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REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE

UNITED REPUBLIC OF TANZANIA

FOR THE

PARTICIPATORY IRRIGATION DEVELOPMENT PROGRAMME



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CURRENCY EQUIVALENTS

Currency Unit	=	Tanzanian Shilling (TZS)
USD 1.00	=	TZS 700
TZS 1.00	=	USD 0.0014

WEIGHTS AND MEASURES

1 kilogram (kg)	=	2.204 pounds (lb)
1 000 kg	=	1 metric tonne (t)
1 kilometre (km)	=	0.62 miles (m(i))
1 metre (m)	=	1.09 yards (yd)
1 square metre (m ²)	=	10.76 square feet (ft ²)
1 acre (ac)	=	0.405 ha
1 hectare (ha)	=	2.47 acres

ABBREVIATIONS AND ACRONYMS

CI	Cooperating institution
DANIDA	Danish International Development Assistance
M&E	Monitoring and evaluation
NGOs	Non-governmental organizations
PCU	Programme Coordination Unit
PMES	Participatory monitoring and evaluation system
PRA	Participatory Rural Appraisal
SACCOs	Savings and credit associations
SDPMA	Smallholder Development Project for Marginal Areas
VEOs	Village extension officers
WFP	World Food Programme
WUAs	Water users' associations

GOVERNMENT OF THE UNITED REPUBLIC OF TANZANIA

Fiscal Year

1 July – 30 June

MAP OF THE PROGRAMME AREA



Source: Appraisal Mission

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.



UNITED REPUBLIC OF TANZANIA
PARTICIPATORY IRRIGATION DEVELOPMENT PROGRAMME
LOAN SUMMARY

INITIATING INSTITUTION:	IFAD
BORROWER:	United Republic of Tanzania
EXECUTING AGENCY:	Ministry of Agriculture and Cooperatives
TOTAL PROGRAMME COST:	USD 25.26 million
AMOUNT OF IFAD LOAN:	SDR 12.55 million (equivalent to approximately USD 17.05 million)
TERMS OF IFAD LOAN:	40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum
COFINANCIERS:	World Food Programme (WFP) Ireland
AMOUNT OF COFINANCING:	WFP: USD 3.56 million Ireland: USD 0.85 million
TERMS OF COFINANCING:	Grants
CONTRIBUTION OF BORROWER:	USD 3.12 million
CONTRIBUTION OF BENEFICIARIES:	USD 0.68 million
APPRAISING INSTITUTION:	IFAD
COOPERATING INSTITUTION:	United Nations Office for Project Services (UNOPS)



PROGRAMME BRIEF

Who are the beneficiaries? The target group consists of smallholder farm families who are reliant upon paddy and vegetables as their major source of income. They have an average farm size of 3.0 ha per household, about half of which is cultivated, and they have very little assets, including livestock. Within the target group, the programme will target resource-poor farmers, women and women-headed households who periodically face food insecurity, through specific interventions that address their agricultural, marketing, labour-saving and produce-storage needs.

Why are they poor? Although the causal factors relating to poverty in marginal areas are numerous (economic, social and political), they are chiefly attributable to: (i) lack of supplementary irrigation facilities for production of both food and vegetable crops, the latter being the major source of cash income for women; (ii) the inadequate supply of improved production inputs, such as seeds and fertilizer; (iii) lack of representation of the poor in the decision-making processes in agriculture and financial organizations in rural areas; and (iv) their limited access to various social services, such as safe drinking water, health clinics and education. The programme will empower them, both economically and politically, help them grasp economic opportunities and improve their livelihood.

What will the proposed programme do for them? The programme will increase incomes for the targeted smallholder farmers through augmented production from: (i) expanding irrigated paddy areas (including a minimum of 25% from women farmers) and upgrading existing schemes constructed under the Smallholder Development Project for Marginal Areas (SDPMA); (ii) increasing dry-season vegetable production; (iii) improving paddy yields from the judicious and economic use of inputs and improved crop husbandry practices; (iv) introducing labour-saving technologies and improved produce storage methods; and (v) launching group-based savings mobilization and credit mechanisms. In the irrigation-scheme villages, the improvement in village water supply will benefit women by reducing the amount of time they spend fetching water every day for domestic purposes. The construction of village latrines will generate environmental and health benefits. The programme will increase agricultural production over an area of about 11 780 ha. The programme will directly benefit a total of 15 700 people.

How will the beneficiaries participate in the programme? Securing beneficiary participation and involving grass-roots organizations in demand-led development initiatives is an integral part of IFAD's strategic framework, as is strengthening local capacity and ensuring women's participation in the programme through a balanced gender focus. The following institutional modalities and mechanisms will ensure the participation of the beneficiaries: (i) establishment of water users' associations (WUAs) that are active in all decision-making processes, from scheme design to preparation and implementation; (ii) their agreement to assume financial responsibilities, including contributing to part of the capital and full costs of irrigation facilities; (iii) the representation of beneficiaries in all committees to be constituted at the zonal, district and regional levels, so that their voices and concerns are heard and considered; and (iv) the enhancement of women's participation in WUAs and savings and credit associations (SACCOs) through targeted training, women's group formation and land allocation.



**REPORT AND RECOMMENDATION OF THE PRESIDENT OF IFAD
TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE
UNITED REPUBLIC OF TANZANIA
FOR THE
PARTICIPATORY IRRIGATION DEVELOPMENT PROGRAMME**

I submit the following Report and Recommendation on a proposed loan to the United Republic of Tanzania for SDR 12.55 million (equivalent to approximately USD 17.05 million) on highly concessional terms to help finance the Participatory Irrigation Development Programme. The loan will have a term of 40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum. It will be administered by the United Nations Office for Project Services (UNOPS) as IFAD's cooperating institution.

PART I - THE ECONOMY, SECTORAL CONTEXT AND IFAD STRATEGY¹

A. The Economy and Agricultural Sector

1. **The economy.** The United Republic of Tanzania is larger than Kenya and Uganda combined, measuring 944 800 km², including the islands of Zanzibar and Pemba, and stretches from the equator to 12 degrees south latitude. Its climate is tropical, the economy predominantly agricultural, and it has a population of 28.8 million people (1994). Although the country's population density is presently 31 per km², the population is expanding rapidly at about 3.2% per year. Nearly 70% of the people live in some 8 000 villages in the rural areas. It is one of the lowest income countries in the developing world, with a per capita income close to USD 200.

2. The last five years witnessed substantial progress in stabilizing and restructuring the economy. Earlier reforms regarding liberalization of the external sector, monetary management and agricultural marketing arrangements were built on. They helped the country grow annually at 4.0% during 1992-97. Estimates by the Bank of the United Republic of Tanzania indicate a slowdown in growth to 3.1% in 1998, due to heavy crop losses caused by adverse climatic conditions associated with *El Niño's* environmental effects. On the positive side, exports rose by about 60%, and the inflation rate stood at 6.7% in 1998 compared to over 30% in 1980s.

3. **Agriculture sector.** Agriculture generates about 50% of GDP, more than 80% of total exports, and employs about 90% of the working population. Most of the 3.5 million farm families are engaged in subsistence cultivation and smallholder cash cropping. Production is highly labour-intensive, and yields are small, due to low input use and limited access to new technologies. Smallholder production accounts for most agricultural exports, and over 80% of the value of marketed cereals (maize, rice, sorghum and millet). While private estates are important in the production of tea and sisal, government estates are significant producers of rice, wheat, sisal, sugar and beef. Food crops amount to 55% of total agricultural production (maize, sorghum, millet, cassava, rice, plantain, wheat and pulses). Between 1992-97, the agricultural sector grew at an appreciable rate of 4%, induced chiefly by policy changes, which also helped farmers respond to market forces.

¹ See Appendix I for additional information.



4. Despite noticeable progress, the agriculture sector remains vulnerable, due to lack of irrigation water, inadequate support services and uncertain weather conditions. The productivity levels of most crops are significantly below those of the 1970s. The cumulative effects of these factors have resulted in an overall food deficit, which is estimated, on average, to be 700 000 t annually, which increases to 1.5 million t during severe draught and floods. Remedying this situation requires focusing on smallholders. Any strategy for further production increase must be associated with broadening the base and capacity of the smallholders, who control about 85% of the total cultivable land, by ensuring their accessibility to improved technologies for agricultural production. It also requires helping them reduce production risks and uncertainties through the provision of irrigation water to enable them to raise high-value cash crops, such as rice and vegetables. Finally, it means strengthening and realigning the agricultural research and extension systems to help them respond to farmer demands in various agro-ecological zones.

B. Lessons Learned from Previous IFAD Experience

5. IFAD has financed seven projects in the United Republic of Tanzania since 1978, three of which are ongoing. Approved financing of the completed projects totals USD 52.86 million, while that of ongoing projects is USD 45.02 million. In the irrigation subsector, the recently completed Smallholder Development Project for Marginal Areas (SDPMA) provided IFAD with a number of useful lessons that have been taken into account in the project. First, the multisectoral design of the SDPMA complicated implementation, due to the number of implementing agencies. Second, the Government was unable to meet its counterpart contributions to the project because of an acute and continuing budget deficit that resulted from the narrow revenue generation base and low export earnings. Third, the cumbersome and bureaucratic procedures of the Central Tender Board delayed the completion of procurement actions by almost three years, while a strong emphasis on the construction of irrigation infrastructure was given at the expense of training, particularly of water users associations (WUAs) in the operation and maintenance of their schemes. Fourth, credit components were particularly difficult to implement, unless they were driven by beneficiary interests, with adequate training and technical assistance provided to improve management capacity. Finally, the on-farm trial process was research-driven, lacking the participation of farmers and extension personnel. Despite these problems, the detailed assessment of ten of the SDPMA schemes suggests that a significant number of farmers benefited from the irrigation facilities. Crop yields increased, on average, by about 30%, from 1.8 t/ha to 2.3 t/ha in Mwanza and Shinyanga. The increase appears to have been higher (about 55%) in Dodoma, Tabora and Singida, with yields improving from 1.1 t/ha to 1.7 t/ha. The increased paddy yields, combined with the low construction costs achieved in the SDPMA (ranging from USD 1 000 to 2 200/ha) confirm that supplementary irrigation of paddy in the marginal areas of the central plateau can be financially viable and economically attractive.

6. A number of SDPMA successes will contribute to the follow-up phase: (a) the gradual evolution of the institutional mechanism for smallholder irrigation development based on beneficiary participation at all stages of scheme development. The keys are training in the participatory approach to irrigation development and computer-aided scheme design, and contracting for design and construction services (i.e., not using a “force account” payment system in which Irrigation Department staff carry out all design and construction work); (b) establishment of an operational modality based on private-sector involvement in scheme construction. Village artisans and local contractors were successfully contracted during the last three years to construct small irrigation structures under the supervision of department staff. Work was completed on time and to high standards. This system could now be extended to contracting all construction works to private-sector contractors; (c) the assurance of the financial viability and sustainability of irrigation schemes. The SDPMA showed that this was possible by establishing a cost recovery system in which the beneficiaries pay full operation and maintenance costs, and a part of capital costs of the irrigation system, thereby relieving the Government of a major financial burden; and (d) the generation of relatively high returns through the small-scale irrigation schemes, based on appropriate technology



and beneficiary participation, both in terms of productivity increase and income gain to the poorest farmers, through the production of high-value cash crops, such as rice and vegetables.

