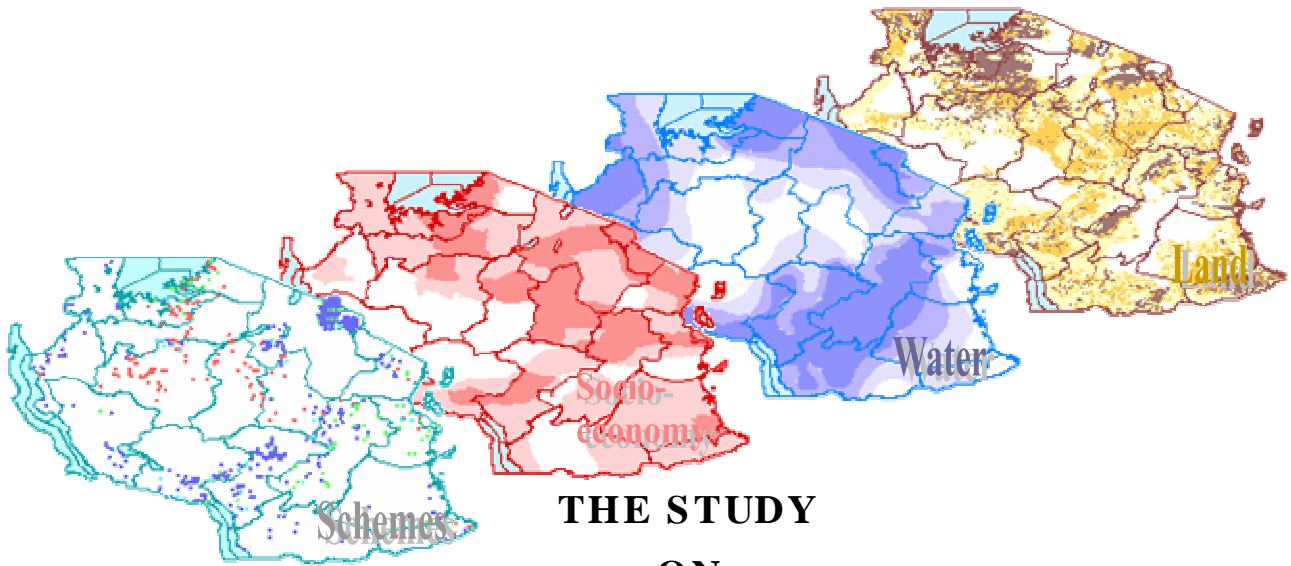


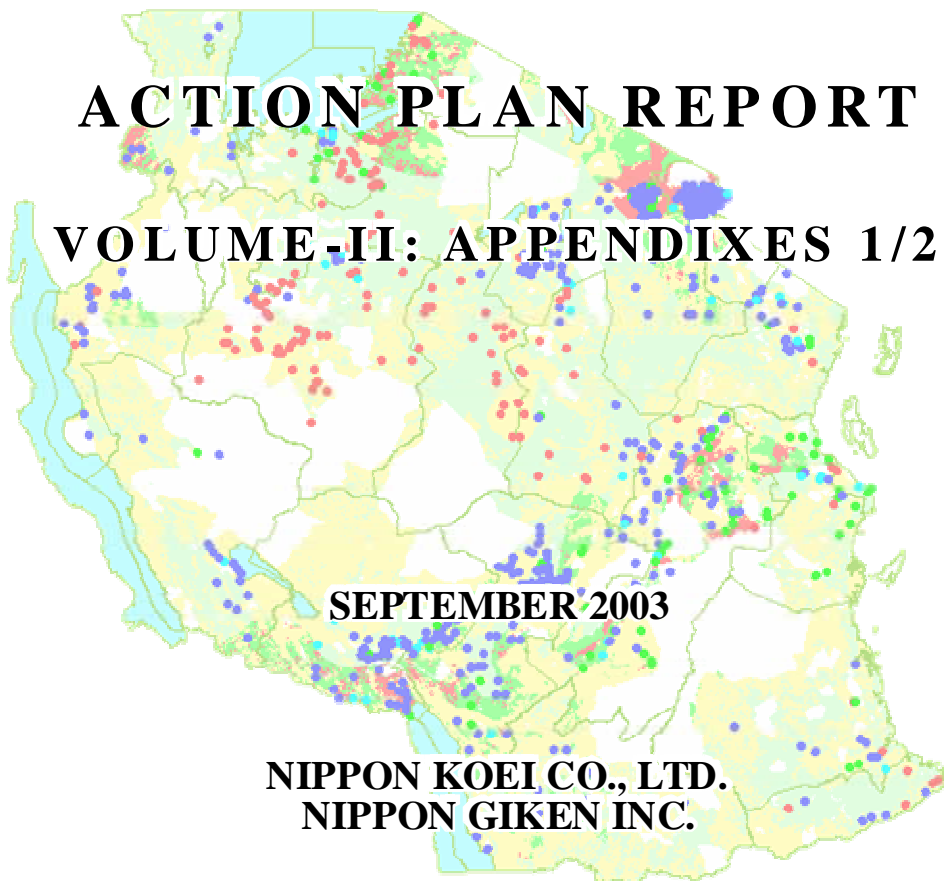
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF AGRICULTURE AND FOOD SECURITY (MAFS)



**THE STUDY
ON
THE NATIONAL IRRIGATION MASTER PLAN
IN
THE UNITED REPUBLIC OF TANZANIA**



**ACTION PLAN REPORT
VOLUME-II: APPENDIXES 1/2**



SEPTEMBER 2003

**NIPPON KOEI CO., LTD.
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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF AGRICULTURE AND FOOD SECURITY (MAFS)

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As of July 4, 2003

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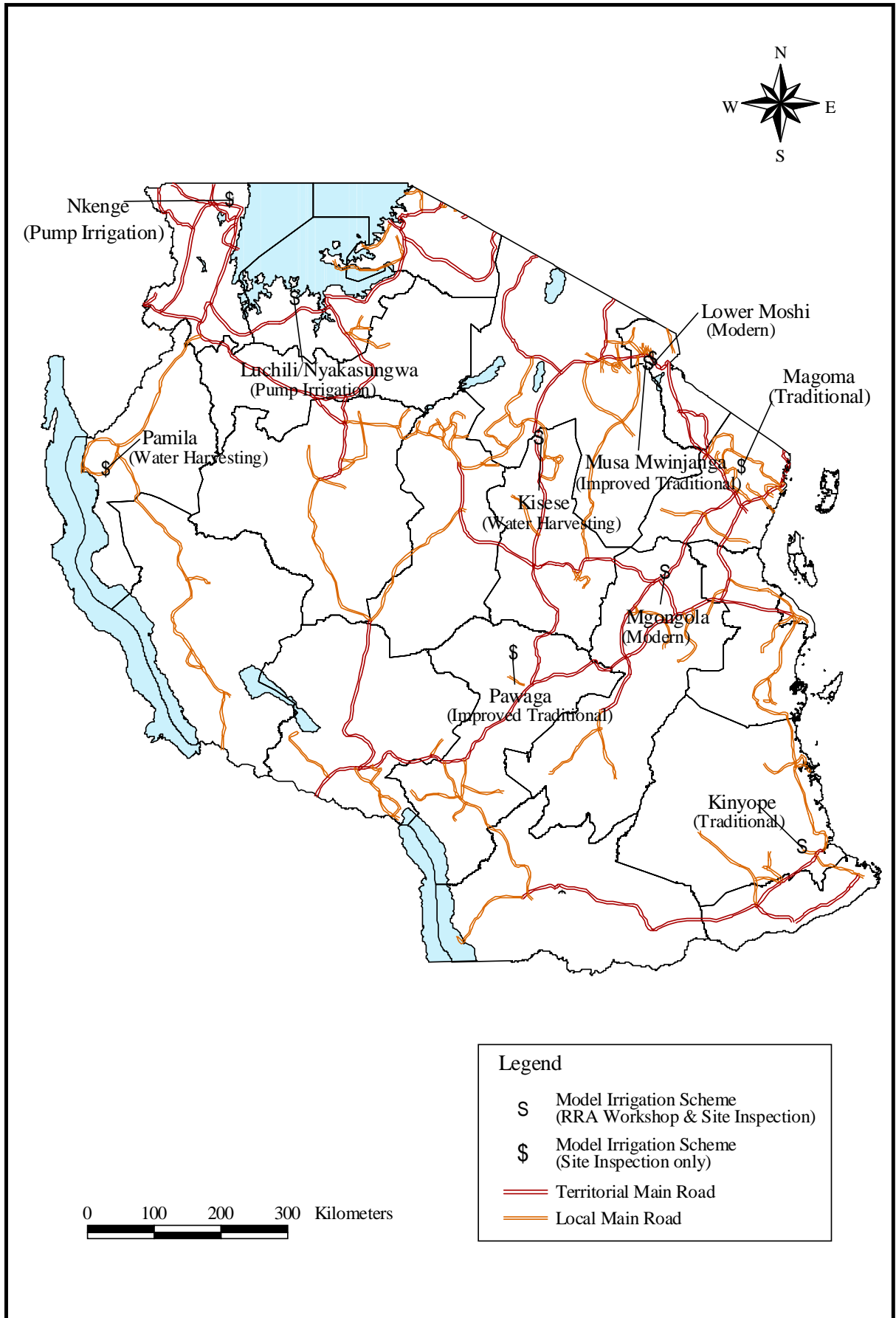
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Appendix A
Project Proposal and Project Design Matrix
For Priority Programmes

**THE STUDY
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THE NATIONAL IRRIGATION MASTER PLAN
IN
THE UNITED REPUBLIC OF TANZANIA**

Action Plan Report

Appendix A

Project Proposal and Project Design Matrix for Priority Programmes

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1. A1: DITS Institutional Improvement Programme

(1) Project Proposal

(1) Title of Programme	DITS Institutional Improvement Programme (Code No.A1)
(2) Location	Mainland
(3) Objectives	This programme aims to diagnose the organizational structure and management of the DITS, in particular, focusing on its appropriateness for implementation of NIMP, namely the realization of sustainable irrigation development, and then, based on the diagnosis, to implement the institutional improvement of the DITS so that it can execute its mandates successfully.
(4) Programme Description	<p>The first step of the DITS institutional improvement began in 2002. The president approved the reform and promotion of the former Irrigation Services Unit (ISU) in November 2002. The old ISU was promoted to the new division consisting of the irrigation services, agricultural machinery and agricultural land use planning. However, this is still not enough. The organization of DITS as a whole must be reformed responding to the new movement of the LGRP and the bottom up approach. Further strengthening is necessary including the following subcomponents:</p> <ul style="list-style-type: none"> - Establishment of Efficient Support Mechanism - Strengthening of the Monitoring Function - Reform of Zonal Irrigation Office conforming to the LGRP <p>Therefore, the recommendations for DITS improvement mainly focus on the three components.</p> <p>(a) Establishment of an Efficient Support Mechanism</p> <p>The efficient support mechanism has not yet been well established institutionally and technically for the farmers' self-reliant irrigation development. First of all, the DITS does need a stronger role of inter-ministerial harmonization among the relevant governmental organizations and other major stakeholders, for instance, coordination of the water rights with the Ministry of Water and Live Stock. When a conflict of water for irrigation and other uses arises, there is seemingly no effective mediation mechanism at present.</p> <p>And also a new project selection procedure of the competitive bottom-up approach should be studied and introduced. In addition, upgrading the technical level of existing technical staff is also necessary. In particular, the training focus must be revised responding to the bottom up approach for the irrigation.</p> <p>(b) Strengthening of Monitoring Function</p> <p>The Monitoring and Evaluation Unit and the Environmental Unit are presently really understaffed, even though their expected roles at the national level are quite crucial to provision of effective feedback data to perform their demarcated roles and, moreover, to socio-economic effectiveness of irrigation development with environmental consideration. As a matter of fact, the DITS does not have established a firm monitoring mechanism yet and hasn't even selected a list of necessary socio-economic, technical and environmental indicators to monitor and evaluate the irrigation development activities. Strengthening of those two units should be included in the DITS institutional improvement programme.</p> <p>(c) Reform of Zonal Irrigation Office conforming to the LGRP</p> <p>Reform of Zonal Irrigation Office should be synchronized with the progress of LGRP. Presently the Zonal Irrigation Office has still very influential role in irrigation development, in particular, in new development schemes, because the LGAs are presently not yet capable enough to perform their demarcated</p>

	<p>roles and functions. At least in the first stage of the Master Plan up to 2007 the Zonal Office should maintain the present roles and functions. Gradually, however, their roles should focus on the inter-regional coordination in cooperation with the Regional Secretariat and provision of policy and technical guidance to the LGAs (DALDO) toward the end of third stage up to the year of 2017. Gradual withdrawal from direct supervision of irrigation schemes and transferring it to the LGAs should be undertaken step by step.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Report on Recommendation	<p>The proposed contents of the report is as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction: Project Purpose and the Background 2. Review of the Division of Roles and Functions of the Irrigation Development among relevant Ministries and the LGAs. <ol style="list-style-type: none"> 2.1 DITS and MAFS 2.2 Other Ministries (Ministry of Water and Livestock Development, Ministry of Cooperatives and Marketing and PORALG) 2.3 LGAs 3. Diagnosis of the Organizational Structure and Management of the DITS <ol style="list-style-type: none"> 3.1 Overall Structure 3.2 Each Unit 3.3 Zonal Office 4. Improvement Plan of the DITS Organizational Structure <ol style="list-style-type: none"> 4.1 Goal and Strategy of Improvement Plan 4.2 Comparative Analysis of Alternative Plans 4.3 The Best Alternative Plan 4.4 Personnel Rotation System for the Improvement Plan 4.5 Capacity Building Plan for Senior Staffs 5. Implementation Plan <ol style="list-style-type: none"> 5.1 Phasing of Necessary Actions of Organizational Improvement 5.2 Implementation Schedule 5.3 Cost estimation 5.4 Monitoring and Follow-up Mechanism of the Implementation Plan
(7) Required Cost	US\$ 660 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for the study and one year for implementation of the Programme (July 2004 - June 2006)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>The division of responsibilities of the irrigation development among the relevant governmental organization needs to be authorized and recognized firmly by the government. This is the prerequisite for the programme. The good coordination among the relevant organizations is very crucial to the successful implementation of the programme. In addition, establishment of an efficient personnel rotation system and the capacity building of senior staffs (in particular, organization management skill) must be implemented in parallel. Otherwise, the improved structure won't work smoothly as expected.</p>
(11) Special Arrangements	-

2. A2: LGA Institutional Strengthening Programme for Irrigation Development

(1) Project Proposal

(1) Title of Programme	LGA Institutional Strengthening Programme for Irrigation Development (Code No. A2)
(2) Location	Mainland
(3) Objectives	This programme aims to diagnose the organizational structure and management of the LGAs, mainly focusing on the appropriateness of DALDOs for implementation of NIMP, namely the realization of sustainable irrigation development, and then, based on the diagnosis, to implement the institutional improvement of the DALDOs so that they can execute their mandates successfully..
(4) Programme Description	<p>In the LGAs the District Agriculture and Livestock Development Office (DALDO) is in charge of irrigation development. However, not all DALDOs have irrigation officers. As a matter of fact, some DALDOs are understaffed today. Although their expected roles and functions have expanded more, the LGAs presently face a lot of constraints that limit their capacity including:</p> <ul style="list-style-type: none"> - Lack of a legal mandate, technical skills and facilities to enforce some roles. - Lack of expertise for strategic and financial planning and management. - Very limited resources for local level institutional building for community participation in the development process. - A shortage of competent personnel and, in some cases, technical equipment to manage and control the development process. <p>The LGAs' role is quite important under the decentralization policy. A lot of constraints stated above must be solved one by one to perform their roles satisfactorily. Some of their main roles are based on the guidance from the Central Government to provide technically and financially appropriate and feasible models and/or methods of irrigation development to the irrigators' organizations (farmers) and, in addition, to assist and encourage the irrigators' organizations to operate and maintain the irrigation scheme by themselves.</p> <p>Therefore, this project consists of the following components:</p> <ul style="list-style-type: none"> - To diagnose the appropriateness of the DALDOs' present organizational structure for implementation of NIMP - To recommend an improvement plan of the DALDOs' organizational structure. - To prepare the implementation plan of the recommendation. - To implement the institutional improvement plan so that the DALDOs can execute the mandates successfully for better performance of participatory irrigation development responding to the decentralization policy. <p>The LGAs are presently being transformed under the decentralization policy, i.e. the LGRP. Therefore, this programme needs to have a close coordination with the progress of the LGRP.</p>
(5) PDM for the Programme	See the attached PDM.

