



**Document of the
International Fund for Agricultural Development**

**United Republic of Tanzania
Participatory Irrigation Development Programme
Completion Evaluation**

*Translation into Kiswahili of the
Agreement at Completion Point is included*

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Photo on cover page:
United Republic of Tanzania
Harsha Irrigation Scheme
Photo by: Moshe Finkel

United Republic of Tanzania

**Participatory Irrigation Development Programme
(PIDP) – Loan No. 511-TZ**

Completion Evaluation

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* All annexes are available from IFAD's Office of Evaluation (evaluation@ifad.org)

Abbreviations and Acronyms

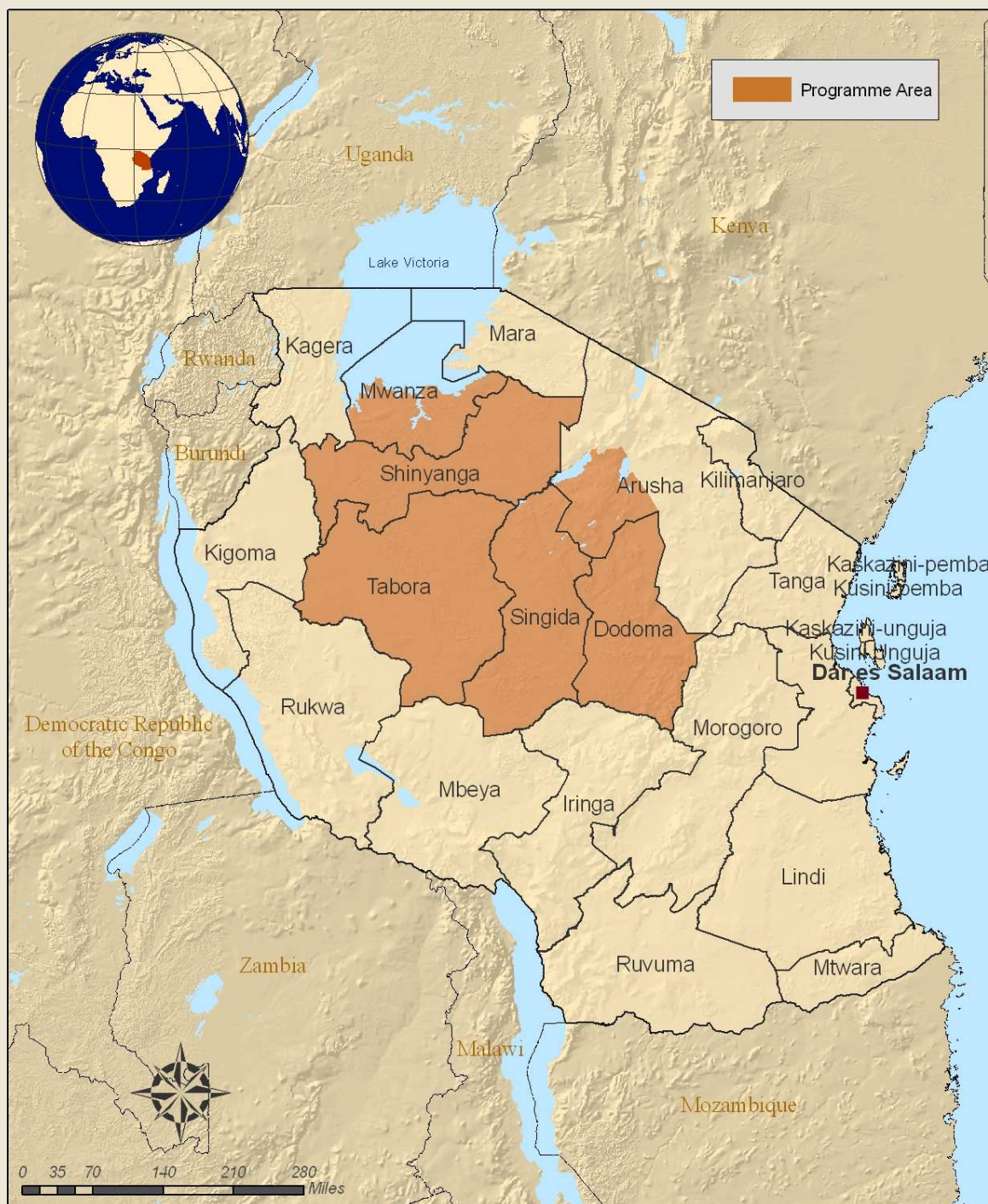
AfDB	African Development Bank
AMSDP	Agricultural Marketing Systems Development Programme
ASDP	Agricultural Sector Development Programme
AWPB	Annual Work Programme and Budget
CI	Cooperating Institution
COSOP	Country Strategic Opportunities Paper
DANIDA	Danish International Development Agency
DED	District Executive Director
DPMC	District Programme Management Committee
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field Schools
FY	Financial Year
GDP	Gross Domestic Product
GOT	Government of Tanzania
HIV/AIDS	Human Immuno-Deficiency Virus/Acquired Immuno-Deficiency Syndrome
IFAD	International Fund for Agricultural Development
IRDP	Institute of Rural Development Planning
JICA	Japan International Cooperation Agency
KATC	Kilimanjaro Agricultural Training Centre
MAFC	Ministry of Agriculture, Food and Cooperatives
MDG	Millennium Development Goal
MIS	Management Information System
MOF	Ministry of Finance
MPEE	Ministry of Planning Economy and Empowerment
MU	Mzumbe University
MUCCOBS	Moshi University College of Cooperatives and Business Studies
MVIWATA	National Farmers Association (Swahili acronym)
M&E	Monitoring & Evaluation
NGO	Non-Governmental Organisation
NSGRP	National Strategy for Growth and Reduction of Poverty (“MKUKUTA”)
O&M	Operation and Maintenance
PCU	Programme Coordination Unit
PADEP	Participatory Agricultural Development Programme
PARENT	Participatory Resource Network
PF	IFAD Division for Eastern and Southern Africa
PIDP	Participatory Irrigation Development Programme
PPP	Purchase Power Parity
PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
PSC	Project Steering Committee
RAS	Rapid Assessment Study
RFSP	Rural Financial Services Programme
SACCOS	Savings & Credit Cooperative Societies
SDPMA	Smallholder Development Project for the Marginal Areas
SNV	Netherlands Development Association
SUA	Sokoine University of Agriculture
TASAF	Tanzanian Social Action Fund
TJFACF	Tanzania-Japan Food Aid Counterpart Fund
TZS	Tanzania shilling
UDSM	University of Dar Es Salaam
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
US\$	United States Dollar

VEO	Village Extension Officer
WB	World Bank
WFP	World Food Programme
WUA	Water Users Association

The United Republic of Tanzania

Participatory Irrigation Development Programme

Completion Evaluation



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.

Map compiled by IFAD

FOREWORD

The Participatory Irrigation Development Programme in Tanzania was designed partly as a follow-up to the IFAD-funded Small-holder Development Project for Marginal Areas to increase crop productivity through expansion and improvement of farmer-initiated and well-managed small-scale irrigation schemes. The programme was co-funded by IFAD, World Food Programme, Irish Development Aid, the Government of Tanzania and the beneficiaries.

By rehabilitating the earlier irrigation schemes as well as designing new schemes, the programme exceeded most of its targets and as a result, over 14 000 hectares have been brought under cultivation and more than 25 400 beneficiaries reached. The programme had a positive impact on food security and incomes but this was limited to areas where water availability and reliability had improved.

Strengthening farmers' organisations, local institutions, water users' associations, and the development of marketing savings and credit groups were all implemented effectively. The adoption and application of a participatory approach to water management was perhaps the strongest achievement of the Programme, as it included more extensively the marginalised sectors of the population, and in particular, empowered women and youth.

Overall, the Programme was found to be highly relevant, as it responded to the needs of beneficiaries as well as to the Government of Tanzania's priorities. It generally over-achieved its outputs as against the targets set at appraisal, but had varying degrees of effectiveness and limited efficiency in several areas, including inadequate capacity of the district staff and local private contractors. The programme also had a positive impact on the socio-economic characteristics of the beneficiary communities.

This completion evaluation report includes an Agreement at Completion Point which summarises the main findings of the evaluation and sets out the recommendations that were discussed and agreed upon by IFAD and the Government of Tanzania, together with proposals as to how and by whom the proposals should be implemented.



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Participatory Irrigation Development Programme (PIDP)

Completion Evaluation

Executive Summary

I. INTRODUCTION

A. Country Background

1. The United Republic of Tanzania is a country with 38 million inhabitants. In 2005, around 75 per cent of the population lived in rural areas, deriving their livelihoods mainly from agriculture and related activities. About 20 per cent of the rural population live in absolute poverty (i.e. below the food poverty line). In 2005, the United Republic of Tanzania was one of the poorest countries in the world, with a GDP at purchasing power parity of US\$580 per capita. The agricultural sector accounts for 45 per cent of the country's GDP, and engages 82 per cent of the labour force. Only 15 per cent of the 40 million hectares of arable land is currently cultivated. The estimated potential for irrigation is 2.1 million hectares. Unreliable rainfall is a major constraint on agricultural development.

2. A number of policies have been formulated to address the country's development concerns, notably, the Vision 2025, which spells out the long-term economic and social development aspirations of improving the living standards of the people; the poverty reduction strategy paper, which was issued in 2000 and is the focus of most development interventions; the Tanzania Assistance Strategy through which donor assistance is harmonized; the sector-wide approach to budget support which is aimed at reducing duplication, encouraging donor harmonization and rationalizing the flow and allocation of funds; and the Agricultural Sector Development Programme which complements the country's poverty reduction strategy and rural development strategy.

3. Various donors, inter alia, IFAD, the World Bank and Danish International Development Assistance have been supporting irrigation development in the country. IFAD has developed two country strategic opportunities papers for the United Republic of Tanzania, the first in 1998 and the second in 2003. The latter was informed by a country programme evaluation undertaken by the Office of Evaluation (OE) in 2001-2002. In terms of investments, the Fund has provided US\$193 million as loans for 12 projects in the country since 1978; these include operations in the irrigation subsector. Currently, five of these 12 projects and programmes are ongoing.

B. The Programme

4. The Participatory Irrigation Development Programme is a six-year operation. The programme became effective in February 2000 and its current closing date is end-June 2007. Prior to the programme, from 1990-1997, IFAD financed another project in more or less the same geographic area, the Smallholder Development Project for Marginal Areas, which was largely aimed at promoting small-scale irrigation development.

5. The initial objectives of the Participatory Irrigation Development Programme were to: (i) increase the availability and reliability of water through improved low-cost systems of water control; (ii) raise agricultural productivity through better extension services; and (iii) build institutional capacity with the long-term vision of realizing the potential of smallholder irrigation development. Notably, these objectives were revised in 2001 to align them with the national Agricultural Sector

Development Programme¹ and it is against the new objectives and outputs that the Participatory Irrigation Development Programme has been evaluated. The programme has four main components, namely: (i) irrigation development; (ii) support to agricultural development; (iii) strengthening farmers' organizations and local institutions; and (iv) programme coordination.

6. The programme covers 12 important crop-producing districts² in the central plateau regions. There is considerable unused arable land in the programme area, largely as a result of the lack of irrigation systems.

7. In the districts covered by the programme, 21-49 per cent of the population live below the basic needs poverty line, mainly because of poor soils and erratic rainfall. Women have limited access to agricultural resources and woman-headed households represent about 11 per cent of the programme target group. In general, the indicators for social and physical infrastructure are below the national average in the programme area.

8. The total programme cost was US\$25.3 million, towards which IFAD provided a loan for US\$17.1 million on highly concessional terms.³ The World Food Programme provided US\$3.6 million in cofinancing and Irish Aid, US\$0.8 million. The Government provided counterpart funds equivalent to US\$3.1 million, and the programme beneficiaries also provided valuable contributions in the form of labour and locally available materials (equivalent to US\$0.6 million).

9. The Ministry of Agriculture, Food and Cooperatives was designated as overall executing agency, while district councils were responsible for actual programme implementation. A programme coordination unit was established in Dodoma, inter alia, to ensure coordination among the line departments involved in programme activities.

10. Various training centres, universities, NGOs, consulting companies and private contractors were also involved in the programme, providing a range of services required for implementation. The United Nations Office for Project Services (UNOPS) was the cooperating institution. Furthermore, efforts were made to ensure close coordination and synergies with other ongoing IFAD-funded projects in the country such as the Agricultural Marketing Systems Development Programme and Rural Financial Services Programme. These two operations, in particular, were expected to support the programme in the areas of marketing and financial services.

C. Objectives and methodology of the evaluation

Objectives

11. The main objectives of the evaluation were to: (i) assess the performance and impact of the programme; and (ii) generate findings and recommendations that would serve IFAD and the Government in designing and implementing similar projects and programmes in the future. The evaluation was also to provide an opportunity for learning and exchanging views with multiple partners on issues related to participatory irrigation development and its contribution to broader rural poverty alleviation efforts in the country (see paragraph 12).

¹ The programme revised the original logical framework as follows: Purpose: Crop productivity through expansion and improvement of farmer-initiated and well-managed small-scale irrigation schemes sustainably increased; Outputs: (1) Water management systems in the programme areas improved, (2) Services for agricultural development improved, (3) Market access roads in the programme areas constructed/improved, (4) Capacity of local institutions (farmers, districts, private sector) improved, participation, equity and sustainability fostered, and coordinated programme activities in place.

² This later became 13 districts as Shinyanga Rural was split into Shinyanga and Kishapu Districts during the period of implementation.

³ The disbursements from IFAD's loan are currently around 98 per cent.

Methodology

12. This assessment followed OE's guidelines for project evaluations⁴ and a six-point scale has been used to attribute ratings to each of the evaluation criteria.⁵ The overall approach to the evaluation included a desk review of the relevant documents, a rapid assessment study,⁶ the main evaluation mission, which entailed almost four weeks of fieldwork and included interviews with key informants,⁷ focus group discussions and other participatory approaches involving beneficiaries in seven selected schemes from six districts.⁸ A final multistakeholder workshop was held in Dar es Salaam in October 2006 to discuss the evaluation's results and lessons learned, as well as to lay the basis for the Agreement at Completion Point (see Part B of this document). The evaluation process involved active interaction and dialogue among members of the core learning partnership (CLP).⁹

13. The evaluation mission categorized the 56 programme schemes into three groups, according to two important characteristics: (i) the availability of water; and (ii) the existence of irrigated farming traditions. Group A (covering 9 schemes) had permanent water availability and the community had a tradition of irrigated farming. Group A was therefore most suited to irrigation schemes. Group B (covering 32 schemes) had seasonal/partial availability of water, experience in rice-growing with water-harvesting techniques of bunding, and therefore was suitable for enhanced water-harvesting schemes. Lastly, Group C (covering 15 schemes) had partial availability of water (seasonal rivers), limited or no experience with irrigation or water-harvesting, and therefore qualified for water-harvesting schemes. The evaluation team visited samples of all three groups.

II. PROGRAMME PERFORMANCE

A. Design Features: Some General Considerations

14. The programme was designed to include 18 districts identified during programme formulation and appraisal. However – owing to budgetary constraints – the programme steering committee in 2001 approved coverage by the programme of 12 districts only (which later became 13, see footnote 2).

⁴ This included making an assessment of the programme according to internationally recognized evaluation criteria, namely: (i) programme performance, including relevance, effectiveness and efficiency; (ii) impact on rural poverty; and (iii) performance of partners involved in the programme, including IFAD, the cooperating institution, government institutions and others.

⁵ As per OE's project evaluation methodology, on the six-point scale, 6 represents the best score. For example, in assessing project relevance, the scale would read as follows: 6 (highly relevant), 5 (relevant), 4 (partly relevant), 3 (partly irrelevant), 2 (irrelevant), 1 (highly irrelevant).

⁶ The rapid assessment study collected household data on food security, incomes, and opinions on programme relevance and effectiveness from beneficiary and non-beneficiary communities.

⁷ Informants were from the key ministries, donor agencies, local authorities and also included community leaders.

⁸ The mission was composed of Mr Ole Olsen, team leader; Mr Moshe Finkel, Irrigation Engineer; Mr Charles Lwanga-Ntale, Social Scientist; and Ms Sylvia Schweitzer, IFAD Evaluation Officer. The lead evaluator was Ms Victoria Matovu, OE.

⁹ The CLP comprised representatives from: the ministries responsible for poverty eradication; the Ministry of Agriculture, Food and Cooperatives; regional and district authorities, irrigation and agricultural extension services; the World Food Programme; Irish Aid; and research institutions and universities. The CLP also included representatives of UNOPS, Nairobi; the Eastern and Southern Africa Division, IFAD; in addition to stakeholders in irrigation development such as the Danish International Development Assistance and the Japan International Cooperation Agency.

15. The process of selecting¹⁰ districts, schemes/communities and individual beneficiaries was lengthy. It entailed involving potential beneficiaries in a process of consultation and dialogue for around five months before decisions were taken on the selection of schemes. This laborious process was a cause for discontentedness in those communities that were ultimately not included in the programme.

16. Programme design underestimated the cost of scheme construction, predicting an average of US\$170 000 instead of the actual average cost incurred of US\$380 000. This caused a shortfall in the programme budget, leading to delays in implementation. Eventually, the financing gap was filled by the Government, which provided an additional allocation of US\$2 million as counterpart funding towards the programme.

B. Implementation and Outputs

Targeting

17. In all, around 25 400 people benefited from the programme. In most cases, the poverty eligibility criteria (see footnote 10) were applied and the unit of selection was the household or the individual, except in schemes where people had plots along an already existing irrigation canal and thereby automatically became beneficiaries. In such situations, compulsory land redistribution was enforced when plots were larger than two hectare per person.¹¹

18. In some cases, poorer segments within selected communities could not participate in the programme because of their inability to contribute the labour required by the programme.¹² Women were particularly disadvantaged in contributing labour, since they were already overburdened with other priority household work. In six out of seven schemes visited by the evaluation team, the 30 per cent target of women beneficiaries was surpassed. However, the 50 per cent target of beneficiaries living below the poverty line was only met in two out of seven schemes visited.

Irrigation development

19. The planned output was improved water management systems in the programme areas. In general, it is noteworthy that the planned outputs have been achieved and in some cases exceeded. That said, the lowest achievement related to dam construction (50 per cent) and the highest related to the number of beneficiaries reached (187 per cent).

20. Although the programme made due efforts to undertake the required technical analysis in identifying irrigation schemes for development and/or rehabilitation, the basis for decisions was in some cases weak because of the lack of data (especially on hydrology). This led to the selection of some schemes where the available volume of water was insufficient and could not meet the

¹⁰ The criteria for selecting districts included the number of sites and the irrigation potential in the district and the contribution by the district of staff for programme implementation. Scheme selection was also informed by technical, social, economic and agricultural aspects and the situation in terms of management capacity, ease of implementation, land distribution and the environment. At the community level, resource-poor farmers especially women and woman-headed households were the main target groups. Target group composition had to meet the following requirements: (a) beneficiaries should not hold more than 2 hectares of cultivable land; (b) 75 per cent of the beneficiaries should be below the poverty line; and (c) at least 30 per cent of total beneficiaries and 50 per cent of the irrigation management committee members should be women.

¹¹ It was proposed during programme appraisal that beneficiaries would be only resource-poor farmers owning less than two hectares. As a result, land redistribution was imposed to cater for previous inequalities in access to land among the beneficiaries.

¹² In order to promote ownership, beneficiaries were required by the programme to show their participation by contributing labour, local materials or some funds to the programme.

community needs. As such, some schemes did not yield the results anticipated in terms of production over a number of years.

21. The evaluation notes that with approximately ten years of IFAD presence in the country's irrigation subsector, more attention should have been paid to the selection of suitable sites. For instance, although droughts and floods cannot be foreseen, their probable occurrence and consequences should have been more thoroughly factored in during the design process.

22. On another related issue, the tendering process for each scheme was longer than planned, mainly because of the lack of response from contractors. The programme therefore decided to construct some schemes through the use of Government structures. The tendering process led to delays in the construction work and revealed that there were only a few private contractors available to undertake such construction work within the stipulated time frame. In general, the capacity of the contractors was low, inter alia, in terms of technical know-how and resources.

