (20) copies on the course of the Study
Interim Report:	Twenty (20) copies at the middle of the Study
Draft Final Report:	Twenty (20) copies at the end of Phase II fieldwork The GOM side shall submit written comments on the Draft Final Report to JICA in one (1) month after the receipt of the report.
Final Report:	Forty (40) copies within two (2) months after the receipt of comments on the Draft Final Report from the GOM

VII. UNDERTAKING OF THE GOM

Em

J 32

1. To facilitate the smooth conduct of the Study, the GOM shall take necessary measures, as listed below;

- (1) Secure the safety of the Study Team,
- (2) Permit the members of the Study Team to enter, leave and sojourn in Malawi for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees,
- (3) Exempt the members of the Study Team from taxes, duties and other charges on equipment, machinery and other materials to be brought into and out of Malawi for the conduct of the Study,
- (4) Exempt the members of the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study,
- (5) Provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced into Malawi from Japan in connection with the implementation of the Study,
- (6) Secure permission for the Study Team(s) to enter private properties or restricted areas for the implementation of the Study,
- (7) Secure permission for the Study Team to take all data and documents, including photographs and maps, relevant to the Study out of Malawi to Japan, and
- (8) Provide medical services as needed. Its expenses will be chargeable to members of the Study Team.

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

3. Department of Irrigation, Ministry of Agriculture and Irrigation (hereinafter referred to as "DOI") shall act as the counterpart agency to the Study Team and also as the coordinating body in relations with other governmental and non-governmental organizations for the smooth implementation of the Study.

4. DOI shall, at its own expense and in cooperation with other organizations concerned, provide the Study Team with the following;

- (1) Available data and information related to the Study,
- (2) Counterpart personnel,
- (3) Suitable office space and necessary equipment in Lilongwe and the Study area, and
- (4) Credentials or identification cards.

VIII. UNDERTAKING OF JICA

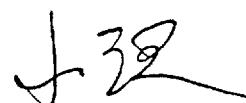
For the implementation of the study, JICA shall take the following measures;

- (1) Dispatch, at its own expense, study teams to Malawi,
- (2) Pursue technology transfer to the Malawian counterpart personnel in the course of the study.

IX. CONSULTATION

JICA and the Ministry of Agriculture and Irrigation shall maintain constant communication and consult with each other in respect of any matters that may arise from or in connection with the Study.





Em

Annex

TENTATIVE WORK SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Work in Malawi		[Bar]									[Bar]																
Work in Japan	[Box]								[Box]														[Box]				
Reports	△ Ic/R				△ P/R			△ P/R	△ It/R							△ P/R						△ P/R	△ Df/R		◎		△ F/R

(Remarks)

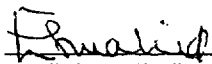
- Ic / R : Inception Report
- It / R : Interim Report
- P / R : Progress report
- Df / R : Draft Final Report
- F / R : Final Report
- ◎ : Comments on Df/R by GOM

J 22

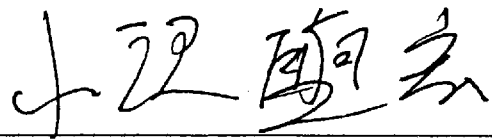
3. 協議議事録 (M / M)

Minutes of Meetings on the Scope of Work
for
the Study on
The Capacity Building and Development
for Smallholder Irrigation Schemes in the Republic of Malawi
agreed upon between
The Ministry of Agriculture and Irrigation
and
The Japan International Cooperation Agency

Lilongwe, November 5, 2001



Dr. E. S. Malindi
Principal Secretary
Ministry of Agriculture and Irrigation



Mr. Yoshihiro OZAWA
Leader
The Preparatory Study Team
Japan International Cooperation Agency

I. INTRODUCTION

In response to the request of the Government of the Republic of Malawi, the Preparatory Study Team headed by Mr. Yoshihiro OZAWA (hereinafter referred to as "the Team"), was sent to Malawi by the Government of Japan through the Japan International Cooperation Agency (hereinafter referred to as "JICA"), from October 28 to November 6, 2001 for the purpose of discussing and confirming the Scope of Work for the Study on the Capacity Building and Development for Smallholder Irrigation Schemes in the Republic of Malawi (hereinafter referred to as "the Study"). The Team held a series of discussions with the relevant authorities of the Government of the Republic of Malawi represented by the Ministry of Agriculture and Irrigation (hereinafter referred to as "The Malawian side").

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

The following are the main issues discussed and agreed upon by both sides in relation to the Scope of Work for the Study. The list of participants and resource persons in the series of meetings is attached as Annex.

II. RESULTS OF DISCUSSIONS

1. Title of the Study

Both sides agreed that the title of the Study should be changed from "the Study on The Capacity Building / Rehabilitation and Development for Irrigation Schemes in the Republic of Malawi" to "The Study on the Capacity Building and Development for Smallholder Irrigation Schemes in the Republic of Malawi". "Development" includes construction of new schemes and rehabilitation of existing schemes.