(6) Contents of Report on Recommendation	<p>The proposed contents of the report is as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction: Project Purpose and the Background 2. Review of the Division of Roles and Functions of the Irrigation Development among the LGAs and relevant Ministries. <ol style="list-style-type: none"> 2.1 The LGAs (DALDOs) 2.2 MAFS (DITS) 2.3 Other Ministries (Ministry of Water and Livestock Development, Ministry of Cooperatives and Marketing and PORALG) 3. Diagnosis of the Organizational Structure and Management of the DALDOs for Irrigation Development <ol style="list-style-type: none"> 3.1 Overall Structure 3.2 Each Unit 3.3 Relationship with Other Relevant Organizations such as Regional Commissioner's Office and the Zonal Office 4. Improvement Plan of the Organizational Structure of the DALDO <ol style="list-style-type: none"> 4.1 Goal and Strategy of Improvement Plan 4.2 Comparative Analysis of Alternative Plans 4.3 The Best Alternative Plan 4.4 Personnel Rotation System for the Improvement Plan 4.5 Capacity Building Plan of Senior Staffs 5. Implementation Plan <ol style="list-style-type: none"> 5.1 Phasing of Necessary Actions of Organizational Improvement 5.2 Implementation Schedule 5.3 Cost estimation 5.4 Monitoring and Follow-up Mechanism of the Implementation Plan
(7) Required Cost	US\$ 660 thousand
(8) Executing Agency	The LGAs
(9) Implementation Schedule	Two years for study and implementation of the Programme (January 2005 to December 2006)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>The division of responsibilities of the irrigation development among the relevant governmental organizations needs to be authorized and recognized firmly by the government. This is the prerequisite for the programme. Therefore, the good coordination among the relevant organizations is very crucial to the successful implementation of the programme. In addition, establishment of an efficient personnel rotation system and the capacity building of senior staffs (in particular, organization management skill) must be implemented in parallel. Otherwise, the improved structure won't work as expected</p>
(11) Special Arrangements	The A1 programme should precede the A2 programme.

(2) Project Design Matrix**(LGA Institutional Strengthening Programme for Irrigation Development) under NIMP**

Project Name: National Irrigation Master Plan ' Duration: 2003 - 2017 (15 years)

Project Area: Tanzania Target Agency: LGAs Date: August 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The sustainable irrigation development is realized.	– Implementation progress of the NIMP	– Monitoring and evaluation reports of the NIMP since 2003	– ASDP is vigorously implemented as scheduled.
Project Purpose Support to irrigation farming by the LGAs is improved.	– By 2007, institutional strengthening of the IS district is completed in more than 90 % of districts holding irrigation schemes.	– Completion report of the institutional strengthening of the IS district – Report of DALDO in each district	– Necessary official backup is properly provided to the reformed organization of IS district by the LGAs so as to function properly.
Outputs 1. Institutional strengthening plan of the irrigation sector in the LGA (referred to as the IS district, hereafter) is finalized. 2. Organizational structure of the IS district is legally changed by district in line with the plan 3. Personnel changes and if necessary recruitment of staff are done in the IS district in line with the plan by district.	1. By 2005 the plan is approved by the Central and Local Governments. 2. By 2005 implementation of the plan is started by district. 3. By 2007 the efficient personnel rotation mechanism works properly in line with the plan.	1. Note of approval by the Governments 2. Progress report of institutional strengthening of the IS district 3. Progress report of institutional strengthening of the IS district	– Other relevant projects for institutional strengthening such as the DITS improvement project, the policy guidelines in irrigation development project are implemented in parallel. – Technical training for the staff of IS district is implemented in parallel.
Activities 1-1 To review previous institutional strengthening plans on the IS district. 1-2 To prepare a realistic and effective plan of institutional strengthening of IS district. 1-3 To finalize the plan of institutional strengthening of the IS district. 2-1 To make an implementation plan of district's legitimate change corresponding to the institutional strengthening. 2-2 To execute the implementation plan of district's legitimate change. 3-1 To make a district's personnel assignment plan in line with the strengthening plan. 3-2 To execute the district's personnel assignment plan.	Inputs Donor Task Force 1) Local Government Institution 12 M/M 2) Local Government Organization 12 M/M 3) Local Government Management 10 M/M 4) Legal specialist 10 M/M Subject specialist for the subject of task duties (as required) Equipment 1) Computer system L.S. 2) Office equipment L.S. 3) Others L.S. Budget Some part of expenditures of local activities related to the Project.	GOT Personnel 1) Counterparts in each subject in DITS 2) Counterpart in each district Equipment 1) Office L.S. 2) Others L.S. Budget 1) Salaries and necessary expenses for counterparts 2) Necessary expenditures in internal investigations.	– All necessary arrangement for institutional improvement of IS district is fulfilled by the LGAs and MAFS without substantial delay. Preconditions – It is clearly confirmed the necessity of institutional improvement of IS district is recognized by the LGAs and MAFS. – The LGAs and MASF can provide necessary resources for the project. – The mandate based on the roles and functions of IS district is clearly authorized by the government.

3. A3.1: New Legal Framework for IA Establishment Study

(1) Project Proposal

(1) Title of Programme	New Legal Framework for IA Establishment Study (Code No. A3.1)
(2) Location	Mainland
(3) Objectives	<p>The IA is a basic private organization and a principal actor for irrigation development. A well-organized IA is one of crucial factors for its success. As for the registration of the IA, there are generally two alternatives: cooperative or association. However, neither of them is necessarily an optimum organizational form for the IA. Therefore, the objective of the study is to make a recommendation of a new legal framework for the IA, which bestows an appropriate legal status on the IA and defines its rights and liability for irrigation development.</p>
(4) Programme Description	<p>A new legal framework exclusively for the IA should be established, as it is necessary for securing their ownership and self-reliable irrigation development. The study includes the following issues which should be clearly defined in the new framework:</p> <ul style="list-style-type: none"> - The compulsory participation of all irrigators in the IA is a prerequisite of irrigation development. - MAFS must become a competent authority of the IA, that is to say, the registrar of the IA. Otherwise irrigation development can hardly be implemented consistently and smoothly. - MAFS should hold an appropriate coordination function of the water right for irrigation development with the Ministry of Water and Livestock Development. <p>The study consists of the following items:</p> <ul style="list-style-type: none"> - A review of the existing legal framework for the IA and irrigation development - Field survey of the existing IAs in the country - Analysis of the IAs' roles and liabilities for irrigation development (registration, organizational structure, membership, licensee of water right, water charge collection and payment, land tenure ownership, by-law and regulations, operation and maintenance activities, management of organization, ownership of the facilities, dissolution, and so forth.) - Recommendations for a new legal framework for the IA - Implementation plan for a new legal framework for the IA <p>A reliable legal framework is a prerequisite for successful farmers-oriented irrigation development. It should provide a secure legal environment for farmers and other private stakeholders to participate and invest in irrigation development. Legal status of the IA, land tenure and water right, as well as ownership of and responsibility for irrigation facilities should be clearly defined for irrigation development through the new legal framework.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Report on Recommendation	<p>The proposed contents of the report is as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction: Project Purpose and the Background 2. A Review of the Existing Legal Framework for the IA and Irrigation Development <ol style="list-style-type: none"> 2.1 Cooperative Societies Act 2.2 Societies Ordinance 2.3 Others 3. Diagnosis of the existing IAs in the country

	<ul style="list-style-type: none"> 3.1 Overall Review 3.2 Unregistered IA 3.3 Registered IA as cooperative 3.4 Registered IA as association 3.5 Other types of IA 3.6 Problems to be tackled 4. Analysis of the IAs' roles and liability for irrigation development <ul style="list-style-type: none"> 4.1 Overview of Roles and Liability 4.2 Registration 4.3 Organizational Structure 4.4 Membership 4.5 Water right, Water charge, Land tenure 4.6 Ownership of the Facilities 4.7 Bylaw and Regulations 4.8 Operation and Maintenance of the Facilities 4.9 Management of Organization 4.10 Dissolution 4.11 Others 5. Recommendation for a New Legal Framework for the IA 6. Implementation Plan for a New Legal Framework <ul style="list-style-type: none"> 6.1 Phasing of Necessary Actions for a New Legal Framework 6.2 Implementation Schedule 6.3 Cost estimation 6.4 Monitoring and Follow-up Mechanism of the Implementation Plan
(7) Required Cost	US\$ 525 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for the study and one year for implementation of the Programme (July 2004 - June 2006)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	A good coordination of the relevant ministries is crucial to the success of the study, such as PO-RALG, the Ministry of Cooperatives and Marketing, Ministry of Home affairs, Ministry of Water and Livestock Development, and so forth.
(11) Special Arrangements	The Preparation of Legal Framework for the Development of Irrigation in Tanzania under the Agricultural Sector Programme Support (ASPS) – Irrigation Component has been implemented. The result of the study should be utilized for this programme A3.1.

4. A3.2: IA Organizing and Registration Support Manual

(1) Project Proposal

(1) Title of Programme	IA Organizing and Registration Support Manual (Code No. A3.2)
(2) Location	Mainland
(3) Objectives	<p>For the time being, registration of IA as cooperative or association should be promoted, until the new legal framework has been established.</p> <p>A registered IA is essentially much preferable to non-registered one even in the present situation, because a legal status as cooperative or association may bestow social credibility to the IA filled with the prerequisites for the registration and may make the management of IA more smoothly and easy for the farmers.</p> <p>Registration of IA can be regarded as the necessary initial step toward the self-reliant irrigation development.</p> <p>The main objective of the programme is to make a support manual for organizing and registration of IA, so that the extension service officers of the LGAs can provide the farmers with necessary information on organizing and registration of IA and guide them properly. The programme also includes a training programme of the extension service officers.</p>
(4) Programme Description	<p>The local governments need to provide the farmers with sufficient information on the application procedures, the differences between cooperative and association and other necessary relevant issues, such as standard organization chart for IA, model bylaws and regulations and etc., so that the farmers can properly select an appropriate organizational form from cooperative and association based on their needs. Therefore, the central government, namely DITS, needs to prepare the standard guidelines and manual for the Local Governments to encourage the farmers to properly organize and to register the IA without biased intervention of the government officials.</p> <p>The programme consists of the following two parts:</p> <ul style="list-style-type: none"> - To prepare a support manual for the LGA extension service officers - To train the LGA extension service officers <p>The preparation of the manual includes the following activities:</p> <ul style="list-style-type: none"> - To review the existing organizing and registration procedure of the IA - To create the support manual of organizing and registration of the IA under the present legal framework. <p>Training of the LGA extension service officers includes the following activities:</p> <ul style="list-style-type: none"> - To hold seminars for explanation of the support manual to the LGAs' staffs and other stakeholders. - To train staffs of governmental offices concerned with the procedures of organizing and registration of the IA.
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Manual	<p>The proposed contents of the Manual are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction: Project Purpose and Background 2. A Review of the Existing Organizing and Registration Procedure of the IA <ol style="list-style-type: none"> 2.1 Cooperative Societies Act 2.2 Societies Ordinance 2.3 Others 3. Overview of the IAs' roles and liabilities for irrigation development <ol style="list-style-type: none"> 3.1 Overview of Roles and Liabilities

	<p>3.2 Registration</p> <p>3.3 Organizational Structure – Executive Committee, Sub Committee, Field Canal Subgroup</p> <p>3.4 Membership</p> <p>3.5 Water right, Water charge, Land tenure</p> <p>3.6 Ownership of the Facilities</p> <p>3.7 Bylaw and Regulations – Necessity of Compulsory Participation of Irrigators</p> <p>3.8 Operation and Maintenance of the Facilities</p> <p>3.9 Management of Organization</p> <p>3.10 Dissolution</p> <p>3.11 Others</p> <p>4. Differences between Cooperative and Association</p> <p>5. Standard Procedure of Organizing the IA</p> <p>6. Standard Procedure of Registration</p> <p>6.1 Cooperative</p> <p>6.2 Association</p> <p>6.3 Others</p> <p>7. Movement of a New Legal Framework for the IA</p>
(7) Required Cost	US\$ 780 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for preparation of the manual and one year for training the extension officers (January 2005 - December 2006)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>The manual should be applied to the all concerned IAs without biased intervention of the government officials, such as district cooperative officer. The LGA staffs must be neutral to the farmers' selection of their appropriate legal entity. Unnecessary intervention is surely harmful to promoting the farmers' ownership for irrigation development.</p> <p>Also, efforts are required to popularize the manual especially LGAs' staff concerned with irrigation development.</p>
(11) Special Arrangements	The manual must be modified after the enactment of the new legal framework. Besides, the programmes A3.2 and A3.3 can share and utilize the study results together. Therefore, unnecessary overlap of the study should be removed.