Support to agricultural development

23. The planned outputs were improved agricultural development services and the rehabilitation or building of market access roads in the programme areas. Under this component, a total of 327 km of market access roads were constructed, which is 31 per cent more than envisaged. Extension officers and participating farmers were trained using the farmer field school¹³ concept, which led to enhanced knowledge among beneficiaries about improved technologies and varieties. The latter was an important factor in the increases achieved in agricultural production and productivity – for example in paddy – from an average of 0.5 to 2 tonnes per hectare. Increases, however, fell short of expectations at design, partly as a result of the limited availability of irrigation during low rainfall periods in the year.

24. On a less positive note, some of the demonstrations and trial programmes were seriously affected by drought. For similar reasons, the survival rate of trees planted along the roads constructed is only around 10 per cent, which was the result of both drought and animal damage. Tree-planting along irrigation canals was only 20 per cent successful. Finally, the least successful intervention was the construction of pit latrines in the farm areas (5 per cent). The demand for this item may have been overestimated at the time of programme formulation.

Strengthening farmers' organizations and local institutions

25. The planned outputs were improved capacity of local institutions among farmers, districts and the private sector; and the fostering of participation, equity and sustainability. In total, 56 water users' associations were formed (representing an achievement of 108 per cent) and 123 256 participant-training-days were provided, with women constituting 36 per cent of the participants. Moreover, a total of 44 savings and credit cooperatives (85 per cent of target) were established, and these served as the main vehicle for promoting savings and credit. The programme also provided support to private-sector development, for example, in terms of training of local artisans and contractors to construct and maintain or repair roads and physical irrigation structures. However, the identification of potential entrepreneurs to be trained was problematic because few people had the required qualifications.

26. District-level capacity-building focused on training of district staff, and members and leaders of water users' associations in programme implementation and review, labour-saving technologies, scheme operation, water management and other related matters. The evaluation notes that the training imparted was relevant, even though more attention could have been devoted to establishing effective

¹³ This is a mode of promoting knowledge among adults, whereby farmers are taught through experimenting with crops and observing crops on the farm or in the field.

links between district-level and community institutions so as to enable districts to provide technical support to communities.

C. Assessment of Programme Performance

Relevance

27. The Participatory Irrigation Development Programme responded to the needs of the beneficiaries and was in line with Government's overall efforts to combat rural poverty by enhancing rural and agricultural development. The programme was integral to the Government's endeavours to achieve the Millennium Development Goals, and conformed with the country strategic opportunities papers (prepared by IFAD in 1998 and 2003) for the United Republic of Tanzania by aiming to facilitate the rural poor's access to irrigation in order to enhance incomes and livelihoods. The beneficiaries met by the evaluation team felt that the programme was highly relevant as it aimed to address the problems they were facing in relation to inappropriate physical infrastructure, water management, farming technology, food supply, housing, gender equity, linkages with authorities and the ability to organize themselves. All in all, the evaluation concludes that the programme was highly relevant, with a rating of 6.

Effectiveness

28. The effectiveness of the programme in meeting objectives varied. Overall, water availability and management have improved in the programme area among most but not all of the target group. Extension services for agricultural development saw general betterment, market access roads have been constructed and are serving their purpose, and the capacities of institutions have been strengthened, even though the sustainability of some are a cause for concern. As such, the evaluation considers the programme moderately effective, with a rating of 4.

Efficiency

29. It is noteworthy that in the earlier stages of implementation, some delays occurred as a result of the lengthy participatory approaches that were being promoted, for example, in the selection of target communities, and the training of water users' associations and savings and credit cooperatives. Also, the tendering procedures for selecting private contractors was time-consuming and the actual construction of the schemes was slower than anticipated largely because of the limited capacity of the contractors selected.

30. Developing sufficient capacity at the district level to fully meet the implementation needs of the programme required more intensive training than originally thought. In particular, the drawn-out tendering procedures and lack of capacity among contractors led to inefficiencies. Moreover, as stated previously, the overall budget was not sufficient to construct all of the planned schemes, mainly because of the underestimation of construction costs at design and unforeseen increases during implementation. In sum, given that certain activities of the programme proceeded fairly swiftly (for example, the construction of rural roads and the establishment of various grass-roots institutions), whereas others (such as the construction of dams) were more laborious, the evaluation rates the programme as moderately efficient, with a score of 4.

D. Evaluation of Programme Partners

31. IFAD was the programme's initiating agency and thus responsible for programme design. Although there were some design weaknesses – such as the underestimation of construction and rehabilitation costs of irrigation schemes – IFAD carried out planning and design in a largely participatory manner and provided rapid implementation support, whenever needed. Moreover, the programme self-assessment, undertaken as an input for this evaluation, found that overall support from IFAD was timely and satisfactory. In sum, the evaluation considers IFAD's performance as satisfactory, with a rating of 5.

32. UNOPS – the cooperating institution – provided fully satisfactory supervision through annual missions; undertook loan administration, including disbursements, in an efficient manner; and provided implementation support as required. The performance of UNOPS is rated satisfactory, with a rating of 5.

33. Through its food-for-work activities, the World Food Programme has supported the construction of market access roads to an extent that allowed the construction of more roads than planned (an extra 77 km or 31 per cent) and has also provided food items worth US\$883,366 for the excavation of 300 km of irrigation canals. However, initially during implementation, beneficiaries in some schemes confused “food for work” with food aid. Shortage of food supplies and uncertainties about provision of non-food items were also experienced, but these problems were resolved over time. The performance of the World Food Programme is considered moderately satisfactory, with a rating of 4.

34. Irish Aid provided substantial financing for the training of water users’ associations, savings and credit cooperatives and women’s economic groups. The funds were strictly earmarked for training of women, which caused some delays during early implementation until women’s groups had been formed under the programme. Broadly speaking, according to the evaluation, the performance of Irish Aid is satisfactory, with a rating of 5.

35. The Government carried out its role of programme partner to the satisfaction of all parties. For example, it allocated additional counterpart funds than initially envisaged under the programme for irrigation scheme development. Sound programme management has also been ensured through the effective performance of the programme coordination unit, which includes an efficient monitoring and evaluation system. At the district level, performance has been dependent on support from the programme (e.g. in terms of training, additional staff and financing). It appears that performance in relation to the implementation of individual schemes has been less satisfactory since the gradual withdrawal of programme support. That is, district programme coordination units financed under the programme have already been phased out and their responsibilities have been taken over by the line departments at the district level, which have not allocated any specific resources for the operation and maintenance of the programme schemes. This raises concerns because several of these schemes are not yet fully operational, and water users’ associations still need support and coaching to ensure proper scheme implementation. Funds from the national Agricultural Support Development Programme are expected to fill the gap; however, this has not yet materialized. Despite this issue, the Government’s overall performance is considered satisfactory, with a rating of 5, given its overall positive approach to the programme.

36. Community organizations. Community-level institutions – especially the water users’ associations, and savings and credit cooperatives – have performed their core functions. However, there is some concern about the level of resources invested by the communities in operation and maintenance, which could jeopardize scheme sustainability. The overall performance of the community organizations is satisfactory, with a rating of 5.

III. PROGRAMME IMPACTS

A. Rural Poverty Reduction

37. The programme made a moderately successful impact on rural poverty in the country, earning a score of 4. The impact on social capital and empowerment has been positive and, in general, the communities have a greater role in development planning and implementation. In addition, increases in agricultural production and productivity, and in food security were observed in schemes where irrigation water was permanently available. Better extension services also contributed towards achieving food security. Likewise, the construction and rehabilitation of rural roads facilitated market access for produce and improved the timeliness of input delivery. Transportation costs were also lowered. That said, the impact of tree-planting on the environment has been low, and where land was

cleared for cultivation, biodiversity has been lost. Increased irrigation had a somewhat negative impact on health, as the frequency of malaria and bilharzia grew when schemes became operational.

B. Sustainability

38. According to the evaluation, the programme is potentially sustainable, with a rating of 4. At the national level, there is clear evidence of political sustainability given the thorough attention that the Government has devoted to developing irrigation and water-harvesting systems, which is also reflected in its National Irrigation Policy. At the district level, while policy statements support irrigation development, these have yet to be translated into concrete commitments in budgets to ensure that extension agents can continue to provide advice to the community on a wide range of issues, after the phasing out of the programme. At the grass-roots level, the sense of programme ownership is strong, which is essential for sustainability, even though beneficiaries need to invest greater resources in the operation and maintenance of the schemes and the rural infrastructure developed.

C. Innovation Promotion

39. The performance of the programme has been satisfactory in promoting innovations that can be replicated and scaled up, and therefore the programme receives a rating of 5. For example, the promotion of participatory irrigation planning approaches ensured that incremental water was available by diverting water from rivers to irrigation fields in order to supplement traditional modes of water-harvesting, and also allowed members of water users' associations to be involved in the tender process for contractors. This and other aspects of the programme were innovative within the irrigation subsector in the United Republic of Tanzania, and given the broadly positive results, are considered by the Government and key partners as features that should be replicated by future irrigation programmes.

40. The following table shows the ratings of the programme for performance, impact and overarching factors and performance of partners.

Ratings of the Participatory Irrigation Development Programme

<i>Programme evaluation ratings^{a/}</i>	
Programme performance	
Relevance	6
Effectiveness	4
Efficiency	4
Impact (overall)	4
Physical and financial assets	4
Human assets	4
Social capital and empowerment	4
Food security	4
Environment and natural resources	4
Institutions and policies	4
Overarching factors	
Sustainability	4
Innovation	5
Performance of partners	
IFAD	5
Government	5
Co-operating Institution: UNOPS	5
Co-financiers: WFP	4
Irish Aid	5
Communities	5

^{a/} IFAD uses a scale of 1 to 6, where 1 represents the lower score and 6 the highest.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

41. Through the implementation of 56 schemes, the programme has reached more than 25 000 beneficiaries, which is 59 per cent more than expected at appraisal. This also includes reaching a greater number of women than originally targeted, although the programme was unable to involve the poorest to the extent envisaged. Generally speaking, the performance of the programme is impressive because, for example, most of the outputs have been achieved or even exceeded. However, more reliable provision of water has not been fully achieved within some schemes.

42. On another issue, although the demand-driven, participatory approach lengthens the time for productive investments to yield results, the programme has demonstrated that this approach is effective in managing water in small-scale irrigation schemes and can enhance ownership and sustainability.

43. There is evidence that programme interventions have improved the knowledge and skills of beneficiaries, and have had positive impact on physical assets, food security, human assets and empowerment. Some challenges were: the absence of the necessary information to allow for optimum planning and design; lengthy tendering procedures; lack of local contractors; and underestimation of scheme construction cost. Drought has reduced the effectiveness of some of the completed schemes.

44. The evaluation considers overall programme performance to be moderately successful, assigning it a rating of 4 on the 6-point scale (where 6 is the highest score). Significantly, the programme scores were higher than the average scores in the 2005 ARRI report for relevance and innovation promotion, while they were the same as the ARRI report scores for all impact domains and for sustainability.

45. The implementation of the Participatory Irrigation Development Programme yielded several lessons. These form the basis of the recommendations below, which are categorized into policy and institutional issues, capacity-building and technological information. First, the Government faces a formidable challenge in striving to reduce poverty in the country, especially in semi-arid and other marginal areas that are characterized by low and unreliable rainfall, seasonal rivers and unpredictable water resources. Although irrigation and/or water-harvesting are among the development options of such regions, it is critical to ensure that the right choices are made, based on an assessment of the technical feasibility of the scheme. Second, owing to the limited availability of water and its various uses in any given area, a holistic approach to developing water resource management is necessary in order to avoid over-optimistic irrigation development plans that may not be sustainable. Further, the demand-driven approach to managing water for irrigation through water users' associations is effective and sustainable. However, these associations need continued technical support from the districts.

46. One of the challenges of the programme was to reach the target proportion of people living below the poverty line. This was problematic because these people either doubted the programme's benefits or could not afford to participate in the required construction work. As a consequence, in order to enhance participation the programme had to accept some delay in the decision by potential members to join, and to manage a trade off between (i) promoting ownership by requesting participants to contribute money and labour; and (ii) risking the exclusion of some of the poorest among the target group, especially women.

47. There is also a need to expand irrigated farming substantially by enhancing water-use efficiency (which is often as low as 30 per cent) through better management of irrigation or water-harvesting systems and through increased productivity. This could be achieved by using the same amount of water to irrigate a larger area, by cultivating more than one crop per year and/or, by growing high-value crops with low water requirements.

48. Participatory approaches, although time-consuming, proved effective in enhancing inclusion of the disadvantaged, but they were not documented. The evaluation also revealed that the participatory approach, the development of water users' associations and the training received in general contributed to building the social capital of the community, which could be useful for other development purposes.

49. The need for capacity-building at various levels cannot be overemphasized. Since the district authorities are expected to implement the irrigation policy within the new decentralized framework, the staff at this level must acquire the necessary skills in participatory planning and implementation of irrigation schemes, irrigation engineering, scheme construction, institution-building, agronomy and scheme management. In addition, resources need to be mobilized to support the requisite training. More training is needed in the sector of irrigated farming and, similarly, the private sector lacks the technical and financial capacity to cope with the contracted works.

50. Finally, the programme lacked necessary data, particularly on hydrology, that should form the basis for decision-making.

B. Recommendations

Policy and institutional issues

51. The National Irrigation Policy currently being developed should emphasize the need to analyse different irrigation/water-harvesting technologies, and crop/agronomy and livestock options in the context of each potential scheme area. In this way, a "one fits all" solution can be avoided and schemes can function more effectively.

52. Catchment approach. The Ministry of Agriculture, Food and Cooperatives and other line ministries should continue to develop the policy framework and ensure that the necessary institutions at the national, regional and local levels are in place so that a catchment approach¹⁴ may be followed in water resource management.

53. Supporting water users' associations. Greater institutional support should be provided to these associations to help them to mature in their crucial role in irrigation management and perform this role effectively. A study of how water users' associations function should be carried out and the results translated into operational tools for use by the associations.

54. Targeting the rural poor. It should be established at the design stage of any irrigation project or scheme that the overall aim is to target the rural poor, while giving due consideration to the economic efficiency of the schemes.

55. Water use efficiency. The Ministry of Agriculture, Food and Cooperatives should take measures at the policy level to ensure more efficient use of water. This could take the form of guidelines for optimum use of irrigation water.

56. Participatory approaches involving district councils and communities should be adopted as the standard methodology for planning, designing and implementing all future irrigation and water-harvesting programmes.

57. Exploiting already improved social capital. In instances where strong social capital – such as women's groups – has been built by the programme but where irrigation systems have been less successful, efforts should be made to use that social capital for other development purposes in the community.

Capacity-building

58. At the district level. The human and financial capacity at the district level should be enhanced. In particular, more financial resources should be allocated to irrigation development, and training programmes in various fields should be organized for the district staff, for example in following participatory approaches to development; and training water users' associations in good management practices and in the operation and maintenance of irrigation schemes. This increased capacity is essential for the planned decentralized implementation of the National Irrigation Policy and for attaining the targets with regard to the expansion of irrigated agriculture.

59. In irrigated farming. The availability of training in irrigated farming is a prerequisite for the successful implementation of the National Irrigation Policy. The basic functions of the specialized training institution, the Kilimanjaro Agricultural Training Centre, should be maintained through the provision of the appropriate financial and human resources.

60. Private-sector contractors. A dialogue should be initiated to identify training programmes for private contractors. Such programmes should also ensure that private contractors are well versed in tendering and procurement rules, regulations and procedures.

¹⁴ This approach aims to ensure that the water resources of a river are managed and used with due consideration for other users in the catchment area.

Technological information

61. Data collection programme. A data collection programme should be implemented in the water-harvesting diversion schemes that have already been constructed. This would facilitate the implementation of similar activities in the future. Aspects to be documented should include river flows, flood flows, and rainfall volume and intensity.

62. Compiling information regarding irrigation and water-harvesting techniques. Information about the range of available irrigation/water-harvesting technologies should be compiled, drawing on the knowledge and experience that have been gained on this subject in the United Republic of Tanzania.

United Republic of Tanzania

Participatory Irrigation Development Programme (PIDP)

Completion Evaluation

Agreement at Completion Point

I. BACKGROUND

1. In 2006, the International Fund for Agricultural Development's (IFAD) Office of Evaluation (OE) conducted a completion evaluation of the Participatory Irrigation Development Programme (PIDP) in the United Republic of Tanzania. The evaluation mission took place in July/August 2006 and the evaluation report was finalized at the end of October 2006.

2. The Core Learning Partnership (CLP) of the evaluation comprised of representatives from: the Ministry of Finance; Ministry of Planning, Economy and Empowerment; Ministry of Agriculture Food and Cooperatives (MAFC); Prime Minister's Office, Regional Administration and Local Governments, District Councils, Regional Administrative Secretaries, World Food Programme; the office responsible for Irish Development Assistance; members of research institutions and universities; The United Nations Office for Project Services (UNOPS), Nairobi; and the IFAD Division for Eastern and Southern Africa (PF). Other agencies involved in irrigation development such as the Danish International Development Agency (DANIDA) and Japan International Cooperation Agency (JICA) were also part of the CLP.

3. A final workshop was held in Dar es Salaam on 19 October 2006 to discuss the findings and lessons from the evaluation, and to lay the basis of the Agreement at Completion Point (ACP). This ACP reflects an agreement between the Government of Tanzania (GOT) [represented by the Ministry of Agriculture Food and Cooperatives (MAFC)] and IFAD (represented by the Eastern and Southern Africa Division).

II. THE MAIN EVALUATION FINDINGS

4. The PIDP was designed according to IFAD's country strategy for the United Republic of Tanzania, and was in line with the Government's high priority of poverty reduction. The programme considerably attained its objectives by improving overall water availability and agricultural productivity although with varying degrees of effectiveness. PIDP made very good efforts in terms of institutional capacity development, as well as promoted participatory approaches and intensive training. It also significantly achieved most of its outputs and it provided opportunities for the traditionally landless (especially women and youth) to get land.

5. There were several challenges facing PIDP implementation and these include: the low institutional capacity at district level, the limited range of water-harvesting technologies used, the under estimated level of construction costs for individual schemes, the lengthy tendering process and the low capacity of contractors and the unclear land rights of the 'new' land owners among others

III. RECOMMENDATIONS AGREED UPON BY ALL PARTNERS

A. General Policy Recommendation

6. It was proposed that the recommendations below should be integrated into the National Irrigation Policy under formulation and that MAFC should therefore introduce this ACP to the team drafting the policy. Further, it was agreed that the implementation of the recommendations should be

within the context of the Agricultural Sector Development Programme (ASDP) and the respective District Agricultural Development Plans (DADPs).

7. The proposed National Irrigation Policy policy should be comprehensive and robust taking into consideration:

- Different water users
- Competitive water demands
- Sustainability of irrigation development and management
- Targeting the poor (pro-poor)

Time frame: by end of 2006

B. Specific Policy and Institutional Issues

8. Poverty eradication. It should be emphasized in the National Irrigation Policy being developed, that different irrigation/water-harvesting technologies be discussed in the context of each potential scheme area, and the range of agronomy options available including selecting the most suitable crops. Livestock development should be considered alongside crop production, to promote a harmonious coexistence of the two, and where possible to integrate them. It is also evident that market access for surplus produce and access to inputs and finance must be integral parts of irrigation schemes and community development.

9. Catchment approach. MAFC should ensure that Ministry of Water, and other line ministries in consultation with partners continue their concerted actions to incorporate the catchment approach in the policy and to ensure that the necessary institutions at national, regional and local levels are established to implement it.

Time frame: end of 2006

Supporting water users' associations

10. Districts should provide institutional support to the WUAs to assist them in maturing and performing their very crucial role in irrigation management.

Time frame: by end of 2007

11. The PIDP Programme Coordination Unit (PCU) should conduct a comprehensive study of how WUAs function (what works and what does not work). The study should be formulated and carried out and the results be translated into operational tools regarding the regulatory role of WUAs. Based on the results of the study it should be considered to develop more robust arrangements for legal support to the WUAs.

Time frame: by July 2007

12. Targeting the rural poor. MAFC should decide at the design of any irrigation scheme that the overall aim is to target the rural poor while giving due consideration to the economic efficiency of the schemes.

Time frame: after the development of the irrigation policy – by December 2007

13. Water use efficiency. MAFC in coordination with relevant ministries (Water, Environment, Energy, Livestock) should therefore develop appropriate strategies that will empower farmers to become aware of and knowledgeable in water management. The District Councils should train WUAs and then WUAs should become accountable to the communities for efficient water use. This requires a

participatory approach, training, application and enforcement of regulations and introduction of incentives/disincentives.