C. IFAD's Strategy for Collaboration with the United Republic of Tanzania

7. **The United Republic of Tanzania's policy for poverty eradication.** Poverty in the United Republic of Tanzania is both endemic and structural. About 54% of the rural population live in absolute poverty. The incidence of poverty is most concentrated among the rural families living in the arid and semi-arid regions who depend exclusively on the production of crops for food and income. A poverty profile survey of rural households, undertaken by the Cornell/Economic Research Bureau team, indicates that only 42% of the household's food consumption is obtained from their own farm; over 25% of the rural families have to spend about 3.1 hours a day collecting drinking water. Rural poverty chiefly manifests itself in unemployment, malnutrition, high infant mortality, a low literacy rate and poor health. The disaggregation of poverty by agro-ecological zones shows large variations in welfare across the country, with the central semi-arid zone classified as the poorest, with an average calorie intake per capita of 1 547 kcal/day as against the balanced recommendations of 2 300 kcal/day. The mortality rate is 249 per 1 000.

8. To address the overall poverty situation in the country, the National Poverty Eradication Strategy was prepared under the overall coordination of the Vice President of the United Republic of Tanzania. The existing plan is already integrated within the overall National Plan of the Government and priorities have been accorded to secure financial allocations. Under this plan, the poverty eradication strategy is divided into three components, consisting of: (a) promoting priority sector and subsectors (such as agriculture, microfinance and irrigation), through the mobilization and redirection of resources to eradicate poverty; (b) creating an enabling environment by promoting good governance, the participation of beneficiaries and establishing effective coordination and supervision arrangements; and (c) building the basic economic infrastructure (roads, telecommunications, energy and water) through growth-oriented macroeconomic policies to stimulate investments and productivity. Nevertheless, the United Republic of Tanzania is a highly indebted country due to its past socialist policies, and its low internal revenue mobilization capacity makes it difficult to realize the goals set in the poverty alleviation programmes. In these circumstances, the Government requires assistance in prioritizing investment programmes and policies, based on the judicious allocation of limited resources to achieve sustainable development. The proposed IFAD and World Food Programme (WFP)-supported programme of small irrigation development in the poorest marginal areas will serve that basic objective.

9. **The poverty eradication activities of other major donors.** Donor support to the small-scale irrigation subsector has been limited in comparison to other sectors of the Tanzanian economy. However, a large number of donors (the Danish International Development Assistance (DANIDA), the World Bank, the African Development Bank (AfDB), Italy, Japan, and The Netherlands) support the Government's efforts to increase agricultural production and reduce uncertainties and risks inherently present in the production system, through developing irrigation system networks. In assisting the Government, each of the donors has developed a niche based on their strategic thrust, and plays a critical role in the overall development of the irrigation subsector. Assistance from The Netherlands presently supports the Traditional Irrigation Improvement Programme in the Kilimanjaro and Arusha regions, which focuses on irrigation and soil and water conservation, including the strengthening of WUAs. Japan and Italy support highly capital intensive projects in the Kilimanjaro and Dodoma regions, whereas the DANIDA-financed Agricultural Sector Support Programme is designed to improve water resources and crop husbandry practices in existing smallholder schemes in the Southern Highlands. IFAD and WFP discussed the present programme with all existing and prospective donors to avoid duplication with their programmes, and agreed to confine their



intervention to the country's poorest geographical areas, to realize their mandated objectives of poverty alleviation and empowerment of the poor.²

10. **IFAD's strategy in the United Republic of Tanzania.** IFAD's assistance in the United Republic of Tanzania has three strategic focuses: (a) to address rural household food insecurity, by increasing agricultural production and improving natural resource management practices through the provision of irrigation, improving savings mobilization and credit delivery and related support services; (b) in collaboration with other donors (such as the Belgian Survival Fund for the Third World), to improve the social and human dimensions of the poor by establishing sustainable primary health clinics, drinking water facilities and sanitation programmes, based on community initiative and response; and (c) to mitigate the operational constraints faced by IFAD and other donor agencies in the implementation of projects and programmes. An integral part of IFAD's country strategy is to secure beneficiary participation, involve community-based organizations in demand-led rural development initiatives and strengthen local capacity, including women's participation. IFAD's strategy supports the Government's devolvement of its major implementation responsibilities and services to the private sector, NGOs and civil-society organizations. At the same time, IFAD will assist the Government in strengthening its capacity to deliver core regulatory, coordination and monitoring functions in the agriculture sector. The country strategy emphasizes flexibility in design and financing, which will allow IFAD to adapt the programme design over time to implementation experience gained and evolving organizational and institutional changes, particularly at the district level.

11. **Programme rationale.** IFAD's operational experience and lessons learned in the SDPMA (paras. 5 and 6) guide the rationale for IFAD's intervention in the small-scale irrigation subsector. Generally, small irrigation schemes constructed under the IFAD-financed SDPMA have the following characteristics. First, they are technically simpler in design and easier for the farmers to operate and maintain, provided they receive appropriate training and the necessary technical assistance. Second, they are organizationally participatory in nature and capable of harnessing group initiatives and strengths, responding thereby to community initiatives and demand. Third, usually they are financially less expensive, ranging from USD 1 000 to 2 200/ha, compared to USD 10 000/ha for large-scale irrigation schemes. A significant part of these expenses could be recovered from the beneficiaries, and consequently, the schemes are financially more viable and sustainable. Finally, when seen for their overall economic impact, these schemes are capable of producing quicker production gains, both in terms of increased crop productivity and incomes, because the average gestation period of a typical scheme varies from 18 to 24 months to complete its entire work.

12. The programme will build upon the SDPMA's achievements. It will face the challenge of sustainable and efficient small-scale systems for water control, by introducing new roles and responsibilities for staff and farmers, joint planning and implementation, placing women in planning and management, training farmers and the irrigation and extensions staff in awareness and skills, and establishing effective farmer organizations. The design approach will be participatory and demand-driven. Since the programme's financial resources are limited, and only a very small part of the enormous irrigation potential can be developed, focusing resources on capacity-building will help the United Republic of Tanzania to develop further its human resources potential after programme completion.

² See Appendix II.



PART II - THE PROGRAMME

A. Programme Area and Target Group

13. The proposed programme area is located in the northern part of the country, and includes parts of six regions (Dodoma, Singida, Shinyanga, Tabora, Mwanza and Arusha), which comprise 38 districts. Considering the constraints in implementation capacity, 18 potential districts were pre-selected during formulation for possible inclusion in the programme, using the following criteria: (a) the annual rainfall and high probability of drought during the wet season; (b) the potential for small-scale irrigation development; (c) the existing area's paddy cultivation; (d) the size of the farming population; (e) the poverty index; (f) the district's commitments to contribute to programme implementation and availability of requisite qualified staff; (g) road access; and (h) the percentage of women-headed households. Within the potential districts, some 150 possible sites (with a potential area of just over 100 000 ha) have been pre-identified by Irrigation Department staff in consultation with local government authorities. These districts will be screened further during implementation, in terms of their actual commitments of financial resources, their technical suitability and the farmers' interest in joining the programme. Within each district, the district steering committee will select the potential sites, applying the following criteria: (a) the technical aspects, including hydrology, soil suitability and technical viability; (b) the social features, including beneficiary demand and conflicts of interest over water and targeting; (c) the economic factors, such as economic and financial viability and market access; (d) the agricultural and managerial elements, covering beneficiary experience, farmers' organization and labour availability; (e) the ease of implementation, namely topography, market access, the availability of construction materials and commitment of farmers; (f) the environmental impact of the schemes, based on an environmental checklist to be developed in programme year (PY) 1; and (g) land distribution, to ensure that at least 80% of the plots owned by individual households in an irrigation scheme will not be larger than 1 ha each, and about 25% are owned by women. The fact that the development potential is considerably larger than what can actually be implemented creates an opportunity to apply rigorous selection criteria to ensure efficient implementation, greater programme impact and sustainable scheme development.

14. The programme target group consists of smallholder farm families who rely upon paddy production as their major source of food and income. These families tend to have fewer household members, few assets, small landholdings and low crop yields. They are generally food-insecure and rely on income from casual labour for about eight months of the year. Within the programme target group, resource-poor farmers, women and women-headed households who face periodic food insecurity, will be expressly targeted through three specific intervention instruments: (a) economic criteria. The target group in each scheme will have, on average, not more than 2 ha of cultivable land, as against the national average of 5.0 ha. In addition, seventy-five per cent of the beneficiaries will have an income below the poverty line; (b) specific targeting criteria. Each scheme must ensure that at least 30% of the total beneficiaries and 50% of the irrigation management committee members are women. In new irrigation schemes, where some additional land may be brought under cultivation, preference will be given to landless women, to whom a minimum of 25% will be distributed; and (c) self targeting investments. Support will be given to groups or associations willing to be involved in high-value cash crops, such as rice and vegetables, etc., to ensure the programme's overall viability. Appendix III shows the criteria used to define the target groups, the major constraints faced by them as indicated in the Participatory Rural Appraisal (PRA) exercise and the intervention measures proposed to alleviate them. A total of 15 700 will benefit from the programme.



B. Objectives and Scope

15. The strategic goal of the programme is sustainable improvement in smallholder incomes and household food-security. Its purpose is to enhance the institutional, organizational and technical capacities of farmers, the private sector, NGOs, civil-society organizations and government institutions, to construct, develop and sustain small-scale irrigation systems throughout the marginal areas of the United Republic of Tanzania. The objectives of the programme will be achieved by: (a) increasing the availability and reliability of water through improved low cost systems of water control; (b) raising agricultural productivity by improving agricultural extension services to respond better to farmers' needs; and (c) building institutional capacity to realize, over the long term, the vast potential for smallholder irrigation development throughout the programme area. The six-year programme will consolidate the irrigation development effort in the central plateau.

C. Programme Components

16. The proposed programme will be demand-driven, responding to the viable options of small irrigation groups and community savings associations over a period of six years. The programme will comprise the following: irrigation development; agricultural development; capacity-building of farmer organizations and local institutions; and programme coordination and monitoring. All programme components are interlinked and integrated, and each one will be targeted to a specific beneficiary group or area as a potential growth centre. All components will respond to the critical needs, preferences and priorities of the beneficiaries, and all will have, as a common feature, beneficiary participation in decision-making and implementation. Each of the components has the following major features:

17. **Irrigation development.** This component will comprise: (a) the rehabilitation and upgrading of SDPMA irrigation schemes; (b) the construction of new irrigation schemes; (c) the construction of shallow wells for dry season irrigation of vegetables; and (d) the construction of shallow wells for domestic water supply and sanitation.

- (a) **Rehabilitation and upgrading of SDPMA irrigation schemes.** Although major construction of the SDPMA schemes has been completed, some minor works still remain to be undertaken, if it is to realize its full potential. These works are particularly needed because: (i) the beneficiary training that relates to operation and maintenance could not be completed prior to the closure of the loan; (ii) a minimal amount of repair work remains outstanding, following the damage caused by the 1997/98 *El Niño* floods; and (iii) a number of minor construction deficiencies need to be corrected. Under the subcomponent, 16 schemes, covering some 3 850 ha, will be provided with facilities for their upgrade on the basis of consultations with village councils and WUAs. The work will include the completion of on-farm development, including secondary and tertiary canal networks, and the construction of additional cattle-crossings, using stone revetments and water-ponds for cattle at the terminal end of the canal systems.
- (b) **Construction of new irrigation schemes.** This subcomponent will support the construction of 32 new small diversion schemes and eight small dams, of an average size of 200-250 ha, covering a total estimated area of 7 840 ha. The work will include the construction of diversion structures using low cost gabion and reinforced concrete weirs, off-take sluices, a canal network, infield water distribution and control structures, tertiary canals to minimize conveyance loss of irrigation water and flood protection embankments.