5. A3.3: IA Management Training for Farmers

(1) Project Proposal

(1) Title of Programme	IA Management Training for Farmers (Code No. A3.3)
(2) Location	Mainland
(3) Objectives	<p>Judging from the RRA done by the NIMP study team, the management of existing IAs should be improved. The following problems have been identified:</p> <ul style="list-style-type: none"> - Poor participation of members in the IA activities such as operation and maintenance activities of irrigation facilities, meeting and etc. - Lack of leadership of the IA executive committee and necessity of leadership training - Poor awareness of the IA's importance and roles by farmers for self-reliant irrigation development and necessity of enlightenment of farmers for better understanding of the IA - Insufficient financial management ability <p>The objectives are to prepare a training programme for the IA management and to provide IA leaders with the training services, so that they can improve their management skills and manage their organizations successfully for realization of the sustainable self-reliant irrigation development.</p>
(4) Programme Description	<p>The programme focuses on issues concerning management of the IA. Technical issues concerning operation and maintenance are dealt with in the other programme (C6).</p> <p>The programme consists of the following items:</p> <ul style="list-style-type: none"> - To review the present performance of IA management and the problems. - To confirm the roles and functions of the IA for irrigation development. - To identify necessary items for the training programme. - To prepare model bylaw and regulations of the IA, which defines the compulsory participation of the members and other necessary items. - To prepare the training manual and programme for the IA management for IA leaders. - To design an organizational setup for implementation of the training program. - To provide IA leaders with the training services through the setup
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Training Programme	<p>The proposed contents of the training for the IA leaders are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ul style="list-style-type: none"> (a) Overview of Roles and Liabilities of the IA (b) Registration (c) Organizational Structure (Executive Committee, Sub-Committee, Field Canal Group) (d) Bylaw and Regulations <ul style="list-style-type: none"> - Necessity of Compulsory Participation of Irrigators (e) Selection of Leaders (Chairperson, Secretary, Treasurer) (f) Membership (g) Water right, Water charge, Land tenure (h) Operation of General Meeting and Other Meetings (i) Financial Management (Registration Fee, Membership Fee, Budget (j) Plan, Financial Report, Bank Account, Audit, and etc.)

	(k) Dissolution (l) Enlightenment of Members' Active Participation in the IA Activities (m) Leadership Training (n) Others
(7) Required Cost	US\$ 765 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for preparation of the manual and the program and one year and a half for training the IA leaders (January 2005 - June 2007)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	Good cooperation of DITS and the LGAs (DALDOs) is a necessary condition for successful implementation of the programme. DITS is mainly responsible for preparing the manual and the training programme. The LGAs are mainly responsible for implementing the training programme for the IA leaders.
(11) Special Arrangements	The programmes A3.2 and A3.3 can share and utilize the study results together. Therefore, unnecessary overlap of the study should be removed.

6. B1: Regularization of Irrigation Administration and DITS Working Mandate Formulation Programme

(1) Project Proposal

(1) Title of Programme	Regularization of Irrigation Administration and DITS Working Mandate Formulation Programme (Code No.:B1)																						
(2) Location	Mainland and Zanzibar																						
(3) Objectives	<p>The programme aims to regularize irrigation administration of Tanzania, and to standardize the mandate of DITS in accordance with the irrigation regulations. The DITS's mandate should clarify scheme selection procedures and scheme implementation processes in collaboration with LGAs.</p> <p>Through properly executing the programme, DITS will properly initiate works in the new governing of irrigation development. It is expected to attain the overall objectives of NIMP.</p>																						
(4) Programme Description	<p>Circumstances of irrigation administration have drastically changed in Tanzania. Progress of the agricultural sector development represented by ASDP is a most influential movement in the irrigation sector. Corresponding to such movement, decentralization and privatization have been brought into irrigation administration. The GOT has promoted the competent authorities of irrigation administration from the Irrigation Section (IS) to the DITS following a recommendation made in the Master Plan. In accordance with the promotion of the former IS, the new position of the irrigation authority as the DITS, has to be clarified immediately.</p> <p>The ASDP is underpinned by national policies which are strongly supporting, in particular, the decentralization of many public sector responsibilities to LGAs. Irrigation administration is positioned in the turmoil of the decentralization. New formation of the irrigation administration with the collaboration of the LGAs needs to be established. Fulfillment of this programme is to answer those urgent needs.</p>																						
(5) PDM for the Programme	See the attached PDM.																						
(6) Contents of Programme	<p>The proposed contents of the Programme are as follows:</p> <table border="1" data-bbox="576 1397 1447 1982"> <thead> <tr> <th data-bbox="576 1397 815 1451">Activities</th> <th data-bbox="815 1397 979 1451">Procurement</th> <th data-bbox="979 1397 1259 1451">Providing of manpower and training</th> <th data-bbox="1259 1397 1447 1451">Remarks</th> </tr> </thead> <tbody> <tr> <td data-bbox="576 1451 815 1585">To review previous laws and rules concerning to the irrigation administration.</td> <td data-bbox="815 1451 979 1585">Not specified</td> <td data-bbox="979 1451 1259 1585">- Consultants having required ability and faculty</td> <td data-bbox="1259 1451 1447 1585"></td> </tr> <tr> <td data-bbox="576 1585 815 1693">To prepare a draft of regulations of irrigation administration.</td> <td data-bbox="815 1585 979 1693">Not specified</td> <td data-bbox="979 1585 1259 1693">- Consultants having required ability and faculty</td> <td data-bbox="1259 1585 1447 1693"></td> </tr> <tr> <td data-bbox="576 1693 815 1881">To adjust inconsistencies of the draft of the regulations with other related regulations and irrigation development policy.</td> <td data-bbox="815 1693 979 1881">Not specified</td> <td data-bbox="979 1693 1259 1881">- Consultants having required ability and faculty</td> <td data-bbox="1259 1693 1447 1881">Certain committee collaborating other concerned authorities should be organized.</td> </tr> <tr> <td data-bbox="576 1881 815 1982">To finalize the draft of regulations of irrigation administration.</td> <td data-bbox="815 1881 979 1982">Not specified</td> <td data-bbox="979 1881 1259 1982">- Consultants having required ability and faculty</td> <td data-bbox="1259 1881 1447 1982"></td> </tr> </tbody> </table>			Activities	Procurement	Providing of manpower and training	Remarks	To review previous laws and rules concerning to the irrigation administration.	Not specified	- Consultants having required ability and faculty		To prepare a draft of regulations of irrigation administration.	Not specified	- Consultants having required ability and faculty		To adjust inconsistencies of the draft of the regulations with other related regulations and irrigation development policy.	Not specified	- Consultants having required ability and faculty	Certain committee collaborating other concerned authorities should be organized.	To finalize the draft of regulations of irrigation administration.	Not specified	- Consultants having required ability and faculty	
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To finalize the draft of regulations of irrigation administration.	Not specified	- Consultants having required ability and faculty																					

	To review the previous missions for the DITS.	Not specified	- Consultants having required ability and faculty	
	To prepare a plan for the new mission statement of DITS.	Not specified	- Consultants having required ability and faculty	Link to the Subject-wise programme A1
	To finalize the plan of mission	Not specified	- Consultants having required ability and faculty	
	To study demands to be included into the new duties standard of DITS.	Not specified	- Consultants having required ability and faculty	
	To review previous duties of DITS.	Not specified	- Consultants having required ability and faculty	
	To finalize a plan of task duty standards of DITS.	Not specified	- Consultants having required ability and faculty	
	To conceptualize official procedures of schemes selection and implementation.	Not specified	- Consultants having required ability and faculty	
	To formalize each process of the scheme implementation in consideration of the finalized feature of DITS and other related organizations and regulations.	Not specified	- Consultants having required ability and faculty	
	To prepare written rule on the formalities on scheme implementation.	Not specified	- Consultants having required ability and faculty	
(7) Required Cost	US\$ 540 thousand			
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	At this moment special attention should be given to farmer-managed small-scale irrigation schemes. Those small-scale irrigation schemes are intended to be managed on the basis of farmers' participation and initiatives. LGAs are expected to play an important role in promotion of the small-scale irrigation developments. Irrigation administration of DITS of MAFS, is essential for irrigation development, but has undergone a complete change in consideration of the decentralization. All personnel concerned in irrigation administration should recognize such needs and embody ideal management of irrigation development in their duties.			
(11) Special Arrangements	A Subject-wise Development Programme for institutional improvement of government authorities concerning irrigation development is proposed in Programme A1 together with implementation of this programme. Both programmes have close connections with each other. The two programmes should be implemented together.			

1-3 Adjust inconsistencies of the draft of the regulations with other related regulations and irrigation development policy.	Subject specialist for the subject of task duties (as required)	Equipment 1) Office 2) Others	L.S. L.S.	Preconditions It is clearly confirmed the needs of establishment of certain task duties standard of DITS is recognized in MAFS. MASF can provide necessary resources to DITS so that DITS works as required in new mission statement.
1-4 Finalize the draft of regulations of irrigation administration.	Equipment 1) Computer system 2) Office equipment 3) Others	L.S. L.S. L.S.	Budget 1) Salaries and necessary expenses for counterparts 2) Necessary expenditures in internal investigations.	
2-1 Review previous mission for the DITS.	Budget Some part of expenditures in local activities related to the Project.			
2-2 Prepare a plan of new mission statement of DITS.				
2-3 Finalize the plan of mission statement of DITS.				
3-1 Study demands to be included into the new duties standard of DITS.				
3-2 Review previous duties of DITS.				
3-3 Finalize a plan of task duties standard of DITS.				
4-1 Conceptualize official procedures of schemes selection and implementation.				
4-2 Formalize each process of the scheme implementation in consideration with the finalized feature of DITS and other related organizations and regulations.				
4-3 Prepare a written rule on the formalities on scheme implementation.				

7. B2: Contract Management System Improvement Programme

(1) Project Proposal

(1) Title of Programme	Contract Management System Improvement Programme (Code No.:B2)			
(2) Location	Mainland and Zanzibar			
(3) Objectives	<p>This programme aims to establish or improve the management system for contracts, which covers contract works and sub-contract tasks on irrigation development.</p> <p>Fulfillment of improvement of the contract management system would ultimately further improve the private sector through stimulating contractors' motivation for business.</p> <p>Through effective utilization of established contract management systems for irrigation development, it is expected to attain the overall objectives of NIMP.</p>			
(4) Programme Description	<p>Outsourcing and entrusting public tasks to the private sector has been encouraged in terms of privatization in Tanzania, especially in the agriculture sector of the country. LGAs as well as central government become important players in contract order and management. Privatization and decentralization are important trends in irrigation development in Tanzania. Current contract management systems for irrigation development in the MAFS are still of the old order, and applicable for specified contract tasks. The contract management system particularly relating to farmer-managed irrigation scheme implementation needs to be improved so as to meet the recent trend of outsourcing.</p> <p>The programme consists of three major significant tasks. The first important task is to review the present contract system and to identify shortcomings and insufficiencies of the old system. The second imperative task is to design new modalities for the contract system, which meet the actual demands of the contracts. The third important task is to build up certain management system operations, maintaining and updating the established contract modalities, so that they can be maintained appropriately. The programme should fulfill these important tasks successfully through assigning staffs, pursuing specified activities, testing and other required activities.</p>			
(5) PDM for the Programme	See the attached PDM.			
(6) Contents of Programme	The proposed contents of the Programme are as follows:			
	Activities	Procurement	Providing of manpower and training	Remarks
	To review the existing contract system	Not specified	- Consultants on contract works	
	To plan proper contract procedures for irrigation scheme implementation not only for the central government but also LGAs.	Not specified	- Consultants on contract works	
To prepare necessary documents on the new contract methods	Not specified	- Consultants on contract works		

	To arrange the circumstances of governmental offices concerning to contract management so as to introduce the new contract system.	Facilities of office for contract management	- Consultants on contract works	Executing Programme D4 in Parallel
	To train staffs of governmental offices concerned the procedures of the new contract methods.	Not specified	- Consultants on contract works - Training specialist	
	To prepare an explanatory paper on the new contract methods.	Not specified	- Consultants on contract works	
	To deliver the explanatory paper on the new contract methods to contractors.	Not specified	- Concerned governmental staff	
	To hold several seminars for explanation of applying the new contract methods to contractors in several times. (To start periodical seminars holding)	Not specified	- Concerned governmental staff - Permanent trainer	
(7) Required Cost	US\$ 420 thousand			
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2005 – June 2006)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>The need for improvement of the contract system is very high in Tanzania. Once the contract system is established for small irrigation scheme implementation, the contract system could not always direct other irrigation scheme developments. The contract system should be designed assuming various conditions and situations focusable in the whole of Tanzania.</p> <p>In implementation of small-scaled irrigation schemes, farmer's participation is possibly involved. Consideration for good coordination between contract tasks and participants should be given properly.</p> <p>Also, efforts are required to popularize the outcomes of the programme, especially for LGAs' local staffs concerned with irrigation development.</p>			
(11) Special Arrangements	<p>Farmers contributions in the physical works of the irrigation scheme are still in the mid course of arguments, as to when and how farmers participating are to be managed, although a special study was executed in this Action Plan. And it is also unclear what is the relation between such farmers contribution and the contract works. Before discussing methods of contract, clear allotment of works in scheme implementation for the contractors should be studied in detail.</p> <p>The contract system and its developed modalities in outsourcing are prepared for the situation of the Mainland. However, it is useful even in Zanzibar. The outputs should be contrived to be convenient for both users in the Mainland and Zanzibar.</p>			

Activities	Inputs		
1-1 Review of existing contract system	Donor	GOT	All necessary arrangement for introduction of the new contract system will be fulfilled on schedule by any reliable parties concerned.
1-2 Plan proper contract procedures for irrigation scheme implementation for not only central government but also LGAs.	Study Team 1) Contract specialist 10 months 2) Legal specialist 6 months 3) Documentation 6 months 4) Construction 6 months 5) Institution 3 months	Personnel 1) Counterparts in each subject Equipment 1) Office L.S. 2) Others L.S.	
1-3 Prepare necessary documents on new contract method	Equipment 1) Vehicles L.S. 2) Office equipment L.S. 3) Others L.S.	Budget 1) Salaries and necessary expenses for counterparts 2) Allowances and expenses of governmental staff training 3) Some portion of the budget for establishment of new contract system	Preconditions A contract system exist for irrigation scheme implementation. An association of the contractors exists and functioning substantially. It is clearly confirmed the needs of improvement previous contract system for irrigation scheme implementation by central government, local government agencies and contractors.
2-1 Arrange circumstance of governmental offices concerning to contract so as to introduce the new contract system.	Budget Some part of expenditures in local activities related to the Project.		
2-2 Train staffs of governmental offices concerned the procedures of new contract method.			
3-1 Prepare an explanatory paper on the new contract method.			
3-2 Deliver the explanatory paper on the new contract method to contractors.			
3-3 Hold seminars for explanation of applying new contract method to contractors in several times.			