2. Objectives of the Study

"Self-help smallholder irrigation schemes" are those irrigation schemes fully managed, operated and maintained by smallholder farmers and are constructed by the government with full participation of the farmers during all stages of development. "Smallholder farmers" are farmers who hold farms less than two (2) hectares on customary land.

3. Study areas

The study for identification of potentials for self-help smallholder irrigation development will be carried out covering whole country. The study for formation of draft methodologies for self-help smallholder irrigation development will be carried out for the selected areas.

4. Scope of the study

Refer to the scope of the study, the contents of each item are described as follows:

(1) Formation of farmers' organization

- Identification of beneficiaries
- Agreement by the beneficiaries involved
- Formation of farmers' group
- Farmers' training
- Formation of constitution and bylaws
- Registration of organization as an association or cooperative

EM

JZR

- (2) Planning and designing
 - Topographic survey
 - Preliminary layout
 - Design drawings
 - Cost estimation
 - Farm planning
 - Appraisal
- (3) Implementation
 - Construction / rehabilitation using smallholder farmers' friendly technology with farmers' full participation
 - "Smallholder farmers' friendly technology" is the type of technology that can easily be operated, maintained and managed by smallholder farmers. During construction, full participation of the beneficiaries' community will be encouraged with minimal utilization of machinery.
- (4) Operation, maintenance and management
 - On-farm irrigation management
 - Management of farmers' organization

5. Steering Committee

Regarding the item 3, "VII. UNDERTAKING OF THE GOM" of the Scope of Work, both sides agreed that it is necessary to establish the Steering Committee for the smooth and efficient implementation of the Study. The members of the Committee consist of representatives of the following organizations.

- (1) Department of Irrigation, Ministry of Agriculture and Irrigation
- (2) Other related departments of Ministry of Agriculture and Irrigation
- (3) Water Resources Board, Ministry of Water Development
- (4) Ministry of Gender, Youth and Community Services
- (5) Ministry of Forestry, Fisheries and Environmental Affairs
- (6) JICA Malawi office
- (7) Embassy of Japan in Zambia (as observers)

6. Equipment and facilities necessary for the Study

The Malawian side promised to provide the Study team with a suitable office space within the buildings of Ministry of Agriculture and Irrigation and to make its best effort to provide desks, chairs and the use of one telephone with facsimile function in the office as required.

The Malawian side requested that the following equipments and materials for the Study be provided by JICA. The Team promised to convey the request to the JICA headquarters.

- Vehicle, fuel
- Photocopy machine
- Personal computer
- Others, if necessary

7. Counterpart personnel

The Malawian side promised to assign the necessary number of counterpart personnel to the Study team. Both sides agreed that during the course of the

Em

J 22

conduction of verification studies. it will be necessary that counterpart personnel, especially from ADD and RDP levels, be with the Study Team on a full time basis.

8. Training of counterpart personnel

The Malawian side requested the counterpart training in Japan for effective technology transfer. The Team promised to convey the request to the JICA headquarters.

9. Report

The both sides agreed that the Final Report should be open to the public.

Em

JIR

LIST OF PARTICIPANTS

Malawian side:**Ministry of Agriculture and Irrigation**

Dr. E. S. Malindi Principal Secretary

Department of Irrigation, Ministry of Agriculture and Irrigation

Dr. C. P. Mzembe Controller of irrigation Services

Mr. A. T. Khonje Chief Irrigation Officer

Mr. G. B. Mkwende Agricultural Economist

Salima Agricultural Development Division

Mr. G. S. Mwepa Chief Irrigation Officer

Mr. Chipeta Senior Irrigation Officer

Mr. M. Z. Bodzalekani Deputy Program Manager

Muzuzu Agricultural Development Division

Mr. C. S. Khonje Program Manager

Mr. M. Mpitapita Principal Irrigation Officer

Kasungu Agricultural Development Division

Mr. M. Munba Principal Irrigation Officer

Mr. A. Tembo Senior Irrigation Officer

Mr. B. J. Sizilande Program Manager

Japanese side:**Preparatory Study Team**

Mr. Yoshihiro Ozawa Leader / Irrigation policy

Mr. Hideyuki Kanamori Irrigation / Agricultural Infrastructure

Mr. Hatsuo Miyasaka Farm management / Irrigated agriculture

Mr. Junichi Hanai Project formulation/Evaluation

JICA Malawi Office

Mr. Hiroshi Murakami Resident Representative

Mr. Minoru Yoshimura Deputy Resident Representative

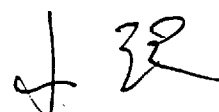
Mr. Kenichi Matsumoto Assistant Resident Representative

JICA Expert

Mr. Seishi Matsuzawa Irrigation

Mr. Naoto Watanabe Agronomy

Mr. Masafumi Taguchi One Village One Product Movements

4. 現地踏査メモ

現地踏査メモ

■ 1. NOGOLOWINDO SELF-HELP IRRIGATION SCHEME

- 1) 施設：電動モーターポンプで揚水した水を貯水地（周囲長：約 80 m、深さ：165 cm）に溜め、そこから重力排水
- 2) 開発：1985 年
- 3) 受益：1.4ha, 140 農家, 0.1ha/農家（灌漑地区外を入れると 0.8ha/農家）
- 4) 資金：EU 資金（現在は EU 資金で NGO である COSPE がリハビリ中）
- 5) 問題/所見：電気が 1 回/3 ヶ月の割合でしばしば High charge になって切れる。
- 6) 作付け：雨季（2 月～8 月）は野菜、乾季（8 月～10 月）はメイズ
- 7) 参考：ポンプ 1 台 300,000 K