- (c) **Shallow dug-wells.** Support will be given to the siting, construction and development of some 72 shallow wells that are equipped with treadle or hand-pumps³ for vegetable cultivation and raising of paddy seedlings (preferably by women). Each well will irrigate some 0.4 ha, which will allow 12 to 15 beneficiary women to cultivate a plot size of 200-300m².
- (d) **Drinking water and sanitation.** The various PRA exercises undertaken during formulation emphasized the need to improve the quality of life as catalysts for change in rural development. Consistent with this objective, the proposed programme envisages the construction of 32 shallow wells for the supply of domestic water, based on beneficiary demand in the villages, where irrigation schemes are to be supported. In addition, a limited number of latrines will be constructed to adjoining irrigated areas for sanitation purposes. The water supply will reduce women's daily labour in collecting water by an expected three hours, and will mitigate the drinking of unsafe water by villagers. Beneficiaries will contribute by supplying materials and labour, and they will be responsible for full operation and maintenance.
18. **Agricultural development.** This component will have the following major subcomponents:
- (a) **Strengthening the village extension service.** Provision will be made under this subcomponent for the: (i) recruitment of 35 village extension officers (VEOs) on a contract basis to ensure that farmers in each of the schemes receive full-time technical support services; (ii) the training of VEOs and subject-matter specialists on the various aspects of rice production techniques and management at Kilimanjaro Agricultural Training Centre and the International Rice Research Institute (IRRI) in The Philippines; and (iii) transport, training allowance and operational costs.
- (b) **On-farm trials and demonstrations.** This subcomponent will accelerate the dynamics of the smallholders' farming system by providing farmer-managed, on-farm trials and demonstrations to bring about technological change in rice and vegetable production. In each scheme, one simple adaptive trial and one demonstration on a volunteered farmer's field will be carried out, with technical assistance from the VEOs, irrigation technicians and research scientists. Demonstrations will cover, *inter alia*, planting density, row transplanting, land levelling, weeding and fertilizer application.
- (c) **Training of farmers.** The subcomponent will support training activities, which will include: (i) farmer-to-farmer exchange visits and farmer study visits to other projects and research stations, in order to exchange information and experiences, and discuss the technical issues/constraints they face with a view to finding appropriate solutions; (ii) short residential training courses for elected representatives of farmer groups in various topics of interest, such as on-farm water management, paddy production and supplementary irrigation of vegetables; and (iii) training farmers on identifying and selecting quality seeds needed for production. Women will form about 50% of training course participants.
- (d) **Market access roads.** Most access roads leading from farms to markets and villages are dilapidated and extremely precarious. They require immediate rehabilitation if farmers are to facilitate the marketing of inputs/outputs, reduce transport costs and improve their mobility. To correct this situation, this subcomponent will finance the following: (i) the construction of 250 km of market access roads, including 100 drainage crossings; (ii) tree planting along road and canals; (iii) the training of about 50 communities on labour-based

³ A hand pump with a 45 stokes/minute would pump some 800 litre/hr or about 9 000 litre/day.



construction technology; (iv) supply of construction hand tools, equipment and 12 plate compactors, one for each districts; and (v) the maintenance costs of roads.

19. **Capacity-building of farmer organizations and local institutions.** This component will support training programmes for the following:

- (a) **The WUAs.** The capacity-building component will consist chiefly of four types of training: (i) an introductory seminar in each of the proposed scheme areas with the village council, local leaders and farmers, to discuss the general principles, conditions and proposed approach to irrigation development under the programme; (ii) once the initial confirmation of establishment of a WUA is received, a general training course in each scheme to help the farmers with the formulation of by-laws, setting up of financial accounts, scheme registration and the opening of a bank account, to make them fully aware of their rights and responsibilities; (iii) training for the scheme leaders of WUAs on various aspects, such as leadership qualities, WUA administration, operation and maintenance, water management practices and a cost recovery system; and (iv) specific training to women on labour-saving technologies and other elements of women's participation in the programme. Training sessions will be conducted by district and zonal engineers, the organization and training officer, together with district extension officers and community development officers.
- (b) **Technical training for zonal and district staff and private-sector contractors.** The three zonal irrigation units located in the programme area will be strengthened by providing essential transport facilities, equipment and funds for operational costs so as to enable them to provide effective training support to the districts. Resources will be funded for staff training on aspects, such as interactive scheme design, analysis of scheme viability, contract preparation and supervision, and study tours for selected staff. Basic training in essential skills related to district and site selection will be supported at all operational levels of the programme, as will participatory project planning, computer use, progress monitoring and general and financial administration. Similarly, provision is made for upgrading the technical skills of district level staff on organizational and technical management of schemes, and infrastructure construction. Since most construction work will use private-sector contractors and village artisans, provision has been made to train them in the fields of bid preparation, contract execution and quality control. These will be carried out by supervisors and external service providers, such as the National Construction Council and local consultants.
- (c) **Training of credit and savings groups.** There are about 20 savings and credit associations (SACCOs) in the programme area, which generally play a critical role in realizing the objectives of irrigators by extending loans to WUA members. To strengthen their organizational and management capacity, provision will be made to: (i) train group members on business identification, development, basic accountancy and bookkeeping, and business management, including the exploration of market opportunities; (ii) furnish matching grants to qualified SACCOs for the purchase of materials needed to construct storage for paddy, to enable farmers to obtain higher prices during lean seasons; (iii) assist groups in legal, financial and administrative matters relating to the formulation of their by-laws and their registration process; and (iv) offer study tours to high-performing savings' groups. This subcomponent will be contracted to one or more service providers, including NGOs. The SACCOs will be given some office facilities and equipment.

20. **Programme coordination and monitoring.** The management structure of the programme will be an integral part of existing government structures, which will mainly rely upon district councils and the private sector. The programme execution will be supported by: (a) a programme coordination



unit (PCU) and district programme units, with necessary staff and support services; (b) a programme steering committee and district programme committees for coordination; (c) arrangements for regular monitoring and periodic programme evaluations; and (d) a liaison office in the Ministry of Finance to ensure programme facilitation and coordination in terms of budgets, procurement, submission of withdrawal applications, release of funds and debt management and monitoring.

D. Costs and Financing

21. The total programme costs over the six-year period of implementation, inclusive of contingencies, taxes and duties, are estimated at USD 25.26 million, with a foreign exchange content of about USD 6.60 million. IFAD's loan will be USD 17.05 million, with the remaining amount of USD 3.56 financed by the World Food Programme (WFP) for the construction of access roads and secondary and tertiary channels for irrigation systems. Ireland will provide USD 0.85 million for strengthening farmer organizations and their technical capacity for implementation, while the beneficiaries will offer USD 0.68 million and the Government USD 3.12 million for staff salaries and taxes and duties (see Table 2). In addition, IFAD will provide a special operation facility grant of USD 75 000 to facilitate important start-up actions.

TABLE 1: SUMMARY OF PROGRAMME COSTS^a
(USD '000)

Component	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
Irrigation development	8 663	3 323	11 986	28	56
Agricultural development	3 292	603	3 895	15	18
Capacity-building of farmer organizations and local institutions	2 686	835	3 520	24	16
Programme coordination and monitoring	1 188	824	2 012	41	9
Total base costs	15 829	5 584	21 414	26	100
Contingencies	2 829	1 015	3 845	53	18
Total programme costs	18 658	6 600	25 258	26	118

^a Discrepancies in totals are due to rounding.

TABLE 2: FINANCING PLAN^a
(USD '000)

Component	IFAD		WFP		Ireland		Beneficiaries		Government		Total		For. Exch	Local (Excl. Taxes)	Duties and Taxes
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%			
Irrigation development	10 389	73	1 036	7	99	1	678	5	2 030	14	14 232	57	3 939	8 393	1 900
Agricultural development	1 574	34	2 526	54	19	-	-	-	552	12	4 671	19	717	3 566	388
Capacity-building of farmer organizations and local institutions	2 996	74	-	-	673	17	-	-	370	9	4 038	16	973	2 696	370
Programme coordination and monitoring	2 095	90	-	-	57	3	-	-	165	7	2 317	9	971	1 181	165
Total disbursement	17 054	68	3 561	14	848	3	678	3	3 117	12	25 258	100	6 600	15 836	2 823

^a Discrepancies in totals are due to rounding.





E. Procurement, Disbursement, Accounts and Audit

22. **Procurement.** The procurement of civil works and goods financed out of the proceeds of the loan will be undertaken in accordance with IFAD procurement guidelines. Training and consultancy services will be obtained in accordance with the cooperating institution's (CI) procurement guidelines. In view of the small size of localized contracts, most civil works will be carried out using small contractors and local artisans; wherever possible, civil works will be grouped into bidding packages exceeding USD 100 000 or the equivalent. The annual work plan and budget will provide a plan and schedule of procurement. International competitive bidding will apply for goods and civil works valued at or above USD 100 000 or equivalent. Local competitive bidding will be used for contracts valued between USD 20 000 and USD 100 000. For USD 20 000 or less, local shopping, evaluating and comparing bids invited from at least three suppliers, will be used. Vehicles, motorcycles, spare parts and office equipment, will be grouped into packages exceeding USD 100 000 for international competitive bidding.⁴ Training and technical assistance under the programme will be obtained through limited international shopping, using short-list procedures, by comparing proposals submitted by pre-selected companies or contractors.

23. **Disbursements.** The IFAD loan will be disbursed over a period of six years, and is expected to begin in the year 2000. To facilitate implementation, the programme will open a special account to be held in USD, at a suitable bank in the country on terms and conditions acceptable to IFAD. Upon loan effectiveness, IFAD will initially deposit USD 1.0 million into the account. Disbursements of programme funds will be made for all eligible expenditures (excluding taxes and duties) under the programme, against submission of full standard supporting documentation to IFAD (except in the case of contracts as determined in the loan documents, which will be documented through certified statement of expenditures).

24. **Accounts and audit.** In line with sound accounting practices, the programme will maintain separate accounts and records to accurately reflect the costs of the different components and activities. Each year the Controller of the Auditor General's Office or a private independent firm will audit the programme accounts, the special account and the statements of expenditure, and submit the report to IFAD and the CI.

F. Organization and Management

25. The programme design is based on a demand-driven approach, where ultimate implementation responsibilities will lie with the beneficiary groups (WUAs and SACCOs, etc.), in collaboration and cooperation with the public and private sectors and civil-society organizations, such as the district and village councils and NGOs. The Government will facilitate, regulate, supervise and monitor the programme. The following considerations will guide the implementation arrangements: (a) the programme should pursue a gradual and flexible integration of its activities in the districts within the framework of the Government's existing decentralization policy; (b) when the Government is unable to provide suitable staff for key programme positions, these will be filled on a contract basis to minimize the Government's recurring costs; and (c) a strong and centralized programme coordination function will be established to ensure smooth functioning of the programme. In view of the highly decentralized nature of these operations, a PCU, headed by a programme coordinator, will be established at Dodoma, which will be responsible for all coordination, monitoring and district selection matters. All policy aspects and decision-making process will be guided through the programme steering committee, to be constituted under the chairmanship of the Permanent Secretary

⁴ Whenever possible vehicles and equipment should be purchased through the United Nations Office for Project Services (UNOPS) to minimize delays in procurement and specific arrangements will be established in the loan documents.



of Agriculture, and will include beneficiary and key donor representation. However, each programme district will be the focal point for all implementation activities.

