

# **BACK TO OFFICE REPORT FOR BACKSTOPPING VISIT TO TANZANIA**

**22nd May – 10th June 2006**

**Martin Ager, Water Resources Officer AGLW/SAFR**

## **1. BACKGROUND**

This visit was undertaken to provide Technical Support Services to the following two projects;

- GCP/URT/123/JPN – Small Scale farmers Irrigation Development in Drought Affected Areas in Tanzania
- UTF/URT/121/URT – Farmer Training Support Programme for Smallholder Irrigation Schemes in Rufiji and Pangani Basins

The Reporting Officer (RO) also discussed broader irrigation issues in Tanzania. The programme of the visit is given in Annex 1 and the people met in Annex 2.

## **2. GCP/URT/123/JPN - Small Scale Irrigation Development in Drought Affected Areas**

### **2.1 Introduction**

This project is to promote rapid adoption of small scale irrigated farming and sustainable land management practices in irrigated areas to improve food security and increase incomes of drought affected small scale farmers. The immediate objectives are;

- To identify appropriate irrigation technologies and to increase rice and other crop production by better water control, improved varieties and soil fertilisation.
- To increase irrigation water use efficiency and productivity by improved water control and management in the selected areas.
- To encourage greater farmer participation in operation and maintenance through the establishment and strengthening of Water Users Associations (WUA) in the respective sites to ensure sustainability of the irrigated schemes.
- To provide the essential support services and assist farmers in the introduction of the improved irrigated agricultural production technologies through an intensive staff training programme for an effective local capability.

Work is being undertaken in two phases, phase 1 is currently ongoing in 6 districts, successful interventions will than be scaled up in phase 2 to cover 22 districts.

### **2.2 Training of Trainers (ToT)**

A training of trainers course started at the Ministry of Agriculture, Food Security and Cooperatives (MAFC) Training Institute the day before the RO arrived (programme in

Annex 5). The course was aimed at introducing 40 irrigation officers and extension officers from six districts to the principles and techniques of organising farmer field schools for improved crop production with irrigation. The RO participated in the following sessions;

- Farmer Field Schools (run by Mrs Happiness Phillip, a Trainer of Trainers in FFS methodology from the MAFC in Arusha).
- Assembly of drip kits (run by Eng Phillip Assenga, Rommert Schram and the RO)
- Formation of Cooperatives (run by Mr Makoko Mjungu from the District Department of Cooperatives, Mwanza).

The language of training was Swahili but as far as could be determined, the content was highly relevant to the work to be undertaken by the officers during the implementation of the project.

The Farmer Field School method of extension is already used in Tanzania and is supported by government. Four Training of Trainers officers, including Mrs Phillip, are employed by government and are active in the country. The RO will send copies of the Farmer Field School Manual on Soil and Water Conservation produced recently by FAO in Zimbabwe for possible use in Tanzania.

Farmers will be encouraged by the project to form savings and credit circles which could eventually be registered as cooperatives. Cooperatives would have an elected board. A problem that exists with the formation of farmer circles and cooperatives is past experience of group leaders collecting money and spending it for their own purposes. The identification of trustworthy officers and the security of funds, probably in a bank account, seem crucial if money is to be saved for maintenance and eventual replacement of irrigation equipment.

Discussions with the course participants revealed that the government officers were under resourced, particularly in terms of transport to get to the villages for which they were responsible. This could have serious implications for the implementation of the current phase 1 of the project and for the scaling up to more districts during phase 2.

### **2.3 Irrigation Equipment**

The project includes the procurement and distribution of equipment for irrigation. The following are the main issues observed in relation to the proposed technologies;

- Treadle pumps - the Money Maker treadle pump is already well known in Tanzania and parts and replacements are available in Mwanza. Provided savings can be made out of increased profits from irrigated agriculture, this technology is likely to be sustainable. Imported Indian treadle pumps are cheaper but may have a problem with parts and after sales service.
- Motor pumps – Chinese pumps are available locally. These pumps will irrigate larger areas but have comparatively high operation and maintenance costs. The