Time frame: starting June 2007

14. Participatory approach. The participatory approach should be adopted as a standard methodology for the planning, design, implementation, monitoring & evaluation of all future irrigation and water-harvesting programmes. MAFC should ensure that this is adopted in the National Irrigation Policy.

15. PIDP PCU should develop guidelines for participatory approaches for incorporation into DADPs for implementation.

Time frame: by June 2007

16. Exploiting already improved social capital. In instances where good social capital has been built, but where irrigation systems have not worked as well, efforts should be made to use the acquired social capital for other community development. The respective districts should identify areas where such social capital exists and incorporate such information in their DADPs for use.

Time frame: Starting January 2007

C. Capacity-building

17. Capacity-building at district level. MAFC should ensure that measures are taken nation wide to considerably increase the capacity (human and financial resources) at district level to take responsibility for implementation and follow up of irrigation development programmes. An assessment will need to be urgently made of the bottlenecks to effective implementation and uptake of management responsibilities by district institutions. This should be followed by a clear definition of activities, including timelines, aimed at addressing the identified gaps. This is a condition for the foreseen decentralized implementation of the National Irrigation Policy and attaining the targets set for expanding irrigated agriculture.

18. MAFC in collaboration with Prime Minister's Office-Local governments should ensure that District Councils carry out an assessment of requirements, identify capacity gaps and develop corresponding training programmes. Districts could undertake both training and recruitment of necessary staff in order to fill the existing gaps.

Time frame: starting July 2007

19. Capacity-building in irrigated farming. MAFC should ensure, that the necessary training needs are catered for during policy formulation and that District Councils through DADPs make provision for Farmers Field School, supporting Village Extension Officers' (VEO) and core farmers' participation.

Time frame: July 2007

20. Private sector contractors. MAFC should open up dialogue with the private sector specifically to identify gaps and develop means and measures to fill the gaps. Training programmes should be developed in cooperation with the sector to improve its capacity. Possibilities for streamlining tendering and procurement rules, regulations and procedures thus facilitating its operations in irrigation scheme construction should be investigated. Measures must be developed to improve the productivity of the sector otherwise a bottleneck for scheme construction will be a serious constraint on the implementation of the National Irrigation Policy.

21. MAFC should in coordination with other relevant ministries establish cooperation with the National Construction Council, Contractors' Registration Board, and Engineers Registration Board in order to implement this recommendation.

Time frame: immediately

D. Technical Matters

22. Data collection programme. MAFC and the DADPs should ensure that the necessary data are collected to support future works. MAFC in coordination with Ministry of Water and other relevant institutions should immediately establish such data collection stations in cooperation with Zonal Irrigation Units and the District Councils.

Time frame: immediately

23. Compiling information regarding irrigation and water-harvesting techniques. The MAFC through the Department of Irrigation and Technical Services should compile information about the range of irrigation/water-harvesting technologies already developed and available and the related advantages and disadvantages. The already existing knowledge and experience in the United Republic of Tanzania about irrigation and water-harvesting techniques should be made the best possible use of. Where necessary it should be supplemented and up-dated. Relevant institutions should be assigned the task of compiling the relevant information available nationally and internationally and make it available for the National Irrigation Policy implementation.

Time frame: immediately

Jamhuri ya Muungano wa Tanzania

Mpango Shirikishi wa Kuendeleza Kilimo cha Umwagiliaji (PIDP)

Tathmini Wakati wa Kumilika kwa Mpango

Makubaliano Wakati wa Kukamilika kwa Mpango

I. UTANGULIZI

1. Mnamo mwaka 2006, Ofisi ya Tathmini (OE) ya Mfuko wa Kuendeleza Kilimo Duniani (IFAD) ilifanya tathmini wakati wa kukamilika kwa Mpango Husishi wa Kuendeleza Kilimo cha Umwagiliaji (PIDP) katika Jamhuri ya Muungano wa Tanzania. Timu ya tathmini ilianza kazi Julai/Agosti 2006 na ripoti ya tathmini ilikamilika mwishoni mwa October 2006.

2. Washirika katika kujifunza (CPL) wa tathmini hii walihusisha wawakilishi kutoka: Wizara ya fedha, Wizara ya Mipango, Uchumi na Uwezeshaaji; wizara ya Kilimo, Chakula na Ushirika (MAFC); Ofisi ya Waziri Mkuu – Tawala za Mikoa na Serekali za Mitaa; Makatibu Tawala wa Mikoa; Mpango wa Chakula Duniani (WFP); Ofisi inayohusika na misaada ya Maendeleo ya Ireland, Ofisi ya Usimamizi wa Miradi ya Umoja wa Mataifa (UNOPS) – Nairobi; Ofisi ya IFAD inayosimamia Kanda ya Mashariki na Kusini mwa Afrika (PF). Mashirika mengine yanayoshughulika na kuendeleza umwagiliaji kama vile DANIDA na JICA walikuwa pia ni sehemu ya washirika katika kujifunza.

3. Warsha ya mwisho iliandaliwa Dar es Salaam tarehe 19 October, 2006 kujadili matokeo ya tathmini hiyo na mambo muhimu ya kujifunza kutokana na tathmini hiyo, na kuweka msingi wa mkataba wa kukamilika kwa Mpango (ACP). Mkataba huu unaashiria makubaliano kati ya Serikali ya Tanzania (ikiwakilishwa na wizara ya Kilimo chakula na Ushirika) na IFAD (ikiwakilishwa na ofisi ya Usimamizi wa Mashariki na Kusini mwa Afrika)

II. MAMBO MUHIMU YALIYOTOKANA NA TATHMINI

4. PIDP ilisanifiwa kulingana na Mkakati wa IFAD wa nchi wa Jamhuri ya Muungano wa Tanzania, na ilikuwa sambamba na kipaumbele cha serikali cha Kuondoa Umaskini. Mpango huu kwa kiasi kikubwa ulifikia malengo yake kwa kuboresha kwa ujumla upatikanaji wa maji na tija katika Kilimo ingawa kiwango cha uzalishaji kinatofautiana. PIDP imefanya vizuri sana katika kujenga uwezo wa taasisi zake, pamoja na kuendeleza mbinu shirikishi na mafunzo ya kina. Pia ilifanikiwa kwa kiasi kufikia matokeo mengi iliyokuwa imejipangia na kutoa fursa kwa watu ambao kijadi hawakuruhusiwa kumiliki ardhi (hasa kwa wanawake na vijana) kupata ardhi.

5. Pia yalikuwepo matatizo mbalimbali ya liyokabili utekelezaji wa PIDP ambayo ni pamoja na: Uwezo mdogo kitaasisi katika ngazi ya wilaya, wigo mdogo wa mbinu za uvunaji maji uliotumika, Makisio ya chini ya gharama za ujenzi wa skimu, taratibu ndefu za zabuni na uwezo mdogo wa makandarasi pamoja haki za umiliki mpya wa ardhi ambao haukuwa bayana.

III. MAPENDEKEZO YALIYOKUBALIWA NA WASHIRIKA WOTE

A. Mapendekezo ya Sera kwa ujumla

6. Mambo yafuatayo yalichambuliwa kwa kina ili kuona kufaa kwake na kwa kufuata kipaumbele kwa mpangilio wa Sera, Kujemga uwezo, mambo ya utaalum; na mapendekezo yaliyoonekana yanafaa. Ilipendekezwa kuwa mapendekezo hayo yafanywe kuwa sehemu ya Sera ya taifa ya Umwagiliaji inayoandaliwa na kwamba Wizara ya Kilimo, Chakula na Ushirika (MAFC) inapaswa

kutambulisha mkataba huu wa Kukamilika kwa Mpango (ACP) kwa timu inayosawidi sera hiyo. Pia, warsha ilikubaliana kwamba utekelezaji wa mapendekezo haya utakuwa katika mazingira ya Mpango wa Kuendeleza sekt a ya Kilimo (ASDP) na Mipango ya Kuendeleza Kilimo katika Wilaya (DADPs) husika.

7. Pendekezo la sera ya Umwagiliaji lazima iwe ya kina na iboreshwe kwa kuzingatia yafuatayo:

- Watumiaji mbalimbali wa maji
- Ushindani katika mahitaji ya maji
- Uendeleu wa Kilimo cha umwagiliaji na matunzo
- Kulenga maskini vijijini

Muda: Mwishoni mwa 2006

B. Mambo muhimu yahasuyo Sera na Taasisi

8. Kuondoa Umaskini. Ni lazima isisitizwe katika Sera ya Umwagiliaji ambayo inaandaliwa kuwa, teknolojia mbalimbali za umwagiliaji/uvunaji maji zijadiliwe katika usanifu wa skimu mojamoya, na fursa mbalimbali za utaalamu wa mazaouliopo ikiwa ni pamoja na uchaguzi wa zao muafaka katika eneo hilo ili kuleta Uwiano wa haya mambo mawili, na pale inapowezekana kuyafanya yote pamoja. Pia imethibitika kuwa, upatikanaji wa soko kwa ajili ya mazao ya ziada na upatikanaji wa pembejeo na mtaji lazima viwe ni sehemu ya skimu ya umwagiliaji na maendeleo ya jamii.

9. Mbinu ya Kulenga Vyanzo vya Maji. Wizara ya Kilimo ihakikishe kuwa Wizara ya Maji, na wizara nyingine husika kwa kuwasiliana na washirika wengine aendee na juhudi zao za dhati kuweka mbinu hii ya mtazamo wa vyanzo vya maji katika sera zao na kuhakikisha kuwa taasisi muhimu za kitaifa, Kimkoa na ngazi za kijamii zimeanzishwa ili kutekeleza ambo hili.

Muda: Mwishoni mwa 2006

Kusaidia Vikundi vya Wamwagiliaji maji

10. Wilaya lazima itoe misaada ya kitaasisi kwa WUA ili kuzisaidia kukomaa na kutekeleza wajibu wake wa msingi wa kusimamia Kilimo bora cha umwagiliaji

Muda: Mwishoni mwa 2007

11. Ofisi ya Uratibu wa PIDP lazima ifanye utafiti wa kina wa jinsi WUA inavyofanya kazi (nini kinafanya kazi na ni nini hakifanyi kazi). Utafiti huo uandaliwe na kufanyika na matokeo yatafsiriwe katika dhana za utekelezaji kulingana na wajibu wa uendeshaji wa vikundi vya wamwagiliaji (WUA). Kufuatia matokeo ya utafiti huo, lazima zitafutwe mbinu bora zidi za kisheria za kusaidia WUAs.

Muda: Julai 2007

12. Kulenga maskini vijijini. Wizara ya Kilimo wakati wa usanifu wa mradi wowote wa Umwagiliaji lazima iamue kuwa lengo kuu la mradi huo ni kulenga maskini vijijini pamoja na kuwa makini katika kukuza uchumi wa skimu.

Muda: Baada ya kukamilika Sera ya Umwagiliaji – Disemba 2007

13. **Matumizi bora ya Maji.** Wizara ya Kilimo ikishirikiana na wizara nyingine husika (Maji, Mazingira, Nishati, Mifugo) ni lazima ziandae mikakati inayofaa ambayo itawajasirisha wakulima ili watambue na kuelewa mbinu bora za matumizi ya maji. Wilaya lazima zitoe mafunzo kwa viongozi

wa vikundi vya Wamwagiliaji (WUAs) halafu WUAs wanapaswa kuwajibika kwa jamii kuhusiana na matumizi bora ya maji. Hii yahitaji mbinu shirikishi, Mafunzo na matumizi ya Pongezi/adhabu

Muda: Kuanzia Juni 2007

14. **Mbinu Shirikishi.** Mbinu Shirikishi lazima zitumike rasmi katika kupanga mipango, usanifu wa miradi, utekelezaji, Ufuatiliaji na Tathmini wa miradi yote ya Umwagiliaji na uvunaji maji ijayo. Wizara ya Kilimo lazima ihakikishe kuwa mbinu hizi zinaingizwa kwenye sera ya Umwagiliaji.

15. Ofisi ya Uratibu wa PIDP iandae mwongozo wa mbinu shirikishi ili uingizwe kwenye mipango ya wilaya kwa utekelezaji.

Muda: June 2007

16. **Kutumia fursa ya Mtaji wa Kijamii ulikwisha jengwa.** Kwa mahali ambapo Mtaji wa kijamii ulijengwa vyema, lakini mradi wa umwagiliaji haufanyi kazi vyema, juhudi lazima zifanywe kutumia Mtaji huo katika mambo mengine ya maendeleo katika jamii hiyo. Wilaya husika lazima zitafute maeneo ambapo Mtaji huo upon a kuzweka taarifa zake katika mipango ya Kilimo ya wilaya kwa matumizi.

Muda: Kuanzia January 2007

C. Kujenga Uwezo

Kujenga Uwezo Ngazi ya Wilaya

17. Wizara ya Kilimo Lazima ihakikishe kwamba hatua zinachukuliwa Kitaifa kuhakikisha kuwa uwezo unaongezwa (raslimali ya watu na fedha) katika ngazi ya wilaya ili wawajibike kutekeleza mpango ya umwagiliaji. Taasisi mbalimbali wilayani lazima zifanye haraka Uchambuzi wa vikwazo vilivyopo kiutekelezaji na kiutawala. Hii ifuatiwe na mwongozo wa majukumu ikiwa ni pamoja na muda wa utekelezaji, na malengo ya kuondoa vikwazo vilivyogunduliwa. Hili ni sharti kwa katika mfumo wa ugawaji madaraka katika utekelezaji wa sera ya umwagiliaji na kufikia lengo la kuongeza eneo la umwagiliaji.

18. Wizara ya Kilimo kwa kushirikiana na Ofisi ya Waziri Mkuu-Tawala za Mikoa na Serikali za Mitaa lazima zihakikishe kuwa Halmashauri za wilaya zinafanya uchambuzi wa mahitaji, kugundua mapungufu na kuyawekea mpango wa mafunzo. Wilaya zinaweza kufanya mafunzo sambamba na kuajiri wataalam wapya ili kuziba mapengo yaliyopo.

Muda: Kuanzia Julai 2007

19. **Kujenga Uwezo katika Kilimo cha Umwagiliaji.** Wizara ya Kilimo Chakula na Ushirika ihakikishe kwamba mahitaji muhimu ya mafunzo yanatimizwa wakati wa utengenezaji wa sera na kwamba wilaya husika kupitia mipango yake ya Kilimo zitenge fedha kwa ajili ya Mashamba Darasa, mafunzo ya mabwana shamba (VEO) na ushiriki wa Wakulima Viongozi.

Muda: Julai 2007

20. **Makandarasi wa Sekta Binafsi.** Wizara ya Kilimo lazima ianzishe majadiliano na sekta binafsi hasa katika kujua mapungufu yaliyopo na kasha kutafuta jinsi na mbinu za kuondoa mapungufu hayo. Mpango wa mafunzo uandaliwe kwa kushirikiana na Sekta hiyo ili kuboresha uwezo wa sekta hiyo. Uwezekano wa kurekebisha utangazaji wa zabuni, sheria za manunuzi, kanuni na taratibu ili kuwezesha utumikaji wake katika shughuli zaujenzi wa skimu za umwagiliaji ni lazima utafutwe. Mbinu ni lazima zitafutwe ili kuboresha tija ya sekta hiyo vinginevyo vikwazo katika ujenzi wa skimu za umwagiliaji litakuwa ni tatizo kubwa katika utekelezaji wa sera ya umwagiliaji maji.

21. Wizara ya Kilimo kwa kushirikiana na Wizara nyingine husika lazima zianzishe ushirikiano na Baraza la Taifa la ujenzi, Bodi ya Usajili wa Makandarasi na Bodi ya Usaili wa Wahandisi ili kutekeleza pendekezo hili.

Muda: Sasa hivi

D. Mambo ya Kiufundi

Mpango wa Ukusanyaji Takwimu

22. Wizara ya Kilimo kupitia Mipango ya Kilimo Ya Wilaya lazima ihakikishe kuwa takwimu muhimu zinakusanywa kusaidia kazi za baadae. Wizara ya Kilimo ikishirikiana na Wizara ya Maji pamoja na wizara nyingine muhimu lazima zianzishe vituo vya ukusanyaji wa takwimu mara moja kwa kushirikiana na ofisi za kanda za Umwagiliaji na Wilaya husika.

Muda: Sasa Hivi

23. **Kukusanya taarifa zihusuzo Umwagiliaji na mbinu za Uvunaji maji.** Wizara ya Kilimo kupitia idara ya Umwagiliaji na Huduma za Kiufundi lazima ikusanye taarifa kuhusu umwagiliaji na mbinu za uvunaji maji ambazo tayari zimebuniwa na zipo pamoja na faida na hasara zake. Elimu na uzoefu ambao tayari upo katika Jamhuri ya Muungano wa Tanzania kuhusiana na Umwagiliaji na mbinu za Uvunaji maji lazima vitumike vizuri. Pale inapowezekana mbinu hizo ziboreshwe na zifanywe za kisasa. Taasisi zinazohusika lazima zipewe wajibu wa kukusanya taarifa zinazohusika kitaifa na kimataifa na kuziingiza katika utekelezaji wa Sera ya Umwagiliaji.

Muda: Sasa hivi

United Republic of Tanzania

Participatory Irrigation Development Programme (PIDP)

Completion Evaluation

Main Report

I. INTRODUCTION

A. Country Background

1. **Demographic and socio-economic indicators.** Tanzania has an area of 945 087 km² and a population of 36.7 million (2002), of which 64.6 per cent lives in rural areas. In Uganda and Kenya the corresponding figures were 84.7 per cent and 63.7 per cent, respectively. The population growth rate for Tanzania is 2.9 per cent. The population density is on average 38 per km² (2002), compared to 56.1 in Kenya and 128.3 in Uganda.

2. The HIV/Aids prevalence rate among adults in Tanzania was 7.7 per cent (2003), which is slightly higher than in Kenya (6.7 per cent) and notably higher than in Uganda (4.1 per cent). Also, infant mortality is significantly higher in Tanzania (99 deaths/1 000 live births) than in Kenya (61.4) and Uganda (67.8).

3. In 2003, Tanzania was the third poorest country in the world with a per capita Gross Domestic Product (GDP) of only US\$621 Purchase Power Parity (PPP), which is considerably lower than for Kenya (US\$1 037) and Uganda (US\$1 457). However, Tanzania's GDP growth rate was estimated at 6.7 per cent compared to Kenya 2.8 per cent and Uganda 4.7 per cent. The annual inflation rate as measured by the consumer price index was 4 per cent in 2005 (as compared to 8.1 per cent in Uganda and 10.3 per cent in Kenya).

4. **The agricultural sector.** The structure of Tanzania's economy is characterized by a large agricultural sector, which accounts for 45 per cent (2004) of the GDP (compared to 16 per cent for industry and 39 per cent for services). In Kenya and Uganda, the agricultural sector accounts for only 32.4 per cent and 15.8 per cent of the GDP, respectively. Agricultural exports account for about 85 per cent of all exports quantitatively and 45 per cent of export earnings. Crop production contributes 74 per cent to the agricultural GDP. The agricultural sector engages 82 per cent of the labour force. Tanzania has a potential total arable area of about 40 million hectares of which only 6.3 million hectares (15.7 per cent) are currently under crop production.

5. Unreliable rainfall both within the same year and from one year to another in most parts of the country is a constraint on development of Tanzania's mostly rainfed agriculture. The potential for irrigation is estimated at 2.1 million ha in mainland Tanzania. Some of the existing irrigation schemes require rehabilitation and some are affected from the degradation of the catchments areas, water logging and salinity.

6. Besides the International Fund for Agricultural Development (IFAD), other institutions contributing to irrigation development in Tanzania include the World Bank (WB), the Danish International Development Agency (DANIDA), the Food and Agricultural Organization (FAO), the Japan International Development Agency (JICA), the Netherlands Development Organisation (SNV), and the African Development Bank (AfDB).

7. **Rural development issues.** Rural areas are very poorly covered by physical and social infrastructure: only 42 per cent have access to water supply (Kenya 46 per cent, Uganda 58 per cent).