26. **Beneficiary participation.** The beneficiaries have been closely involved in the design and formulation of this programme through PRA studies, diagnostic surveys of selected SDPMA sites, a gender assessment study, workshops and focus group discussions. Beneficiary participation will be reinforced during implementation by actively engaging civil-society organizations, such as village and district councils and NGOs. In association and collaboration with VEOs and community development officers, they will have a pivotal role in organizing WUAs, SACCOs and health and sanitation groups. They will train them on various operational activities so that they can assume major implementation responsibilities. The beneficiaries will be represented both at the project steering committee and district programme management committee levels to ensure that their concerns, constraints and demands are satisfactorily met. Their commitments will be obtained in the form of equity, cash and labour contributions for the various programme activities, such as construction of irrigation, roads, shallow wells etc., which they will undertake. In addition, they will bear full operation and maintenance costs.

27. **Monitoring and evaluation (M&E).** The guiding principle behind the M&E approach is based on participatory monitoring and evaluation system (PMES). It provides a framework for generating information to: (a) guide strategic programme decision-making; and (b) enable management to make adjustments to the programme's implementation approach, management and organization to meet beneficiary needs within the framework of established goals. The overall responsibility for the PMES will rest with the PCU and will occur at the irrigation scheme, district and overall programme levels. Under the guidance of the programme coordinator, the monitoring and evaluation officer of the PCU will be monitor and supervise the implementation of programme activities. The detailed evaluation and assessment of what impact the programme had will be contracted to the private sector in PY 3 and PY 5. In addition, the PCU will carry out the operational review of the programme in PY 2 and PY 4. Annual review workshops will be held once a year, hosted by the PCU.

G. Economic Justification

28. The programme's major benefit will be the increased incomes and employment for the targeted smallholder farmers through increased production. This will result from: (a) the improvement and expansion of irrigated paddy areas; (b) the expansion of dry-season vegetable production by women; (c) the increase in paddy yields through judicious and economic use of inputs and improved crop husbandry practices; (d) the introduction of labour-saving technologies and improved crop storage facilities; and (e) the strengthening of group-based savings mobilization and credit mechanisms. An improved village water supply will benefit women by reducing the amount of time they spend daily fetching water for domestic purposes; the construction of a village sanitation programme (through construction of latrines) will generate environmental and health benefits. The programme will increase agricultural production over an irrigated area of about 11 720 ha, of which 7 870 ha will be under the new irrigation system and about 3 850 ha under upgraded works. The net financial returns per hectare is estimated to increase by 83–200% in the new schemes and by 57–67% in the rehabilitated schemes. The base case of economic return is estimated at 19%.

29. The total number of smallholder farm families that will benefit directly from the paddy-based irrigation schemes is expected to reach 15 700 by the end of the six-year programme. An estimated 1 100 women-headed households will benefit directly from the shallow wells to be constructed for drinking water and vegetable production. An additional 4 000 families are estimated to benefit directly from SACCO-related activities.



H. Risks

30. The major risks associated with the implementation of the proposed programme are related chiefly to institutional and organizational issues related to the Government's decentralization policy. Programme design has incorporated appropriate safeguards and measures to minimize them. They are: (a) engaging beneficiaries and local institutions in all stages of programme cycle; (b) developing proposals, irrespective of their nature and scope, on the basis of needs-based assessment and response from the communities to ensure their full commitment to the programme; (c) training beneficiaries and staff and building technical skills aimed at enhancing their implementation capacity; (d) coordinating programme activities through decentralized organizational structures, with appropriate linkages at the centre; and (e) strengthening the M&E system, with an option to review risks in PY 2 and PY 4 and to take remedial measures as needed.

I. Environmental Impact

31. Given the small-scale of the proposed irrigation interventions, the flat topography of the programme area, and the low inputs used by the farmers, it is unlikely that any major negative impact will be caused to the environment. However, a number of potential irrigation sites have been identified close to the wetlands and national parks. Environmental screening criteria have been included in determining the scheme selection to ensure that the environmental impact of the programme will be minimized. An environmental screening and scoping note, prepared during programme design, classified the programme in category B.

J. Innovative Features

32. The programme will help consolidate an approach to IFAD-supported agricultural investments in the United Republic of Tanzania that is participatory, beneficiary demand-driven and private-sector oriented. In this transformation process, the programme will use a number of innovative approaches that were piloted in the SDPMA and other recent IFAD-supported projects in the country and elsewhere. These include: (a) ensuring that programme activities are PRA-led and beneficiary-owned; (b) having qualified and experienced private-sector operators and NGOs, both international and national, help build capacity at the district grass-roots level to implement participatory smallholder irrigation development and facilitate targeting and group mobilization; (c) supporting the establishment of village-based savings SACCOs to improve the marketing and farmer returns from paddy and vegetables, and facilitate the purchase of inputs to improve crop production, while providing a complementary platform for the rural financial services activities planned by IFAD and the Government; (d) emphasizing the training of WUAs to be responsible for water use and scheme operation and maintenance, and raising beneficiary ownership and the sustainability of irrigation schemes; (e) placing specific emphasis on the participation of women in WUAs and SACCOs, and encouraging adequate provision of plots within irrigation schemes for women-headed households, and including specific activities for women (the provision of shallow wells for microirrigation of vegetables and domestic water supply, as well as labour-saving and produce-storage equipment); and (f) ensuring flexibility in programme design so that during implementation, the programme is able to respond to: (i) the emerging strategies of the new policy environment of privatization and decentralization, as well as to new institutional procedures at the district level as they develop; and (ii) practical, on-the-ground experience.⁵

⁵ The mechanisms designed to align the programme with IFAD's corporate strategic thrusts are summarized in Appendix IV, together with the responsible institutions and the cooperating partners.



PART III - LEGAL INSTRUMENTS AND AUTHORITY

33. A loan agreement between the United Republic of Tanzania and IFAD constitutes the legal instrument for extending the proposed loan to the borrower. A summary of the important supplementary assurances included in the negotiated loan agreement is attached as an annex.
34. The United Republic of Tanzania is empowered under its laws to borrow from IFAD.
35. I am satisfied that the proposed loan will comply with the Agreement Establishing IFAD.

PART IV - RECOMMENDATION

36. I recommend that the Executive Board approve the proposed loan in terms of the following resolution:

RESOLVED: that the Fund shall make a loan to the United Republic of Tanzania in various currencies in an amount equivalent to twelve million five hundred and fifty thousand Special Drawing Rights (SDR 12 550 000) to mature on and prior to 1 September 2039 and to bear a service charge of three fourths of one per cent (0.75%) per annum, and to be upon such other terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Fawzi H. Al-Sultan
President



SUMMARY OF IMPORTANT SUPPLEMENTARY ASSURANCES INCLUDED IN THE NEGOTIATED LOAN AGREEMENT

(Loan Negotiations concluded on 31 August 1999)

1. The PCU will open, and thereafter maintain in a bank acceptable to IFAD, a programme account held in Tanzanian Shillings (the Programme Account). The Government of the United Republic of Tanzania (the Government) will ensure that the PCU will be fully authorized to operate the Programme Account.
2. The PCU will make monthly transfers of funds from the Programme Account to the District Accounts for implementation of programme activities at programme district level (the District Accounts).
3. The Government will take necessary action to ensure that its counterpart funding for the programme is accurately reflected in the annual Public Investment Budget. Such counterpart funds will be applied to the payment of foregone taxes, some incremental salaries and office space in accordance with the annual work programme and budget (AWPB) for each programme year. The Government will further ensure that its counterpart funds are made available to the programme in a timely fashion throughout the programme implementation period.
4. The Government will ensure that women are represented in all programme activities and that they receive appropriate benefit from the outputs of the programme.
5. The Government will make any necessary arrangements for the Regional Tender Board to have authority to review all competitive bids for procurement under the programme.
6. The Government will ensure the following with respect to each WUA participating in the programme schemes:
 - (a) the Government will issue regulations for the establishment of WUAs in accordance with the National Water Utilization Act, 1998 and in line with draft model articles of association, acceptable to IFAD, for the establishment of WUAs;
 - (b) the WUAs will have a democratically-elected executive committee;
 - (c) female membership in each WUA, and representation on its executive body, will be at least equal to the proportion of women farmer beneficiaries to the total beneficiary population in the relevant WUA area;
 - (d) each WUA will sign a tripartite implementation agreement with the relevant district programme unit (DPU) and village council, wherein the WUA commits its members to participate in, and setting forth the responsibilities, timeframes and milestones for the construction and completion of the scheme;
 - (e) upon the completion of each programme scheme and as a condition for its handing over to the WUA, the concerned WUA will enter into a tripartite agreement with the relevant village council and DPU, agreeing, *inter alia*, to assume the responsibility and pay for the operation and maintenance of its scheme once completed; and



ANNEX

- (f) each WUA will agree to select and pay for the services of a skilled scheme member to act as manager and be responsible for the day-to-day running of the scheme upon its completion and handover to the WUA.
7. The Government will allocate unutilized land under the programme in accordance with the Government's Village Land Act (Act No. 5, 1999), with due regard to gender concerns and allocations to the poor/landless in accordance with the design of the programme and the loan agreement.
8. The Government will ensure that programme districts and the roads to be upgraded under the programme will be selected in accordance with the selection criteria set forth in the loan agreement.
9. The Government will ensure that programme Schemes fulfil the eligibility criteria set forth in the Loan Agreement. In addition, the Government will ensure that before any scheme will be considered for inclusion in the programme, the relevant village council will have entered into a written agreement with the relevant district council regarding the allocation of unused/unoccupied plots of land and the operation and maintenance of schemes once completed.
10. The Government will ensure that shallow wells included in the programme fulfil the eligibility criteria set forth in the loan agreement.
11. The Government will ensure the following with respect to maintenance of roads upgraded under the programme:
- (a) necessary payments for maintenance of roads constructed under the programme will be made on the basis of certifications by the respective village councils and the community development officer; and
 - (b) women's groups will be responsible for the maintenance of tree seedlings planted under the programme, including watering and replanting, as needed.
12. The Government will ensure that an irrigation design manual for smallscale irrigation schemes will be prepared and developed, covering major aspects of scheme development. The Government will also ensure that copies of the manual are sent to IFAD by the end of the first programme year.
13. The Government will ensure that the number of women participating in farmer training courses will be in proportion at least equivalent to the number of women farmer beneficiaries to the total programme beneficiary population.
14. The Government will ensure that all serviceable equipment and machinery purchased under the Smallholder Development Project for Marginal Areas (SDPMA) and equipment used by the technical staff at the zonal irrigation units are retained at their respective centres and made available for programme implementation.
15. The Government will ensure that civil works relating to the upgrading of SDPMA schemes and certain works related to road construction will be carried out by using the programme beneficiaries' own labour force in each relevant village, in accordance with the AWPB.
16. The Government will ensure that no disbursements will be made from the District Accounts to the respective DPUs unless the DPUs submits monthly financial statements to the PCU within one month from the last day of the reported month.



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17. The Government will ensure that no disbursements will be made for the loan in respect of expenditures incurred for programme implementation activities in any of the programme districts until a DPU for that programme district has been duly formed and the district councils have entered into an agreement with the PCU incorporating the conditions and modes for programme implementation.
18. The Government will ensure that no disbursements will be made for the loan in respect of expenditures for any single programme scheme until:
- (a) a WUA for that programme scheme has been duly organized and registered in accordance with the relevant laws of the United Republic of Tanzania; and
 - (b) a village extension officer, with qualifications and experience satisfactory to IFAD, has been appointed for the operation of that programme scheme.
19. The following are conditions precedent to the effectiveness of the loan agreement:
- (a) a PCU shall have been established;
 - (b) a programme coordinator and a financial controller at the PCU shall have been duly recruited and appointed by the Government and approved by IFAD;
 - (c) a programme steering committee (PSC) shall have been duly established;
 - (d) a programme implementation manual shall have been prepared by the PCU and approved by IFAD and adopted by the PSC;
 - (e) the Government shall have opened the Special Account and the Programme Account;
 - (f) the Government shall have made arrangements for the availability of counterpart funds for programme year 1;
 - (g) the loan agreement shall have been duly signed, and the signature and performance thereof by the Government shall have been duly authorized and ratified by all necessary administrative and governmental action; and
 - (h) the Government shall have provided the Fund with a favourable legal opinion.