- durability of pumps of Chinese manufacture may be doubtful and availability of spare parts and mechanics should be checked. Reliable water sources are needed if they are not to be pumped dry thus having a negative impact on other users.
- Solar pumps – being manufactured in Mwanza but this is a new technology here and therefore there is uncertainty about skills and replacement parts for maintenance. High capital cost could inhibit uptake of technology without intervention of external funding.
  - Windmill pumps – being manufactured locally but similar issues to solar pumps. Also a question on the reliability of wind during the growing season.
  - Water tanks – high capital costs for subsistence farmers.
  - Drip kits – high capital costs and no supply chain for spare parts in Mwanza. The drip kits procured by the project are the cheapest available but may still be beyond the reach of farmers. Pipes and joints are very fragile and prone to leakage, the equipment may not last very long in the field.
  - Persian wheel – this is not known technology in Tanzania and Eng Assenga feels that a lot of his time would be needed even to design and build one prototype. This would be to the detriment of all other project activities. While it would be interesting to see if Persian wheels could work in Tanzania, the best way might be to hire a consultant, perhaps through the Technical Cooperation between Developing Countries programme from Pakistan, specifically to work on the Persian Wheel for a few months.

An economic evaluation of the different technologies should be made to determine the costs and benefits over the life-span of equipment and hence establish whether they are viable for farmer uptake.

An evaluation of the effectiveness of different small scale irrigation interventions produced by International Water Management Institute (IWMI) for FAO was given by the RO to Eng Assenga to draw attention to the experiences of projects in other countries working with these technologies. An electronic copy will be sent to Rommert Schram.

## **2.4 Project Management**

The FAO project team in Mwanza comprises Eng. Phillip Assenga and a driver, based in the Zonal Irrigation Office. The work is too much for one person, even now during phase 1 which is only in 6 districts. During phase 2 it is expected to roll out the interventions to 22 Districts and this will certainly be too much.

Due to the lack of transport and other resources, some of the staff of the Zonal Irrigation Office are not working to their fullest capacity. It is recommended that Eng. Assenga assess the staffing needs for the project during phase 2 and that the MAFC be requested at an appropriate level to attach suitable staff from the Zonal Irrigation Office to the project. While they would not be paid for this work, they would be offered allowances at government rates and transport as necessary to carry out work in the field.

These changes, together with a possible South South consultant on the Persian wheel, would have budgetary implications which would have to be calculated by Eng. Assenga.

A budget review could then be sought to include the necessary additional resources or changes in budget lines.

## **2.5 Sawenge Irrigation Scheme**

A joint mission by Mr Gerald Runyuro (FAO Programme Assistant) and Mr Saidi Johari (Programme Assistant, World Food Programme) arrived in Mwanza and requested the assistance of Engineer Assenga, Rommert Schram and the RO to identify technical solutions to a problem that had arisen on a project to build an irrigation canal on the Sawenge Irrigation Scheme in Magu. The District Agriculture and Livestock Development Officer (DALDO), Mr Loutandula Mabimbi, assigned his Assistant Mrs Apolonia Magere to visit the site.

The canal was being dug with food for work but progress was stopped by heavy rain and flooding of the works. The villagers restarted work without the agreement of the project team and without supervision, though the District Irrigation Officer may have known what was going on. The villagers were promised a high rate of food (10kg/m<sup>3</sup> plus 15% of that weight in pulses and 7.5% in oil) if they completed the work.

A vertical sided canal had been dug through sandy soil and the material thrown out immediately beside the canal was already falling back in. There had been no surveying of bed or bank levels and infiltrating groundwater water could be seen flowing in what should have been the upstream direction. Advice was given to the Assistant DALDO on remedial measures (proper surveying of the canal, excavating to designed bed and embankment crest levels, digging a trapezoidal canal section and moving the excavated material back to leave a berm between it and the canal.

Geraldo Runyuro and Saidi Johari were left discussing the measurement of work achieved and how the remaining work would be supervised and the remaining food rationed to complete the work in a more orderly fashion.

## **3. UTF/URT/121/URT - Farmer Training for Schemes in Rufiji & Pangani Basins**

### **3.1 Introduction**

This project under the Special Programme for Food Security (SPFS) aimed to increase the capacities of extension workers and farmers in 15 irrigation schemes that were improved as part of the World Bank financed River Basin Management/Smallholder Irrigation Improvement Programme (RBM/SIIP) in the Rufiji and Pangani basins.

This mission was expected to provide technical backstopping to the FFS programme and evaluate the degree to which they had been able to realise the planned outcomes. The team was planned to be composed of the RO, the SPFS Water Management Officer (David Chomka) and the national consultant Horticulture (Tabu Likoko). Since the project was over and these staff were now engaged elsewhere, the team included Mr Abel Mero (Field Management Officer) and Rommert Schram (Assistant Professional Officer). The terms of reference are given in Annex 3.