Given the large size of the country, poor roads are one of the most limiting factors to agricultural development. Limited transport infrastructure combined with long distances to markets result in high costs for moving food and export crop produce. It also limits the movement of food from food-surplus to food-deficit regions. More than 38 per cent of the rural population aged five years and above has no access to education (primary and above). However, Tanzania has made considerable progress in primary education following the implementation of the Primary Education Development Plan in 2000. Net enrolment increased from 59 per cent in 2000 to 91 per cent in 2004. Thirty-four per cent of the population does not have access to medical treatment. The shortage of skilled health care providers is likely to be further aggravated by the increased health care demands induced by HIV/AIDS.

8. **Characteristics of rural poverty.** Poverty¹ is still widespread in Tanzania especially in the rural areas, as about 85 per cent of the poor live in rural areas. According to the Household Survey of 2000/01, about 20.4 per cent of the rural population live in absolute poverty as measured by the food poverty line, and about 39 per cent are considered poor compared to 65 per cent in 1985. This remarkable progress is reflected in the United Nations Development Programme (UNDP) Human Development Index, which rose from 0.266 in 1991 to 0.418 in 2003. The Human Development Index in 2003 for Kenya and Uganda is 0.474 and 0.508, respectively. It should be noted that a poverty baseline was only established in 2000/01, and did not exist when PIDP was formulated.

9. Poverty is particularly widespread among those involved in smallholder agriculture, livestock production and small-scale fishing. Within the agriculture sector, food crop producers are generally poorer than cash crop farmers. Both operate under cyclical and structural constraints, are subject to frequent natural calamities (drought and flooding), and lack market linkages, inputs, credit and irrigation water. Income inequality for rural areas has remained rather constant and is rooted in inequitable access to productive assets, including land, financial services, and livestock as well as to education. There is clear evidence that poverty is higher among the population groups living far from markets, drinking water supplies and health clinics. PIDP has taken into consideration the perception in the target communities of poverty. This perception was reflected during community meetings when asked about characteristics of poor persons; examples of this are presented in Annex I.

10. **IFAD's interventions in Tanzania.** Since 1978, IFAD has approved 12 loans on highly concessional terms for twelve projects/programmes in Tanzania for a total amount of US\$193.24 million. The PIDP was IFAD's ninth intervention in the country and has received a share of 8.8 per cent (US\$17.05 million) of these funds. The interventions cover smallholder development, rural finance, marketing, water supply and irrigation. Further details are presented in Annex II.

B. The Programme

11. **The Participatory Irrigation Development Programme.** The Programme was conceived as a six-year programme to some extent to follow up on the Small-holder Development Project for Marginal Areas (SDPMA). The initial objectives were to (i) increase the availability and reliability of water through improved low cost systems of water control, (ii) raise agricultural productivity through improved extension services, (iii) build institutional capacity with the long term vision to realize the potential for smallholder irrigation development throughout the programme area, which is within 12 (later 13) districts in six central plateau regions: Manyara (formerly part of Arusha), Dodoma, Mwanza, Shinyanga, Singida and Tabora. These regions include about one-third of the total land area and approximately 31.3 per cent of the population of Tanzania, i.e. 11.5 million people. According to

¹ Poverty has varied definitions, both international and nationally. The World Bank defines extreme poverty as living on less than US\$ (PPP) 1 per day, and moderate poverty as less than \$2 a day. Wikipedia describes "poverty" using 3 criteria: (i) as the lack of material needs such as food, clothing, shelter and health care; (ii) social need such as social exclusion including lack of information and education; and (iii) lack of sufficient income and wealth. While these were considered, at the start of implementation of PIDP, beneficiary communities through participatory methods identified criteria that characterised 'the poor' in their respective localities. Thus adapting poverty to the local context.

the Self Assessment Report (Annex III) prepared by PIDP, the programme was to be “district-focused and demand-driven adopting a participatory approach to fully involve communities in design and implementation of interventions.”

12. **Characteristics of the programme area.** The six programme regions are important crop producing areas, contributing about 80 per cent of the nation’s production of cotton, 66 per cent of sorghum and millets and more than 40 per cent of maize and rice. Farming is the main source of food supply and of income in the programme area. Most of the farmers are subsistence farmers, cropping less than two ha almost entirely under rain-fed conditions. Crop production households predominate, but some 50 per cent of these also raise livestock.

13. The proportion of the programme area’s population living below the basic needs poverty line is: 43 per cent in Shinyanga, 40 per cent in Tabora, 43 per cent in Mwanza, 32 per cent in Dodoma, 49 per cent in Singida and 21 per cent in Arusha. Important reasons for this are the poor quality of the land and low and erratic rainfall. Food insecurity is a serious problem for most households for at least two months of the year at the beginning of the rainy season, when their subsistence food stocks are exhausted and when school fees and land preparation expenditures peak.

14. The average size of farm holding for rainfed crops per household in the programme area is three ha. Four per cent percent of farmers have more than 3.2 ha, 60 per cent have between 2 and 3.2 ha and 36 per cent have less than two ha². The land is held under traditional rights. Inequality in land distribution is common in traditional rice-growing areas, with the majority of farmers owning one



Gichamedia: Female programme beneficiary
Photo: Moshe Finkel

to two ha, while a small group of farmers may own as much as 10-20 ha each. Women have limited access to agricultural resources and have problems obtaining irrigated plots and hiring labour. Female-headed households represent 11 per cent of the programme’s target group. The programme area includes significant under-used, unallocated lands, which could be developed for irrigated cropping and distributed to the poor and the landless.

15. With a few exceptions the following indicators such as the primary school net enrolment rates; the adult literacy rate (any language); access to safe drinking water (piped or other) in the population are lower in the programme area than the averages for mainland Tanzania, and the average distance to a hospital is longer.

16. **Programme partners and finance.** The PIDP is a partnership among several stakeholders. The total programme costs were estimated at US\$25.3 million to be jointly financed by: IFAD loan: US\$17.1 million, Irish Aid grant: US\$0.8 million, World Food Programme (WFP) grant assistance: US\$3.6 million-equivalent in food

² With a minimum requirement of 2 100 kcal/day/person and five people per family about two ha can provide the necessary amount of cereals and pulses with yields of about 500 kg/ha.

assistance, beneficiaries: US\$0.7 million equivalent in labour and materials and the Government of Tanzania (GOT): US\$3.1 million equivalent, in the form of taxes and import duties foregone, seconded staff salaries and office space. In addition, in 2005/6, GOT allocated US\$2 million to secure construction of all planned schemes, which brings the total GOT contribution to US\$5.1 million and the total budget to US\$27.3 million. There were supplementary funds from the Government of Switzerland (US\$60 000) for technical backstopping and from the Tanzania-Japan Food Aid Counterpart Fund (TJFACF) TZS 150 million (US\$144 000³), District Council TZS21 million (US\$20 000), whereby beneficiaries contributed TZS10 million (US\$9 600) as contribution to the construction of the Mwangeza Dam.

17. The key government ministries involved are the Ministry of Finance (MOF) as the borrower, Ministry of Agriculture, Food and Cooperatives (MAFC) executing the Programme, the Prime Minister's Office, Regional Administration and Local Governments, as well as Ministry of Planning, Economy and Empowerment (MPEE). The District Councils have contributed funds in form of staff salaries and office space and are in charge of implementing programme activities at that level; while the Sokoine University of Agriculture (SUA), University of Dar Es Salaam (UDSM), Mzumbe University (MU), Moshi University College of Cooperatives and Business Studies (MUCCOBS), and Institute of Rural Development Planning (IRDP) and some private sector firms and NGOs such as TIP, CEMIDE Trust, Stoas International, InWent, Agrisystems International, H-Deca, Kilimanjaro Agricultural Training Centre (KATC), Mkindo Farmers Training Centre, Participatory Resource Network Group (PARENT) and respective Zonal Irrigation Units have provided training and various consultancy services to PIDP. Private Sector Contractors have constructed most of the schemes. National Farmers' Association – MVIWATA have been recently linked to farmer's organisations for continued backstopping and provision of market information.

18. The United Nations Office for Project Services (UNOPS) is the Cooperating Institution (CI), which administers the loan and has been supervising the programme implementation annually. Between 2000 and 2005, six supervision reports were produced.

19. The Programme Coordination Unit (PCU) is responsible for coordination at the national level while in each district there is a District Programme Management Unit. At the scheme level, the Water Users Associations (WUAs) supervises and backstops the beneficiaries.

20. Other IFAD programmes have also been instrumental partners: notably the Agricultural Marketing Systems Development Programme (AMSDP) for support in marketing, training and construction of warehouses, and the Rural Financial Services Programme (RFSP) for support to micro-finance institutions.

21. **Programme milestones.** The PIDP was initiated as a follow-up to the Smallholder Development Project for Marginal Areas (SDPMA, 1989-1997). It was appraised in September 1999 and a loan agreement between the GOT and IFAD was signed on 10 November 1999. The loan became effective on 18 February 2000, and the start up workshop was 14 to 17 March 2000. The completion date and the closing date were planned at 30 March 2006 and 30 September 2006 respectively. However, as four schemes being constructed by local contractors financed by the IFAD loan were not completed and additional allocation of funds by (GOT) for the ten schemes has allowed not only to fill a gap in financing for planned construction works, but to complete more construction work than initially planned. The completion date and closing date have therefore been rescheduled to 31 December 2006 and 30 June 2007 respectively.

³ 1US\$=1 040 TZS

C. Objective of the Evaluation

22. In accordance with the IFAD Evaluation Policy, PIDP was selected for a completion evaluation. The purpose of the evaluation is to ensure accountability and to establish an overview of good practices and lessons learned. An evaluation mission was in Tanzania during the period 17 July – 11 August 2006.

23. **Evaluation methodology.** The evaluation was carried out in four phases: 1) Desk review and preparatory work for which the following documents were made available: Draft IFAD Evaluation Manual (2006), Evaluation Approach Paper (2006), Programme Loan Agreement (1999), Report and Recommendation of the President (1999), Appraisal Report (1999), COSOP (1999) and (2003), Supervision Reports 2000 – 2005, PIDP Annual Work-plan and Budget (2001-2005/6), PIDP Self Assessment Report (2006), Participatory Programme Impact Assessment (Oct 2005); 2) Rapid Assessment Study (RAS) (Annex IV); 3) Main field work with meetings in Dar Es Salaam with relevant Ministries, donors as well as other stakeholders and in 7 selected schemes in 6 districts; (the list of people met is included as Appendix 2; and 4) Wrap-up meeting and final workshop.

24. The evaluation was carried out in the context of the defined purpose of the programme, which was to sustainably increase land productivity and crop production through expansion and improvement of farmer initiated and well managed small-scale irrigation schemes in the semi-arid areas of Central Tanzania. Details of the evaluation approach can be found in the OE Approach paper. It should be noted that the internationally recognized definitions of irrigation and water harvesting have been applied in carrying out the evaluation⁴.

25. For the purpose of the evaluation the schemes were grouped into 3 categories A, B and C mainly differentiated by: the availability of water and traditions of irrigated farming. Tables showing the Groups of schemes A, B, and C are presented in Annex V. Schemes were also grouped into Type I and II⁵ although in some cases the two characteristics were overlapping. The evaluation mission visited a sample of schemes with the above characteristics also considering the time available⁶. Further, some of the total number of schemes (56) included in the PIDP were not yet operational, and were therefore considered less interesting for a completion evaluation.

⁴ Irrigation is defined as the process of artificially supplying water and applying it to land to meet the water requirements of crops. "Irrigation is the process by which water is diverted from a river or pumped from a well and used for the purpose of agricultural production. Areas under irrigation thus include areas equipped for full and partial control irrigation. The area which can potentially be irrigated depends on the physical resources 'soil' and 'water', combined with the irrigation water requirements as determined by the cropping patterns and climate. Environmental and socio-economic constraints also have to be taken into consideration in order to guarantee a sustainable use of the available physical resources. This means that in most cases the possibilities for irrigation development would be less than the physical irrigation potential". *Source FAO*

Water harvesting is defined as the process of collecting and concentrating runoff water from a runoff area into a run-on area, where the collected water is either directly applied to the cropping area and stored in the soil profile for immediate use by the crop, i.e. runoff farming, or stored in an on-farm water reservoir for future productive uses, i.e. domestic use, livestock watering, aquaculture irrigation. The collected water can also be used for groundwater recharge and storage into the aquifer, i.e. recharge enhancement. *Source "FAO, 2003"*

[IFAD definition: Water harvesting is the collection of runoff from within fields or micro-catchments or external catchments such as road catchments, with or without storage, for use in irrigating crops].

⁵ Type I schemes were established on land which was not cultivated. Type II schemes were established where a traditional form of irrigation was already being practiced, i.e. those schemes where some form of irrigated agriculture was already taking place prior to PIDP intervention.

⁶ Time required for a scheme visit was one full day.

II. PROGRAMME PERFORMANCE

A. Design Features

26. PIDP was initially designed with the objectives to (i) increase the availability and reliability of water through improved low cost systems of water control; (ii) raise agricultural productivity through improved extension services; and (iii) build institutional capacity with the long term vision to realize the potential for smallholder irrigation development throughout the programme area, which is within 12 (now 13) districts in the marginal areas of Tanzania. The initial logframe of the programme was revised through a participatory process in 2001 to adapt it to the actual situation⁷. The original logframe matches the revised version to a large extent. Divergent classifications on the level of activities are largely caused by introduction of output 5, “Participation, equity and sustainability fostered”.

Programme objectives and outputs

27. The programme goal, objectives and outputs were laid out as follows:

Super Goal: Contribute to the national plan of achieving poverty reduction and improve living standards of its people. This super goal corresponds to Tanzania’s Development Vision 2025, so that the Programme is aligned with national priorities.

Goal: Contribute to the Agricultural Sector Development Strategy (ASDS) by sustainable increase in smallholder income levels⁸.

Purpose: Crop productivity through expansion and improvement of farmer initiated and well managed small-scale irrigation schemes sustainably increased.

Outputs: Purposes in the old logframe became outputs in the revised logframe. A new output was added in the revised logframe: “Participation, equity and sustainability fostered”.

The process of revising the original logframe was taken to the level of each scheme, which respectively have their own logframe with baseline data, objectives, activities and indicators of achievement.

Programme outputs and corresponding components

Output 1: Water management systems in the programme areas improved;

Component (i): Irrigation Development/sub-components: Upgrading SDPMA Schemes, Construction of New Schemes, Support to Zonal Irrigation Units

Output 2 and 3: (2) Services of agriculture development improved and (3) Market access roads in the programme areas constructed/improved;

Component (ii): Support to agricultural Development/ sub-components: Agricultural Extension Services, construction of Market Access Roads.

Output 4 and 5: (4) Capacity of local institutions (farmers, districts, private sector improved); (5) Participation, Equity and Sustainability fostered.

Component (iii): Strengthening of Farmers Organizations and Local Institutions/ sub-components: Establishment of and capacity building for Water User Associations,

⁷ This should be part of any programme implementation and be carried out when need arises. However, this is not always the case, and PIDP should therefore be commended for this action.

⁸ ASDS has now been developed into the Agricultural Sector Development Programme (ASDP).

Provision of technical and organisational support to Marketing and Savings groups, the Private sector, District Councils.

Output 6: Coordinated Programme Activities in place.

Component (iv): Programme Co-ordination unit and IFAD “Liaison Office”.

28. The Super Goal was not clearly stated in the original logframe, however it was interpreted as “Food security.” In the revised logframe it is broader and this is the only level mentioning “poverty reduction.” Increase in “production” is not mentioned in the revised logframe because this “objective” was moved to purpose level (see below) and changed to “productivity”. A comparison of the original and the revised logical frame is presented in Annex VI.

29. The overall organizational structure for the programme’s implementation is as follows: The involved Government Ministries were as shown under the section on Programme partners and finance above. A Programme Steering Committee (PSC) was established chaired by the Permanent Secretary (MAFC) and with representatives from Ministry of Finance, Prime Ministers Office-Regional Administration and Local Government, Ministry of Planning, Economy and Empowerment, Donors, MAFC, Regional Administrative Secretaries of the six Programme regions and representatives of Farmers and from Agricultural Sector Development Programme. The Steering Committee convenes twice a year.

30. In line with the Government’s policy on decentralisation and strengthening the roles of district and local governments, the respective District Councils were the actual implementers. District Programme Management Committees (DPMC) were established with the District Executive Directors (DED) as the chairperson and made responsible for implementation of the Programme in the districts. To support the districts and contribute to capacity development at that level, District Programme Management Units were established in each district covered. The Programme covered all costs for these units.

31. **Selection of districts.** During formulation and appraisal, 18 districts were identified as having potential for irrigation development. However, due to constraints in financial resources, it was decided that only 12 should be included in PIDP. The selection of districts and of scheme areas was initiated at the Start-up workshop. The procedure for selection of actual communities for interventions was as follows: (i) The DPMC would, acting on requests directly from farmers or through Village Councils or Ward Development Committees and based on information from past surveys on irrigation potential, select six to eight of the most promising sites in the district as candidates to be included in the programme; (ii) Detailed investigations would then be carried out by the Village Extension Officer (VEO), District Community Development Officer, engineers and technicians from Zonal Irrigation Unit, and District Programme Management Unit; (iii) Final selection of schemes was approved by the Programme Steering Committee, subject to IFAD’s endorsement that all had complied with agreed selection and eligibility criteria. The figure “The PIDP step by step approach at village level”, Annex VII illustrates the selection process and key stages, including approximate times spent at each stage, that were adopted by PIDP.

32. **Targeting.** PIDP’s targeting approach was very detailed and it included district, scheme and community levels. At the district level the criteria used were (i) the total number of sites and potential area; (ii) the district’s contribution of staff to programme implementation; (iii) the poverty situation in the district; (iv) the state of the roads network and access to potential sites; (v) experience with irrigation development; (vi) other donor activity; and (vii) market availability and existing rice trade in the district. The first two criteria were considered most critical. Schemes were selected based on technical, social, economic and agricultural, factors managerial issues, ease of implementation, land distribution and environmental aspects. While at community level, resource-poor farmers especially women and female-headed households were the main targets. Selection was therefore done according to the following criteria: (i) not more than 2 ha of cultivable land, (ii) 75 per cent of the beneficiaries being below the poverty line; (iii) at least 30 per cent of the total beneficiaries and 50 per cent of the

irrigation management committee members should be women. In Type I schemes, where some additional land could be brought under cultivation, preference would be given to landless women, to whom a minimum of 25 per cent was to be distributed; and (iv) at least 50 per cent of beneficiaries would be from poor households⁹. In all, the project aimed at reaching 15 700 beneficiaries.

33. **Comments on programme design and concepts.** The programme was designed in accordance with the IFAD Country Strategic Opportunities Paper (COSOP) of 1997/98 and is still in line with the updated COSOP (2003) presenting the overall IFAD strategy: The strategic investment thrusts of IFAD for the medium term are designed as an integral part of the country-owned process to achieve the Government's long-term vision, which is consistent with the Millennium Development Goals (MDG). Specifically IFAD's strategy includes: (i) improving the rural poor's livelihood systems and food security; (ii) assisting the country in undertaking additional policy and regulatory reforms; and (iii) establish a system of good and transparent governance. Within this context IFAD prioritised : (i) pro-poor growth strategy; (ii) technological change; and (iii) support to the grass-roots institutions of the poor. Conceptually it has been decisive for achieving positive results for PIDP that a participatory approach was adopted ensuring that the design at local level corresponded to community priorities and needs. The deliberate effort made by the Programme to target the poorest was itself laudable.

34. The programme design corresponds to the Government of Tanzania's high priority on poverty reduction as evidenced inter alia in its National Strategy for Growth and Reduction of Poverty (NSGRP), popularly known as MKUKUTA. The NSGRP target is increased growth in the agricultural sector from 5 per cent in 2002/03 to 10 per cent by 2010 through inter alia increased number of irrigation schemes and development of more efficient water use.

35. PIDP was appropriately designed as a participatory programme – also fitting well within Tanzania's decentralized system. District Councils in the respective scheme areas were expected to take the lead in both design and overall supervision of local implementation, thus enhancing programme ownership at district level both in the political and administrative sphere.

36. The establishment of District PIDP Units within existing district administrative structures helped to bring irrigation issues into the focus at this level. Training programs designed to improve district level capacity to implement the programme are also noteworthy. Similarly, the establishment and registration of WUAs created opportunities for horizontal communication among communities through for example exchange visits, as well as vertical communication with higher-level administration, which was especially important for fostering and initiating policy dialogue.