COUNTRY DATA

UNITED REPUBLIC OF TANZANIA

Land area (km² thousand) 1996 1/	884	GNP per capita (USD) 1997 2/	210
Total population (million) 1997 1/	31.3	Average annual real rate of growth of GNP per capita, 1990-97 2/	0.9
Population density (people per km²) 1996 1/	35	Average annual rate of inflation, 1990-97 2/	25.2
Local currency	Tanzanian Shilling (TZS)	Exchange rate: USD 1 =	TZS 700
Social Indicators		Economic Indicators	
Population (average annual population growth rate) 1980-97 1/	3.1	GDP (USD million) 1997 1/	6 920
Crude birth rate (per thousand people) 1997 1/	41	Average annual rate of growth of GDP 1/ 1980-90	n.a.
Crude death rate (per thousand people) 1997 1/	16	1990-97	2.7
Infant mortality rate (per thousand live births) 1997 1/	85	Sectoral distribution of GDP, 1997 1/	
Life expectancy at birth (years) 1997 1/	48	% agriculture	47
Number of rural poor (million) (approximate) 1/	n.a.	% industry	21
Poor as % of total rural population 1/	n.a.	% manufacturing	7
Total labour force (million) 1997 1/	16	% services	31
Female labour force as % of total, 1997 1/	49	Consumption, 1997 1/	
Education		General government consumption (as % of GDP)	13
Primary school gross enrolment (% of relevant age group) 1996 1/	66	Private consumption (as % of GDP)	83
Adult literacy rate (% of total population) 1995 3/	68	Gross domestic savings (as % of GDP)	3
Nutrition		Balance of Payments (USD million)	
Daily calorie supply per capita, 1995 3/	2 003	Merchandise exports, 1997 1/	716
Index of daily calorie supply per capita (industrial countries=100) 1995 3/	63	Merchandise imports, 1997 1/	1 958
Prevalence of child malnutrition (height for age % of children under 5) 1992-97 1/	43	Balance of merchandise trade	-1 242
Prevalence of child malnutrition (weight for age % of children under 5) 1992-97 1/	31	Current account balances (USD million)	
Health		before official transfers, 1997 1/	- 885
Health expenditure, total (as % of GDP) 1990-97 1/	n.a.	after official transfers, 1997 1/	- 544
Physicians (per thousand people) 1990-97 1/	0.04	Foreign direct investment, 1997 1/	158
Percentage population without access to safe water 1990-96 3/	62	Government Finance	
Percentage population without access to health services 1990-95 3/	58	Overall budget surplus/deficit (including grants) (as % of GDP) 1996 1/	n.a.
Percentage population without access to sanitation 1990-96 3/	14	Total expenditure (% of GDP) 1996 1/	n.a.
Agriculture and Food		Total external debt (USD million) 1997 1/	7 177
Food imports as percentage of total merchandise imports 1997 1/	n.a.	Present value of debt (as % of GNP) 1997 1/	72
Fertilizer consumption (hundreds of grams per ha of arable land) 1995-97 1/	113	Total debt service (% of exports of goods and services) 1997 1/	12.9
Food production index (1989-91=100) 1995-97 1/	97.2	Nominal lending rate of banks, 1997 1/	29.2
Land Use		Nominal deposit rate of banks, 1997 1/	7.8
Arable land as % of land area, 1996 1/	3.5		
Forest area (km ² thousand) 1995 1/	325		
Forest area as % of total land area, 1995 1/	36.8		
Irrigated land as % of cropland, 1994-96 1/	4.6		

n.a. not available.

Figures in italics indicate data that are for years or periods other than those specified.

1/ World Bank, *World Development Report*, 1999.

2/ World Bank, *Atlas*, 1999.

3/ UNDP, *Human Development Report*, 1998.

**DONOR COMPLEMENTARITY IN SMALLHOLDER IRRIGATION**

Donor	Project Name	Project Location	Status	Complementarity
The World Bank	River Basin Management and Smallholder Irrigation Improvement	Pangani and Rufiji River Basins	Started in 1996; ongoing.	Located in high rainfall areas, outside programme areas; centralized approach to implementation.
DANIDA	Smallholder Irrigation Improvement in Agricultural Sector Support Programme	Mbeya, Iringa and Morogora regions	Started in 1998; ongoing.	Programme will focus on crop husbandry and socio-economic issues; areas fall outside the programme.
SNV, The Netherlands	Smallscale Irrigation and Traditional Irrigation Improvement	Dodoma, Kilimanjaro and Arusha	First and second phases 1988-97 and third phase in 1998-2003.	Pilot participatory schemes implemented by NGO; third phase to be centred in Moshi; will concentrate on sustainable land use in river basins; empowerment of WUAs and planning at district and microcatchment levels; will complement the programme.
FAO / UNDP	Institutional Support to Irrigation Development	National Policy Focus	1987-1994.	Prepared guidelines on privatization of irrigation activities.
ADB/UNCDF	Smallholder Irrigated Rice Project / Irrigation Project	Three schemes in Tanga and Mbeya	Nearing completion.	Capital intensive; fall outside programme locations.
JICA	Smallholder Irrigation Schemes	Lower Moshi and Bagamoyo schemes	Lower Moshi completed; Bagamoyo under preparation.	Highly capital intensive schemes with centralized operations; regions fall outside the programme areas.
UNDP	Smallholder Irrigation Schemes (three)	Zanzibar, Kilimanjaro and Mbeya regions	Nearing completion.	Experimental schemes and no duplication of areas with that of the programme.
Italian Aid	Smallholder Irrigation Scheme	Humbolo Irrigation Scheme, Dodoma	Nearing completion.	High-cost scheme; does not conflict with the programme.
IFAD	Smallholder Irrigation Development Project in Marginal Areas ; and Mara Region Farmers Initiative Project	In central plateau and Mara region	SDPMA completed in 1997 and Mara started in 1997.	SDPMA included participatory smallholder irrigation development component which provided valuable lessons and experiences that have been consolidated and extended in the programme. Mara project has a smallholder, demand-led water harvesting subcomponent.



TARGET GROUP DEFINITION, SELECTION CRITERIA, MAJOR CONSTRAINTS AND PROGRAMME INTERVENTIONS

Target Group	Selection Criteria	Major Constraints	Programme Instruments
Smallholder families: Resource-poor farmers (priority target group)	a) Farm size < 2 ha b) < 0.5 ha irrigated c) No work oxen d) Food deficit households e) Farm incomes below the national poverty line (TZS, 199x prices) f) Off-farm income < TZS 70,000	<ul style="list-style-type: none"> • Low crop production and low farm incomes • Inadequate supply of water for paddy production • Food insecurity • Lack of farm inputs and credit • Poor health status 	<ul style="list-style-type: none"> • Improved agricultural extension services aimed at increasing paddy incomes and market awareness training. • Construction of sustainable irrigation schemes to harvest water for paddy and the formation of effective WUAs. • Increased food production through farmer training in improved crop husbandry practices and access to better produce storage methods. • Assistance with the formation of savings groups • Improved domestic water supplies, sanitation and health awareness training.
Poor-women and women-headed households (FHHs) priority target groups		<ul style="list-style-type: none"> • Low crop production and low incomes • Inadequate supply of water for paddy production and dry-season vegetable production • Food insecurity • High labour requirements for farm chores and collecting domestic water • Lack of access to irrigated plots • Low representation in WUAs and SACCOs • Lack of farm inputs and credit • Poor health status 	<ul style="list-style-type: none"> • Improved agricultural extension services to raise farm incomes, the introduction of labour-saving technologies and market awareness training. At least 50% of the participants of farmer training courses and study tours will be women. • Construction of sustainable irrigation schemes for paddy production and microirrigation schemes for vegetables. • Improved access to agricultural extension services, irrigated plots and better produce storage methods. • Introduction of labour-saving technologies and shallow wells for village domestic water supply. • Use of targeting criteria to ensure women have fair and reasonable access to irrigated plots and awareness training for women's rights. • Specific training to raise the profile of women and their representation in WUAs and savings groups. • Support to the formation of SACCOs in scheme. • Villages and women's savings groups associated with shallow wells used for vegetable production. • Improved domestic water supply, sanitation and health awareness training.
Smallholder families (relatively better off)	a) Farm size ≥ 2 ha b) ≤ 1 ha irrigated c) Experience occasional food deficits d) Have own work oxen or access to them e) Off-farm income < TZS 100,000 f) Farm incomes above the national poverty line	<ul style="list-style-type: none"> • Inadequate supply of water for paddy production • Low crop production and low incomes • Lack of farm inputs and credit 	<ul style="list-style-type: none"> • Construction of irrigation schemes for paddy production • Improved water management and crop husbandry techniques • Support to the formation of SACCOs



IFAD CORPORATE THRUSTS AND POSSIBLE AREAS OF REALIGNMENTS AND INTEGRATION

Programme Subcomponent	Corporate Objectives	Mechanism to Realize Objectives	Responsibilities under the Programme	Cooperating Partners
Irrigation development	<ul style="list-style-type: none"> Secure beneficiary participation Secure involvement of grass-roots organizations Ensure flexibility in project design Build social capacities Gender responsiveness 	<p>PRA, request letter from beneficiary groups.</p> <p>Formation of WUA and its registration is a pre-condition.</p> <p>Flexibility introduced with scope for modifications and revisions based on beneficiary and community needs.</p> <p>Training to WUAs on O&M, leadership and financial management and village artisans.</p> <p>Specific activities targeted to women, priority access to land, extension services, irrigation wells and representations in WUAs.</p>	<p>VC, DPU, DC</p> <p>DPU and PCU</p> <p>DPU and PCU</p> <p>ZIUs, DPU, DC</p> <p>VCs, DPUs and DCs</p>	<p>MAC</p> <p>District council and MAC</p> <p>DCs and MAC</p> <p>MAC and local training institutions</p> <p>PCU and MAC</p>
Market access roads	<ul style="list-style-type: none"> Secure beneficiary participation Secure involvement of grass-roots organizations Ensure flexibility in project design Build social capacities Gender responsiveness 	<p>Road selection on the basis of community demand.</p> <p>Construction and operation and maintenance will be through local village groups.</p> <p>Village groups and WUAs to select priorities; scope for revisions based on beneficiary need.</p> <p>Local community groups and artisan will be given training on O&M.</p> <p>Women's groups receive priority in the management of tree-planting along roads.</p>	<p>DPU and DC</p> <p>DPU, DC and PCU</p> <p>DPU, DC & IFAD</p> <p>District engineer, DPU</p> <p>VCs, DPUs</p>	<p>WFP</p> <p>WFP</p> <p>WFP</p> <p>Local training institute, WFP</p>
Agricultural development	<ul style="list-style-type: none"> Secure beneficiary participation Secure involvement of grass-roots organizations Ensure flexibility in project design Build social capacities Gender responsiveness 	<p>Crop-production constraints will be analysed based on participatory diagnostic appraisals.</p> <p>Activities are carried out within the scheme areas managed by WUAs and farmers groups.</p> <p>Flexibility with scope for modifications based on farmers' perception and needs.</p> <p>Farmers organizations and WUAs will be provided training.</p> <p>Women groups and farmers will receive priority in adaptive trials, demonstrations and extension visit.</p>	<p>VEOs, DPU</p> <p>VEOs, DPU, DC</p> <p>VEOs, DPU</p> <p>VEOs, DPU</p> <p>VCs, WUAs, VEOs, DPUs</p>	<p>PCU, MAC</p> <p>Research institutions</p> <p>PCU & MAC training institution</p> <p>MAC research institutions</p> <p>PCU & MAC training institution</p> <p>PCU & MAC</p>