■ 2. KAMBWIRI SELF-HELP IRRIGATION SCHEME

- 1) 電動モーターポンプで揚水・加圧して、スプリンクラー（12mX12m）で散水
- 2) 開発年：1995 年
- 3) 受益：6.1ha, 61 農家
- 4) 資金：USAID
- 5) 問題/所見：スイッチの盗難と電気代が高いこと。
- 6) 作付け：乾季にメイズ、雨季に野菜（トマト、キャベツ、菜種、マスタード、タマネギ）0.1ha 当たりの収益性は以下のとおり。
 - ①メイズ：6,000～8,000K
 - ②タマネギ：18,000K
 - ③トマト：15,000K

■ 3. BUA GOVERNMENT-RUN IRRIGATION SCHEME

- 1) 砂袋の堰で導水して取水、カルバートで送水していたが、川筋が変わったために上流に堰（練石積）を新設し、径 70cm のパイプで送水する計画。
- 2) 開発年：1967 年頃開発されたが、1994 年から取水できなくなった。
- 3) 受益：元々 300 ha だが、リハビリでは 160ha
- 4) 資金：もともとは台湾の援助で建設。IFAD 資金 32 百万 K でリハビリテーション。
- 5) 問題/所見：養生していない。

■ 4. KASITU SELF-HELP IRRIGATION SCHEMEN

- 1) 氾濫源を 2 本の堤防（3,000m 長）で雨季の洪水を防ぎ、2 箇所では取水して堤防間の土地を灌漑。
- 2) 開発年：現在リハビリ中
- 3) 受益：20ha+35ha=55ha
- 4) 資金：IFAD（設計は AHT というドイツ人コンサル）
- 5) 問題/所見：簡単な工事にもかかわらずドイツ人コンサルに設計委託。
- 6) 作付け：雨季は水稲、乾季はメイズ、豆、トマト

■ 5. LIMPASA GOVERNMENT-RUN IRRIGATION SCHEME

- 1) 施設：氾濫源に堤防を設け、上流端に布団籠にコンクリートを巻いた堰（約 20mX20m）を設置して取水。
- 2) 開発年：1960 年頃

- 3) 受益：450haに700農家
- 4) 資金：台湾
- 5) 問題/所見：元々堰はなかった。しかし、1970年頃に川筋が変わったために堰を設けたが、2度洪水で破壊され、その度に補修した。最近では1987年にJOCV協力で補修したが、堰の下からの水が抜けて十分に取水できず、150haしか灌漑できない。

■ 6. KAMALAMBO DAM DAMBO SELF-HELP PROJECT

- 1) 湿地の川に土堰堤（140m長、高さ約5m、天端幅：4m）を建設中である。貯水による地下水涵養で、下流の灌漑ができるという。
- 2) 開発年：1998
- 3) 受益：90農家（女性が世帯主は34農家）
- 4) 資金：DANIDA
- 5) 問題/所見：重機による施工。
- 6) 作付け：トマト、メイズ、タマネギ、マスタード、その他

■ 7. KAKHULAJINO DAM DAMBO SELF-HELP PROJECT

- 1) 湿地の川に土堰堤（約140m長）を建設中で、土盛りは2/3ほどできている。
- 2) 開発年：2年前
- 3) 受益：（聴取できず）
- 4) 資金：DANIDA
- 5) 問題/所見：重機が不足で工事が休止。
- 6) 作付け：聴取できず。

■ 8. LINGA DAM DAMBO GOVERNMENT-RUN SCHEME

- 1) 湿地の川に土堰堤（約150m長）を設けて貯水しているが、取水工が埋まっている。余水吐は、水兼道路になっている。
- 2) 開発年：1950年頃
- 3) 受益：不明
- 4) 資金：古くて不明
- 5) 問題/所見：ジョウロによる灌漑。
- 6) 作付け：タバコ、白菜

■ 9. BWANJE BALLEY IRRIGATION DEVELOPMENT PROJECT

- 1) 英国資金で230haの水田が開発されたが、リハビリと新規開田570haを行なうため、既存の堰の上流に新たにコンクリート堰を設け、さらに圃場の用水路と排水路が建設された。灌漑は、川から全量取水して実施されている。
- 2) 開発年：1999年（2000年から作付け開始）
- 3) 受益：800ha
- 4) 資金：日本の無償資金協力、約19億円
- 5) 問題/所見：3箇所計48haのモデル圃場を除いて、マラウイ側が実施することになっている均平工事がされていないため、2000年の乾季作は114haである。しかし、KR2で購入したブルドーザー1台が昨年9月に配置されて、均平工事を実施中であった。なお、均平工事予定地区の中に森林地170haがある。
- 6) 作付け：水稲、メイズ