37. The process of selecting districts, communities/schemes and finally individual beneficiaries was quite lengthy especially scheme selection. It is questionable why farmers should be involved in preparatory work for five months before a final decision on scheme selection is made.¹⁰

38. The targeting criteria chosen were well adapted to the local context and were mostly appropriate for identifying the poor. The programme, through the District Implementing Units also ensured that the criteria were applied and that the process was accomplished at a reasonable cost. However, the ownership of livestock should have been considered in the assets base. In societies where livestock is regarded as an indicator of wealth, it should be incorporated in the targeting approach in order to avoid undue diversion of project benefits to better-off households. On the other hand, taking into consideration the potential conflicts between livestock owners and irrigated crop farmers the intervention should aim at enhancing co-existence or where crop farmers are also livestock owners even an integration of crop production and livestock.

⁹ Appraisal Report, p. 11.

¹⁰ Involving farmers on the one hand raises their expectations - the longer time the more – and when the result is negative it leaves frustrations accordingly. Therefore the involvement before decision should be as short as possible.

39. The links between the “hardware” and “software” components of the programme seems sometimes hazy or incongruent¹¹. While goals for construction of irrigation systems etc. were well defined, those for fulfilling community needs and for stakeholder participation were either loosely defined or were at best simply reflected as “the wishes of the people”. What communities wished and needed could not always be achieved through physical irrigation or water harvesting structures, because not enough water was available. For example, in Mtitaa, articulated community needs on one hand contrasted with hardware being inappropriate to fulfil the needs on the other hand. This raises questions about the adequacy of communication between the “hardware designers” and the “software advocates”. When software issues are not matched with hardware options, major challenges will be encountered in any attempt to achieve the stated programme objectives.

40. The programme design allowed for targeting women and to fully involve them in key institutions, such as WUAs and Savings and Credit Cooperatives (SACCOS). Gender training was a priority and labour-saving technology such as fuel saving stoves and weeders were introduced to alleviate women’s burdens and improve opportunities time wise so that the women could engage in community activities. On the other hand it seems to have been assumed in the design phase that in most male-headed households any increased income would automatically lead to improved quality of life for the entire household. Within a given community there are, however, households with a complex set of internal dynamics and relationships, where the above assumption is not fulfilled. This issue of intra-household gender discrepancies was apparently only partly resolved by the gender focal points established by the programme. Further, it is worth noting that the location of different schemes in different socio-cultures also means that specific gender issues to address could be different. These two aspects should have been taken into consideration in the design phase.

41. As noted from the foregoing description, the design of the programme was quite relevant to the needs of the poor. Food security and income were among the top priorities of most communities, and relevance of the programme was achieved through, and typified by, prioritisation of these needs at scheme level. It was also achieved by the deliberate targeting of poorer households after they were identified through the Participatory Rural Appraisal (PRA) process. This was particularly the case in Type 1 schemes.

42. Although the programme spanned across different agro-ecological zones and different social and cultural traditions, the programme emphasized a single technology -- diversion of floods from intermittent flowing rivers (except for 10 dams/reservoirs), and a single crop, rice¹² (except in six schemes where there was an existing garlic production). One would have expected attempting a broader range of water harvesting technologies as well as a broader range of crops selected¹³, especially for the Group C schemes, where there were no previous traditions of either use of water harvesting techniques or of growing rice.

43. The advantages of building on previous traditions and experience in crop production under irrigation or applying water harvesting techniques must be emphasised. Farmers with such experience would more readily accept the PIDP interventions, and be able to fully operate the schemes by themselves, thus making the schemes sustainable in a shorter time span than where participants do not have such experience. This should therefore have been one of the important criteria, as it would lead to a higher degree of achieving programme objectives. In areas where there is no previous experience in

¹¹ In this report, the term “hardware” is used to denote all aspects of engineering design and physical construction of the schemes, while “software” refers to the institutional relationships, organisational and capacity issues which are necessary for people’s organisations to function efficiently and effectively.

¹² Rice was the preferred crop because it has higher value than maize, is both as a food and cash crop. Vegetables were not feasible in most schemes as they are far away from market cities.

¹³ Chickpeas and lablab were introduced later, not in the design stage. It is difficult to justify, from an economic point of view irrigation of only one crop per year.

irrigation/water harvesting future projects should be prepared to invest the resources needed for training and coaching beneficiaries to ensure sustainability.

44. Options for support to development of communities in semi-arid areas are limited. Water-harvesting and irrigation schemes not surprisingly often come to the mind of those concerned as a first choice among the few existing options. However, the condition of water availability and its reliability are of course decisive for the success of such schemes, and not always fully investigated and taken into consideration in decision making. In addition, certain improvements could have been made to programme design in order to mitigate the impacts of “predictable” drought.



Rice field in Mtitaa
Photo: Moshe Finkel

45. It is observed that partly as a result of cost under-estimation at formulation and appraisal, the initial budget was insufficient. The estimated cost of construction per scheme was US\$170 000 and average cost at implementation was US\$380 000. The formulation and appraisal should be based on realistic figures.

B. Implementation and Outputs

46. After applying the targeting criteria the following emerged: 12 districts selected for PIDP implementation (Kwimba, Misungwi, Maswa, Shinyanga Rural¹⁴, Igunga, Nzega, Manyoni, Iramba, Dodoma Rural, Mpwapwa, Mbulu and Babati), 56 schemes identified and selected for rehabilitation/construction (see details under engineering design). At the end 25 445 beneficiaries will have been reached compared to the original target of 15 700 (exceeded by 62 per cent). It should be noted that data on the proportions of the poor of the total population for the implementation period were lacking and so indirect estimation methods were used.

47. The process of scheme selection in these districts deviates slightly from what was prescribed in the programme documents to accommodate local variations¹⁵. Further, there were various methods used for selecting beneficiaries both for Type I and II schemes as explained below.

48. Results from this evaluation indicate that in type I schemes the selection of beneficiaries was done using either the demand-driven approach or random sampling of all those who applied and qualified. In all cases, the poverty eligibility criteria were followed and special efforts made to target women and youth. The unit of selection was either the household or the individual. In the latter case, all those aged 18 and above became eligible.

¹⁴ Later split into Shinyanga and Kishapu Districts.

¹⁵ Interview with Ms. Susan Bidya, Executive Director of Dodoma District, 21/7/06.

49. In type II schemes to the extent possible, the ‘new’ scheme would be aligned along the canals of an ‘old’ one so the people who had plots along such canals automatically became beneficiaries. However, their plot sizes were confined to a maximum of 2 ha per person, which led to redistribution of land to family members. An agreement between the Village Council and the District Programme Management Unit on this was a precondition for a scheme to be included in the programme.

50. All beneficiaries were required to participate in scheme construction by providing labour, local materials and paying an entry fee ranging between 2 000 TZS¹⁶ in Harsha and 18 000 TZS in Chamipulu. This was a way of trying to ensure their ownership and commitment as well as sustainability of the schemes.

51. In some schemes it was observed that one of the results of this targeting could be an upward shift of beneficiaries from poverty as illustrated in Figure 1 in Section III.¹⁷ It should be noted that at the beginning of PIDP about 75 per cent of the poorest and 50 per cent of the poor did not participate either because they doubted the programme’s benefits or they could not afford to participate in the construction work as required. This raises the concern that in order to enhance participation the Programme had to manage a trade off between (i) aiming at creating ownership by getting people to contribute money and labour; and (ii) thereby excluding some of the poorest, especially women. This is an important lesson for project designs, which seek to procure peoples’ participation through contribution of labour and money while at the same time seeking to reach the poorest of the poor.¹⁸

52. The approaches used in both type I and II provided opportunities for acquisition of land by the traditionally landless people especially women and youth. However, the land rights of those benefiting from redistribution remain ambiguous: while the WUA hold the legal title to all land in the scheme the original plot owner can take the initiative and apply to WUA to receive land back from a person they redistributed to and have it redistributed to someone else. Furthermore, plot owners are not entitled to sell their plots so they lack full ownership.

53. Additional benefits from PIDP¹⁹, for both women and men included: improved access to land; greater participation in decision-making within households; improved participation in community-level processes and activities (such as women being elected to councils). Positive effects on the non-targeted poor such as becoming tenants of irrigated plots, employment as farm labourers or in construction work, were strongest in schemes, where better-off people were included as beneficiaries.²⁰

54. In a nutshell, the detailed targeting criteria were largely followed, although to a larger extent for gender equality aspects than for socio-economic considerations. In six out of the seven schemes visited, the target of 30 per cent of the beneficiaries being women was greatly exceeded,²¹ however,

¹⁶ 1US\$= 1 040 Tanzanian shillings.

¹⁷ Findings from community leaders from Lusilile indicate that previous to PIDP the villages had 4 social-economic groups: the poorest, the moderately poor, middle class and the rich. In 1994 the poorest formed the bulk of the population, followed by the moderately poor, the middle class and the rich. PIDP targeted a quarter of the poorest and half of the poor and by 2005 the poorest had reduced in size in addition to an increment in the sizes of the middle class and the rich.

¹⁸ The “poorest of the poor” often have neither money nor spare time to provide labour. The very poorest segment include the destitute, who often spend most of their time looking for opportunities for survival – usually providing their labour in exchange for food and can hardly be considered economically active.

¹⁹ Evidence from Lusilile and Chikopelo.

²⁰ This was the case in irrigation schemes that were constructed in (or in immediate vicinity of) existing irrigation schemes. Community members who happened to hold plots in this area became automatically beneficiaries irrespective of their socio-economic profile.

²¹ Female beneficiaries comprised 42 per cent in Mtitaa, 23 per cent Gichamedia, 45 per cent Lusilile, 56 per cent Chikopelo, 73 per cent Igongwa, 48 per cent Harsha, and 39 per cent Chamipulu.

the target of at least 50 per cent of the beneficiaries being poor was only met in two of the seven schemes visited.

55. PIDP has managed quite well in reaching women as beneficiaries. In the seven schemes visited, between 23 and 73 per cent of the beneficiaries were women. This can be attributed to well-defined targeting criteria (paragraph 32) and special efforts to focus the application of these. The Programme design allowed fully involving women in WUAs and SACCOS. Gender training was a priority activity and women groups for various economic and social activities were established although. 35 per cent of the beneficiaries were women and 35 per cent of the training days were for women. Women felt empowered by PIDP to be active in for example WUA committees and got access to land and other productive capital.

Implementation of the components

56. The first steps were to raise awareness among members of communities selected on the implications of a PIDP intervention. Once the idea of building a scheme in cooperation between the community and the Programme was accepted, the actual planning process started with logical planning, incorporating problem and solution tree analyses, well-being analysis, as well as logical framework and activity planning. The well-being analysis used people's own criteria to identify the poorest members of the community as already mentioned.

57. The process of planning and design²² of irrigation projects is usually divided into two distinct phases: i) planning, which requires a multi-disciplinary view of all aspects related to irrigation (water availability and supply, agronomic issues of crop selection, cropping patterns, rotations and crop water requirements), as well as taking into account social issues through a participatory approach. Alternatives should be discussed before a decision is taken; and (ii) detailed engineering design, based on the alternative selected. This entails design of the means to supply water to the scheme, layout of the water conveyance system and structural detailing of hydraulic structures envisaged.

58. **Planning and selection of appropriate schemes.** From observations in the field, it appears that although the above outlined procedure has been followed, the basis for decision-making has in some cases had weaknesses: Data especially on hydrology may have been incomplete, as some rivers had never been gauged and the unreliability of rainfalls may not have been taken sufficiently into consideration. With some ten years of IFAD presence in the area and in the sector and sub-sectors, one would have expected that more attention would have been given to selection of appropriate scheme sites, especially since one of the key criteria for selection was "having potential for irrigation." Some community preferences identified for technological assistance may not be technically or economically feasible.

59. It is important that the participatory process merges beneficiaries' needs with the realistic and possible technical options for irrigation as people cannot be expected to know all the technical details such as information about catchment areas, availability of water (volume) and its probability, water needs of different crops. Such merging of technical perspectives and people's perspective would increase the likelihood of sustainability.

60. Extreme droughts and floods cannot be foreseen, but experience could allow to apply a certain number of exceptional years for each 10 year period, which can then be taken into consideration when calculating expected returns from the investment in the schemes.

²² It should be noted that there is a distinction between pit latrines in farm areas and in the villages. In the farm areas the water level is at least seasonally so high that pit latrines are an unsuitable solution. On the other hand in the villages pit latrines are widely used, so the limited achievement of the targeted number to be constructed is not just a question of limited awareness of the importance of sanitation.

61. Of the 56 schemes constructed/rehabilitated by PIDP, ten schemes had been designed with small dams/reservoirs of which 5 reservoirs will be constructed (three have been completed and two are under construction), 51 schemes were for diversion weirs.²³ In 47 schemes, water-harvesting techniques were adopted. All these schemes adopted a single water-harvesting technique of diversion of floodwater using hydraulic diversion structures for supply of water while surface irrigation techniques were adopted for delivery and application of the water. Most schemes were designed for rice irrigation except the 6 schemes in Mbulu District that were designed for garlic and maize as second crop while the 3 schemes in Babati are designed for both paddy and maize/onions as second crop.

The detailed engineering design of schemes

62. Drawings and the structures eventually constructed in the field reveal solid engineering practices. The Engineering Design Office is to be commended for successfully completing the designs for 40 schemes in such a short period of time meeting acceptable engineering standards. The engineering designs completed were adequate and responded to the design flows as defined by the planners in the design report. However, due to the failure to adequately research and complete the planning phase, some of the schemes, albeit well designed from the engineering point of view may not have yielded the anticipated results, especially in Group C schemes.

63. **Tendering and contractors.** The entire tendering process for each scheme was expected to take three to four months. For most of the schemes, this predetermined time-schedule was not sufficient. In some cases tenders were advertised without attracting any response from contractors. In some of these cases, PIDP finally opted to construct the schemes through use of government personnel and equipment through Force Account procedure.²⁴ In others, the tenders were re-advertised up to four times before the required 'at least three' qualifying contractors responded. This not only led to delays in construction, but also revealed that there were not enough contractors to simultaneously, undertake the works envisaged at 40 sites. Although PIDP gave a financial advance for mobilization, many of the contractors were unable to mobilize and deliver equipment to the field. In general, the financial, technical and managerial capacities of the contractors were very low.

64. **Scheme construction.** Community participation at this stage primarily involved collecting stones, digging canals and providing labour whenever this was needed. Through their WUA and village leaders communities participated in supervision of all works by the contractors together with engineers from the Zonal Irrigation Office. Periodically, also, meetings were held at the construction site to review progress involving District Executive Directors, contractors, beneficiaries and Zonal Irrigation Office representatives.

Planned outputs and degree of achievement

65. An overview of the programme achievements as of July 2006 is presented in Annex VIII. According to the revised logframe, various supervision reports, programme annual reports and partly verified from the field visits, PIDP should be highly commended for the very impressive progress made with several planned outputs being significantly over-achieved.

Irrigation development component

66. The project reported the following achievements. The programme outstandingly over achieved most of its targets including rehabilitation of the former SDPMA schemes (100 per cent), selecting

²³ The remaining 5 dams that were designed did not have funds and have been shelved.

²⁴ In some cases it has at the end apparently been the only option available for scheme construction. The team was given to understand, that this actually was not in line with Government policy about privatisation and Government's withdrawal from the commercial market.

new irrigation schemes (117 per cent), completing studies of and designing new schemes (117 per cent and 111 per cent respectively). However, construction of new schemes and dams reached respectively 86 per cent and 50 per cent of the targets. Finally some 56 schemes will have been rehabilitated/constructed and a total of 5 037 ha (131 per cent) from the rehabilitated schemes and 9 025 ha (115 per cent) from new schemes will have been brought under cultivation and the total number of beneficiaries reached will be 25 445 of which 35 per cent are women.

Agricultural development component

67. This component performed quite well over achieving its targets in training VEOs (112 per cent), construction of market access roads (131 per cent) and tree planting along roads (131 per cent). Whereas the achievements were lower than expected for tree planting along canals (20 per cent), exchange visits (88 per cent) and construction of pit latrines (5 per cent). The other outputs were achieved as planned. Details of performance of this component are shown in Table 1 and discussed below.

68. **Training.** The production phase of the schemes evolved gradually after the schemes became operational. During this phase the VEO ensured continuous technical support to scheme members through frequent visits. Training of the VEOs and the farmers was done through Farmer Field Schools (FFS).²⁵ The trained farmers then became trainers of other groups of farmers in the schemes. This system has worked very well and the knowledge about improved practices in rice cultivation has increased considerably and been translated into increased yields. Sharing of knowledge and experience between farmers and schemes has also been accomplished through study tours and exchange visits.

Table 1. Performance of the Agricultural Development Component

	Original Target	First Review Mission October 2003	Achieved Evaluation (July 2006)
Sub-component			
Train VEO	52	41	58 (112%)
Organize On-farm trials and Demonstration	156	860	
Exchange Visits	7 500		6 631 (88%)
Train SMS rice	12	12	12 (100%)
Conduct Survey-Market Access Roads kms	520	122	520 (100%)
Train Engineers on labour intensive techniques for road construction	12	24	24 (200%)
Form Village Groups	52	34	56 (108%)
Construct Market Access Roads kms	250	85	327 (131%)
Train Irrigation Technicians	12	12	12 (100%)
Farmers Training in Various areas	6 500		
Tree Planting - road side	250		25 (10%)
Tree Planting - canal side	125		25 (20%)
Construct Pit latrines	1 070	8	57 (5%)

Source: adapted from the Self Assessment Report prepared for the IFAD Completion Evaluation mission conducted in July 2006.

69. **Trials and demonstrations** programmes have in many schemes been seriously affected by drought, however, there are some good examples of variety trials with conclusive results of great importance for the farmers.

²⁵ Initially VEOs and a core group of farmers were trained at Kilimanjaro Agricultural Training Center (KATC) supported by Japan International Cooperation Agency (JICA).

70. **Market access roads** have been constructed (327 km or 77 km more than the planned 250 km) and have served the expected purposes. However, lack of provision to procure culverts for the roads has been a threat towards sustainability. Some roads have been upgraded to serve as regional/district roads while the remaining is maintained by the respective village governments.

71. **Tree planting** along roads and canals has taken place and 3 232 tree seedlings were planted along 327 km road²⁶ compared to the 250 km planned, but the survival rate is very low as estimated by the PCU at only about 10 per cent due to drought, damage from browsing animals and from termites and not sufficient awareness and follow up by beneficiaries. In Igongwa for example, 100 (5 per cent) surviving trees were counted the Evaluation Team out of 2 000 initially planted. Tree planting along canals only had 20 per cent achievement.

72. **The construction of pit latrines** in the farm areas performed very poorly achieving a dismal (5 per cent) of its target. Although it was included in the original design of the Programme, there was no demand for this intervention even after repeated sensitization and training. Most farmers were of the opinion that the intervention was not a priority to them. As such out of the first 16 schemes that were sensitized only two schemes indicated a need for pit latrines in the farm area. In Lusilile for example, only two pit latrines were constructed by the time of the evaluation and they planned to have two more.²⁷

Strengthening of farmers organizations and local institutions component

73. PIDP set out to improve especially small-scale farmers' access to, and increase their use of facilities and services, which support the enhancement of agricultural productivity. However detailed data on trainings planned were not available for comparison. Specifically four sub-components were defined as follows:

- (i) **Strengthening of WUAs.** Overall, during the period 2000-2006, a total of 56 WUAs were formed and registered indicating overachievement of 108 per cent of the target (52) In addition, various trainings were carried out for WUAs and village leaders on the general principles and practices of irrigation, scheme maintenance and repair, financial management, issues in the establishment, registration and management of WUAs, leadership and conflict resolution. In total 123 256 participant-training-days was carried out of which 43 740 or 35.5 per cent were women.²⁸ A table showing trainings carried out by the programme is presented in Annex IX.
- (ii) **Developing marketing, savings and credit groups.** Support was given to establish SACCOS to enhance the emerging saving and credit giving culture and to promote marketing. This support was given through training on marketing and savings methods, approaches to participation in schemes, and the training of SACCOS executives in leadership skills. In most schemes SACCOS were functioning effectively, and had led to improved services including credit services for farmers. There have been 44 SACCOS established compared to 52 which is 85 per cent achievement of the planned target. The slow pace of establishment of SACCOS may be attributable to the delays in construction of the remaining schemes and dams.

²⁶ The unit measure in the original plan was km road and not number of trees planted.