8. C1: Survey and Investigation Guideline Establishment Programme

(1) Project Proposal

(1) Title of Programme	Survey and Investigation Guideline Establishment Programme (Code No.:C1)
(2) Location	Mainland and Zanzibar
(3) Objectives	This programme aims to establish practical Survey and Investigation Guidelines which are convenient for conducting necessary site survey and investigation for the sake of fulfilling high-quality planning and designing of new irrigation schemes and rehabilitation irrigation schemes. One copy of the established Survey and Investigation Guidelines should be kept by each District Office and Agency related to irrigation development, to provide them with adequate instruction of the required survey and investigation and those operations. Besides, it could provide the improvement of the planning capability of relevant staff in irrigation development. Through the establishment of the guidelines, it is expected to attain the overall objectives of NIMP.
(4) Programme Description	<p>In irrigation development, planning and designing are generally fundamental factors for successful projects. Planning and designing should be based upon reliable information and data, which are collected through proper surveys and investigations. There are many projects which failed due to lack of important information and data. Preparation of necessary information and data for the project site is an urgent requirement. In order to reinforce planning skills by preparing necessary information and data, preparation and full utilization of a proper survey and investigation guidelines are essential.</p> <p>In Tanzania, irrigation development should be promoted in various manners corresponding to the variations of scheme sites. Sometimes it might be implemented by LGAs' staffs. Pursuing of optimum irrigation development for each target area with its own constraints and locality, requires an overall guideline of survey and investigation for irrigation development, in which proper alternatives could be also provided in the case of LGA initiative schemes.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Guidelines	<p>The proposed contents of the Guidelines are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction 2. Topography <ol style="list-style-type: none"> 2.1 Topo-map and topo-equipment 2.2 Topographic survey <ol style="list-style-type: none"> 2.2.1 Plain survey 2.2.2 River and route survey 2.2.3 Profile leveling survey 2.2.4 Specified survey 2.3 GIS mapping <ol style="list-style-type: none"> 2.3.1 GIS instrument 2.3.2 GIS system and softwear 2.3.3 GIS data 3. Geology <ol style="list-style-type: none"> 3.1 Geologic survey 3.2 Boring and soundings 3.3 Physical prospecting 3.4 Geophysical analysis

	<ul style="list-style-type: none"> 3.5 Survey for erosion and land slide 4. Soil and Land <ul style="list-style-type: none"> 4.1 Needs for soil and land suitability studies 4.2 Exploratory surveys 4.3 Reconnaissance surveys 4.4 Semi-detailed surveys 4.5 Soil sampling 4.6 Field laboratories 4.7 Classification and soil mapping 4.8 Land evaluation 4.9 Present land use surveys 5. Water resources <ul style="list-style-type: none"> 5.1 River water <ul style="list-style-type: none"> 5.1.1 River system and morphology 5.1.2 River discharge 5.1.3 Sediment transportation 5.1.4 River water quantity and living in the water 5.1.5 Aquatic environment 5.1.6 Water abstraction, swage and water navigation 5.1.7 Discharge measurement 5.2 Ground water <ul style="list-style-type: none"> 5.2.1 Aquifers and water yield 5.2.2 Boring and physical prospecting 5.2.3 Uplifting tests 5.2.4 Studies for uplifting affects against present boreholes 5.2.5 Groundwater quality 5.3 Lakes <ul style="list-style-type: none"> 5.3.1 Water availability studies 5.3.2 Lake water uses 5.3.3 Water contamination and water quality 5.4 Other water sources 5.5 Water quality tests 5.6 Surveys for water uses 5.7 Water rights <ul style="list-style-type: none"> 5.7.1 Registration on water uses 5.7.2 Acquisitive procedures of water rights 5.7.3 Maintaining and updating of obtained water rights 5.8 Drainage 6. Socio-economy <ul style="list-style-type: none"> 6.1 Demography 6.2 Sociology 6.3 Rural economy 6.4 Rural appraisal 6.5 Marketing 6.6 RRA and other rural society surveys 6.7 PRA 7. Environment <ul style="list-style-type: none"> 7.1 Environmental hazards in irrigated agriculture 7.2 Regulations on environmental safeguards 7.3 IEE 7.4 EIA 7.5 Countermeasures for environmental problems 8. Execution of field investigations and surveys <ul style="list-style-type: none"> 8.1 Executing organizations 8.2 Operation and services 8.3 Executing costs 8.4 Reporting of field investigations and surveys 8.5 Evaluation of the results 9. Additional Information and Data for Irrigation Planning
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ANNEX

(7) Required Cost	US\$ 450 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	After preparation of these survey and investigation guidelines, it is proposed that they be applied to all concerned irrigation projects/programs with attentive training, and updating the guidelines periodically. Also, efforts are required to popularize the general guidelines, especially for LGAs' local staffs concerned with irrigation development.
(11) Special Arrangements	The survey and investigation guidelines for irrigation development are prepared for irrigation planning in collaboration with the Mainland and Zanzibar. The guidelines should be contrived to be convenient for both users in the Mainland and Zanzibar.

<p>2. Prepare the S&I Guideline reflecting identified requirement for the guideline.</p> <p>3-1 Plan a management and utilizing system of the guideline..</p> <p>3-2 Prepare the handling manual in line with the management plan..</p> <p>4-1 Hold workshops in several times on the topic of the S&I Guideline and its utilization for the purpose of training of concerned personnel.</p> <p>4-2 Transport copies of the S&I Guideline to the agencies designated in the management plan.</p>	<p>7) Land use, GIS 3 months 8) Agronomy 3 months 9) Environment 3 months</p> <p>Equipment (if necessary)</p> <p>1) Vehicles L.S. 2) GIS L.S. 3) Survey equipment L.S. 4) Others L.S.</p> <p>Budget Some part of expenditures in local activities related to the Project.</p>	<p>Budget</p> <p>1) Salaries and necessary expenses for counterparts 2) Some portion of the budget for publication of the Guideline 3) Necessary expenditures in operation of the system</p>	<p>Preconditions</p> <p>It is clearly confirmed the needs of preparation of the S&I Guideline is recognized in local government agencies and private groups.</p>
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9. C2.1: Planning Guideline Establishment Programme

(1) Project Proposal

(1) Title of Programme	Planning Guideline Establishment Programme (Code No.:C2.1)
(2) Location	Mainland and Zanzibar
(3) Objectives	This programme aims to establish a set of comprehensive and practical Planning Guidelines that are convenient for planning of both new irrigation schemes and rehabilitation irrigation schemes. One set of the Planning Guidelines should be distributed to and kept by each District Office related to irrigation development, to implant district staff with a unified understanding on planning of irrigation developments. The establishment of the guidelines, is expected to attain the overall objectives of NIMP.
(4) Programme Description	<p>In irrigation development, a planning is the fundamental activity controlling the fate of the project. There find many irrigation projects which failed due to improper planning. Strengthening of skills in irrigation planning is an urgent need and establishment and full utilization of a proper set of planning guidelines is essential accordingly.</p> <p>In Tanzania, irrigation development should be promoted in various manners corresponding to the variations of the project sites. And from now on, irrigation development should be implemented by LGAs' staffs under the decentralization policy. Optimum irrigation development for each target area having its own constraints and locality, requires an overall irrigation planning guideline, in which proper alternatives could be provided for all schemes including LGA initiative schemes. For the preparation of planning guidelines, it is required to consider conceptual soundness and logical correctness as well as technical reliability.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Guidelines	<p>The proposed contents of the Guidelines are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction 2. Irrigation Purpose <ol style="list-style-type: none"> 2.1 Benefit of Irrigation 2.2 Advantages and Disadvantages of Irrigation 2.3 Risks for Irrigation Practice 3. Irrigation Area <ol style="list-style-type: none"> 3.1 Land Potential 3.2 Climate 3.3 Farmers Potential 3.4 Social Capital related to Irrigation 4. Irrigated Agriculture <ol style="list-style-type: none"> 4.1 Applicable Crops for Irrigation 4.2 Cultivation in Irrigated Agriculture 4.3 Post-harvesting 4.4 Marketing 4.5 Other Related Issues 5. Crop Water Requirements <ol style="list-style-type: none"> 5.1 Estimation Procedure of Crop Water Requirement 5.2 Water Requirement for Land Preparation and Sowing 5.3 Estimation of Reference Evapo-transpiration (ET_o) <ol style="list-style-type: none"> 5.3.1 Estimation Method of Reference Evapo-transpiration 5.3.2 Necessary data and Information 5.3.3 Practical Calculation of ET_o

	<ul style="list-style-type: none"> 5.4 Other Additional Water Requirement 6. Water Resources <ul style="list-style-type: none"> 6.1 Variation of Water Sources for Irrigation 6.2 Characteristics by water Sources 6.3 Water Resources Development for Irrigation 6.4 Legislation System of Water Use 6.5 Obtaining and Maintaining of Water Rights for Irrigation 7. Irrigation Methods and Irrigation Systems <ul style="list-style-type: none"> 7.1 Introduction on Irrigation Type 7.2 Irrigation Methods <ul style="list-style-type: none"> 7.2.1 Surface Gravity Method 7.2.2 Sub-surface Method 7.2.3 Splay and Drip Method 7.2.4 Other Methods 7.3 Irrigation Categories <ul style="list-style-type: none"> 7.3.1 Canal Irrigation 7.3.2 Pump Irrigation 7.3.3 Water Harvesting 7.3.4 Watering 7.4 Classification of Irrigation Scheme <ul style="list-style-type: none"> 7.4.1 Traditional Irrigation Scheme 7.4.2 Water harvesting Scheme 7.4.3 Modern Irrigation Scheme 7.4.4 Improved Traditional Irrigation Scheme 7.5 Irrigation System <ul style="list-style-type: none"> 7.5.1 Intake Structures 7.5.2 Canal System 7.5.3 On-Farm Facilities 7.5.4 Dam and Reservoir 7.5.5 Pump System 7.5.6 Others 8. Irrigation Development Levels <ul style="list-style-type: none"> 8.1 Definition of Irrigation Development Levels 8.2 Classification of Irrigation 8.3 Indicators of Irrigation Development Levels 8.4 General Features of the Indicators 8.5 References for Adoption of the Indicators 8.6 Additional Remarks 9. Project Evaluation <ul style="list-style-type: none"> 9.1 Technical Appropriation 9.2 Economical Soundness 9.3 Financial Dependability 9.4 Social Sustainability 9.5 Environmental Harmoniousness 10. Operation and Maintenance of Irrigation Systems <ul style="list-style-type: none"> 10.1 Importance of O&M 10.2 Necessary Activities for O&M 10.3 Irrigators Association (IA) 10.4 Establishment and Maintaining of IA 10.5 Relating Organizations 10.6 Arbitration of Conflicts within IA and with Outsiders 11. Participation in Irrigation <ul style="list-style-type: none"> 11.1 Target 11.2 Method 11.3 Relating Partners 11.4 Monitoring and Support 11.5 Related Issues 12. Project Cycle Management <ul style="list-style-type: none"> 12.1 Concept 12.2 Method
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	12.3 Execution 12.4 Monitoring and Evaluation 13. Considerations in the Environment 13.1 Environmental Issues 13.2 Environmental Impacts caused by Irrigation 13.3 Mitigating Measures 13.4 Necessary Considerations 14. River-basin Management in Irrigation 14.1 Concept 14.2 Establishment of Management Organization of Irrigators 14.3 Activities of River-basin Management in Irrigation 14.4 Negotiation with River-basin Offices 14.5 Protecting Measures of Existing Irrigation Water Use 15. Additional Information and Data for Irrigation Planning ANNEX
(7) Required Cost	US\$ 680 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	Programmes aim to prepare their own criteria and guidelines. The planning guidelines should be applied to all concerned irrigation projects/programmes. Thereby, discord in the contents between these general guidelines and the individual guidelines belonging to the specified project should be excluded. Also, efforts are required to popularize the general guidelines especially to LGAs' staff concerned with irrigation development.
(11) Special Arrangements	The planning guidelines for irrigation development are prepared for irrigation planning in collaboration with the Mainland and Zanzibar. The guidelines should be contrived to be convenient for both users in Mainland and Zanzibar.

Activities	Inputs		
<p>1-1 Study previous failures in planning and designing due to lack of necessary technology in planning.</p> <p>1-2 Study requirement for planning and decision making for irrigation development.</p> <p>2 Prepare the Planning Guideline reflecting identified requirement for the guideline.</p> <p>3-1 Plan a management and utilizing system of the guideline..</p> <p>3-2 Prepare the handling manual in line with the management plan.</p> <p>4-1 Hold workshops in several times on the topic of the Planning Guideline and its utilization for the purpose of training of concerned personnel.</p> <p>4-2 Transport copies of the Planning Guideline to the agencies designated in the management plan.</p>	<p>Donor</p> <p>Preparation Team</p> <p>1) Planning 6 months</p> <p>2) Irrigation 6 months</p> <p>3) Meteo-hydrology 6 months</p> <p>4) River/Watershed 6 months</p> <p>4) Topo-survey 3 months</p> <p>5) Hydraulics 6 months</p> <p>6) Geology 3 months</p> <p>7) Land use, GIS 6 months</p> <p>8) Agronomy 6 months</p> <p>9) Environment 3 months</p> <p>10)Participation 6 months</p> <p>Equipment</p> <p>1) Vehicles L.S.</p> <p>2) GIS L.S.</p> <p>3) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>GOT</p> <p>Personnel</p> <p>1) Counterparts in each subject</p> <p>Equipment</p> <p>1) Office L.S.</p> <p>2) Others L.S.</p> <p>Budget</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for publication of the Guideline</p> <p>3) Necessary expenditures in operation of the system</p>	<p>All necessary arrangement for the stationing of the management system of the guideline will be fulfilled on schedule by any reliable parties concerned.</p> <hr/> <p>Preconditions</p> <p>It is clearly confirmed the needs of preparation of the Planning Guideline is recognized in local government agencies and private groups.</p>

10. C2.2: Designing Guideline Establishment Programme

(1) Project Proposal

(1) Title of Programme	Designing Guideline Establishment Programme (Code No.:C2.2)
(2) Location	Mainland and Zanzibar
(3) Objectives	This programme aims to establish practical Design Guidelines which are convenient for creating designs appropriate to the site conditions for new irrigation schemes and rehabilitation irrigation schemes. One set of the Design Guidelines should be distributed to and kept by each District Office related irrigation development, to provide them with adequate instructions on how to make successful designs. Besides, it could provide the improvement of design capability of relevant staff in irrigation development. Through the establishment of the guidelines, it is expected to attain the overall objectives of NIMP.
(4) Programme Description	<p>In irrigation development, designing as well as planning are the fundamental activities controlling the fate of projects. There are many projects that were executed with great difficulty or sometimes failed due to low skills in designing. Proper designing to meet the actual conditions of the project site is an urgent requirement for successful irrigation development. In order to reinforce designing skills, preparation and full utilization of proper design guidelines is essential.</p> <p>In Tanzania, irrigation development should be promoted in various manners corresponding to the variations of project sites. From now, it might be mostly implemented by LGAs' staffs. To pursue optimum irrigation development for each target area that has its own constraints and locality, requires overall irrigation design guidelines, in which proper alternatives in designing could also be provided in the case of LGA initiative schemes. For the preparation of Design Guidelines, conceptual soundness and logical correctness are to be held in addition to technical reliability.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Guidelines	<p>The proposed contents of the Guidelines are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction 2. Irrigation systems <ol style="list-style-type: none"> 2.1 Water source systems 2.2 Irrigation system layout <ol style="list-style-type: none"> 2.2.1 Main canal 2.2.2 Secondary canal 2.2.3 Tertiary canal 2.2.4 Distribution canal 2.3 On-farm facilities and equipment <ol style="list-style-type: none"> 2.3.1 Gravity surface irrigation 2.3.2 Pressured irrigation 2.4 Drainage systems <ol style="list-style-type: none"> 2.4.1 Drainage system layout 2.4.2 Drainage canal for surface drainage system 2.4.3 Sub-surface drainage 2.4.4 Pump drainage