DC District council
DPU District programme unit
MAC Ministry of Agriculture & Cooperation
ZIUs Zonal Irrigation Units

PREVIOUS IFAD LOANS TO THE UNITED REPUBLIC OF TANZANIA

Project Name	Initiating Institution	Cooperating Institution	Lending Terms	Board Approval	Loan Effective-ness	Current Closing Date	Loan/Grant Acronym	Denominated Currency	Approved Loan/Grant Amount
Mwanza/Shinyanga Rural Development Project	WB	WB	HC	13 Apr 78	28 Feb 79	31 Dec 84	L - I - 2 - TAN	USD	12000000
Southern Highlands Smallholder Food Crop Project	IFAD	WB	HC	05 Sep 85	03 Aug 87	31 Dec 93	L - I - 176 - TZ	SDR	14500000
Smallholder Support Project in Zanzibar	IFAD	WB	HC	13 Sep 89	07 Mar 91	31 Dec 97	L - I - 242 - TZ	SDR	8150000
Southern Highlands Extension and Rural Financial Services Project	IFAD	WB	HC	06 Apr 93	30 Jun 93	31 Dec 99	L - I - 324 - TZ	SDR	11500000
Smallholder Development Project for Marginal Areas	IFAD	UNOPS	HC	06 Dec 89	05 Oct 90	31 Dec 97	G - S - 20 - TZ	USD	280000
Smallholder Development Project for Marginal Areas	IFAD	UNOPS	HC	06 Dec 89	05 Oct 90	31 Dec 97	G - S - 20 - TZ	SDR	650000
Smallholder Development Project for Marginal Areas	IFAD	UNOPS	HC	06 Dec 89	05 Oct 90	31 Dec 97	L - S - 24 - TZ	SDR	11450000
Mara Region Farmers' Initiative Project	IFAD	UNOPS	HC	06 Dec 95	25 Jun 96	30 Jun 03	G - S - 32 - TZ	USD	195000
Mara Region Farmers' Initiative Project	IFAD	UNOPS	HC	06 Dec 95	25 Jun 96	30 Jun 03	L - I - 400 - TZ	SDR	9650000
Agricultural and Environmental Management Project	IFAD	UNOPS	HC	04 Dec 96	10 Sep 97	31 Dec 03	G - I - 18 - TZ	USD	90000
Agricultural and Environmental Management Project	IFAD	UNOPS	HC	04 Dec 96	10 Sep 97	31 Dec 03	L - I - 433 - TZ	SDR	10300000

5



APPENDIX VI

LOGICAL FRAMEWORK

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
<p>Goal: Sustainable increase in smallholders production and income levels.</p>	<p>1. Average farm yield and income of target population increased by X% by end of project.</p>	<p>1.1 Periodic household income/ expenditure surveys and diagnostic studies.</p>	<p>(Goal to Supergoal): 1. Demand for paddy and vegetables continue to increase.</p>
<p>Purpose: Participatory irrigation framework established successfully tested and ready for replication.</p>	<p>1. Number of target districts having adopted participatory irrigation framework.</p> <p>2. More efficient use of available water for irrigated agriculture in 12 districts in marginal areas.</p>	<p>1.1 Supervision reports, periodic review reports and completion report.</p>	<p>(Purpose to Goal): 1. Continued government commitment to decentralization.</p> <p>2. No major civil service retrenchment.</p> <p>3. No major changes in legal frameworks governing property rights and WUA operation.</p>
<p>Outputs: 1. Water management systems established/upgraded and functioning effectively.</p>	<p>1.1 Approximately 4 800 Households benefiting from 16 consolidated SDPMA schemes.</p> <p>1.2 Approximately 9 500 households benefiting from construction of 32 new schemes.</p> <p>1.3 Approximately 300 households benefiting from construction of 8 microdams.</p> <p>1.4 Approximately 1 100 women benefiting from construction of 72 shallow wells.</p> <p>1.5 36 domestic wells supplies installed.</p> <p>1.6 Approximately 58 WUAs and 108 water user groups, registered and having full responsibility for O&M.</p> <p>1.7 WUA-trained programme conducted.</p> <p>1.8 3 zonal irrigation units fully equipped and operational.</p> <p>1.9 ZIU technical and participatory training programmes conducted.</p> <p>1.10 Training programme for artisans/local contractors conducted.</p>	<p>1.1.1 District baseline surveys, PCU progress reports, diagnostic studies, supervision reports, periodic review reports and completion report.</p> <p>1.2.1.....”.....</p> <p>1.3.1.....”.....</p> <p>1.4.1.....”.....</p> <p>1.5.1.....”.....</p> <p>1.6.1.....”.....</p> <p>1.7.1.....”.....</p> <p>1.8.1.....”.....</p> <p>1.9.1.....”.....</p> <p>1.10.1.....”.....</p>	<p>(Output to Purpose): 1. Access to markets and adequate functioning of market services.</p> <p>2. Farmers motivated to join WUAs/user groups and assume O&M responsibility.</p> <p>3. Beneficiaries willing to participate and contribute in-kind and cash.</p> <p>4. District and scheme selection conducted according to transparent criteria.</p> <p>5. Beneficiaries motivated to participate in food-for-work road construction and O&M.</p>



APPENDIX VI

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
<p>2. Improved services for agricultural development available to farmers in programme scheme areas.</p> <p>3. Participatory, decentralized institutional arrangement operational.</p>	<p>2.1 Approximately 300 on-farm trials conducted.</p> <p>2.2 Approximately 300 demonstrations conducted.</p> <p>2.3 Approximately 20 existing SACCOS trained and strengthened.</p> <p>2.4 32 women's groups trained in 52 schemes.</p> <p>2.5 52 VEOs trained in participatory extension and paddy production.</p> <p>2.6 12 irrigation technicians trained in efficient water management.</p> <p>2.7 250 km of rural access roads constructed using labour-intensive methods.</p> <p>2.8 12 district engineers trained in labour-intensive works, construction procedures conducted.</p> <p>2.9 50 village groups trained in rural road O&M conducted.</p> <p>2.10 Procedures and guidelines prepared and adopted.</p> <p>2.11 DPU training programme conducted.</p> <p>2.12 Management information system (MIS) and Financial information system (FIS) developed and operational.</p>	<p>2.1.1 District baseline surveys</p> <p>PCU progress reports, diagnostic studies, supervision reports, periodic review reports and completion report.</p> <p>2.2.1....."</p> <p>2.4.1....."</p> <p>2.4.1....."</p> <p>2.5.1....."</p> <p>2.6.1....."</p> <p>2.7.1....."</p> <p>2.8.1....."</p> <p>2.9.1....."</p> <p>2.10.1 Supervision reports, PCU progress reports, periodic review reports and completion report.</p> <p>2.11.1....."</p> <p>2.12.1....."</p>	
<p>Activities:</p> <p>1.1 Consolidate and upgrade existing schemes.</p> <p>1.2 Construct new small-scale schemes, microdams, tube wells and shallow wells.</p> <p>1.3 Form and register WUAs and water user groups.</p> <p>1.4 Form and register user groups and construct domestic water supplies.</p>	<p>Input:</p> <p>As specified in programme cost tables.</p>	<p>1.1.1 DCU, PCU & ZIU progress reports, audit reports, review of awarded contracts training evaluations, field visits and focus group discussions.</p> <p>1.2.1....."</p> <p>1.3.1....."</p> <p>1.4.1....."</p>	<p>(Activity to Output):</p> <p>1. Timely provision of agricultural inputs.</p> <p>2. Adoption of new technologies by target group.</p> <p>3. Beneficiaries demand signals are transmitted uninterruptedly.</p> <p>4. Staff committed to programme objectives and implementation approach.</p> <p>5. Functional and efficient coordination arrangements between and within programme components.</p> <p>6. Staff motivation remains high.</p> <p>7. Timely procurement of goods and services.</p>



APPENDIX VI

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
1.5 Design comprehensive training programmes for government staff, private sector and farmers.		1.5.1.....”.....	8. Adequate availability and capacity of local artisans, contractors and service providers to provide cost-effective services.
2.1 Assign/recruit additional scheme-specific VEOs.		2.1.1.....”.....	
2.2 Design and conduct comprehensive training for government staff, private sector and farmers.		2.2.1.....”.....	
2.3 Implement training of trainers programme.		2.3.1.....”.....	
2.4 Conduct participatory on-farm trials and establish demonstration plots.	Total Cost: USD 25.3 Irrigation Development: USD 14.23 Agricultural Development: USD 4.67 Capacity-building & Institutional support: USD 4.04 Programme Co-ordination: USD 2.32	2.4.1.....”.....	
2.5 Implement pilot support programme for SACCOs.		2.5.1.....”.....	
3.1 Establish decentralized DPUs.		3.1.1.....”.....	
3.2 Design procedures and guidelines for planning, construction and O&M.			
3.3 Design and install MIS and FIS.		3.3.1.....”.....	
3.4 Establish liaison office.		3.4.1.....”.....	

COSTS AND FINANCING

TABLE 1: EXPENDITURE ACCOUNTS COST SUMMARY

	(TZS million)			(USD '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
I. Investment costs								
A. Civil works								
1. Irrigation civil works	5 179	1 726	6 906	7 223	2 408	9 631	25	45
2. Other civil works	1 298	144	1 442	1 810	201	2 011	10	9
Subtotal	6 477	1 871	8 348	9 033	2 609	11 642	22	54
B. Vehicles, equipment and inputs								
1. Vehicle	334	621	955	466	865	1 331	65	6
2. Irrigation and field equipment	160	353	513	224	492	716	69	3
3. Other equipment and material	88	206	294	123	287	411	70	2
Subtotal	583	1 179	1 762	813	1 645	2 458	67	11
C. TA, training and studies								
1. Technical assistance (TA)								
International TA	-	585	585	-	816	816	100	4
National TA	172	-	172	240	-	240	-	1
Subtotal	172	585	757	240	816	1 055	77	5
2. Training	691	80	771	964	111	1 075	10	5
3. Studies and Support Services	672	35	707	937	49	986	5	5
Subtotal	1 535	700	2 235	2 141	976	3 117	31	15
Total Investment Costs	8 595	3 750	12 345	11 986	5 229	17 216	30	80
II. Recurrent costs								
A. Staff salaries	1 516	-	1 516	2 114	-	2 114	-	10
B. Vehicle O&M	415	178	592	578	248	826	30	4
C. Office O&M	179	77	255	249	107	356	30	2
D. Infrastructure maintenance	646	-	646	901	-	901	-	4
Total Recurrent Costs	2 756	254	3 010	3 843	355	4 198	8	20
Total BASELINE COSTS	11 351	4 004	15 355	15 829	5 584	21 414	26	100
Physical contingencies	945	400	1 346	1 318	558	1 877	30	9
Price contingencies	4 361	1 305	5 667	1 511	457	1 968	23	9
Total PROJECT COSTS	16 657	5 710	22 367	18 659	6 600	25 258	26	118



TABLE 2: DISBURSEMENT ACCOUNTS BY FINANCIERS

(USD '000)