²⁷ It should be noted that there is a distinction between pit latrines in farm areas and in the villages. In the farm areas the water level is at least seasonally so high that pit latrines are an unsuitable solution. On the other hand in the villages pit latrines are widely used, so the limited achievement of the targeted number to be constructed is not just a question of limited awareness of the importance of sanitation.

²⁸ Training days has been calculated by multiplying the number of participants in each training by the number of training days (duration) and summing these up for all the trainings.

- (iii) **Supporting private sector development.** The private sector sub-component aimed at providing skills to 156 local artisans, to enhance their ability to compete for tenders offered by the schemes. Two specific activities were envisaged for this sub-component (i) conducting training for local artisans and contractors; and (ii) providing on-the-job training for local artisans.

74. In 2002, four-day training sessions were held at scheme level for a total of 760 local artisans, village government leaders, and WUAs (640 men and 120 women) focusing on road construction and maintenance, and strengthening of village groups.

75. The training of artisans and small contractors contributed to improving their skills to construct, maintain and repair physical structures in the schemes. In Harsha, Gichamedia and Igongwa, artisans and small contractors were reported to be employed by the schemes and to be performing well. In Gichamedia where the evaluation mission visited only a few weeks after floods had destroyed the canal gates and some of the canal structures it was reported that the WUA was going to engage the services of local contractors to carry out specific repair jobs.

76. Although some success with PIDP private sector development has been achieved, the identification of potential entrepreneurs with the required qualifications to be trained was still rather problematic to the programme. In Lusilile and Gichamedia this was attributed to the rather low educational qualifications, which potential entrepreneurs possessed as well as to the lack of previous exposure to similar activities.

77. **Training district staff.** The programme set out to establish and train 12 District staff in various technical areas and this was achieved by 100 per cent. They were trained on management of schemes, monitoring and supervising programme planning, implementation, and review, as well as managing specific skills development among: WUA leaders and committee members, scheme facilitators, water guards and block leaders. The provision by the respective 12 district councils of office space for District Implementation Units greatly facilitated the establishment of these offices.

78. Specific activities planned by PIDP included also in backstopping the District Councils, in undertaking their intended roles, procurement of goods and provision of technical assistance for training, and management of programme activities.

79. According to district staff met by the evaluation team it was considered necessary as most of the issues, which they were now addressing relating to irrigated agriculture and the management of WUAs and other community institutions were new to them.

80. Although the training was well received in the districts, there appeared to be a need for continuous and consistent support to the trainees in order for them to apply and practice the skills they had acquired. The failure to provide this follow-up probably partly explains the weaknesses, which were identified in links between district-level and community-level institutions.

81. **Other training.** Scheme members were also trained in gender and development with the intention of identifying and bridging gender gaps and promoting labour-saving technologies such as power tillers, threshers, stores and energy-saving stoves. Lastly, the programme introduced training village women's groups in health including HIV/AIDS as well as entrepreneurship. The flexibility in programme implementation is commendable as it enabled beneficiaries to address training needs as it was necessary.

C. Attaining Programme Objectives

82. PIDP was initially designed with the objectives to (i) increase the availability and reliability of water through improved low cost systems of water control; (ii) raise agricultural productivity through improved extension services; and (iii) build institutional capacity to realize, over the long term, the



Chamipulu: Farmers displaying their harvest

Photo: Moshe Finkel

vast potential for small holder irrigation development throughout the programme area. The revised logframe combined the above 3 into: “Crop productivity through expansion and improvement of farmer initiated and well managed small scale irrigation schemes sustainably increased.

83. The programme has to a large extent attained its objectives although with varying levels of effectiveness as detailed below:

84. As regards ‘increasing availability and reliability of water’ this varies depending on appropriateness of designs as discussed under “implementation of components”. As earlier mentioned, the schemes can be categorised as A, B and C comprising 16 per cent, 57 per cent and 27 per cent respectively of the total number of schemes (see Annex V). In Group A schemes, water is available throughout the year but in limited volume. PIDP increased the volume available for irrigation (precise data on this was not available). In group B, the water is moderately reliable after PIDP for about six months as compared to three months previously while in group C, water is at best available for only three to five months depending on the size of the catchments area. It should be noted, however, that water availability is also affected by drought and rainfall patterns.

85. Agricultural productivity has increased when sufficient water is available, although not to the extent expected.²⁹ There has also been a change in cropping patterns as previously 77 per cent of the farmers produced maize while in 2005, 90 per cent of the farmers produce rice as the main crop.

86. There has been outstanding achievements in institutional capacity development with (i) the establishment of viable WUAs to manage irrigation issues at scheme level; (ii) to some extent with the District Implementation Units to provide technical advice and oversee implementation; (iii) with the establishment of SACCOS for savings and credit; and (iv) Women’s groups for social development (see social capital and empowerment). This is due to the consistent use of participatory approaches of empowering the beneficiaries and the deliberate training and skills development programmes.

87. At the design stage an exit strategy was included, which means that the District Councils should take full responsibility for the follow up required in relation to the PIDP schemes. However, this strategy has not been fully implemented due to lack of capacity (human and financial resources). It is yet to be seen how this gap will be filled to make the Districts fully operational in this area.

²⁹ According to the Rapid Assessment Study there has been an increase in productivity of rice from an average of 0.5 tons/ha to 2 tons/ha.

D. Assessment: Relevance, Effectiveness and Efficiency³⁰

88. **Relevance.** Beneficiaries considered PIDP very relevant because it addressed most of the identified needs of the rural poor including among others shortage of food, lack of access roads, poor housing, lack of linkages to local authorities, gender equity, linkage to authorities and inability to organise themselves. Evidence from the evaluation, which confirms this is presented in Annex X on relevance. The programme is in conformity with IFAD's strategic objectives and is in line with Tanzania's development vision and the Agricultural Development Plan.

89. **Rating relevance: (6):** "The project objectives are **relevant and significant** (addressing a priority) to the poor and to IFAD's country strategy."

90. **Effectiveness.** The general assessment of the effectiveness of PIDP to meet the objectives as stated in the revised logframe is as follows: Water management has improved to varying degrees in the Group A and B schemes through the efforts of the WUA, but at this stage hardly in the group C schemes. Services of agricultural development have improved in all schemes and translated into increase in yield. It is estimated that at least 10-20 per cent of the increases in yield are associated with improved water management and the rest to improved agricultural practices. Market access roads have been constructed/improved and are serving the intended purposes. Improvement of capacities of institutions has to a large extent been achieved especially with respect to WUAs and SACCOS. To some extent, also, capacities were built for the function of district and other local governments in relation to irrigation development.

Table 2. Rating Effectiveness

To achieve immediate objective	Group A schemes (9)	Group B schemes (32)	Group C schemes (15)
Weight (x)	0.16	0.57	0.27
Rating	4	5	2
Weighted rating	0.64	2.86	0.54
Overall rating: 4.0			
A: Could in most cases have exploited their potentials further			
B: achievements quite good compared to the situation before PIDP			
C: Some institutional development achieved			

(x) The weight of each category is calculated according to the number of schemes in each category in relation to the total number of schemes.

Source: Evaluation team

Efficiency

91. PIDP implementation experience shows that participatory approach is effective though time consuming, and that 9-12 months are required for sensitization of communities, planning and design of schemes, and that six to nine months are required for contracting/implementation preparation before actual construction that takes 10-12 months or more, i.e. all together 25 – 33 months from sensitization of communities to the scheme is operational.

³⁰ The overall rating in this section of the report is rounded up to the nearest whole number.

92. The tendering procedures for scheme construction took longer time than anticipated. A major problem was the limited number of contractors' responding to calls for tenders and later lack of funds and limited capacity of tenderers. A lesser problem was the IFAD, GOT and UNOPS procedures, which should have been known and taken into consideration at programme formulation and design stage when setting the timeframes.

93. The construction phase as such has been inefficient mainly due to low financial and technical capacity of contractors, as indicated by comparing construction time using tender procedure and private constructors (construction time 8-12 months) with force account procedure (construction time 2.5 – 6 months).

94. The PIDP has in its self assessment (May 2006) observed: "District staff required intensive training especially in partnership building and participatory approaches." It seems that the need for training of district staff was underestimated at the formulation and appraisal stage. The lack of capacity at district level can be considered having negative influence on programme efficiency, and can be a potential threat to sustainability. Efficiency was better at village and PCU level and weakest at district level, indicating that the district level needs strengthening.

95. As a result of cost under-estimation at formulation and appraisal as well as unforeseeable price increases afterwards the initial budget was insufficient and some ten schemes that were already prepared could not be constructed. Average cost of construction per scheme was initially estimated at US\$170 000 at formulation stage while average cost at implementation was US\$380 000. The detailed cost estimates prepared during detailed engineering design were close to the actual costs by the contractors. However, additional contribution from the Government of Tanzania has allowed continuing the construction work.

96. Shortcomings in economic feasibility analysis of the proposed works, although critical to sustainability, become apparent when finally reviewing the value of produce from the schemes over a number of years since completion.³¹

Table 3. Rating: Efficiency of Implementation

PCU			
Planning	(weight 40%)	rating 2	0.80
Other implementation	(weight 60%)	rating 5	3.00
Total			3.80
Districts			3.00
Villages			4.00
Average (3.80+3.00+4.00 = 10.80/3)			3.60
Overall rating			4.0

Source: Evaluation Team

E. Performance of IFAD and its Partners

97. PIDP was formulated and implemented under a complex partnership involving International bilateral and multilateral agencies, GOT at national and sub-national levels and beneficiaries. At project formulation, the roles and responsibilities of the partners were clearly outlined including financing and co-financing, Government counterpart funding (as spelt out under programme partners and finance) and the contribution of the beneficiaries. At national level a steering committee planned and reviewed implementation, served as forum for exchange of information and decided on important matters concerning the programme.

³¹ It is evident that economical feasibility is critical, but not the only factor decisive for sustainability.

98. **IFAD** undertook programme preparation including formulation and appraisal, and provided technical advice and effected disbursements of finances as required during implementation. There was a degree of flexibility in implementation approach, which was very important in terms of adapting the programme to local needs and emerging priorities. The PIDP Self Assessment considers “Overall support of IFAD to PIDP as timely and satisfactory. This is reiterated in the supervision reports.

Rating³² for IFAD’s performance is 5.

99. **UNOPS** was the CI and it ably conducted the required supervision functions including budget monitoring and general implementation support. The supervision missions were annual, and were conducted by the portfolio manager in charge of PIDP and consultants who provided the necessary backstopping and feedback to the PCU especially as regards programme implementation. UNOPS also promptly informed IFAD about its findings from supervision by sharing its reports.

Rating for UNOPS’ performance is 5.

100. **WFP** support to PIDP was through food for work the construction market access roads and also supplemented GOT efforts to accomplish the 10 schemes that could not be covered by IFAD loan proceeds through provision of food items worth US\$883,366 for excavation of 300 km of canals. WFP contribution is a good example of applying labour intensive construction work and has attracted positive attention from districts and other donors demonstrating an alternative to heavy machinery with high fuel consumption. However, in some schemes, especially in the last 6 districts the provision of this support faced some difficulties. According to the Self Assessment Report of PIDP: (i) confusion at grass root level to distinguish between the food for work concept and the food for relief services concept, and PIDP had to clarify this through additional sensitization; and (ii) in 2002/03, WFP experienced shortage in food supplies, which resulted in reducing the food norm per unit activity to a level below market price which was a disincentive for the beneficiaries. However these problems were resolved over time.

Rating for WFP’s performance is 4.

101. **Irish Aid** substantially financed training and material support to the WUAs, SACCOS and Women Economic Groups. This support has contributed to scheme development and the empowerment of farmers in terms of managing their schemes, participating in decision-making processes; and taking ownership. However, the funds were at the outset strictly earmarked for training of women and the utilization of the grant was therefore slow at the beginning.

Rating for Irish Aid’s performance is 5.

102. **Government of Tanzania** played its role as required and its financial contribution surpasses the planned target. All the involved ministries have been supportive to the PIDP and when, the loan funds were exhausted the GOT allocated the necessary additional funds. Irrigation development is currently of high priority to GOT in its effort to reduce poverty and the PIDP approach is apparently getting some special attention.

103. Effective programme management has been achieved inter alia through the activities of the PCU. The staff of this unit was the Programme Coordinator, the Financial Controller, Gender and Targeting Officer, the Monitoring and Evaluation Officer and two Assistant Programme Coordinators. The unit was responsible for coordinating the implementation of the programme and providing technical support to District Implementation Units. The PCU included there is a Monitoring and

³² The rating of the Programme partners’ performance is according to the following scale: 6 outstanding, 5 very good, 4 good, 3 moderate, 2 poor, 1 very poor.

Evaluation function with regular reporting from each district³³ on physical outputs and financial development. After the closure of PIDP, those roles of the PCU, which are to be continued, are expected to be taken over by the Agricultural Sector Development Programme.

104. Local Governments (District Councils) through the DPMC and the DEDs coordinated PIDP partnerships at district level while the Regional Administrative Secretaries harmonized the functions of the different sector ministries. The district level also brought together district-based NGOs, service providers, as well as medium-level private entrepreneurs. The programme partnership worked reasonably well in most districts.

105. District Programme Management Units, which were financed by PIDP have been phased out and all responsibilities including financial responsibilities have been taken over by the districts particularly the maintenance of some of the market access roads. However, in general the additional responsibility in relation to the established schemes has not been reflected in any increase in budgets, as necessary to ensure the envisaged follow up and support to these schemes. This shortcoming is also already evident in less intensive monitoring and follow up to the schemes. The recent GOT plan to increase allocation of funds to the districts within the framework of the ASDP is expected to alleviate similar situations in future.

Rating for Government of Tanzania's performance is 5.

106. The PIDP partnership is best articulated at the community level by WUAs, SACCOS, economic groups, local NGOs, as well as village and ward governments. Partnership at this level functioned very well. The Communities delivered by and large their contributions to programme implementation (labour, local materials and cash) timely and to extent required.

Rating for the Communities performance is 5.

107. A challenge, which the programme partnership faced at national level, was the ineffectiveness of communication between the different levels of partnership. This resulted in slow or weak decision-making and resolution of problems.³⁴

108. Overall, the PIDP partnership was to be complimented. It was well managed and in a few instances when there were challenges in implementation, the partners were able to resolve issues promptly.

³³ The programme has adopted a participatory approach to monitoring and evaluation allowing each scheme to select its own impact indicators so as to accommodate local conditions. This creates a feeling of ownership but does not allow for comparisons of impact across schemes, which reduces the usefulness of the system as a management tool PCU level.

³⁴ A case in point is the conflict, which the scheme at Chikopelo has with a neighbouring community at Nondwa, where a water dam is located and from where water for irrigation in Chikopelo was meant to be coming. This conflict could not be resolved at the local level and was subsequently referred to the district. However, poor communication between the different levels meant that no solution to the conflict was actually found.

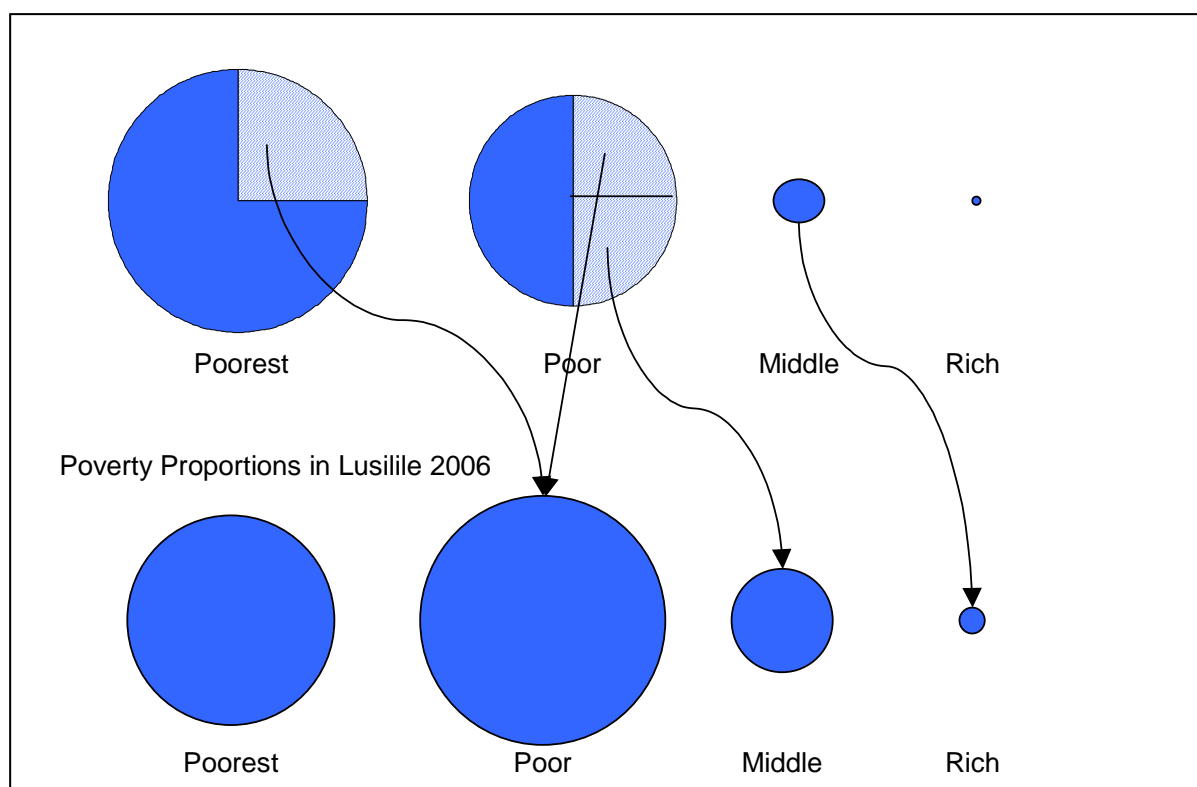
III. PROGRAMME IMPACTS

A. Rural Poverty Reduction Impacts

109. PIDP implementation was expected to positively impact on the livelihoods of the beneficiaries by improving their incomes, food security and general well being. The poverty reduction impact indicators used in this assessment include the socio-economic changes of the beneficiaries and the material and non-material achievement as described below. The indicators spelt out in the PIDP Appraisal Report have been discarded as they were not appropriate. It is worth noting that evidence of the programme's impact would have been more vivid had this evaluation taken place much later than at the completion of the project.

110. PIDP has had a positive impact on the socio-economic characteristics of the beneficiary communities. The tendencies appear from figure 1, which illustrates the observations made in one scheme, Lusilile. According to this figure in 2000 PIDP targeted a quarter of 'the poorest' and half of 'the poor',³⁵ and after programme implementation (2006) the result is a shrinking of 'the poorest' group and an enlargement of the poor, middle class and the rich. This is further reinforced by the findings on physical assets and food security.] The impact of PIDP could have been more accentuated if the designs in Group C schemes had been appropriate and if all the construction works had been carried out on schedule.

Figure 1. Comparison of Poverty Proportions in Lusilile 2000



111. However, during the 2003-05 period there was insufficient rainfall³⁶ which directly reduced the availability of water for irrigation and therefore counteracted poverty reduction. On a positive note,

³⁵ It should be noted that at the beginning of PIDP about 75 per cent of the poorest and 50 per cent of the poor did not participate either because they doubted the programme's benefits or they could not afford to participate in the construction work as required.

³⁶ Source: Programme Coordinator PCU

GOT has been promoting trade liberalization and economic empowerment as strategies to alleviate poverty and decentralization have empowered districts to participate in development. These measures have reinforced the impact of PIDP.