	<ul style="list-style-type: none"> 3. Canal structures <ul style="list-style-type: none"> 3.1 Irrigation channels <ul style="list-style-type: none"> 3.1.1 Canal cross-section 3.1.2 Hydraulic design 3.1.3 Sectional properties of canal section 3.1.4 Bed gradient and longitudinal profile 3.1.5 Canal alignment 3.2 Canal lining <ul style="list-style-type: none"> 3.2.1 Selection of type of lining 3.2.2 Cast in situ concrete lining 3.2.3 Precast concrete tile lining 3.2.4 Lining in expansive soils 3.3 Conveyance structures <ul style="list-style-type: none"> 3.3.1 Inverted canal siphons 3.3.2 Elevated flumes 3.3.3 Road crossings 3.3.4 Drops/chutes 3.4 Protective structures <ul style="list-style-type: none"> 3.4.1 Culverts 3.4.2 Overchutes 3.4.3 Drain inlets 3.4.4 Wasteways 3.5 Regulating structures <ul style="list-style-type: none"> 3.5.1 Head regulators 3.5.2 Checks 3.5.3 Silt control devices 3.6 Water measurement structures <ul style="list-style-type: none"> 3.6.1 Parshall flumes 3.6.2 Constant head orifice 3.7 Other related structures 4. Diversion weirs <ul style="list-style-type: none"> 4.1 Type of weirs and layout of a diversion weir 4.2 Hydraulic design <ul style="list-style-type: none"> 4.2.1 Hydraulic jump 4.2.2 Design against seepage 4.2.3 Hydraulic design of other weirs portion 4.3 Design of weir structures 4.4 Gate structures 4.5 Other related structures 5. Dams and Reservoirs <ul style="list-style-type: none"> 5.1 Dam types and its layouts 5.2 Gravity dams <ul style="list-style-type: none"> 5.2.1 Cross-section of dam body 5.2.2 Related structures 5.2.3 Reservoir protection 5.3 Fill dams <ul style="list-style-type: none"> 5.3.1 Embanking materials 5.3.2 Cross-section of dam body 5.3.3 Related structures 5.3.4 Reservoir protection 5.4 Water impounding 6. Boreholes and Wells <ul style="list-style-type: none"> 6.1 Evaluation of water demand and aquifer 6.2 Drilling methods 6.3 Design of boreholes 6.4 Power source of wells 6.5 Design of wells 6.6 Water delivery 6.7 Related equipment of boreholes and wells
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	<p>7. Pump stations</p> <p>7.1 Design of pump equipment</p> <p>7.1.1 Design of suction and delivery water level and pumping head</p> <p>7.1.2 Design pumping discharge</p> <p>7.1.3 Design of pump equipment</p> <p>7.1.4 Design of power source</p> <p>7.1.5 Design of related equipment</p> <p>7.1.6 Countermeasures against water hammer</p> <p>7.2 Design of suction and delivery basins</p> <p>7.3 Designing of pump houses</p> <p>7.4 Design of pump operation systems</p> <p>8. Farm irrigation structures</p> <p>8.1 Structures for surface irrigation methods</p> <p>8.2 Structures for sub-surface irrigation methods</p> <p>8.3 Structures for pressurized irrigation methods</p> <p>8.4 Watering devices</p> <p>8.5 Water lifting devices</p> <p>9. Drainage facilities</p> <p>9.1 Measures for reclamation of waterlogged and inundated soils</p> <p>9.2 Designs for sub-surface drainage</p> <p>9.2.1 Design of under-drain</p> <p>9.2.2 Design of drain system</p> <p>9.2.3 Design of vertical drainage</p> <p>9.3 Designs for surface drainage</p> <p>9.3.1 Design of surface drain</p> <p>9.3.2 Design of open-channel drainage</p> <p>9.3.3 Design of outlet system</p> <p>9.4 By force drainage</p> <p>10. Water harvesting</p> <p>10.1 Selection of methods for rain water harvesting</p> <p>10.2 Implicate water harvesting methods</p> <p>10.3 Explicate water harvesting methods</p> <p>10.4 Dynamic water harvesting methods</p> <p>10.5 Related information on water harvesting</p> <p>11. Land consolidation</p> <p>11.1 Design of field lots</p> <p>11.2 Design of farm roads</p> <p>11.3 Design of on-farm irrigation and drainage</p> <p>11.4 Sub-soil improvement works</p> <p>11.5 Design of land re-plotting</p> <p>12. River control and training</p> <p>12.1 River training works</p> <p>12.2 Design of river control structures</p> <p>12.3 Bank revetment works</p> <p>12.4 Sediment control works</p> <p>12.5 Temporary works</p> <p>13. Other references</p> <p>ANNEX</p>
(7) Required Cost	US\$ 620 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)

(10) Assessment of Possible Problems and Bottlenecks in Implementation	After preparation of these Design Guidelines, it is recommended that they be applied to all concerned irrigation projects/programs, thereby, discords in the contents between these general guidelines and the individual guidelines belonging to the specified projects should be excluded. Also, efforts are required to popularize the general guidelines especially to LGAs' local staffs concerned with irrigation development.
(11) Special Arrangements	The design guidelines for irrigation development are prepared for irrigation planning in collaboration with the Mainland and Zanzibar. The guidelines should be contrived to be convenient for users both in the Mainland and Zanzibar.

<p>2 Prepare the Designing Guideline reflecting identified requirement for the guideline.</p> <p>3-1 Plan a management and utilizing system of the guideline..</p> <p>3-2 Prepare the handling manual in line with the management plan..</p> <p>4-1 Hold workshops in several times on the topic of the Designing Guideline and its utilization for the purpose of training of concerned personnel.</p> <p>4-2 Transport copies of the Designing Guideline to the agencies designated in the management plan.</p>	<p>Equipment</p> <p>1) Vehicles L.S.</p> <p>2) GIS L.S.</p> <p>3) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>Preconditions</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for publication of the Guideline</p> <p>3) Necessary expenditures in operation of the system</p> <p>It is clearly confirmed the needs of preparation of the Designing Guideline is recognized in local government agencies and private groups.</p>
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11. C3.1: Operation and Maintenance (O&M) Guideline Establishment Programme

(1) Project Proposal

(1) Title of Programme	Operation and Maintenance (O&M) Guideline Establishment Programme (Code No.:C3.1)
(2) Location	Mainland and Zanzibar
(3) Objectives	This programme aims to establish practical Operation and Maintenance Guidelines which are convenient for conducting proper operation and maintenance of existing irrigation systems for sustainable achievement of effective irrigation in new irrigation schemes and rehabilitation irrigation schemes. One copy of the established Operation and Maintenance Guidelines is openly kept in each District Office and Agency related to irrigation development and also in a working place of the farmers' organization, to provide them with adequate instruction on how to conduct activities in O&M. Furthermore it improves the capability in irrigation practice of concerned members under proper maintenance. Through the preparation of the guidelines, it is expected to attain the overall objectives of NIMP.
(4) Programme Description	In irrigation practice, operation and maintenance activities affect the chances of success of schemes. There are many irrigation schemes that were ruined due to lack of adequate operation and maintenance. In order to reinforce farmers and/or farmers groups' skill in operation and maintenance of irrigation systems, preparation and full utilization of proper Operation and Maintenance Guidelines is essential. For the preparation of Operation and Maintenance Guidelines, consideration should be given to ease of application and familiarity for beneficiaries in addition to technical reliability.
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Guidelines	<p>The proposed contents of the Guidelines are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction 2. Irrigation water management <ol style="list-style-type: none"> 2.1 Irrigation practices in Tanzania 2.2 Government policy and strategies in irrigation development 2.3 Participants of irrigation <ol style="list-style-type: none"> 2.3.1 Farmers 2.3.2 LGAs 2.3.3 Central government 2.4 Water rights <ol style="list-style-type: none"> 2.4.1 Registration system of water right 2.4.2 Obtaining procedure of irrigation water right 2.4.3 Maintain of irrigation water right 2.4.4 Water right and river basin management 2.5 Role of water management <ol style="list-style-type: none"> 2.5.1 Activities in surface irrigation 2.5.2 Activities in sub-surface irrigation 2.5.3 Conjunctive use of surface and ground water 3. Water users organizations <ol style="list-style-type: none"> 3.1 Playing the role of water users organizations 3.2 Juristical system of irrigation organizations 3.3 Typical model of irrigation organizations 3.4 Formation of irrigation organizations 3.5 Performance of irrigation organizations 3.6 Monitoring of organization activities

	<p>4. Source of water</p> <p>4.1 Preservation of water sources</p> <p>4.1.1 River water</p> <p>4.1.2 Groundwater</p> <p>4.1.3 Lake water</p> <p>4.1.4 Rainwater harvesting</p> <p>4.1.5 Others</p> <p>4.2 Preservation of River Basins</p> <p>4.3 Preservation of aquifers</p> <p>5. Irrigation water delivery</p> <p>5.1 Basic soil-water plant relationships</p> <p>5.2 Crop water requirements</p> <p>5.3 Irrigation systems and water application methods</p> <p>5.4 Measurement of irrigation water</p> <p>6. Operation of irrigation facilities and structures</p> <p>6.1 Dams and reservoirs</p> <p>6.2 Intake structures</p> <p>6.3 Irrigation channels</p> <p>6.4 Water delivering structures</p> <p>6.5 Watering and water spreading facilities</p> <p>6.6 Pump facilities</p> <p>6.7 Boreholes</p> <p>6.8 Water harvesting facilities</p> <p>7. Maintenance, repair and rehabilitation of irrigation and structures</p> <p>7.1 Dams and reservoirs</p> <p>7.2 Intake structures</p> <p>7.3 Irrigation channels</p> <p>7.4 Water delivering structures</p> <p>7.5 Watering and water spreading facilities</p> <p>7.6 Pump facilities</p> <p>7.7 Boreholes</p> <p>7.8 Water harvesting facilities</p> <p>8. Drainage</p> <p>8.1 Sub-surface drainage facilities</p> <p>8.2 Drainage channels</p> <p>8.3 Others</p> <p>9. Environmental issues in irrigation systems</p> <p>9.1 Environmental hazards on river water regime</p> <p>9.2 Environmental hazards like waterlogging</p> <p>9.3 Environmental hazards on biological aspects</p> <p>9.4 Environmental hazards on human health</p> <p>9.5 Environmental hazards on natural conditions</p> <p>10. Information for urgent remedies against draught</p> <p>10.1 Characteristics of draught occurrences</p> <p>10.2 Water stress effects on crops by draught occurrences</p> <p>10.3 Remedies on agronomic aspects</p> <p>10.4 Physical remedies</p> <p>10.5 Remedies by saving water</p> <p>10.6 Monitoring of draught damages</p> <p>10.7 Evaluation of draught damages</p> <p>11. Additional Information and Data for Operation and Maintenance</p> <p>ANNEX</p> <p>1 Related information on O&M</p> <p>2 Concerned agencies and organization in irrigation</p> <p>3 Applicable existing training courses of irrigation management</p> <p>4 Laws and regulations concerning about irrigation</p>
(7) Required Cost	US\$ 820 thousand

(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2005 – June 2006)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	Since experience in adequate execution of Operation and Maintenance are superficial in Tanzania, it is hardly expected to deal with the completed guidelines with a practiced hand in the early stage. After preparation of these Operation and Maintenance Guidelines, it is proposed to apply the guidelines to all concerned irrigation projects/programs, and if necessary properly giving attentive training. Also, efforts are required to popularize the general guidelines especially to LGAs' local staffs concerned with irrigation development.
(11) Special Arrangements	The Operation and Maintenance Guidelines for irrigation systems are prepared in collaboration with the Mainland and Zanzibar. The guidelines should be contrived to be convenient for both users in the Mainland and Zanzibar.

<p>2 Prepare the O&M Guideline reflecting identified requirement for the guideline.</p> <p>3-1 Plan a management and utilizing system of the guideline.</p> <p>3-2 Prepare the handling manual in line with the management plan..</p> <p>4-1 Hold workshops in several times on the topic of the O&M Guideline and its utilization for the purpose of training of concerned personnel.</p> <p>4-2 Transport copies of the O&M Guideline to the agencies designated in the management plan.</p>	<p>Equipment</p> <p>1) Vehicles L.S.</p> <p>2) Office equipment L.S.</p> <p>3) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>Preconditions</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for publication of the Guideline</p> <p>3) Necessary expenditures in operation of the management system of the guideline</p> <p>It is clearly confirmed the needs of preparation of the O&M Guideline is recognized in local government agencies and farmers groups.</p>
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12. C4: Farmers' Participation in Irrigation Development Programme

(1) Project Proposal

(1) Title of Programme	Farmers' Participation in Irrigation Development Programme (Code No.:C4)
(2) Location	Mainland and Zanzibar
(3) Objectives	<p>This programme aims to enhance farmers' participation in irrigation, so that irrigation schemes are properly and continuously managed by farmers' themselves.</p> <p>The programme is to review the current situation of farmers' participation in irrigation schemes, and to focus on the needs of farmers' participation in irrigation development. A set of proper guidelines for farmers' participation will be prepared based on the review results. The guidelines are intended to be fully applicable and manageable for the LGAs' staff and leaders of farmers. The farmers' participation should be discussed for the planning, designing, construction and operation and maintenance stages. In particular, farmers' contribution for construction work and operation and maintenance activities should be clearly mentioned in the guidelines.</p> <p>Furthermore, a few pilot model irrigation schemes for farmers' participation will be established, in which replicable effects of the pilot models for farmers' participation are expanded to other areas. A leaflet on this programme showing the results and necessary instruction of farmers' participation in irrigation development will be prepared, and its copies will be distributed to relevant offices/IAs.</p> <p>Through properly utilization of result of the programme, it is expected to attain the overall objectives of NIMP.</p>
(4) Programme Description	<p>Due to periodic food insecurity in Tanzania, there is a keen need to develop farming under irrigation in order to exploit the existing irrigation potential so as to complement weak rainfed farming. However, some of the implemented irrigation schemes are disappointingly deteriorated in operation due to poor farmers' participation. Food security is attainable through irrigation development with adequate farmers' participation.</p> <p>On the examination and evaluation of current irrigation initiatives carried out under the ASDP preparation, special attention is giving to small-scale farmer-managed irrigation development. Such small-scale irrigation activities generally form a small-scale irrigation scheme which requires intensified farmers' participation.</p> <p>Furthermore, putting forward the decentralization in agriculture including irrigated agriculture, LGAs and irrigating farmers' themselves are about to play an important role for small-scale farmer-managed irrigation strengthening of the irrigation development under enthusiastic farmers' participation at the center of the movement.</p> <p>In these respects, it should be said that farmers' participation is essential in irrigation development.</p>
(5) PDM for the Programme	See the attached PDM.