	IFAD		WFP		Ireland		Beneficiaries		Government		Total		For. Exch.	Local (Excl. Taxes)	Duties and Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%			
A. Civil works	9 187	66	3 144	23	-	-	-	-	1 647	12	13 978	55	3 130	9 202	1 647
B. Vehicles and equipment															
1. Vehicles	1 085	70	-	-	-	-	-	-	465	30	1 550	6	1 007	77	465
2. Equipment	793	61	49	4	141	11	-	-	309	24	1 293	5	895	89	309
Subtotal	1 877	66	49	2	141	5	-	-	774	27	2 842	11	1 902	166	774
C. Technical assistance, training and studies															
1. Technical assistance (TA)															
International TA	706	74	-	-	249	26	-	-	-0	-0	955	4	955	-	-
Local TA	221	79	-	-	31	11	-	-	28	10	280	1	-	252	28
Subtotal	926	75	-	-	281	23	-	-	28	2	1 235	5	955	252	28
2. Training	910	72	-	-	354	28	-	-	0	-	1 264	5	129	1 136	-
3. Studies and support services	1 025	87	30	3	72	6	-	-	54	5	1 181	5	59	1 067	54
Subtotal	2 861	78	30	1	707	19	-	-	82	2	3 680	15	1 143	2 455	82
D. Operating Costs															
1. Staff salaries	1 781	77	-	-	-	-	-	-	525	23	2 306	9	-	2 076	231
2. O&M	1 347	55	338	14	-	-	678	28	89	4	2 452	10	425	1 938	89
Subtotal	3 128	66	338	7	-	-	678	14	614	13	4 758	19	425	4 013	319
Total	17 054	68	3 561	14.1	848	3	678	3	3 117	12	25 258	100	6 600	15 836	2 823

TABLE 3. COMPONENTS PROGRAMME COST SUMMARY

	(TZS million)			(USD '000)			%	% Total
	Local	Foreign	Total	Local	Foreign	Total	Foreign Exchange	Base Costs
A. Irrigation development								
Upgrading SDPMA schemes	174	58	232	243	81	323	25	2
New schemes construction	5 832	1 988	7 820	8 133	2 773	10 906	25	51
Support to zonal irrigation units (ZIUs)	206	337	542	287	470	757	62	4
Subtotal	6 212	2 383	8 594	8 663	3 323	11 986	28	56
B. Support to agricultural development								
Extension services	761	259	1 020	1 061	361	1 422	25	7
Market access roads	1 600	174	1 774	2 231	243	2 473	10	12
Subtotal	2 361	433	2 793	3 292	603	3 895	15	18
C. Farmers organizations and local institutions								
WUAs	97	6	103	136	8	144	6	1
Marketing and savings and credit groups	267	163	430	372	227	599	38	3
Private sector	27	1	29	38	2	40	5	-
District councils	1 535	428	1 963	2 141	597	2 738	22	13
Subtotal	1 926	598	2 524	2 686	835	3 520	24	16
D. Programme coordination								
Programme coordination	852	591	1 443	1 188	824	2 012	41	9
Subtotal	852	591	1 443	1 188	824	2 012	41	9
Total BASELINE COSTS	11 351	4 004	15 355	15 829	5 584	21 414	26	100
Physical contingencies	945	400	1 346	1 318	558	1 877	30	9
Price contingencies	4 361	1 305	5 667	1 511	457	1 968	23	9
Total PROJECT COSTS	16 657	5 710	22 367	18 659	6 600	25 258	26	118



ORGANIZATION AND MANAGEMENT

A. Overview

1. The programme will be implemented through the Ministry of Agriculture and Cooperatives (MAC). The programme's proposed organization and management structure and the way it will be integrated in the government system is shown in Table 1. On the one hand, implementation arrangements will be in line with the policy directions of the Government, including decentralization of programme implementation to the districts and the use of private-sector operators, whenever the necessary capacity exists and their services are cost-effective. On the other hand, an appropriate organizational set-up, effective operational procedures and capable staff will be recruited to ensure successful programme implementation. The following considerations have guided the formulation of implementation arrangements: (a) the programme should pursue a gradual and flexible integration of its activities in the districts depending on district capacity; (b) when the Government is unable to provide suitable staff for key programme positions, these should be filled on a contract basis; and (c) a strong and centralized programme coordination function will be required during programme implementation.
2. The main features of the proposed organization and management are highlighted below.

B. Executing Agencies

Ministry of Agriculture and Cooperatives (MAC)

3. The MAC will have overall national responsibility for the programme. While most implementation activities will devolve to the districts, the MAC, mostly through the PCU, will provide policy guidance and review programme performance. The MAC will allow its three zonal irrigation units (ZIUs), under the programme area (at Mwanza, Tabora and Kilimanjaro), to assist the programme in carrying out scheme designs, preparation of contract specification and tender documents, and implementation supervision of the irrigation schemes, since the expertise required for those tasks, in most cases, is not available in the districts.

District Programme Units (DPUs)

4. In each selected district where the programme is implemented, an agreement describing the conditions and modalities for implementation will be made between the PCU and the district council, after which a DPU will be established. The DPU will operate on the basis of monthly workplans that will be discussed in monthly planning meetings, under the direction of a district programme management committee (DPMC). The DPU will consist of a number of staff, some of whom will be contracted. Others will be seconded by the district to the programme full-time. This DPU will have primary responsibility for implementation of the three main components of the programme in a district: (a) introduction of improved systems for water control; (b) agricultural development; and (c) capacity-building of beneficiaries. Various programme activities will require knowledge and skills that are not available in the district, in which case external specialists will be contracted to assist the DPU. These specialists will include staff from the ZIUs, as well as private-sector service providers, such as small contractors, training institutions, NGOs and consultants.
5. The DPM will have management responsibility for programme implementation at the district level. The DPM will be integrated in the district structures at the same level as the heads of the departments, and will thus report to the district council through the district executive director (DED). This will ensure that programme activities are in line with priorities and other development efforts in



the district. The DPM will also have a direct line of responsibility to the programme coordinator (PC), because overall programme planning, monitoring, and reporting will, at least initially, be carried out by a central PCU. The Government will disburse the programme resources through the PCU to the DPU.

6. A qualified accountant will assist the DPMC in all matters related to budgeting, local purchase, financial administration and reporting. The availability of a capable irrigation officer (IO) who can be seconded full-time to the programme, will be a condition for programme implementation in a district. The IO will report to the DPMC, to whom monthly workplans, monitoring data and monthly reports on physical progress and scheme operation will be provided. The main functions of the IO will be to assist in the supervision of scheme construction, train WUAs in scheme O&M and monitor scheme performance. There will also be an organization and training officer (OTO), seconded full-time to the DPU, whose main function will be to plan and organize all training activities in the district.

7. The presence of a capable VEO and community development officer (CDO) will be a condition for scheme implementation at any particular site. Since the number of VEOs¹ is generally much lower than the number of villages in most districts, especially after retrenchment, it is assumed that two thirds of the required VEOs need to be contracted². Monthly workplans and reports of extension staff on programme-related activities will be submitted to the DPMC through the district extension officer (DEO), and copied to the district agriculture of livestock officer (DALDO). Unlike the IO and the OTO, the divisional extension officer (DIVEO) will be a part-time member of the DPU. The DIVEO will be primarily responsible for supervision of VEOs.

Zonal Irrigation Units (ZIUs)

8. The responsibility for technical preparation and supervision of scheme implementation will be, however, concentrated in the ZIUs, with the possibility to partly use contracted services. For the programme area, three ZIUs will be involved: Mwanza, Tabora and Kilimanjaro.

9. Staff from the ZIU will be involved in three types of activities: (a) data collection, evaluation and ranking of sites in a district; (b) surveys and scheme designs for selected sites; and (c) preparation for contracting out and supervision of implementation works. The PCU will include the ZIUs in the consolidated workplans and budgets for the programme, based on the requirements of the districts, and will coordinate the activities of the ZIUs. The programme will provide resources to the ZIUs in return for specific services, similar in principle to the way private-sector operators will be engaged to provide specific training and construction services.

10. The ZIU staff will be involved in an irrigation scheme development training course for district staff, training of contractors and local artisans, and training of trainers courses in scheme O&M for district-based staff.

Private Sector

11. Major activities in which private-sector service providers will be involved under the programme are scheme construction, training and possibly scheme survey and design. There are signs that the number and capacity of private-sector operators is growing in response to the new opportunities that are created under the Government's policies and the liberalized economy.

12. The use of local artisans was found to be effective in the construction of simple distribution structures under the SDPMA. In addition, using local artisans, in combination with providing some

¹ Provision has been made in the cost tables for 50% of the OTO's to be contracted.

² About two thirds of the VEOs (32 out of 54) are expected to be contracted.



on-the-job training, creates the necessary capacity at the scheme level to adequately meet most requirements for minor maintenance and repairs. Under the programme, small contracts will be offered to local artisans by the DPUs. The ZIU engineer will prepare technical specifications based on approved scheme designs. Most schemes will be characterized by low-cost, simple structures, but in some cases significant earthworks and head-works beyond what can be achieved by farmers and local artisans will be required. In these cases, the services of district-based contractors will be engaged.

C. Programme Coordination

13. The need for coordination, advice and policy guidance within the programme will be addressed in four ways: in the districts, by establishing district steering committees (DSCs); at the national level by establishing a liaison office in the Ministry of Finance (MOF), and a programme steering committee (PSC); and for the programme, by establishing a PCU. The PSC will review the consolidated annual work plan and budget (AWPB) for the programme, as well as the semi-annual and annual progress reports and policy issues. The DED and the DPMC from any particular district may be invited to attend a PSC meeting, to address particular issues regarding their district that cannot be solved satisfactorily by the DSCs.

14. Each DSC will meet at least two times per year, and also have an annual field visit to implementation sites in the district. The DSC will be chaired by the DED and have the DPMC as secretary. The DSC will have the following main tasks: (a) to review DPU workplans and approve the selection of sites for implementation, which will have to be endorsed by the PCU; (b) to ensure that programme implementation progresses as planned, and in coordination with other development efforts in the district; and (c) to address any problems that cannot be solved at the executive level. The DSC will have about ten members, including a representative from the planning office, agriculture, community development, the ZIU, the district council, and will also include beneficiary representatives consisting of selected village council and WUA committee members. Key donor representatives will also be coopted as a member. The programme workplans and budgets will be prepared according to established district procedures, and it will be integrated in the district workplan and annual budget, approved in a full council meeting and implemented under the supervision of established district structures.

15. The programme will assist in the establishment and operation of a liaison office in the MOF in Dar es Salaam, including a contracted liaison officer who will work part-time on programme matters. This office will provide support to the programme and other IFAD-supported programmes in the United Republic of Tanzania, on aspects relating to maintaining contact with ministries, other government and non-governmental institutions, attending to formalities related to central government development budget provisions, reimbursements, withdrawal applications, contracts and procurements.

16. The PCU will be headed by the PC who will be assisted by five professional staff and support staff. The PC and the financial controller (FC) will be appointed by the MAC. The PC will be assisted by two assistant programme co-ordinators (APCs), one of whom will concentrate on aspects related to scheme design, construction and contracts (APC development), while the other will concentrate on programme implementation in the districts and the coordination of all training activities (APC operations). The FC will deal with all financial and procurement matters under the programme, such as the preparation of consolidated annual budgets, including the districts, ZIUs, contracted services and the PCU; check and consolidate monthly financial reports from the districts; prepare semi-annual and annual financial reports; and prepare regular withdrawal applications.