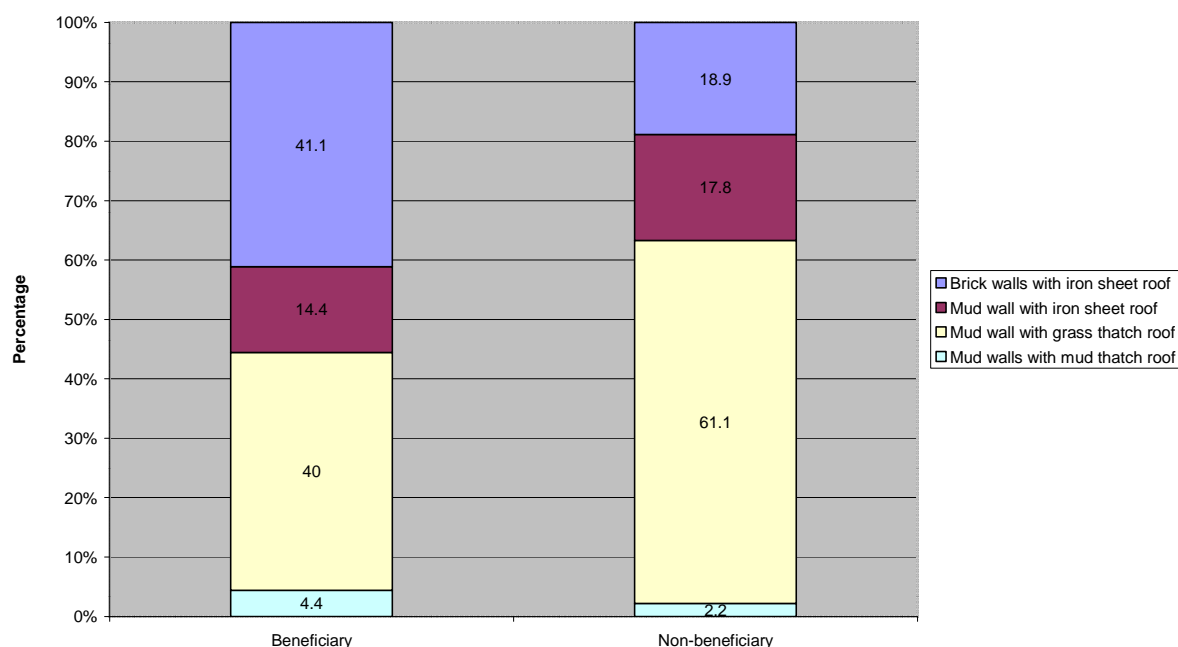
112. There have also been other stakeholders contributing in similar areas of operation as PIDP: NGOs-CARITAS, World Vision) and WFP in improving food security, ASDP in poverty reduction by increasing agricultural production (PADEP, KATC), and in improving access roads AMSDP and Tanzanian Social Action Fund (TASAF). In conclusion, although PIDP has made significant impact all positive development cannot be attributed to the programme alone. The synergy between the PIDP, AMSDP and the RFSP (all supported by IFAD) has been playing a significant role in the newly introduced WRS and the SACCOS as envisaged in the COSOP of 1997.

113. PIDP has contributed in several ways to achieving increased production and income and improved food security. In some successful schemes, increased yields and cropping area as well as shifts to higher-value crops have helped to increase the income of farm households, generate employment, and lower consumer food prices.

Impact on physical assets

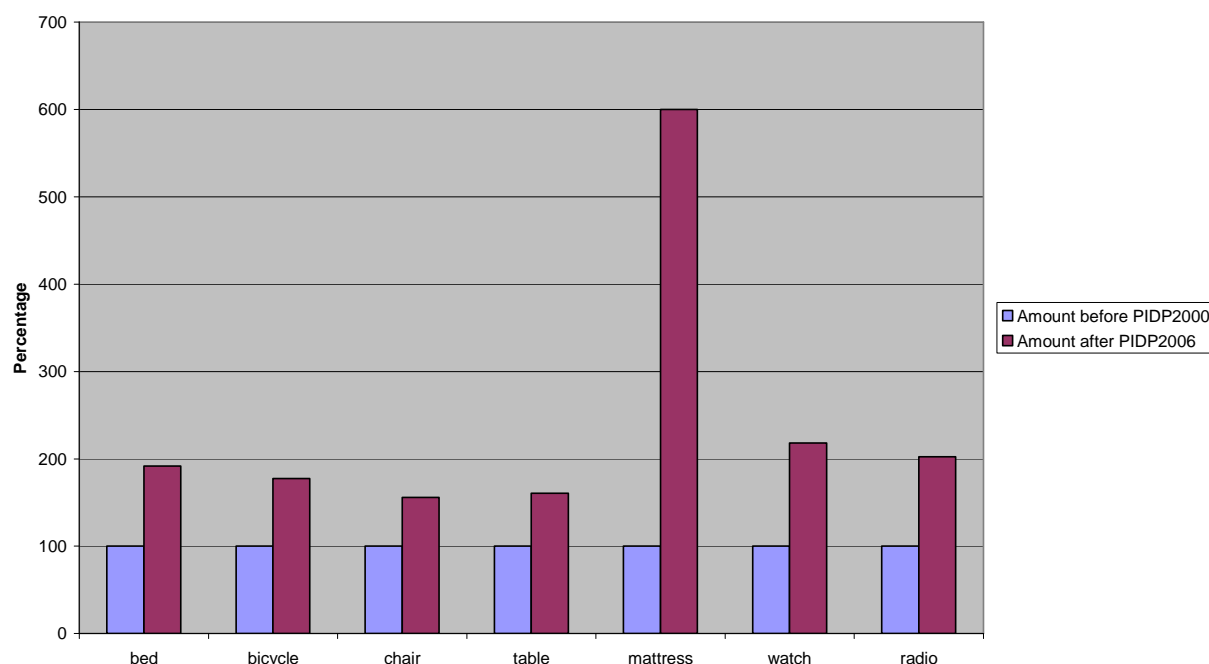
114. Community members reported that due to their participation in the schemes they had acquired more livestock (including donkeys, oxen, milk cows, goats, sheep and chicken), land, farm implements such as ox-carts, ox ploughs, household goods like bicycles, generators, mobile phones, infrastructure like water pumps, grinding machines, storage buildings and improved housing. The following two figures illustrate some of the achievement/characteristics of programme beneficiaries compared to non-beneficiaries. Clearly the programme made a significant positive impact on the quality of housing owned by beneficiaries (figure 2) and on the physical assets owned by households (figure 3).

Figure 2: Housing Material for Beneficiaries and Non beneficiaries



Source: Rapid Assessment Study carried out in 2006 in preparation for the final evaluation in July-August 2006, page 32.

Figure 3. Assets owned by targeted farmers before and after project



Source: Rapid Assessment Study carried out in 2006 in preparation for the final evaluation July-August 2006.

115. **Impact on food security.** There is a general declining trend of food shortage in the project area since the year 2000.³⁷ This is reinforced by findings from the main evaluation which found that PIDP improved food security in four out of seven villages visited (Gichamedia, Igongwa, Harsha and to a lesser extent Chamipulu). These villages had tradition and experience related to irrigation and/or water harvesting, and the two most successful ones had water permanently available. In addition, improved extension service contributed to increasing agricultural productivity and production.

116. The effect on reduction of the duration of food shortage per year as well as on increasing the number of meals and the food diversity is also found in the results of the Rapid Assessment Study (May 2006). Little to no impact on food security was however achieved in schemes when too little water was available to actually render the schemes operational (Lusilile, Chikopelo and Mtitaa).

117. Because of these differences between schemes, the programme's overall impact on food security can be assessed as fair. It is, however, well understood that the rather poor performance of Lusilile, Chikopelo and Mtitaa in terms of food security is largely due to adverse climatic conditions and this effect was most accentuated in schemes with small catchment areas.

118. **Impact on environment and common resource base.** The common resource base has been improved inter alia by making land available for cultivation but this has been achieved to a higher degree in type I than type II schemes. Water management skills are required to optimise water use efficiency and to avoid salination of soils in susceptible areas. Although tree planting along newly constructed roads and canals had been planned, results show success only along the roads partly because of low survival rate of the trees and partly because of poor enforcement as discussed above under implementation and outputs.

119. **Impact on human assets.** From the information collected from the group discussions and through the Rapid Assessment Study it can be concluded that PIDP had a positive impact on the

³⁷ Rapid Assessment Study, page 13.

human assets of its target group: directly on knowledge of improved agricultural technology and indirectly on children's enrolment in secondary schools, which has increased.

120. Deliberate use of a participatory approach by PIDP fostered inclusion of hitherto more excluded segments of the population enabling them to acquire various forms of human assets, such as improved education, health and skills.

121. Some positive spill-over effects on non-targeted people could be observed as application of improved agricultural technology. There seem to be considerable possibilities for strengthening these positive effects by ensuring that extension services are equally available to all.

122. However, the reported³⁸ higher frequency of water borne diseases, malaria and bilharzias is a not surprising side effect of the change in environment by expanding the irrigated areas. This suggests that stronger focus should have been on health-related training especially with regard to protection against water borne diseases. In future irrigation projects it should be explored how to include national health services, health service providing NGOs and possibly WHO to provide such training. It should also be explored how to promote pit latrines, which are essential for sanitation and health, including the prevention of the human/snail cycle of bilharzias.

123. A negative impact highlighted was the establishment of mills and storage facilities in Gichamedia and some other schemes that has led to a marked increase in the number of traders, almost exclusively men, who frequent the area and engage in promiscuous behaviour thereby increasing the risk of spreading HIV and AIDS.

124. **Impact on social capital and empowerment.** Adoption and application of the participatory approach was perhaps one of the strongest achievements of PIDP. Inclusion of different categories of the population, in particular the poorest categories, in planning and implementation, as well as participation of different categories of people in the community, and of different institutions as stakeholders in PIDP design and management is impressive.

125. The promotion of participation and increased equity³⁹ inherently support community interaction and thereby the building of social capital and people's empowerment. This has become apparent in the formation of economic groups, Farmer Field Schools and SACCOS. Improved community interactions also become obvious, as farmers informally exchanging knowledge on farming techniques is another evidence of improved interaction between communities. Indirectly, market access roads contributed to the strengthening of social capital through improved and easier movement thus facilitating community interaction.

126. Empowerment was very evident especially among women, who stressed that PIDP had enabled them to express themselves freely in community meetings, choose their leaders and in some cases hold official positions in the WUA committees. Women and formerly landless people also gained access to productive capital such as land (through redistribution) and financial services.

127. In addition, effective WUA management helped to minimise conflicts over water, which occurred very seldom considering the severity of drought in such an expansive project area. Even in schemes where increasing smallholders' income could not be achieved due to drought and technical shortcomings the impact on social capital has been positive (e.g. in Lusilile). People are better able to organise themselves and members of economic groups saw their group membership as an inspiration to join income-generating activities outside agriculture.

³⁸ There were no figures available on this. The finding is based on information from focus group interviews in communities.

³⁹ Between men and women, poor and rich, elite and non-elite, young and old.

128. Bonding social capital or links, trust and sharing of information among members of one group, has been fostered to a much larger extent by PIDP than linking social capital, which is based on networks among different hierarchical levels. The lack of linking social capital can become a constraint to the communities' development in the long run, because entrepreneurial community members to drive development further must not be caught up in too tight and thus blocking intra-community ties but need opportunities to get involved in wider networks beyond their immediate group. WUA and SACCOS should therefore be regarded as entry points for inter alia strengthening marketing.

129. It was observed that the schemes contributed to develop the local private sector in certain areas. A vibrant paddy marketing business was, for example developed in Gichamedia. Besides, artisans who had been trained by PIDP were also working in the rice mills, some as technicians and others as supervisors.

130. Owing to drought periods, it has been difficult to fully assess performance of WUAs, since most have not had an opportunity to actually manage the water resource. While information from both communities and officials suggests that, overall, WUAs in PIDP schemes have functioned quite well, a number of recurrent O&M problems were cited, including failure to implement water schedules and water allocation, difficulties in establishing a functioning crop calendar, and failure to enforce some regulations and by-laws. They also included an apparently growing reluctance of farmers to contribute to the O&M-fund leading to low revenue and hence lack of funds to repair and maintain scheme facilities and structures in time. Hints were also given on some cases of embezzlement of scheme funds. These findings point to some weaknesses in the functioning of irrigators' organisations, which need to be continuously addressed in order to avoid the recurrence of such problems.

131. The Igongwa WUA appears to have a strong business sense and have developed a unique approach, which may be replicated. See Box 1 below.

Box 1. Igongwa's Experience: Managing their Scheme

IGONGWA WUA, was established in 1997 called Uwamai. It had an initial membership of 294; membership in 2005 was 288 with 46 women and 142 men. A number of members have returned to livestock keeping and have therefore left the WUA as this required moving away from the scheme. Current membership is 255 (126 women; 129 men). Membership fees are TSh1,500. The WUA has four committees: Executive Committee (16 members); Water Committee (six members; Reconciliation Committee consisting of seven mzees who handle disciplinary issues; and Security Committee with five members. It also has a Planning & Finance Committee and an Agricultural Committee. After harvesting the chickpeas the Executive Committee, along with the Water Committee will walk the length of the canals, assess damage and survey potential weak points. They will assign duties to various members to take charge of the necessary repairs. This will be presented to a general assembly of the farmers for overall approval and division of the required labour. The registered WUA replaced the former unregistered WUA. Elections were held in 1994 (unregistered WUA); 1997 upon registration and in December 2005. By laws require election every three years. A general meeting is held every three months to discuss current issues. O&M fees are based on the harvest. In a good year the fees consist of one bag of rice per acre per member and in a bad year 4-5 litre tins/acre. O&M is thus, collected in rice, which is kept for sale at peak prices. Only cash collected from the members is for penalties. If current O&M requires cash during period when prices are low they prefer taking cash from the account and to keep the rice for sale when prices peak. There are no complaints about this method, and members are comfortable with paying dues in rice. Prior to preparing for the next rice season, the Executive Committee walks through the scheme to prepare a report on work that must be done; scheme members who are "fundis" are contacted for cost estimates; fundis who are members will do the work either in exchange for help on their plots or for rice; very little actual cash is therefore spent. This is limited mainly, to purchase of cement. If prices of rice skyrocket, they will sell even if cash is not needed. However, they do not usually keep rice over to the next season. Thus, they are accumulating a fairly sizable amount of ready money in their bank account. This, they say, is to be kept in reserve as a Replacement fund in case the head-works collapse due to heavy flooding and they must rebuild them to keep the scheme operable.

This is outstanding and is a unique approach that is contrary to most other schemes where they will wait for Government or donors to resolve any problems with funding. This is obviously a very strong and well managed organization of farmers.

Agricultural productivity (this has been discussed under effectiveness in paragraph 88)

132. **Impact on financial assets.** Increase in agricultural productivity in some schemes is reflected on the households' increased ability to sell cereals with the result that household incomes have increased. Although there was no baseline data on financial assets where water management systems have worked, community members confirmed that there was improved income, increased vibrancy of financial services, typified by establishment of SACCOs and private businesses. At the household level, through increased agricultural productivity, effective water management systems have increased incomes. Evidence adduced from the Rapid Assessment Study also showed a considerable difference between beneficiaries and non-beneficiaries with respect to ability to sell cereals based on the 2005 harvest sales,⁴⁰ which in turn affects income.

133. **Impact on marketing.** At scheme level, improved access to markets has been enabled by the construction of roads.⁴¹ Access to information on prices and goods influences the ability of the rural poor to make decisions about marketing. Increased income in selected schemes (e.g. Gichamedia, Harsha and Igongwa) has enabled farmers to acquire mobile phones and to communicate with traders,

⁴⁰ Rapid Assessment Study, PIDP.

⁴¹ As reported in the scheme self assessment reports. This was the case in Bahi scheme. Cost of carrying one bag of paddy by head from the scheme used to be 2 000 TZS and after the road construction cost went down to an average of 500 TZS per bag using bicycles/ox-carts/trucks that can now go up to the fields. This is the case in all schemes at varying degrees of cost reduction.

which led to increased storage of paddy, maize and garlic for sometime before sale in order to get better prices.

134. **Impact on institutions and services.** PIDP intended to enhance the capacity of institutions and improve services to contribute to reducing poverty. Although improved capacity of institutions has been achieved at district level, in general, this has not been adequately translated into effective communication with communities, which has limited this output's contribution to poverty reduction.

135. As a process, participation and equity improve the responsiveness of institutions and the provision of services to people's needs. By participating in the management and running of key institutions (such as WUAs, SACCOS, village governments and tender award committees,) community representatives in such institutions ensure that pertinent issues of relevance to poor peoples' needs were considered. Because communities were able (through their village government, the SACCOS' and the WUAs) to demand for particular agricultural extension services, these services which were provided were responsive to their needs in all the schemes visited.

Table 4. Rating for Rural Poverty Reduction Impacts

	Group A schemes (9)	Group B schemes (32)	Group C schemes (15)	
Weight	0.16	0.57	0.27	TOTAL
Physical Assets	4	4	2	3.46
Food Security	5	4	2	3.62
Env Com Res Base	4	4	2	3.46
Human Assets	4	4	4	4.00
Soc Cap & Empowerment	4	4	4	4.00
Agric Productivity	5	5	2	4.19
Financial Assets	5	4	2	3.62
Markets	5	4	2	3.62
Institutions & Service	4	4	4	4.00
Average	4.44	4.11	2.67	
Weighted Average	0.71	2.34	0.72	
Overall rating: 4.0				

Highly Successful (6), Successful (5), Moderately Successful (4), Moderately Unsuccessful (3), Unsuccessful (2), Highly Unsuccessful (1)

Source: Evaluation Team

B. Sustainability and Ownership

136. **Political sustainability.** This must be assessed at different levels from national to village level. At national level, both the PRSP and ASDP indicate very strong political commitment to irrigation and water harvesting as evidenced by the recent allocation of TZS 21 million as supplementary funds to PIDP. At regional and district levels there are positive political statements but these are not reflected in their budgets. At ward and village levels, there is strong political commitment and lastly, civil society and lobby groups have not yet taken up political issues on irrigation.

137. **Social sustainability.** In the medium term, social sustainability is probably reasonably high while in the long run it might be seriously influenced by the occurrence of drought as lack of water raises frustration and leads to reduced interest in the schemes. Social cohesion is quite high but could be threatened by adverse weather conditions which may increase conflicts over water.

138. **Ownership.** This varied according to level. At national level, effective ownership of the programme has been demonstrated by the role which MAFC plays in guiding the Programme. The

Permanent Secretary chairing the PSC and as mentioned earlier, the Ministry, contributed substantially when shortfalls were recognised in the budget for new schemes.

139. In line with Government's policy of decentralisation, district and lower local governments carried out actual implementation of the programme and exhibited their ownership of the programme. The DPMC, led by the District Executive Directors took full responsibility for planning, implementation and review of the programme. However, full ownership has yet to be translated into budget allocations for the continued support to the schemes. Some districts have partially translated ownership into budgets by including maintenance costs of some roads constructed by PIDP. It is expected that with effect from FY 2006/07, implementation of the ASDP by district may provide the requisite funds for alleviating these problems.

140. At community level, the sense of ownership is very high and is supported by regular reviews of programme activities. Chairmen of WUAs participate in tender evaluation, contract and certificate signing during construction which enhances ownership. However, communication between community and district level is in general weak and may worsen after PIDP closes which will threaten ownership.

141. **Institutional sustainability.** In districts, political commitment and ownership are high. WUAs have until beginning of 2005 (see below) been fully supported by the district administrations and they relate well with district and other local government structures and systems, thereby mutually supporting each other's objectives and enhancing effectiveness of the programme.

142. Since December 2004 (and March 2005 in some districts) the District Implementation Units (PIDP staff) have been phased out and almost all support to the PIDP schemes will have to come from the Districts. The Evaluation Team observed that the ability of the District Team to support the WUAs is limited due to lack of resources for transport, computer skills⁴² and lack of incentives in general to support the PIDP schemes. The sustainability of the institutional capacity at district level is therefore uncertain. It is yet to be seen if this will be remedied by the expected additional funds from ASDP.

143. Zonal Irrigation Units have been providing technical services on irrigation engineering to the programme but the availability of these services to schemes will depend on whether districts can pay for them or not as the costs are still beyond the capacity of the WUAs. Some technical staff in Zonal Irrigation Units was trained by PIDP, which also provided vehicles and necessary equipment.

144. **Economic and financial sustainability** varies. Therefore the assessment has to be differentiated according to scheme categories.

145. At the scheme level, Group A schemes can meet annual costs (and partially discount investment costs) so they have a very good chance of economic sustainability. Harsha WUA for example has been setting aside funds for replacing head works in case they are washed away by heavy floods. As such, Harsha, and possibly other Group A schemes have good chances for achieving economic sustainability. Group B schemes are, on average, able to meet annual costs, and with the introduction of a second crop and improved efficiency may have some chance of discounting investments. These schemes have some chance for eventually achieving economic sustainability, whereas Group C schemes have a very limited chance of economic sustainability if close follow up is not provided.

146. At household level, sustainability in Group A schemes are almost secure and in Group B schemes households stand a good chance of exiting poverty. On the other hand, households in Group C schemes have a high risk of falling back into food insecurity, if there is not a strong follow up. Present measures are insufficient to take people out of poverty, if there is no continued strong support from outside.