### 3.2 Farmer Field Schools

The main objective of the project was to disseminate improved methods to farmers through the FFS extension technique. The table below shows the number of FFSs Expected/Achieved/Still Planned in each of the 15 schemes covered by the project. Those schemes shown in bold were visited. The date of the information is given after each District name.

<b>RUFJI DISTRICT</b>	<b>SCHEME</b>	<b>RICE</b>	<b>ONION</b>	<b>MAIZE</b>	<b>TOMATO</b>	<b>OTHER CROPS</b>	<b>LIVESTOCK</b>	<b>TOTAL</b>
Iringa May 2006	<b>Mangalali /Malizanga</b>		1/1/0	3/1/0	1/1/0	1/1/0 paprika		<b>6/4/0</b>
	<b>Luganga</b>	2/1/0	1/1/0	1/0/1	1/0/0		1/1/1 poultry 1/1/0 goat 0/0/1 pig	<b>7/4/3</b>
	Mapogoro	2/1/0	1/0/0	1/0/0			1/1/0 poultry 1/1/0 goat 1/1/0 pig	<b>7/4/0</b>
	Nyamahana			2/1/0		1/1/0 water melon	1/1/0 poultry 1/1/0 goat	<b>5/4/0</b>
Mbareli June 2006	<b>Ruanda – Majenje</b>	2/2/0	1/0/1	1/1/0	0/1/0	1/0/1 paprika		<b>5/4/2</b>
	<b>Ipatagwa</b>	2/2/0 (1 fail)		2/2/0	2/0/0	1/0/1 beans	0/0/2 chicken	<b>7/4/3</b>
	<b>Igomelo</b>	2/0/0 (no water)	2/2/0	2/2/0	2/2/0		0/0/1 chicken	<b>8/6/1</b>
<b>PANGANI DISTRICT</b>								
Korogwe June 2006	<b>Mombo</b>	5/5/0	1/1/0	2/2/0		0/1/0 LabLab		<b>8/9/0</b>
	<b>Mahenge</b>	6/4/0	2/0/0	0/3/0		0/0/2 beans		<b>8/7/2</b>
Moshi June 2006	<b>Soko</b>	3/2/0		2/3/0				<b>5/5/0</b>
Hai June 2006	<b>Longoi</b>	2/2/2	2 /1/0	2/2/0	1/0/1	1/0/1 sweet pepper		<b>8/5/4</b>
Mwanga Feb 2006	Kivulini			2/2/0	1/1/0	1/1/0 sunflower		<b>4/4/0</b>
Arumeru Feb 2006	Kambi ya Tanga			3/2/0	1/0/0	1/0/0 beans	0/0/2 Chicken	<b>5/2/2</b>
	Lekitatu	2/2/0		1/1/0	0/1/0	1/0/0 beans	0/0/1Chicken	<b>4/4/1</b>
Simanjiro Feb 2006	Lemukuna	3/3/0	1/1/0			1/1/0 water melon		<b>5/5/0</b>
<b>TOTAL</b>		<b>31/24/2</b>	<b>12/7/1</b>	<b>24/22/1</b>	<b>9/6/1</b>	<b>9/5/5</b>	<b>7/7/8</b>	<b>92/71/18</b>

The project document had a target of 8–10 FFS in each of the 15 schemes which, taking an average of 9 gives a target of 135 FFS. The table above shows that when the project got underway, it was expected that a lower figure of 92 FFS would be carried out. Against this reduced target, 71 have been achieved to date and a further 18 are still planned. This gives a forecast final output of 89 FFS. This is very close to the expected 92 but is only 65% of the original target. To balance this shortfall can be set the fact that several villages are planning to implement further FFS studies after the end of the project.

The Not to Exceed (NTE) date of this project was 31<sup>st</sup> March 2006. Many of the FFS activities are still continuing and financial agreements have already been signed with the implementing Districts.