(6) Contents of Programme	The proposed contents of the Programme are as follows:			
	Activities	Procurement	Providing of manpower and training	Remarks
	To review previous similar references on farmers' participation.	Not specified	- Consultants having required ability and faculty	
	To study on the contents of the guideline for farmers' participation.	Not specified	- Consultants having required ability and faculty	To be related with the study results on Programme C2.1 and C3.1
	To prepare the Farmers' participation Guideline reflecting identified requirement for the guideline.	Not specified	- Consultants having required ability and faculty	To be related with the study results on Programme C2.1 and C3.1
	To prepare an inventory of irrigation schemes for farmers' participation in consideration of the irrigation scheme inventory prepared in NIMP Study.	Not specified	- Consultants having required ability and faculty	To be referred the Irrigation Scheme Inventory prepared within NIMP
	To make a criteria of scheme selection for the pilot model for strengthening farmers' participation.	Required parts of equipment and additional necessary equipment	- Consultants having required ability and faculty	
	To select pilot model schemes among possible schemes listed in the inventory.	Not specified	- Consultants having required ability and faculty	
	To prepare the Strengthening Plan for farmers participation in the selected pilot schemes.	Not specified	- Consultants having required ability and faculty	
	To arrange necessary resources for implementation of the Strengthening Plan.	Equipment for farmers' activities	Not specified	To be related with the study results on Programme C5 and C7
	To implement the Strengthening Plan as planned.	Not specified	- Consultants having required ability and faculty - Training specialists	
	To monitor the performance of farmers' participation in the pilot schemes.	Not specified		To be related with the study results on Programme D3
	To support O&M of the pilot schemes as required.	Equipment for supporting activities		
	To arrange necessary resources for implementation of villagers tour to the pilot scheme.	Not specified	Not specified	
	To plan tours for visiting pilot schemes.	Not specified	Not specified	
	To conduct the tours as scheduled.	Not specified	Not specified	
	To draft leaflet for the effect of strengthening farmers' participation.	Not specified	- Consultants having required ability and faculty	
	To finalize the draft of leaflet.	Not specified	Not specified	
	To print leaflets at required sheets	Not specified	Not specified	
(7) Required Cost	US\$ 720 thousand			

(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>At this moment special attention should be given to farmers-managing irrigation schemes which are duly dependent on proper farmers' participation.</p> <p>Farmers' participation should be led under proper support of the LGAs. However, strengthening of LGAs' organization and capacity building of LGAs' personnel in charge might be done in parallel with or slightly behind the schedule of implementation of this programme. Taking the importance of village farmers managed irrigation development into consideration, mutual linkage between this programme and other related programmes should be kept.</p>
(11) Special Arrangements	<p>As discussed in Chapter 6 of this report, farmers' participation should be discussed from the viewpoint of farmers' contribution to implant their ownership to the irrigation schemes.</p> <p>This programme should be implemented in collaboration with the Mainland and Zanzibar. The results of the programme should be contrived to be convenient for both users in the Mainland and Zanzibar.</p>

(2) Project Design Matrix**(Farmers' Participation in Irrigation Development) under NIMP**

Project Name: National Irrigation Master Plan _____ Duration: 2003 - 2017 (15 years) _____

Project Area: Tanzania _____ Target Agency: MAFS _____ Date: August 2003 _____

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal</p> <p>The sustainable irrigation development is realized by means of well participation of farmers in irrigation development.</p>	<p>By the mid 2007, for new irrigation schemes of more than 80 % of the schemes started since 2002, PRA is properly conducted. And, all village irrigation schemes are progressed by self-determination and self-reliance of farmers.</p>	<p>Investigation Reports for new irrigation schemes including village irrigation schemes from 2002 to 2006</p>	<p>Other related programmes of NIMP are animatedly implemented as scheduled.</p>
<p>Project Purpose</p> <p>A Guideline for farmers' participation is prepared.</p> <p>Some numbers of pilot model irrigation schemes for farmers' participation are established, and replicable effects of the pilot models for farmers' participation is expanded to other areas.</p>	<p>a) By November 2005, completed Farmers' Participation Guideline is approved by officials concerned.</p> <p>b) Special and appropriate supports for farmers' participation are given in more than 10 irrigation schemes</p> <p>c) Totally and annually more than 2 times of farmers' visiting for learning form other areas to the pilot model schemes are taken.</p> <p>d) More than 500 sheets of the leaflet are provided and spread in all over the country.</p>	<p>Official document on approval of the Guideline.</p> <p>Report on-the-spot investigation (An on-the spot investigation shall be taken)</p> <p>Follow-up Report of the special support to the pilot model schemes</p> <p>Record of preparation and treatment of the leaflet</p>	<p>Districts (or LGA) are strengthened their capability so as to backstop farmers' participation in irrigation development independently.</p> <p>Necessary resources are adequately given in order to implement the pilot model strengthening.</p> <p>The Guideline for farmers' participation is utilized and maintained properly.</p> <p>Several opportunities of other villagers to visit to the pilot model irrigation scheme for farmers' participation.</p>

Outputs			
1-1 Contents for the Farmers' Participation Guideline are decided.	All fields and items contained into previous similar instructions are included in the Farmers' Participation Guideline.	Result of interview survey to personnel concerned on contentment of the Farmers' Participation Guideline for their requirement.	Districts and concerned agencies have technical capability and financial resource to fully support farmers participation in irrigation development.
1-2 The Farmers' Participation Guideline is prepared.	By December 2005, the Farmers' Participation Guideline is completed for its preparation.	Farmers' Participation Guideline	Management system of the Farmers' Participation Guideline exists and function properly in every concerned agencies.
2-1 Typical irrigation schemes for good farmers' participation are selected as the pilot models.	By January 2006, the strengthening Plan for farmers' participation will be completed.	Completion Report for the Strengthening Plan	
2-2 Strengthening Plan for farmers' participation to the selected pilot schemes are made.			
2-3 The Strengthening Plan for farmers' participation is executed in the pilot schemes.			
3-1 Good farmers' participation is maintained in the pilot schemes.	Good farmers participation continues	Follow-up Report of the Strengthening Plan	Villagers participated the tours will soundly reflect the lesson learned through the tours to their own life.
3-2 Tours of other villagers to the pilot schemes are prepared and executed often.	By May 2006, several times tours are scheduled and executed.	Record of Tours	Prepared leaflet will be spread effectively.
4. Leaflet propagating pilot model effects for strengthening farmers' participation is prepared as being effective.	By the mid 2006, the leaflet is completed its preparation.	Memorandum on the preparation of the leaflet	

Activities	Inputs		
1.1.1 Review previous similar references on farmers' participation.	Donor	GOT	All necessary arrangement for acceptance and utilization of the Farmers' Participation Guideline are completed in every districts and organizations concerned.
1.1.2 Study on the contents of the guideline for farmers' participation.	Preparation Team 1) Participation 12 months 2) Irrigation 12 months 3) Rural develop't 6 months 4) Extension 12 months 5) Agriculture 6 months 6) Coordinator 12 months	Personnel 1) Counterparts in each subject	
1.2 Prepare the Farmers' participation Guideline reflecting identified requirement for the guideline.	Field workers	Equipment 1) Office L.S. 2) Others L.S.	
2.1.1 Prepare an inventory of irrigation schemes for farmers' participation in consideration with the irrigation scheme inventory prepared in NIMP Study.	Equipment 1) Vehicles L.S. 2) GIS L.S. 3) Others L.S.	Budget 1) Salaries and necessary expenses for counterparts 2) Some portion of the budget for publication of the Guideline 3) Necessary expenditures in operation of the system	
2.1.2 Make criteria of scheme selection for the pilot model for strengthening farmers' participation.	Budget Some part of expenditures in local activities related to the Project.		
2.1.3 Select pilot model schemes among possible schemes listed in the inventory.			
2.2 Prepare the Strengthening Plan for farmers participation to the selected pilot schemes.			
2.3.1 Arrange necessary resources for implementation of the Strengthening Plan.			
2.3.2 Implement the Strengthening Plan as planned.			
3.1.1 Monitor the performance of farmers' participation in the pilot schemes.			
3.1.2 Support in O&M of the pilot schemes as required.			
3.2.1 Arrange necessary resources for implementation of villagers tour to the pilot scheme.			

<p>3.2.2 Plan tours of visiting pilot schemes.</p> <p>3.2.3 Conduct the tours as scheduled.</p> <p>4.1 Draft leaflet for the effect of strengthening farmers' participation.</p> <p>4.2 Finalize the draft of leaflet.</p> <p>4.3 Print leaflet at required sheets.</p>		<p>Preconditions</p> <p>It is clearly confirmed the needs of strengthening farmers participation is recognized in local government agencies and private groups.</p>
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13. C5: Village Irrigation Development Guideline Establishment Programme

(1) Project Proposal

(1) Title of Programme	Village Irrigation Development Guideline Establishment Programme (Code No.:C5)
(2) Location	Mainland
(3) Objectives	<p>This programme aims to establish proper guidelines for village irrigation development like small-scale farmer-managed irrigation development so as to be easier for LGAs to use.</p> <p>The programme is to conduct investigation studies to clarify problems in farmers managed village irrigation schemes, and to focus on the needs of irrigation development at village the farmers level. The results of the investigations will conceive proper modalities of village irrigation scheme implementation. Also imperative remedial measures against immediate draught crisis will be developed through necessary investigation. The results will be compiled in the form of guidelines for village irrigation development. The compiled guidelines are intended to be fully applicable and manageable for the LGAs' staff too. Proper application methods for the guidelines and establishment of a proper handling system for the guidelines will be also discussed in the programme.</p> <p>Through proper use of results of the programme to the village-level irrigation development, it is expected to attain the overall objectives of NIMP.</p>
(4) Programme Description	<p>Due to periodic food insecurity in Tanzania, there is keen need to develop irrigated farming by exploiting the existing irrigation potential so as to complement weak rainfed farming. The ASDP, which currently struggles notwithstanding the full support of the GOT, is a part of the operational response to a set of policies, strategies and initiatives designed to re-orientate and re-invigorate the national economy. On the examination and evaluation of current irrigation initiatives carried out under the ASDP implementation, a special attention is given to small-scale farmer-managed irrigation development. Such small-scale irrigation activities generally form a small-scale irrigation scheme which involves facility construction. However, unlike scheme implementation, irrigation improvement without involvement of facility construction gives immediate effect to village farmers' irrigation development. Sometimes farmers require immediate technical guidance and information for remedial action against the immediate crisis. Village irrigation development includes such technical support activities without facility construction.</p>
(5) PDM for the Programme	See the attached PDM.

(6) Contents of Programme	<p>The proposed contents of the Programme are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1. Introduction 2. Definition of Village Irrigation Development <ol style="list-style-type: none"> 2.1 Effective Use of Rain-water 2.2 Watering Crops by Natural Water Sources 2.3 Irrigation by Easy Tools 2.4 Irrigation by Permanent Facilities 3. Cultivation and Water <ol style="list-style-type: none"> 3.1 Land Potential 3.2 Crops and Cultivation 3.3 Climate 3.4 Crop Water Requirements 3.5 Water Stress and Decrease of Crop Production 3.6 Impact of Draught on Agriculture 3.7 Other Related Water Requirement in Agriculture 3.8 Water Sources 4. Improvement of Rain-water Use for Agriculture <ol style="list-style-type: none"> 4.1 Easy Estimation of Crop Water Requirements 4.2 Effect of Rainfall Fluctuation on Crop Cultivation 4.3 Allowable Limit of Water Shortage 4.4 Easy Rain-water Management 5. Measures against Draughts <ol style="list-style-type: none"> 5.1 Frequency of Draught Occurrences in Tanzania 5.2 Damages by Draught in Tanzania 5.3 Forecasting of Draught Occurrences <ol style="list-style-type: none"> 5.3.1 Easy Method of Draught Forecasting 5.3.2 Available Data about Draught Occurrences 5.4.3 Accessible Organizations Concerning to Draught Forecasting 5.4 Village Communication for Draught Crisis 5.5 Preventive Measures for Draught Damages <ol style="list-style-type: none"> 5.5.1 Preventive Measures by Farmers' Individual Efforts 5.5.2 Preventive Measures for Collective Efforts of Farmers' Group 5.5.3 Preventive Measures by Physical Arrangement 5.5.4 Preventive Measures through External Supporting 5.6 Remedial Measures against Draught Crisis <ol style="list-style-type: none"> 5.6.1 Remedial Measures by Farmers' Individual Efforts 5.6.2 Remedial Measures for Collective Efforts of Farmers' Group 5.6.3 Remedial Measures by Physical Arrangement 5.6.4 Remedial Measures through External Supporting 5.7 Monitoring of Draught Occurrences 6. Improvement of Watering Practices <ol style="list-style-type: none"> 6.1 Categories of Watering 6.2 Improvement of Water Conveyance and Water Spreading 6.3 Improvement of Water Sources of Watering 6.4 Improvement of Watering Management <ol style="list-style-type: none"> 6.4.1 Improvement in Agronomic Aspects 6.4.2 Improvement in Physical Aspects 6.4.3 Improvement in Labouring Works 6.4.4 Improvement in of Watering Methods 6.4.5 Improvement in Scheduling of Watering 7. Village Irrigation Scheme <ol style="list-style-type: none"> 7.1 Purpose of Village Irrigation Scheme <ol style="list-style-type: none"> 7.1.1 Benefit of Village Irrigation 7.1.2 Advantages and Disadvantages of Village Irrigation 7.1.3 Risks for Village Irrigation Scheme Implementation
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	<ul style="list-style-type: none"> 7.2 Area of Village Irrigation Scheme <ul style="list-style-type: none"> 7.2.1 Land Potential 7.2.2 Climate Characteristics 7.2.3 Villagers Potential 7.2.4 Social Capital related to Village Irrigation 7.3 Irrigated Agriculture in Village Irrigation Scheme <ul style="list-style-type: none"> 7.3.1 Applicable Crops for Village Irrigation 7.3.2 Cultivation in Village Irrigation Scheme 7.3.3 Post-harvesting in Village Irrigation Scheme 7.3.4 Marketing for Village Irrigation Scheme 7.3.5 Other Related Issues 7.4 Crop Water Requirement for Village Irrigation Scheme 7.5 Water Source for Village Irrigation Scheme <ul style="list-style-type: none"> 7.5.1 Variation of Water Source for Village Irrigation 7.5.2 Characteristics by water Sources 7.5.3 Water Resources Development for Village Irrigation 7.5.4 Arrangement of Water Right for Village Irrigation 7.6 Irrigation Method and Irrigation System <ul style="list-style-type: none"> 7.6.1 Introduction on Irrigation Type 7.6.2 Irrigation Method 7.7 Irrigation Category <ul style="list-style-type: none"> 7.7.1 Canal Irrigation 7.7.2 Pump Irrigation 7.7.3 Water Harvesting 7.7.4 Others 7.8 Construction of Village Irrigation System <ul style="list-style-type: none"> 7.8.1 Intake Structures 7.8.2 Canal System 7.8.3 On-Farm Facilities 7.8.4 Small Dam and Reservoir 7.8.5 Pump System 7.8.6 Others 8. Operation and Maintenance of Village Irrigation System <ul style="list-style-type: none"> 8.1 Importance of O&M 8.2 Necessary Activities for O&M 8.3 Water Users Group 8.4 Establishment and Maintaining of Legal Entity for O&M 8.5 Relating Organizations 8.6 Arbitration of Conflicts within Water Users Group and with Outsiders 9. Participation in Village Irrigation <ul style="list-style-type: none"> 9.1 Target for Participation 9.2 Method of Participation 9.3 Relating Partners for Participation 9.4 Monitoring and Support for Participation 9.5 Relating Issues for Participation 10. Consideration in Environment <ul style="list-style-type: none"> 10.1 Environmental Issues 10.2 Environmental Impacts caused by Irrigation 10.3 Mitigating Measures 10.4 Necessary Considerations 11. Access to and continued involvement with Supporting Organizations <ul style="list-style-type: none"> 11.1 Central and Local Governmental Organization Relating to Irrigated Agriculture 11.2 Available Supports 11.3 Accessing Channel to the Related Organizations 11.4 Farmers Duties and Responsibilities 12. Additional Information and Data for Village Irrigation <p>ANNEX</p>
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(7) Required Cost	US\$ 760 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – July 2005)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	Role of LGAs in irrigated agriculture development has been more and more vital in line with the decentralization policy. It should be made under proper support of the MAFS. Taking the importance of village farmers managed irrigation development into consideration, a comprehensive support programme for promoting village irrigation development including achievement of tasks proposed in this programme could launch independent implementation.
(11) Special Arrangements	This programme implementation aims at reliable preparation of the guidelines that is a first attempt at perfection of the guidelines. Taking into consideration a great variety of village situations over the country, the outcomes of the programme should be examined and revised over and over even after phasing out of the programme. In this respect, it is more favorable to implement a special project to verify the guidelines and improve them based on the results.