⁴² In each PIDP District, two vehicles, two motorcycles, two computers and training were provided and in each scheme each extension officer was given a motorcycle and the scheme facilitator was given a bicycle.

Technical (irrigation engineering planning and design) sustainability

147. Technical soundness (irrigation planning). Although schemes have technically sound engineering structures the overall plans remain inefficient, especially in view of the fact that they were designed for only one cropping season per year. Furthermore, application of irrigation water using surface (flood) irrigation methods is an extremely inefficient means, with efficiency as low as 30 per cent (as stated in the design documents).

148. Both Group A and B schemes are technically sound representing appropriate irrigation engineering planning and design, and additionally Group B is making use of an appropriate water harvesting technology for supplemental irrigation. Group C schemes are less technically sound as the basis for planning was weak and the planning process did not take into account the range of options available for selection of crops and techniques.

149. The technical solutions are: for Group A schemes - overall appropriate although one would have expected some additional attempts to upgrade the conveyance and application methods to enable more efficient use of available water; for Group B - mostly appropriate as they make use of a water harvesting technique that provide water to a crop, rice, that flourishes under flooding conditions; for Group C - appropriate for the crop selected, but as the crop water requirements may be technically difficult to secure due to the intermittent nature of the flows the technical solutions included either (i) dams and reservoirs, which are not appropriate due to heavy silt loads and high rates of evaporation making their economic life short; or (ii) harvesting water from extremely large watersheds that require much heavier hydraulic structures threatening the economic feasibility of the projects.

150. **Technical training for O&M.** The technical training for O&M offered for all the schemes was appropriate for the selected technologies and so as regards maintenance Groups A and B schemes are close to being sustainable, while Group C schemes are less sustainable. However, some schemes might eventually be able to move to Group B or even A thus, achieving higher level of sustainability.

151. **Environmental sustainability.** In general, planning and design of schemes should have been based on a catchment approach to ensure soil and water conservation as well as resolution of water use conflicts and competition for water. All schemes, especially Group B and C schemes contribute to a certain degree to flood control as the irrigation schemes contribute to flood routing by storing varying volumes of water thus reducing peak flows.

152. As regards the programme's contribution to soil and water conservation and management, Groups A and B schemes had neither positive nor negative effects as they were invariably constructed at sites where land had already been transformed to farmland. Group C schemes had some negative effects as most of these were new sites that required cutting down trees and clearing land for establishment, which reduces biodiversity.

153. Considering resilience to external shocks – drought and floods, Group A schemes are fairly resilient to drought, they are less resilient to floods as can be seen from the damage at Gichamedia due to a severe storm in May 2006. Group B schemes are less resilient to drought and even more prone to being damaged during extreme floods while Group C schemes were constructed in regions where the extremes between drought and flood are even greater. For economic reasons the designs could not take into account these extremes. They are therefore much less resilient to shock.

Table 5. Rating for Sustainability

Max = 6 max; min = 1.						
	Group A schemes (9)		Group B schemes (32)		Group C schemes (15)	
Weight	0.16		0.7		0.27	
Sustainability area						
Political sustainability	5		5		5	
Social sustainability	5		5		5	
Ownership						
Household level	5		5		5	
District level	5		4		1	
	5		4.5		3	
Institutional sustainability						
District level	3		3		3	
Community level	5		5		5	
	4		4		4	
Economic and financial sustainability	4		3		1	
Technical sustainability	4		4		1	
Environmental sustainability	4		3		1	
Average	4.43		4.07		2.86	
Weighted Average	0.71		2.32		0.77	
Overall rating: 4.0						

Source: Evaluation Team

C. Innovation, Replicability and Scaling-Up

154. **Innovation.** (i) Although overall participatory irrigation practices are not new, for Tanzania the adoption of a participatory irrigation planning approach was an innovation. Through this, PIDP was able to improve planning, helping to provide valuable local information, preventing problems and optimising use of local resources. The approach also enabled mobilizing additional resources and increasing accountability to farmers, which in turn helped to improve the quality of both design and implementation of schemes. The capacity building programmes, which were provided to the WUAs, SACCOS, Districts and other institutions helped improve capacity to carry out participatory programs; (ii) adding the incremental water through diversion of rivers to irrigation fields was an innovative approach that supplemented traditional mode of water harvesting, which mainly harvested direct rainfall in bunded areas and an area completely enclosed by bunds; (iii) sand control through the use of flap gates is also considered to be new in Tanzania; (iv) the Chairman of WUA participating in tender evaluation and contract signing is also new in Tanzania; and (v) scheme facilitators acting as managers of the schemes was new to the Tanzanian context. The use of the log frame by the WUAs for planning and implementation at the scheme level is an innovation in Tanzania, which is now being adopted by other programmes.

155. **Replicability.** Specific elements of PIDP were observed to have a potential for replicability. (i) the participatory approach to design and implementation, which the programme adopted; and (ii) WUAs and SACCOS institutions requiring participation and serving also as instruments for communicating and articulating, i.e. “voicing” in addition to their expected respective roles. As the two institutions demonstrated effectiveness in addressing community needs, they are considered replicable elements of PIDP.

156. Certain elements of WUAs can be replicated and become part of a strategy for up scaling. See box about Igongwa, page 25. The number and mandate of committees (although similar) are established according to local problems.

157. **Scaling-up.** In terms of irrigation development, the current size of area is supposed to have been matched to the amount of water available. Direct scaling-up is therefore not likely to be feasible, unless additional water can be made available, where possible, for example, by construction of additional chaco dams - hand dug pond like dams that collect rain water. The storage capacity in-field, within bunds, is to be taken into account in the design calculations and can therefore not be applied for up-scaling.

158. From the social point of view, up-scaling presents particular challenges even in instances where a scheme has been functioning effectively. For example, the efficient functioning of WUAs primarily rests on the “sense of community” which is usually defined by the boundaries of a village (250-600 households). Up-scaling of schemes to include more than one community would necessitate expansion of the WUA include members one or more of the neighbouring villages. However this alters the balance of social cohesion and is likely to render the WUA less effective. Thus from the social point of view up-scaling is not recommended without adapting water management organisations accordingly. In some cases schemes with only one side will be up-scaled by construction of “Side II”, however this may in most cases reflect weak hydrological estimates at the outset, which did not allow proper sizing of the schemes.

159. Scaling-up of PIDP as a Programme to cover larger areas and more districts could on the other hand be recommended on the condition that necessary resources are allocated, and technical and institutional issues are addressed accordingly.

160. **Rating for innovativeness, replication, and scaling-up.** Between (5) “The project introduced new concepts and technologies, had process to innovate built into the design, and has the potential for replication or were replicated” and (4) “The project introduced ideas that were somewhat new to the project locations, but were not innovative to the country. Chances for replication or up-scaling are limited.” Therefore the score assigned is 4.5.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Overall Assessment

161. The overall assessment of PIDP is a combination of very positive achievements and some areas that require improvement.

162. PIDP has through the implementation of 56 schemes – most of them completed at the time of evaluation – reached over 25 000 beneficiaries thereby exceeding its original target of 15 700 persons. More significantly, the programme exceeded its expected achievement of reaching women but was unable to attract the participation of most of the poorest as they either doubted the benefits to be accrued from PIDP or could not afford to contribute labour as required. This raises the contradiction between pursuance of ‘ownership’ as opposed to reaching the poorest

163. PIDP’s relevance cannot be overstated as it responded to the needs of the beneficiaries and is in line with GOT efforts to combat poverty; and to enhance rural and agricultural development. It is integral to GOT’s efforts to achieve its MDG targets and was in conformity with IFAD’s policy in the country and its overall strategic investment. However, the programme design could have been broadened to allow for alternative irrigation and water harvesting systems and diversified farming/cropping systems including livestock in order to better correspond to the beneficiaries’ situation in each scheme area.



Market Access Road, Igongwa I
Photo: Moshe Finkel

164. The performance of the programme is impressive as can be seen from the achievements of its outputs, which for most are achieved or even overachieved. The programme has for the most part been able to set up the infrastructure for irrigation, market access roads, agricultural extension service and institutions to manage irrigation. None the less, the degree of effectiveness in more reliable provision of water is inadequate especially in Group C areas. In this case, more emphasis should have been on planning of the schemes taking more into consideration probabilities of water availability and returns, which can be expected to ensure financial/economic sustainability of the schemes.

165. PIDP has demonstrated that the demand-driven approach is effective in managing water for irrigation in instances where a large number of small-scale farmers are involved, and that it would be difficult to sustainably improve irrigation or water harvesting without the participation of farmers themselves. Although the participatory approach is slow and time-consuming, it is deemed effective in responding to beneficiaries felt needs, ensuring ownership of programmes and their sustainability.

166. There are indications that the PIDP interventions have reduced the proportion of poor among its beneficiaries and improved their knowledge and skills concerning improved production technologies and management of irrigation schemes. Other positive impacts of PIDP observed are on the physical assets for the beneficiary population, food security, human assets, empowerment of the poor, particularly women and youth.

167. PIDP faced several challenges including lengthy tender procedures, lack of local contractors, underestimation of costs of scheme construction and some inefficiency as regards irrigation and water harvesting technologies among others. Some of the completed schemes are not very effective, partly due to weaknesses in their planning and design. Drought has also contributed to limiting PIDP's positive impact. Generally the engineering designs responded to the planners design flows as defined in their design reports.

Rating: Overall Performance

168. After rounding off the scores for the programme relevance (6), effectiveness (4), efficiency (4), rural poverty impact (4), sustainability and ownership (4), and innovation replicability and scaling-up (5), the PIDP is rated as **moderately successful**.

169. The evaluation considers overall programme performance to be moderately successful, assigning it a rating of 4 on the 6-point scale (where 6 is the highest score). Significantly, the programme scores were higher than the average scores in the 2005 ARRI report for relevance and innovation promotion, while they were the same as the ARRI report scores for all impact domains and for sustainability (as seen in the table below).

Table 6. Ratings of the Participatory Irrigation Development Programme compared with ratings from the 2005 ARRI report

	Programme Evaluation Ratings	ARRI 2005^a
Programme performance		
Relevance	6	5
Effectiveness	4	4
Efficiency of implementation	4	4
Impact (overall)	4	4
Physical and financial assets	4	4
Human assets	4	4
Social capital and empowerment	4	4
Food security	4	4
Environment and natural resources	4	4
Institutions and policies	4	4
Overarching factors		
Sustainability	4	4
Gender	5	4
Innovation promotion	5	4
^a ARRI report ratings have been rounded to facilitate comparison with the programme's evaluation ratings.		

Source: Evaluation Team

170. As can be seen from Table 6 above, PIDP has performed significantly better than the average for the Annual Report on the Results and Impact of Operations Evaluated (ARRI) last year regarding relevance, gender and innovativeness. While for efficiency, financial and physical assets, human assets, food security environment and common resources, it is rated as having been achieved less than the average.

B. Key Issues for the Future and Lessons Learned

171. GOT is facing an enormous challenge of achieving poverty reduction especially in semi arid and (other) marginal areas. Rainfall is low and unreliable, and water resources in the form of rivers and streams are therefore unpredictable and often only seasonal. The options to consider for developing such regions are few, including irrigation and/or water harvesting and it is critical to make the right choices.

172. It must also be emphasised that schemes where seasonality of water only allows growing one crop per year are difficult to develop to economic sustainability. Wherever possible, the aim should be to grow at least two crops per year. In any case, attention should be paid to ensure efficient water use; well functioning WUAs are crucial in this connection.

173. The evaluation findings reveal that the most pertinent development issues related to irrigation and water harvesting are not just technical problems of applying water to crops and improving productivity per se.

174. The Programme has been implemented by a strong and vibrant partnership of government, multilateral and bilateral organisations and beneficiaries. Although there were a few hurdles in implementation, the partnership worked well and it had the exceptional commitment of Government of Tanzania that supported PIDP even beyond what was expected, so as to ensure completion of planned schemes and even more.

175. Experience from PIDP shows, that positive impacts on poverty reduction can be achieved when developing irrigation and water harvesting, but not across the board. The volume of water available and the timing of this are decisive for what can be achieved and must be assessed on a purely technical background before, the final decision which might be political because of competition for water. Different irrigation/water harvesting technologies should be discussed in the context of each potential scheme area, and the range of agronomy options available including selecting the most suitable crops. Livestock development should be considered alongside crop production, not only having focus on attaining a harmonious coexistence of the two, but where possible to integrate them. It is also evident that market access for surplus produce and access to inputs and finance must be integral parts of scheme and community development.

176. Participatory approach, although time-consuming, is effective in getting the disadvantaged included and working well in relation to gender equality, but was less effective in relation to the poor as they often were doubtful of the benefits of PIDP and found it difficult to contribute labour and money as required.

177. PIDP experience also confirms that the adoption by farmers of improved technologies can make considerable contributions to increased productivity and production and thereby reduce poverty. To achieve this requires regular improved extension service and training of beneficiaries, men and women. The role in the local communities of women in achieving the results, which PIDP can demonstrate, must be emphasised as this confirms that awareness raising and training must be provided to achieve improved gender equity.

178. An important lesson in this particular regard is that participation and capacity building are processes which take a long time to yield returns, hence the time perspective for future designs need to take this into consideration. The issue is how development and expansion of irrigation and water harvesting as well as agricultural productivity can be combined with community participation and capacity enhancement to yield effective, demand-driven schemes with appropriate physical structures. In semi-arid areas subject to droughts, the integration of rain fed and “irrigated” agriculture in the farming system could render water harvesting more appropriate, efficient and adaptable.

179. On impacts, the findings of the evaluation mission have not surprisingly revealed variations between schemes to an extent where it is hardly appropriate to use just one set of benchmarks. Two major factors varying from one scheme to another are: (i) water availability and reliability; and (ii) irrigation experience and background of the community. It has been observed that these two factors are decisive for the performance of the schemes.

180. In some schemes, water availability does not meet water requirements corresponding to area and type of crop. The financial viability of such schemes is highly questionable and more thorough preparatory analyses should have been performed.

181. The GOT is at present developing its policy on irrigation development. It will be important to ensure the harmonisation of water resource management with other stakeholders.

182. There is need for capacity building, especially at District level to take responsibility for implementation and follow up of irrigation development programmes. An assessment will need to be urgently made of the bottlenecks to effective implementation and uptake of management responsibilities by district institutions. This should be followed by a clear definition of activities, including timelines, aimed at addressing the identified gaps.

183. A number of policy lessons, e.g. regulatory role of WUAs or in targeting of the poorest vis-à-vis economic efficiency have been learned at village, ward, scheme and district levels and should be documented into a comprehensive learning tool (e.g. how WUAs function). On one hand, WUAs should continue to be supported as the preferred community institutions for promoting people's

participation in the management of schemes. On the other hand, IFAD should decide at the very outset of a programme whether their aim is to target the "poorest of the poor" (thereby downplaying the objective of economic efficiency) or being economically efficient thus running the risk of excluding the poorest of the poor.

184. In order to improve the management of the constructed irrigation or water harvesting systems, measures must therefore be taken to increase the water users' overall awareness and knowledge about water use efficiency and water management, at scheme level, and not only at plot level. This requires a participative approach, training, application and enforcement of regulations, introduction of incentives/disincentives, and maybe re-allocation of water rights, all aiming at directly and indirectly influencing water users to adopt efficient water-use practices.

185. The role of districts as the actual implementers has been satisfactory thanks to direct technical and financial assistance from PIDP during the major part of the programme period. However, due to constraints on resources, the districts will not be able to continue the support to the schemes already operational or to give the necessary support to schemes that are still under construction. There are indications that the districts' support to the schemes is not sustainable with the present level of resource allocation.

186. Training of extension officers and beneficiaries is necessary to achieve this. Such training has in PIDP very successfully been provided by Kilimanjaro Agricultural Training Centre (KATC) and others, which are specialised in this field.

187. KATC has been strongly supported by the Japanese International Cooperation Agency (JICA) and an agreement has been reached to continue this support. However, it is now foreseen that the Centre should operate as a service (training) provider on commercial basis in order to achieve sustainability. However, it should be taken into account that the WUAs do not yet have the capacity to cover the full cost of the training (travel, subsistence, and tuition).

188. Through the implementation of PIDP it has become evident that the capacity of the private sector artisans and contractors needed for scheme implementation and maintenance is low. This means that the capacity of the sector as such is not sufficient. In other words there are at present not enough contracting companies operating in the market for implementing the PIDP schemes within the set time frame. Evidence for this was the difficulties encountered in getting the required minimum number of offers. It was also revealed that the technical and financial capacity of individual contracting companies in many cases was hardly sufficient to cope with the contracted works.

189. The success of WUA's suggests that management of water for irrigated agriculture can be an effective means to promoting sustainability – greater legal and institutional support should be provided to these institutions.

190. Participatory irrigation management enhances inclusion of extremely poor categories of people and promotes ownership, therefore the participatory process should be adopted as a standard methodology for the design and implementation of all future irrigation programmes and water harvesting programmes.

191. In instances where good social capital has been built, but where irrigation systems have not worked as well, efforts should be made to use the acquired social capital for other community development.

192. The time needed to give the participants the necessary understanding, knowledge and skills necessary to manage irrigation successfully should not be underestimated. Efforts should be made to facilitate cooperation among scheme members.

193. The more than 40 constructed water harvesting diversions spread over a range of different watersheds is an opportunity for collection of data to assist any future works in similar areas and under similar conditions, this should include river flows, flood flows, rainfall volume and intensity.

C. Recommendations

Policy and institutional issues

194. The National Irrigation Policy currently being developed should emphasize the need to analyse different irrigation/water-harvesting technologies, and crop/agronomy and livestock options in the context of each potential scheme area. In this way, a “one fits all” solution can be avoided and schemes can function more effectively.

195. **Catchment approach.** The Ministry of Agriculture, Food and Cooperatives and other line ministries should continue to develop the policy framework and ensure that the necessary institutions at the national, regional and local levels are in place so that a catchment approach⁴³ may be followed in water resource management.

196. **Supporting water users’ associations.** Greater institutional support should be provided to these associations to help them to mature in their crucial role in irrigation management and perform this role effectively. A study of how water users’ associations function should be carried out and the results translated into operational tools for use by the associations.

197. **Targeting the rural poor.** It should be established at the design stage of any irrigation project or scheme that the overall aim is to target the rural poor, while giving due consideration to the economic efficiency of the schemes.

198. **Water use efficiency.** The Ministry of Agriculture, Food and Cooperatives should take measures at the policy level to ensure more efficient use of water. This could take the form of guidelines for optimum use of irrigation water.

199. **Participatory approaches** involving district councils and communities should be adopted as the standard methodology for planning, designing and implementing all future irrigation and water-harvesting programmes.

200. **Exploiting already improved social capital.** In instances where strong social capital – such as women’s groups – has been built by the programme but where irrigation systems have been less successful, efforts should be made to use that social capital for other development purposes in the community.

Capacity-building

201. **At the district level.** The human and financial capacity at the district level should be enhanced. In particular, more financial resources should be allocated to irrigation development, and training programmes in various fields should be organized for the district staff, for example in following participatory approaches to development; and training water users’ associations in good management practices and in the operation and maintenance of irrigation schemes. This increased capacity is essential for the planned decentralized implementation of the National Irrigation Policy and for attaining the targets with regard to the expansion of irrigated agriculture.

⁴³ This approach aims to ensure that the water resources of a river are managed and used with due consideration for other users in the catchment area.

202. **In irrigated farming.** The availability of training in irrigated farming is a prerequisite for the successful implementation of the National Irrigation Policy. The basic functions of the specialized training institution, the Kilimanjaro Agricultural Training Centre, should be maintained through the provision of the appropriate financial and human resources.

203. **Private-sector contractors.** A dialogue should be initiated to identify training programmes for private contractors. Such programmes should also ensure that private contractors are well versed in tendering and procurement rules, regulations and procedures.

Technological information

204. **Data collection programme.** A data collection programme should be implemented in the water-harvesting diversion schemes that have already been constructed. This would facilitate the implementation of similar activities in the future. Aspects to be documented should include river flows, flood flows, and rainfall volume and intensity.

205. **Compiling information regarding irrigation and water-harvesting techniques.** Information about the range of available irrigation/water-harvesting technologies should be compiled, drawing on the knowledge and experience that have been gained on this subject in the United Republic of Tanzania.

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