In the Project Status Report dated 11<sup>th</sup> May 2006, which included all commitments at that time, the following balances were still available;

<b>BUDGET CODE</b>	<b>BUDGET</b>	<b>EXPENSES</b>	<b>BALANCE</b>
5013 Consultants	16,250	17,885	(1,635)
5021 Travel	17,500	15,219	2,281
5023 Training	62,000	39,378	22,622
5024 Expendable Procurement	0	51	(51)
5027 Technical Support Services	12,000	0	12,000
5028 General Operating Expenses	5,865	5,985	(120)
5029 Support Costs	14,770	9,793	4,977
<b>TOTAL</b>	<b>128,385</b>	<b>88,312</b>	<b>40,074</b>

While some of the Travel and Technical Support Service budgets will have been spent on this mission and the Support Costs line is not available for use in country, there is still approximately a third of the budget available for further training activities. It is therefore recommended that a budget revision be carried out to extend the NTE date and use any remaining budget to fund more FFS activities and achieve the original targets.

The FFS comprise self selected groups of farmers within a scheme, come together to tackle specific problems by experimenting with new agricultural practices to assess the results on common plots of land. When they find successful changes from their previous practice they can implement these changes on their own land.

Significant improvements in yields were reported from several FFS groups using improved variety of seeds, correct spacing of plants, fertilisers and pest management. In some cases they were harvesting more than double what was achieved on control plots cultivated using traditional techniques. Some examples of the improvements and advantages of FFS cited by the farmers were;

- Rice production increased from 750kg/acre to 1,500kg/acre
- Maize production increased from 600kg to 2,400 kg/acre
- Tomato production increased from 1,840kg – 9,600kg/Ha
- Onions production increased from 4000kg to 8,000kg/acre.
- Better results from controlled water application than flooding
- Better agreement on water control so that all irrigators had their turn
- Planting in rows better for weed control, extra work in planting outweighed by easier weeding later
- Experimentation with different seed varieties for yield and pest resistance
- Understanding of pest management and fertiliser application
- Extension worker able to reach more farmers at the same time. Previously farmers ignored extension workers as they did not have anything useful to offer.

- Field exchange visits were very useful and more were requested by a number of villages
- Higher costs for inputs were more than outweighed by the extra income. It was thought that it would still be profitable to use improved methods if the subsidies on fertilizer were removed

Several of the FFS graduates expressed an interest in continuing with FFS experimental plots after the end of the project and many had already done so. Farmers were interested in further experiments with different techniques, e.g. at Mangalali they wanted to learn more about vegetable seed production. In Iringa district they said that para-professionals among the farmers would lead these schools and be exempt from other village duties.

Many farmers were initially sceptical and did not want to join FFS but often after seeing the results they adopted practices that they had seen and became eager to join existing schools or start new ones. In Luganga, for example, they are now talking of an additional 4 FFS on top of the 7 included in the project.

A few negative points were mentioned about FFS as follows;

- Some villages found a problem with capital availability to extend the use of improved methods into farmer's own fields (e.g. to buy fertilizer), though other villages with well organised Savings and Credit Associations (SACA) did not see this as an issue.
- Some farmers felt that FFS activities took too much of their time as they have other work to do.

Some FFS were forming into Savings and Credit Associations (SACAs) to save money for common goods such as the purchase of inputs. The formation of SACAs used to be a complicated process which could only be done in at the Ministry of Home Affairs in Dar es Salaam. Registration can now be done at District level. After a time, small credit could be available for member's use. None of the SACAs had reached this stage yet and experience from elsewhere has shown that problems often arise at this stage when structures are not in place to enforce repayment on defaulting loans.

### **3.3 Training of Trainers**

The Training of Trainers for the Farmers Field Schools included 33 extension officers and irrigation technicians from the 15 schemes involved in this project. Training took place over three weeks between April and June 2005 and included the following topics;

- Participatory approach/Participatory Rural Appraisal (PRA)
- Horticulture/vegetable production/
- Rice agronomy
- Paprika
- Maize agronomy
- Water management
- Farmer Field School Technique

- IPPM/pest control
- Operation and maintenance of irrigation schemes
- Agro Ecological System Analysis (AESAs)
- Group formation/dynamics/conflict resolution
- Contract Farming
- Marketing
- Crop water use and irrigation water requirements
- Beneficial and harmful insects/botanical pesticides
- Organic farming
- Management of irrigation schemes through Associations/Cooperatives
- Gender
- Water borne diseases

Additional village based training was done to cover HIV/AIDS and Savings and Credit Associations (SACA).