(2) Project Design Matrix**(Village Irrigation Development (VID) Guideline Establishment) under NIMP**

Project Name: National Irrigation Master Plan _____ Duration: 2003 - 2017 (15 years) _____

Project Area: Tanzania _____ Target Agency: MAFS _____ Date: August 2003 _____

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal The sustainable irrigation development is realized by means of well utilizing of the Village Irrigation Development (VID) Guideline	By the mid 2007, the VID guideline is utilized for planning, designing, construction and O&M of more than 80 % of village irrigation schemes newly implemented by districts and farmers' groups since 2002.	Investigation Reports for new village irrigation schemes from 2002 to 2006	Other related programmes of NIMP are animatedly implemented as scheduled.
Project Purpose Village Irrigation Development (VID) Guideline which is convenient for planning, designing, construction and O&M of new village irrigation is completed. A copy of the VID Guideline is placed in each district and organization related irrigation development including NGOs.	a) By May 2006, completed VID Guideline is approved by officials concerned. b) In June 2006, delivered copies of the VID Guideline are confirmed popularity in their areas (positive for more than 80 %).	Official document on approval of the VID Guideline. Report on-the-spot investigation (An on-the spot investigation shall be taken)	Districts (or LGA) are strengthened their capability so as to fulfill village irrigation development independently. Good circumstance for utilization of the DIV Guideline is maintained. When revised the Survey Guideline, delivered one should be replaced smoothly.
Outputs 1. Fields and its level of contents for the VID Guideline are decided. 2. A VID Guideline is prepared. 3. Handling manual for the VID Guideline is prepared. 4. Copy of the VID Guideline is delivered to each district and organization related irrigation development including NGOs.	All fields and items contained into previous similar instructions are included in the VID Guideline. By May 2006, the VID Guideline is completed for its preparation. By June 2006 or before starting of guideline delivering, the handling manual is completed for its preparation. By the mid 2006, the guideline is completely delivered.	Result of interview survey to personnel concerned on contentment of the VID Guideline for their requirement. VID Guideline Handling manual Record of delivery of the VID Guideline	Districts and concerned agencies have technical capability and financial resource to fully conduct survey and/or investigation designated into the Survey Guideline. Management system of the Survey Guideline exists and function properly in every concerned agencies.
Activities 1-1 Study previous remarkable efforts of farmers' groups and districts for village irrigation. 1-2 Study previous failures in village irrigation due to lack of technical (e.g. micro-irrigation etc.) and socio-economical considerations.	Inputs Donor Preparation Team 1) Rural Develop't 6 months 2) Irrigation 6 months 3) Meteo-hydrology 3 months 4) Topo-survey 3 months 5) Hydraulics 3 months 6) Geology 3 months 7) Land use, GIS 3 months	GOT Personnel 1) Counterparts in each subject Equipment 1) Office L.S. 2) Others L.S.	All necessary arrangement for acceptance and utilization of the VID Guideline are completed in every districts and organizations concerned.

<p>1-3 Identify requirement for planning, designing, construction and O&M of village irrigation development.</p> <p>2-1 Investigate needs for improvement in irrigation and/or watering activities of villagers' irrigation practices.</p> <p>2-2 Study appropriate remedial measures of farmers against draught crisis</p> <p>2-3 Prepare the VID Guideline reflecting identified requirement for the guideline.</p> <p>3-1 Plan a management and utilizing system of the guideline..</p> <p>3-2 Prepare the handling manual in line with the management plan..</p> <p>4-1 Hold workshops in several times on the topic of the VID Guideline and its utilization for the purpose of training of concerned personnel.</p> <p>4-2 Transport copies of the VID Guideline to the organizations designated in the management plan.</p>	<p>8) Agronomy 3 months</p> <p>9) Environment 3 months</p> <p>10) Structure design 6 months</p> <p>11) Construction 6 months</p> <p>12) Farmers group 6 months</p> <p>13) Participation 6 months</p> <p>14) O&M 6 months</p> <p>Equipment</p> <p>1) Vehicles L.S.</p> <p>2) GIS L.S.</p> <p>3) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>Budget</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for publication of the Guideline</p> <p>3) Necessary expenditures in operation of the system</p>	<p>Preconditions</p> <p>It is clearly confirmed the needs of preparation of the VID Guideline is recognized in local government agencies and private groups.</p>
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14. C7: Establishment of DADP Formulation Guideline for Irrigated Agriculture Development Programme

(1) Project Proposal

(1) Title of Programme	Establishment of DADP Formulation Guideline for Irrigated Agriculture Development Programme (Code No.:C7)		
(2) Location	Mainland		
(3) Objectives	<p>This programme aims to prepare proper guidelines for DADP formulation for irrigated agriculture in terms of technical aspects. This programme is to conduct an investigation study to clarify problems confronted by District Offices on irrigation development, to select appropriate irrigation schemes, and to focus on the needs of irrigation development at the district level. Proper planning methods and procedures of district manageable small-scale irrigation schemes will be conceived based on the results of the investigations. The results will be compiled into guidelines for village and district irrigation development.</p> <p>The compiled guidelines are intended to be fully applicable and manageable for the LGAs' staff. Deployment of the guidelines in good order and establishment of a proper handling system for the guidelines will also be mentioned in the programme. If necessary, proper training of districts staff could be optionally inclusive within the programme.</p> <p>Through properly utilizing of results of the programme, it is expected to attain the overall objectives of NIMP.</p>		
(4) Programme Description	<p>The ASDS, which currently struggles notwithstanding the full support of the GOT , is a part of the operational response to a set of policies, strategies and initiatives designed to re-orientate and re-invigorate the national economy. The programme is underpinned by national policies supporting, in particular, the decentralization of many public sector responsibilities to LGAs. The LGAs will increasingly be involved through the participatory formulation of District Agricultural Development Plan (DADP). Presently, formulating modalities of the DADP are mostly highlighted. Putting forward the decentralization in agriculture including irrigated agriculture, the guideline of DADP formulation has to be prepared urgently. This programme is to establish proper guidelines for DADP formulation concerning irrigated agriculture.</p> <p>As the DADP Guidelines on its clerical procedures are going to be prepared in another channel, guidelines (tentatively called as DADP-IA) prepared by this programme implementation are regarded as a part of DADP's guidelines for irrigated agriculture development</p>		
(5) PDM for the Programme	See the attached PDM.		
(6) Contents of Programme	The proposed contents of the Programme are as follows:		
	Activities	Procurement	Providing of manpower and training
	To study problems and constraints faced by districts when planning irrigation development independently.	Not specified	- Consultants having required ability and faculty

	To study previous failures in irrigation schemes planned by districts due to lack of technical and socio-economical considerations.	Not specified	- Consultants having required ability and faculty	To be related with the study results on Programme C2.1
	To identify requirements for districts in planning of irrigation scheme developments.	Not specified	- Consultants having required ability and faculty	
	To prepare the DADP-IA Guidelines reflecting identified requirements for the guidelines.	Not specified	- Consultants having required ability and faculty	
	To plan a management and utilization system for the guideline.	Required parts of equipment and additional necessary equipment	- Consultants having required ability and faculty	
	To prepare the handling manual in line with the management plan.	Not specified	- Consultants having required ability and faculty	A manual for general handling the guideline will be prepared in Programme D2
	To transport copies of the DADP-IA Guidelines to the organizations designated in the management plan.	Not specified	- Training specialists	
(7) Required Cost	US\$ 830 thousand			
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>At this moment special attention should be given to small-scale irrigation schemes with a view to introduce a variety of simple technologies. However, in some cases, simple and low-cost irrigation may not be always sustainable, therefore it should make sure of the applicability and sustainability of introduced irrigation technology under the qualified technical support from the DITS of MAFS.</p> <p>Farmers sometimes do not require implementation of an irrigation scheme, but ask for technical support for their irrigation practices without any facility construction. Also farmers do not desire to make their irrigation development as merely a single small-scale irrigation scheme, but desire to fulfill the integrated irrigation development involving other sub-sector works. Upon preparing DADP in irrigation development, LGA's staff should consider these farmers' desires, not being biased toward creation of solely a district manageable small-scale irrigation scheme.</p>			
(11) Special Arrangements	Working Group 2 under TF-1 of DADP preparation has worked to formulate proper modality of irrigation development, especially concerning DADP formulation. The programme should be made in the light of the progress of their work.			

1-2 Study previous failures in irrigation schemes planned by districts due to lack of technical and socio-economical considerations.	5) Hydraulics 3 months 6) Geology 3 months 7) Land use, GIS 3 months 8) Agronomy 3 months 9) Environment 3 months 10) Structure design 6 months 11) Construction 6 months 12) Farmers group 6 months 13) Participation 6 months 14) O&M 6 months 15) Institution 6 months	Equipment 1) Office L.S. 2) Others L.S. Budget 1) Salaries and necessary expenses for counterparts 2) Some portion of the budget for publication of the Guideline 3) Necessary expenditures in operation of the system	Preconditions It is clearly confirmed the needs of preparation of the DADP-IA Guideline is recognized in central government, local government agencies and private groups.
1-3 Identify requirement for districts in planning of irrigation scheme development.			
2 Prepare the DADP-IA Guideline reflecting identified requirement for the guideline.			
3-1 Plan a management and utilizing system of the guideline.	Equipment 1) Vehicles L.S. 2) GIS L.S. 3) Others L.S.		
3-2 Prepare the handling manual in line with the management plan.			
4. Transport copies of the DADP-IA Guideline to the organizations designated in the management plan.	Budget Some part of expenditures in local activities related to the Project.		

15. D2: Technical Manuals Handling Guidelines Establishment Programme

(1) Project Proposal

(1) Title of Programme	Technical Manuals Handling Guideline Establishment Programme (Code No.:D2)
(2) Location	Mainland and Zanzibar
(3) Objectives	<p>This programme aims to establish a teaching source for properly handling all technical references and information that are definitely important for improving and heightening irrigation technology. Formerly, technical manuals for engineering in irrigation had been prepared by the MAFS. However, it was not satisfactorily used due to improper handling and managing.</p> <p>Technical information and knowledge are essential for making capacity building for persons relevant to irrigation development. In order to provide necessary technical information and knowledge, establishment of practical technical manuals and guidelines are required. Those technical manuals and guidelines could make available necessary technical information and knowledge through good management and proper updating. The guidelines to be prepared in this programme are to provide important skills for proper management and handling of technical manuals and guidelines.</p> <p>Through appropriate application of the</p>
(4) Programme Description	<p>In accordance with the findings of technical failures through problem analysis during the Master Plan study, a number of technical guidelines are proposed to be prepared in the Subject-wise Improvement Programme. Those guidelines would be prepared by fully reflecting these findings. However, after the completion of those guidelines, it should be avoided to leave the guidelines unused or to be lost without purpose or to leave them un-revised when needing updating.</p> <p>It can be said that the manner of handling the technical guidelines directly results in success or failure of improving and heightening irrigation technology, which is essential for irrigation development. Technical Manuals Handling Guidelines to be prepared under this programme are to instruct how to utilize the technical manuals concerned, how to keep them, how to maintain them, and how to revise when the current version is revised.</p>
(5) PDM for the Programme	See the attached PDM.
(6) Contents of Programme	<p>The proposed contents of the Guidelines are as follows:</p> <p style="text-align: center;">Table of Contents</p> <ol style="list-style-type: none"> 1 Introduction 2 Technical information and manuals <ol style="list-style-type: none"> 2.1 Technical references 2.2 Technical reports 2.3 News on irrigation 2.4 Survey and investigation guidelines 2.5 Planning guidelines 2.6 Designing guidelines 2.7 O&M guidelines 2.8 Others 2.9 Monitoring of draught damages 2.10 Evaluation of draught damages

	<ul style="list-style-type: none"> 3 Distribution and maintenance of technical manuals <ul style="list-style-type: none"> 3.1 Organizations and places for distribution 3.2 Managing staff 3.3 Managing process 4 Open use of technical manuals <ul style="list-style-type: none"> 4.1 System for public inspection 4.2 Method of public inspection 4.3 Monitoring of performance of public inspection 4.4 Improvement of public inspection system 5 Revision of technical manuals <ul style="list-style-type: none"> 5.1 Periodic revision of technical manuals 5.2 Revising and disposing procedure 5.3 Management of updating 6 Monitoring system for technical manuals <ul style="list-style-type: none"> 6.1 Need of monitoring of technical manuals 6.2 Monitoring system 6.3 Reflection of monitored results to updating 6.4 Maintenance of monitoring system <p>ANNEX</p>
(7) Required Cost	US\$ 180 thousand
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS
(9) Implementation Schedule	Six months for study and implementation of the Programme (January 2005 – June 2005)
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>Preparation of technical manual handling guidelines is strongly requested. Even though a lot of technical manuals and guidelines are going to be provided within implementation of other programmes, it is of no use unless those are kept and used properly. After preparation of these guidelines, it is proposed to give all concerned irrigation projects/programmes proper training on application of the guidelines.</p> <p>Also, efforts are required to popularize the general guidelines especially to LGAs' staffs concerned with irrigation development.</p>
(11) Special Arrangements	The technical manual handling guidelines on irrigation are prepared targeting the Mainland and Zanzibar. The guidelines should be contrived to be convenient for both users in the Mainland and Zanzibar.