D. Monitoring and Evaluation

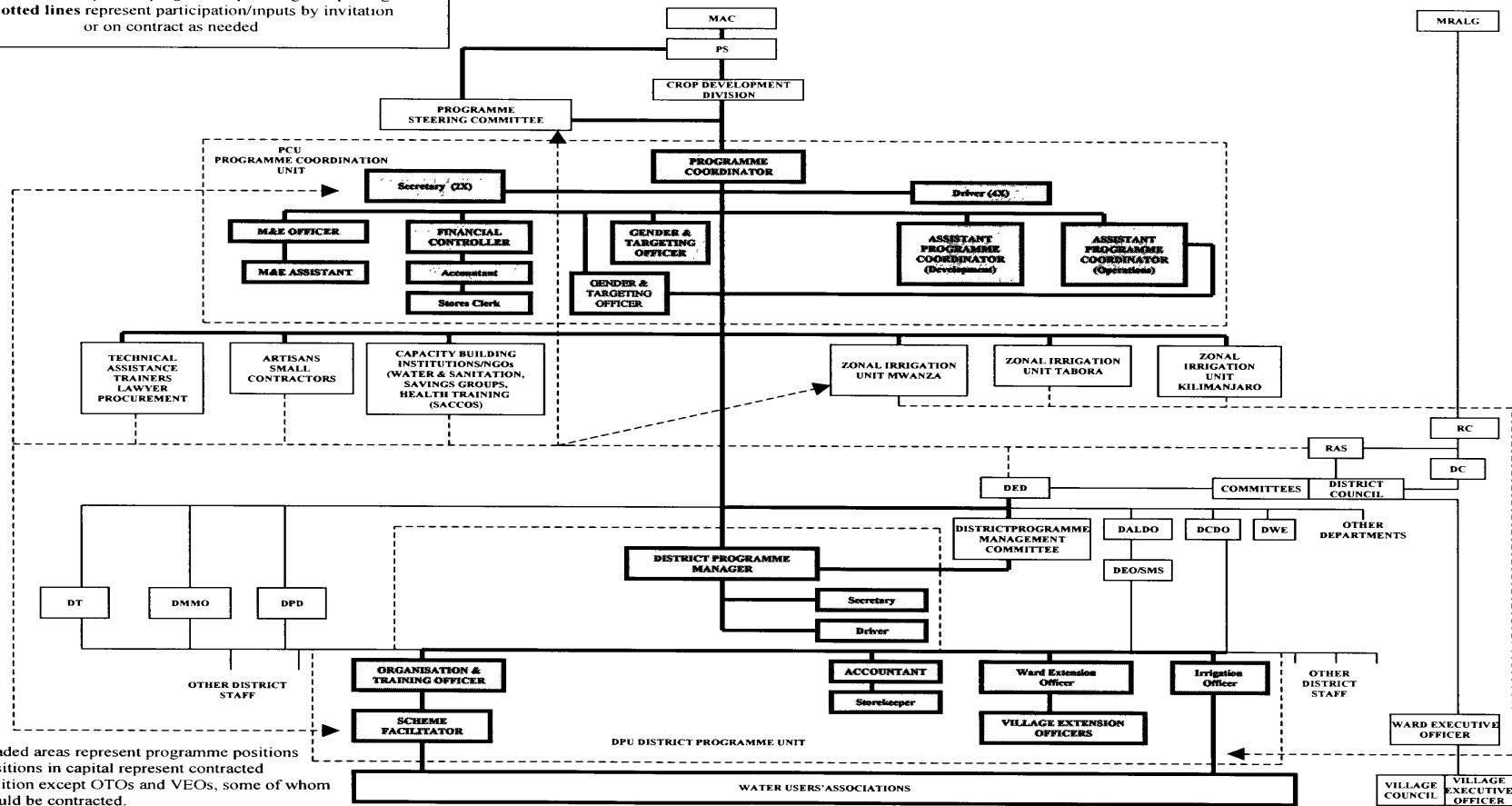
17. The demand-driven and participatory nature of the programme implies that the guiding principle of the monitoring and evaluation approach and methodology should be a PMES. This will provide a framework for generating information to: (a) guide strategic programme decision-making; and (b) enable management to make adjustments to the programme's implementation approach, management and organization, to fit beneficiaries' needs within the framework of established and agreed-upon goals.

18. The overall responsibility for the PMES will rest with the PCU and will take place at the level of the irrigation schemes, the districts and the overall programme. It will be the responsibility of the PCU's monitoring and evaluation officer (MEO). Under the guidance of the PC, the MEO will: (a) monitor and supervise the implementation of programme's activities in order to identify constraints and propose solutions; (b) measure progress and impact at the institutional and group levels; (c) facilitate impact monitoring at beneficiary level through impact studies and simple household surveys; (d) undertake or subcontract scheme-specific baseline surveys to facilitate the establishment of samples of reference households to be monitored during the course of programme implementation; and (e) assist the PC in preparing monthly, quarterly, semi-annual and annual progress reports.

19. At the district level, the relevant line departments, working against agreed work plans and budgets, will continuously monitor implementation of individual component activities. It is proposed that a team approach be taken to the planning and implementation of the PMES. Thus, in each district involved in the programme, a PMES team will be formed in the DPU, comprising initially the relevant programme staff (i.e. the APCs, the MEO, members of the DPU, e.g. WUA training officer, scheme facilitator, site engineer, irrigation officer, DIVEO, VEO and WUA representatives). The district PMES teams will jointly be responsible for: (a) ensuring that PMES information is reflected and incorporated into district annual work plans; (b) monitoring actual physical implementation; (c) tracking project expenditures; and (d) monitoring of programme processes and impact.

PROGRAMME ORGANIZATIONAL STRUCTURE

Thin lines represents the normal governmental structure
 Thick lines represent programme planning & reporting lines
 Dotted lines represent participation/inputs by invitation or on contract as needed



Shaded areas represent programme positions
 Positions in capital represent contracted position except OTOs and VEOs, some of whom would be contracted.



ECONOMIC AND FINANCIAL ANALYSIS

A. Benefits and Beneficiaries

1. **Benefits.** The major direct benefits of the programme will come from increased paddy and vegetable production derived from the expansion of irrigated areas, the improved water availability in both upgraded existing and new schemes, the limited and judicious use of fertilizers, and improved crop husbandry practices. Other major programme benefits are reduced transaction costs and the subsequent increased value added at the farm level, as a result of: (a) better access to markets, reduced transport costs and increased competition among traders after construction and regular maintenance of market access roads; (b) facilitated access to adapted financial services after strengthening of village-based savings and credit organizations; (c) increased selling price of paddy, after support to village-based marketing and storage groups and organizations; and (d) improved market position and negotiation skills of farmers, as a result of the above and, in general, of all grass-roots capacity-building activities financed under the programme. Indirect benefits include environmental and health benefits after construction of village latrines within the schemes; and reduced women labour for fetching water for domestic purpose following construction of water supply schemes.

2. **Beneficiaries.** The total number of families directly benefiting from the paddy-based irrigation schemes is expected to reach 15 700 by programme completion, of which: (a) 4 800 families will crop paddy under the existing SDPMA schemes; (b) 9 800 families in the area will be covered with new schemes, assuming an average irrigated plot size of 1.0 ha per family; and (c) an estimated 1 100 women will directly benefit from the shallow microwells. Most of those families and some additional families within targeted villages will also benefit from the support to marketing groups/associations and rural savings and credit organizations, whose total membership could reach over 4 000 by programme completion.

B. Production and Markets

3. **Incremental Production.** Paddy rice, and to a much lesser extent vegetables, are the crops to be focused on in the proposed programme, although food crops and animal production will also be the attention of ongoing extension activities in the scheme villages. Annual paddy production is currently estimated at about 280 000 t in the six regions that will be involved in the programme. The rice paddy is mostly traded as paddy, and is milled either in Mwanza or Arusha. Most of the rice is then exported, chiefly to Kenya and Uganda. The production of rice is highly demand-led, and there is no shortage of markets, both domestic and in neighbouring countries. Consumers in those markets pay a premium of about 10% to 20% for locally produced rice over imported rice, due mainly to a taste preference for the local varieties. Based on the paddy yield increase assumptions and the numbers of schemes to be upgraded and developed, it is estimated that incremental annual paddy production attributable to the programme will reach a maximum of almost 20 500 t per year at full development, eight years after programme start-up. The same applies to vegetables, for which incremental production is projected at 2 000 t per year at full development.

C. Financial Analysis

4. **Crop budgets.** Significant yield improvements are expected only for paddy rice, as the programme will concentrate mainly on irrigation improvement; most extension work will focus on paddy production. Yields are estimated to increase from 60 to 90% for new schemes over those for traditional schemes. Yield increases in the upgraded SDPMA schemes will be lower (40%), since many farmers are already realizing increased yields and incomes over traditional levels. Yields will increase, primarily because of greater and more timely supply of water, while a small increase in



fertilizer use (0 to 30 kg/ha in average) is assumed. Line transplanting of seedlings will replace broadcasting, and there will be some adoption of new varieties, as a result of extension activities. There will be a small increase in the labour requirement. The significant yield improvements translate into substantially higher net returns per hectare, which will increase from about 80 to 200% in the new schemes, and 60 to 70 % in the upgraded scheme. Returns-to-family labour are estimated at 50 to 160% in the new schemes and 30 to 40% in upgraded schemes.

D. Economic Analysis

5. The economic analysis of the programme was conducted over a 20-year period. All prices are expressed in constant November 1998 values, and physical contingencies were taken into account. Since the Government's economic liberalization programme has largely eliminated distortions, the shadow exchange rate is assumed to be the same as the financial exchange rate; the standard conversion factor applied to non-tradables has been assumed equal to 1. Additional rice produced under the programme will substitute imports, and its economic price has been calculated based on its CIF prices, resulting in a conversion factor of 1.8 for paddy. Likewise, the economic price of fertilizer has been based on the import parity price of urea. The conversion factor applied in the analysis is 0.75. Both import parity prices were calculated using the World Bank projected prices for year 2010, expressed in constant 1999 USD. Due to large unemployment in the rural areas, the conversion factor for unskilled labour is estimated at 50%.

6. **Economic benefits and costs.** The economic analysis took into account quantifiable benefits of irrigated agriculture development, e.g. increased paddy and vegetable production in the scheme area. It assumes that: (a) rainfed crop yields and cropping patterns remain unchanged after programme intervention, as compared to the present situation; and (b) 30% of the area to be developed with new schemes is presently cropped with traditional methods, while the remaining 70% is not cropped at all. Benefits associated with reduced transactions costs, as well as benefits from reduced women labour, improved health and nutritional status have not been accounted for in the analysis. Therefore, the analysis excluded those costs that are not directly associated with the irrigated agriculture benefits, namely market access roads, marketing, savings and credit, domestic water supply and sanitation, as well as the share of programme coordination and district capacity-building costs that can be attributed to those costs.

7. **Economic rate of return.** Based on the above assumptions, the expected economic rate of return (ERR) of the programme is 19% and the net present value (NPV) of the incremental net benefit stream amounts to USD 10 million. The sensitivity analysis shows the ERR is little sensitive to any variation in costs or benefits, and the programme will be economically viable in most cases tested. With irrigation-related costs increased by 30% or 50%, the programme would still yield an ERR of 15% and 13%, respectively. A decrease in benefits or a lagged benefit stream are more likely to occur with lesser increment in yields or adverse climatic conditions. Nevertheless, if benefits lagged by two years or reduced by 30%, the ERR would still be 14% and 13%, respectively, as it would be if both costs were increased and the benefits reduced 20% at the same time.