The extension workers appear to have benefited enormously from this training and many of the techniques learned had been implemented back in the villages with considerable success. In general the officers had found the FFS to be a more useful and satisfying way to work with farmers and they were happy to see positive benefits from their work. Several said that the way of working with farmer groups was much more effective than other extension techniques with individual farmers that they were using before.

Despite the clear successes of the FFS methodology in spreading knowledge for increased production, it is not clear that a 3 week course had made all extension officers into committed and skilled participative facilitators. It is also likely that there are other fields of knowledge which would help the extension workers and ultimately the farmers. Extension officers would therefore benefit from a continuous programme of in-service training.

The Government of Tanzania appears to support the use of FFS extension methods and indeed funded this project through a Unilateral Trust Fund with FAO. There are 4 Trainer of Trainers employed by the MAFC who were trained in the FFS techniques in Zimbabwe. They are still working in this area and the first of a series of one month courses, to train up to 100 government officers, will be starting shortly.

One concern that has been brought to light by a recent FAO evaluation of FFS activities is a tendency for the Farmer Field Schools to stop as soon as the donor support ends. This is a danger with this project, despite considerable buy-in from government departments during the project, FFS would need to be incorporated in the regular education syllabus of extension officers and in the planning and budgeting of District level extension activities for the method to achieve sustainability.

### **3.4 Conclusions**

The main objectives, outputs and activities intended for the project were as follows. The relevant achievements identified by this evaluation are shown in the right hand column;



<b>OBJECTIVE</b>	<b>OUTPUT</b>	<b>ACTIVITY</b>	<b>ACHIEVEMENTS</b>
Strengthen capacity of District extension and Technical Support staff of SIIP project in Participatory training and extension and the implementation of FFS and establishment of participatory farmer's groups.	Detailed workplan and methodology for implementing FFS and establishing farmers groups developed	Train Technical and Extension staff in participatory training and extension for smallholder irrigation schemes	Training of 33 irrigation technicians and extension workers from the 15 SIIP irrigation schemes completed.
Improve agronomic and on-farm water management techniques of farmers in achieving higher and renumarative yields in paddy rice and dry and wet season vegetables as well as strengthening financial capacity to intensify the cultivation of renumarative irrigated crops	Improved remuneration of paddy rice crops and expanded area of vegetables during dry and wet season. Returns enabling further intensification of irrigated production and sustaining revolving FFS funds	Implement FFS for improvement of paddy rice and renumarative vegetables during wet and dry seasons	Within the FFS there was considerable success in increasing productivity and hence profitability of rice, maize and a number of crops and small livestock. The new skills learned by the farmers were being used in some cases on their own fields and were frequently adopted by neighbours who did not participate in the FFS.
Strengthen the institutional capacity of farmers to partake in collective action in improving agronomic and on farm water management activities (joint procurement of credit and savings in inputs and marketing).	A total of 8-10 participatory farmer groups implementing FFS in each of the 15 rehabilitated smallholder schemes established and registered.	Establish and register participatory farmer groups among 10-20 farmers that share common goals and interests that can be pursued through the implementation of FFS.	The project reduced from the original target of 135 FFS to 92 FFS. At the time of the evaluation it could be established that 71 FFS had been carried out and another 18 were still expected.  A number of FFS groups were at various stages in forming SACAs. Some villages had undertaken joint procurement or marketing.

Apart from the reduced number of FFS actually carried out, this project has achieved its objectives very well. The Farmer Field Schools have been well received and useful to both farmers and extension officers at village and district levels. Overall it has been very successful in meeting its objectives.

## **4. OTHER IRRIGATION AND EXTENSION ISSUES IN TANZANIA**

During the backstopping of the above two projects, some wider issues of concern to the upscaling and sustainability of interventions in irrigation and agricultural extension were noted and these are described below.

### **4.1 Water User Associations (WUA)**

Each irrigation scheme had a WUA formed at the time of construction. These associations have constitutions, bylaws and elected committees. The WUAs were registered with MAFC as Savings and Credit Cooperatives (SACCOs). The roles of the WUA were defined in Luganga as follows;

- Water management
- Collect revenue from farmers after harvest
- Payment for water rights
- Maintenance of system
- Group purchase of inputs (e.g. fertilisers) or equipment through savings or obtaining loans
- Conflict resolution

Money collected from farmers was primarily for the payment of water rights and for minor maintenance of the scheme. Figures quoted for these contributions were in the range of 2,000Tsh to 10,000Tsh per farmer

In one case, Mombo, the organisation was exceptionally good and farmers spoke of a separate long term savings account which was being kept for major repairs in the future. They had been told that the scheme was now their responsibility and that they would have to take care of it and they were concerned that a major problem such as the rebuilding of an intake should not put them out of production for what could be a protracted period. This was the only scheme which appeared to have considered long term sustainability in the likely scenario that government will not be able to carry out major repairs at short notice. Farmer field visits to Mombo are recommended to discuss organisational issues.