<p>technical references utilization.</p> <p>2 Prepare the TMH Guideline reflecting improvement idea for technical references handling.</p> <p>3. Transport copies of the TMH Guideline to the agencies designated in the management plan.</p>	<p>3) Irrigation 3 months</p> <p>4) Institution 3 months</p> <p>Equipment</p> <p>1) Office equipment L.S.</p> <p>2) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>Equipment</p> <p>1) Office L.S.</p> <p>2) Others L.S.</p> <p>Budget</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for publication of the Guideline</p> <p>3) Necessary expenditures in operation of the system</p>	<p>Preconditions</p> <p>It is clearly confirmed the needs of preparation of the TMH Guideline is recognized in local government agencies.</p>
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16. D3: Information and Database Improvement Programme

(1) Project Proposal

(1) Title of Programme	Information and Database Improvement Programme (Code No.: D3)										
(2) Location	Mainland and Zanzibar										
(3) Objectives	<p>This programme aims to establish or improve information systems and databases related to irrigation development. These are definitely necessary for monitoring the progress of irrigation development. Even now, useful and important information concerning irrigation development exists separately and is unknown to other persons.</p> <p>In order to make successful irrigation development, interdisciplinary information and data are required for many related fields. Irrigation potential maps prepared under the Master Plan study are a good example for indicating clear success of high-qualified utilization of existing data and information. Furthermore, it could be said that leaving useful data and information unused is a great loss of national assets.</p> <p>Through effective use of established databases concerning irrigation development, it is expected to attain the objectives of NIMP.</p>										
(4) Programme Description	<p>The GOT has promoted the competent authorities of irrigation administration from the Irrigation Section to the Division of Irrigation and Technical Service (DITS). This fact provides clear proof that the GOT attaches great importance to irrigation development while LGAs' initiatives are to be encouraged more.</p> <p>One major mission of the DITS is to "Promote the use of information communication technology and develop an irrigation data bank". This mission is still more highlighted corresponding to enhancing government's attention to irrigation development. The programme is to contribute to this important DITS mission directly.</p> <p>The programme consists of three major significant tasks. The first important task is to properly design an information system and database that meet actual needs now and in the near future. The second important task is to establish a real information system and database as it is designed. Moreover, the third important task is to build up a reliable operation system, and update the established database on time, so that it is maintained appropriately. The programme should fulfill these important tasks successfully through procuring necessary equipment and assigning staffs, pursuing specified activities, and testing.</p> <p>The requisites of the programme are to start the collection of data and information, and to compile them using the computer system. The data on progress of irrigation development in each District, shall be collected from the District Offices.</p>										
(5) PDM for the Programme	See the attached PDM.										
(6) Contents of Programme	The proposed contents of the Programme are as follows:										
	<table border="1"> <thead> <tr> <th data-bbox="576 1767 810 1827">Activities</th> <th data-bbox="810 1767 991 1827">Procurement</th> <th data-bbox="991 1767 1267 1827">Providing of manpower and training</th> <th data-bbox="1267 1767 1461 1827">Remarks</th> </tr> </thead> <tbody> <tr> <td data-bbox="576 1827 810 2029">To identify necessary kinds and modality of databases to be required for the purpose of irrigation development and management</td> <td data-bbox="810 1827 991 2029">Not specified</td> <td data-bbox="991 1827 1267 2029">Database specialist (outsider) -Database specialist (in-house)</td> <td data-bbox="1267 1827 1461 2029"></td> </tr> </tbody> </table>	Activities	Procurement	Providing of manpower and training	Remarks	To identify necessary kinds and modality of databases to be required for the purpose of irrigation development and management	Not specified	Database specialist (outsider) -Database specialist (in-house)			
Activities	Procurement	Providing of manpower and training	Remarks								
To identify necessary kinds and modality of databases to be required for the purpose of irrigation development and management	Not specified	Database specialist (outsider) -Database specialist (in-house)									

	To prepare all required databases so as to utilize necessary data or GIS information	-Required instrument for building databases	-Database specialist (outsider) -Database specialist (in-house)	
	To identify types of computer systems by which established databases are accessed.	-Computer system -Related equipment for opening of the network	-Manpower of computer system installation -Instructor for computer operation	Suitable space for computer system installation should be provided
	To prepare an operation manual for the databases so as to be operational for the specified computer systems.	Not specified	-Database specialist (outsider) -Database specialist (in-house)	
	To investigate possible resources to be mobilized for database updating under the present institutional conditions.	Not specified	-Database specialist (outsider) -Database specialist (in-house)	
	To make a cycle plan for updating databases by utilizing possible resources in MAFS.	Not specified	-Database specialist (outsider) -Database specialist (in-house)	
(7) Required Cost	US\$ 720 thousand			
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	One and half years for study and implementation of the Programme (July 2004 – December 2005)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>New establishment of information systems and databases is required. Even though some databases have already been provided in some manner in implementation of previous projects/programmes, those are not related to each other and unknown to the public. After preparation of the proposed databases, it is proposed to provide all concerned irrigation projects/programs with proper training on data exchange.</p> <p>Also, efforts are required to popularize the outcomes of the programme especially to LGAs' staffs concerned with irrigation development.</p> <p>.</p>			
(11) Special Arrangements	The information systems and databases are established for the situation of the Mainland. However, it is useful even in Zanzibar. The databases should be contrived to be convenient for both the Mainland and Zanzibar.			

<p>information.</p> <p>2-1 Identify types of computer system by which constructed databases are accessed.</p> <p>2-2 Prepare operation manual for the databases so as to be operational for the identified computer systems.</p> <p>3-1 Investigate possible resources to be mobilized for database up-dating under the present institutional conditions.</p> <p>3-2 Make a cycle plan for updating databases by utilizing possible resources in MAFS.</p>	<p>Subject specialist for the subject of database (as required)</p> <p>Equipment</p> <p>1) Computer system L.S.</p> <p>2) Office equipment L.S.</p> <p>3) Others L.S.</p> <p>Budget</p> <p>Some part of expenditures in local activities related to the Project.</p>	<p>Budget</p> <p>1) Salaries and necessary expenses for counterparts</p> <p>2) Some portion of the budget for installation of databases.</p> <p>3) Necessary expenditures in operation of the databases.</p>	<p>Preconditions</p> <p>It is clearly confirmed the needs of preparation of the databases and its operation system is recognized in MAFS and local government agencies concerning to irrigation development.</p> <p>MAFS can provide necessary resources for operation of database updating, otherwise, strengthen organization of IS so that IS can deal with the updating tasks.</p>
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17. E1.5: Environmental Assessment Study for Irrigation Practice in Tanzania

(1) Project Proposal

(1) Title of Programme	Environmental Assessment Study for Irrigation Practice in Tanzania (Code No.:E1.5)			
(2) Location	Mainland and Zanzibar			
(3) Objectives	<p>This programme is to conduct an environmental assessment study to correctly justify causal relations between irrigation water use and environmental issues on water and land. Proper methods of irrigation management friendly to the natural environment are to be conceived. Through implementation of this programme, the possibilities and limitations of irrigation development could be delineated in the scope of the environment.</p> <p>Appropriate application of the outcomes of the programme to the familiar schemes and enhancement of awareness of the importance of environmental conservation management in irrigation, are expected to contribute to attainment of the overall objectives of NIMP.</p>			
(4) Programme Description	<p>Irrigation water use may effect the natural environment in the vicinity of the irrigated site, because no irrigated area can be separated from surrounding environment in connection with a global hydrologic chain. Though some may cause obvious degradation in the environment, others do not lead to serious problems and are sometimes manageable without significant difficulties.</p> <p>Recently, there has been an insistent opinion that water abstraction for irrigation causes environmental hazards like drying up the river during the dry season e.g. an issue in Usangu Basin. However those entertained doubts about environmental degradation, have been not justified scientifically in the right manner. Causal relation between irrigation water use and environmental issues are not yet confirmed.</p> <p>An irrigation development that causes serious environmental degradation should be brought to a close. If environmental effects related to irrigation water use is conspicuous despite being manageable, such irrigation should be controlled in an adequate manner so as to suppress environmental hazards. In order to correctly justify causal relationships between irrigation water use and environmental issues, and to develop proper irrigation management technology affecting small environmental impacts, a comprehensive environmental assessment study for irrigation practice is to be implemented.</p> <p>Implementation of the programme requires a number of specialists in various scientific fields related to the study scope, proper assignment of required specialists is important to the success of the programme.</p>			
(5) PDM for the Programme	See the attached PDM.			
(6) Contents of Programme	The proposed contents of the Programme are as follows:			
	Activities	Procurement	Providing of manpower and training	Remarks
	To select study areas where substantial environmental issues related to the irrigated agriculture occur.	Not specified	- Consultants having required ability and faculty	To take previous environmental topics relating to irrigation into consideration

	To investigate the actual environmental situation of the study areas.	Not specified	- Consultants having required ability and faculty	
	To investigate the effects of irrigation practice in the environment.	Not specified	- Consultants having required ability and faculty	
	To clarify causes and mechanisms of the environmental issues	Not specified	- Consultants having required ability and faculty	
	To conceive countermeasures so as to avoid or lighten the environmental hazards.	Not specified	- Consultants having required ability and faculty	
	To devise procedures for the countermeasures to ensure that they are feasible.	Not specified	- Consultants having required ability and faculty	
	To formulate improvement measures to reverse the environmental deterioration that irrigators can deal with.	Not specified	- Consultants having required ability and faculty	
	To select study areas where occur substantial environmental issues related to the irrigated agriculture.	Not specified	- Consultants having required ability and faculty	To take previous environmental topics relating to irrigation into consideration
(7) Required Cost	US\$ 900 thousand			
(8) Executing Agency	Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	Two years for study and implementation of the Programme (July 2004 – June 2006)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>As the environmental chain is sometimes profoundly ranging, deep insight and scientific viewpoints are essential to uncover the real causal relation between irrigation and environmental phenomena. Proper specialists are to be assigned for the programme implementation, to provide any available data related to the study.</p> <p>Conservation of the environment is occasionally contradictory to development intention. However, concealment and distortion of facts identified in a development intention are strictly forbidden. To discover real causes is indispensable to establish sustainable irrigated agriculture systems.</p>			
(11) Special Arrangements	This environmental programme is to be conducted in the Mainland. However outcomes of the programme which are in common with the natural conditions of Zanzibar should be contrived for Zanzibar.			

<p>irrigation practice in environment.</p> <p>1-4 Clarify causes and mechanism of the environmental issues</p> <p>2-1 Make ideas of countermeasures so as to avoid or lighten the environmental hazards.</p> <p>2-2 Devise procedures of the countermeasures as being feasible</p> <p>3. Formulate improvement measures to the environmental deterioration for which irrigators can deal with.</p>	<p>Supporters</p> <p>1) field investigator - Budget</p> <p>2) farmers moderator - 1) Salaries and necessary expenses for counterparts</p> <p>Equipment</p> <p>1) Vehicles L.S. 2) Allowances and expenses of field trips</p> <p>2) Environmental testing equipment L.S.</p> <p>3) GIS equipment. L.S.</p> <p>Budget</p> <p>Some part of expenditures of local activities related to the Project.</p> <p>Training in other countries</p> <p>Training opportunities in abroad for several number of counterparts in related subjects.</p>	<p>Preconditions</p> <p>IS of DITS and MAFS admit the necessity of substantial research pursuing actual causes of existing environmental issues in which irrigation is regarded as a major contributor of the issues.</p>
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18. E1.6: Study of River-Basin Approach in Irrigation Development

(1) Project Proposal

(1) Title of Programme	Study of River-Basin Approach in Irrigation Development (Code No.:E1.6)			
(2) Location	Mainland and Zanzibar			
(3) Objectives	<p>This programme is to conduct a planning study to correctly justify how to introduce river-basin approach for irrigation water users. And proper methods of irrigation development and management are to be conceived.</p> <p>Water rights for irrigation are the roots of water management to be collaborated with other users in a river basin. The study will clarify routines of water rights management, and formulate how to organize and manage an organization of irrigation water users which is a major body to systematically negotiate with other powers by unifying concerned beneficiary farmers.</p> <p>Through use of the outcomes of the programme and enhancement of awareness on the importance of river-basin management in irrigation, it is expected to attain the overall objectives of NIMP.</p>			
(4) Programme Description	<p>No irrigated area could be separated from the surrounding environment in connection with a grave hydrologic chain. Generally such water environment could be delineated as a unit of a river basin. Water resources, including groundwater, may balance the quantity of water within a river basin. Water uses should also consider such water balance in the unit of a river basin.</p> <p>In Tanzania, a river-basin approach has been soundly endorsed since 1990'. A new water resources management system has been launched in accordance with the newly established National Water Policy on the assumption of applying a river-basin approach. On the course of new policy, every water user, needless to say, irrigation water users have to work to accommodate each other within the same river basin. Participation into water management and authorization obtaining water rights is essential for irrigation water users for their survival. This programme is to find a proper water management programme as a water user of irrigation under the condition of river-basin management.</p>			
(5) PDM for the Programme	See the attached PDM.			
(6) Contents of Programme	The proposed contents of the Programme are as follows:			
	Activities	Procurement	Providing of manpower and training	Remarks
	To investigate the present situation of obtaining water rights for irrigators	Not specified	- Consultants having required ability and faculty	To collaborate with related studies carried out by the river-basin offices
	To clarify difficulties and problems for obtaining water rights for irrigators	Not specified	- Consultants having required ability and faculty	
To devise systematic procedures to handle water right easily for irrigators	Not specified	- Consultants having required ability and faculty		

	To study technical skills to increase the amount of allowable water for irrigation increase	Not specified	- Consultants having required ability and faculty	
	To study technical skills to reduce irrigation water demand	Not specified	- Consultants having required ability and faculty	
	To study proper organizational arrangement towards negotiation between water users.	Not specified	- Consultants having required ability and faculty	
	To prepare a guideline for the river-basin approach for irrigation sector.	Not specified	- Consultants having required ability and faculty	
(7) Required Cost	US\$ 360 thousand			
(8) Executing Agency	Irrigation Section, Division of Irrigation and Technical Services, MAFS			
(9) Implementation Schedule	One year for study and implementation of the Programme (July 2004 – June 2005)			
(10) Assessment of Possible Problems and Bottlenecks in Implementation	<p>River-basin management requires basin-wide data including data for other water users and diverse information on natural conditions for the corresponding river basin. In order to make this required data available, it is essential to establish a satisfactory cooperative relation among river-basin management offices and other water users.</p> <p>Efforts to build reliable cooperative relations with other relevant parties is need. Furthermore, self-awareness of irrigators on a sense of river-basin management is a starting point toward success of introduction of the river-basin management concept into the irrigation sector. Wide enlightenment of irrigators and farmers is also important.</p> <p>A legal entity composed of beneficiary farmers is very desirable as a proprietor of irrigation water rights rather than individual farmers. Therefore, proper organization of a legal entity of irrigators and the proper functioning of them are important preconditions for the successful management of water rights. Establishment of a legal entity of irrigators is indispensable even in this sense.</p>			
(11) Special Arrangements	This programme intended for the introduction of river-basin management is to be conducted in the Mainland. Though scale of the river basins is rather small in Zanzibar, the manner of water management on a river-basin basis is applicable for Zanzibar.			

<p>3-1 Study technical skills to make demanding water for irrigation reduce.</p> <p>4-1 Study proper organizational arrangement towards negotiation between water users.</p> <p>5-1 Prepare a guideline of river-basin approach for irrigation sector.</p>	<p>Budget Some part of expenditures in local activities related to the Project.</p>	<p>Budget 1) Salaries and necessary expenses for counterparts 2) Allowances and expenses of field investigations</p>	<p>Preconditions MAFS admits the necessity of applying river-basin approach in irrigation sector.</p>
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