Most of the other schemes were less organised and would look to government for assistance with major repairs. At the opposite extreme, the Soko scheme appeared to be poorly organised. All 315 farmers should pay 5,000 TSh to the WUA for water rights and maintenance. Some do not pay and there is no enforcement of collection. Sometimes they do not have enough to pay the 187,000 TSh for water rights, when they should be collecting 1,575,000TSh. This village does not even have money for minor repairs.

A variable level of success was seen in the marketing of produce. In Luganga the WUA was strong and they had agreed on a common marketing strategy. All members agreed a common price for sale of rice to middle men coming to the village. While they have a set floor price, they sell individually. They were building a store to gather produce and were

talking about marketing their produce jointly. They had bought a cultivating machine but would like in the future to get a milling machine to add value to their crop. Other villagers were still marketing as individuals meaning that the middle men were able to pay a lower price to those who were willing to sell. These villages needed more support to develop collective marketing strategies. Farmer field visits to Luganga are recommended to discuss marketing issues.

While the two projects visited were concentrating on Farmer Field Schools and the strengthening of these small groups, there is a need to strengthen the capacity of some of the WUAs so that they may better fulfil their role in the overall management and sustainability of schemes. The formation of strong and well trained WUAs should be seen as an integral part of any future irrigation development in the country.

#### **4.2 Sustainability of Irrigation Technology**

The schemes were constructed by the World Bank funded RBM/SIIP project between 1996 and 2004. Some farmers reported participation in design and construction. They were all gravity fed, surface irrigation schemes so there was no complex mechanical equipment to maintain. As far as was observed, the structures were mostly still in good condition though there were some places where concrete was cracked, structures were being undermined by scour and gates were not working properly. Provision had been made at many structures and division boxes for the use of stop-logs to control flow. In all cases these had rotted away or gone missing and the alternative rock and earth dams that were being used were frequently leaking badly resulting in wastage of water. In some cases there was scope for considerable improvements in water management.

Most villagers were undertaking basic maintenance such as clearing canals and some (e.g. Igomelo) had bought cement for minor repairs. Any major structural collapse such as an intake would be beyond the means of the villagers to raise the necessary funding. These schemes would depend on investment from government which could come via the regular District Agricultural Development Plan budget or from a central disaster fund. It would probably be at least a year before money for this could be included in the District Budget and this could result in the loss of several potential harvests of irrigated crops. The department of Irrigation are hoping to include a maintenance fund in next year's budget that would be available at short notice to carry out such works but in general schemes would be more sustainable if farmers were given the maximum responsibility possible for maintenance.

Major repairs would also be beyond the capability of the scheme based irrigation technicians. Technical support would be requested from the District who would go to the Zonal Irrigation office for the necessary skills.

#### **4.3 Government Structures for Irrigation and Extension**

At national level, responsibility for both Irrigation and Extension falls under the Ministry of Agriculture, Food Security and Cooperatives. The Department of Irrigation and Technical Services have decentralised to 7 Zonal Irrigation Offices, each of which has a

complement of about 7 engineers and 4 technicians. Construction is undertaken by the private sector though staff skills in contract management are weak.

Since 1997, decentralisation of many powers to the Districts means that MAFC now has no direct control over irrigation technicians and extension officers working at District level. These staff now fall under the Ministry of Regional Administration and Local Government which makes it more difficult for any central planning and coordination.

If a District Irrigation technician requires assistance with a major repair or a new scheme they request assistance from the Zonal Irrigation Office who have the necessary skills in topographic and soil surveying, engineering design, sociological and environmental issues. These Zonal offices are understaffed but recruitment to fill posts has been restricted. Last year the Department of Irrigation and technical Services requested 21 new engineer posts but only had approval for 9. Zonal Irrigation Offices are also short of transport and other equipment.

Regional agricultural offices have a budget and a small staff to follow up and supervise work in their districts but since 1997 resources have been decentralised away from the regional level. Each district has a few irrigation technicians and extension officers with a small budget to supervise and support their respective activities in the villages. These officers, together with the ward and village level staff, report through the DALDO to the DED and are thus part of the Ministry of Regional Administration and Local Government. Irrigation may not be seen as a priority in some districts when they have a lot of competing demands on their limited resources.

Some District extension officers said that they get out to each village twice or more a month but others complained about a lack of transport or fuel.

Before decentralisation there were District extension programmes, now there is generally no programme to direct village level officers and against which their progress can be monitored. Work tends to be linked to specific projects which have external funding such as the SPFS.

A number of officers at District Level spoke of a commitment to continue with FFS and expand the methodology to other villages. Many officers and councillors had been taken to see activities and they had gained a positive impression. This FFS project has worked well but this has been with considerable organisation and support from a project officer with access to transport and agricultural inputs. A recent evaluation of FFS programmes has shown a general tendency for them to stop soon after donor funding is withdrawn. Real commitment in terms of budget and training is needed for a FFS programme to be entirely delivered through government structures.

There should be an extension officer in every village but some Districts are under-staffed. Many feel that they are isolated out in their villages with little support or guidance from the District. Generally these staff would have either a Certificate (2 years study) or a Diploma (3 years study).

District Agricultural Development Plans are developed in a bottom up manner with requests generated from the villages being coordinated at the district level. These plans usually consider practical problems but extension is not seen as a high priority in the villages. Plans need to be structured to include extension needs if the service is to deliver the possible improvements in productivity.

#### **4.4 Agricultural Sector Development Programme (ASDP)**

The ASDP started on 1<sup>st</sup> June 2006 with direct budgetary support for agriculture through basket funding from the World Bank and others. It aims to develop the agricultural sector at both local and national level with an expanded role for the private sector with government in more of a supervisory role. Contract management skills will need to be reinforced within the public sector staff. Some of the main features of this programme of relevance to irrigation and extension work are as follows;

##### **COMPONENT 1 - LOCAL LEVEL SUPPORT**

This component is designed to support local authorities to plan and coordinate agricultural services. They will develop and implement District Agricultural Development Plans in which farmers will have as significant input to resource allocation. It will include;

- Local agricultural investments and infrastructure development including small scale irrigation supported through District Irrigation Development Fund
- Local agricultural services, including extension, with a shift to contracting out of services. Public and private Agricultural Service Providers will be engaged through contracts made directly between farmer groups and service providers. Work will be supported through block grants and Districts will use their own discretion on how to use money. District, Ward and Village level extension staff will play a role supporting private suppliers to upscale successful activities.
- Local capacity building to improve district planning and investment appraisal. Districts will get a base capacity building grant of 18million TSh for training and technical assistance. Additional grants will be available according to local government's assessments of needs. Activities will include farmer group formation and empowerment. There will also be support to the building of opportunities for private services and the transition of civil servants into private providers.

##### **COMPONENT 2 - NATIONAL LEVEL SUPPORT**

This component seeks to support improvement in the national policy level environment through establishing mechanisms for greater public-private partnerships. Components will include;

- Improved agricultural services including more relevant and responsive agricultural research and the establishment of better linkages with extension.
- National level irrigation developments.
- Stimulate market and private sector development

- Improve food security
- Coordination monitoring and evaluation

Underlying much of this programme is a need to enhance the capacity of private sector organisations and increase the ability of government officers in contract management.

#### **4.5 Training**

The agricultural colleges appear to have been neglected and under-funded since decentralisation and there is real concern in both the Extension and the Irrigation services that not enough trained officers are not coming up through the system to balance those leaving and to meet the needs. Government policy is to restrict employment and for more work to be done through the private sector.

At the higher level, Sokoine University has a Masters course in Irrigation and a few staff from the Department of Irrigation and from Districts have been on courses organised by FAO and Galilee University. This, however, is still far short of meeting the training needs and the Director of Irrigation and Technical Services sees as a priority the training of District and Zonal level staff, particularly in issues relating to scheme design and contract management.

The Japanese International Cooperation Agency (JICA) have established the Kilimanjaro Agricultural Development Project which includes the Kilimanjaro Agricultural Training Centre (KATC) at Moshi. This trains extension officers and farmers in irrigation techniques. Originally the trainers were Japanese but this has been reduced and some staff are now funded by the Government of Tanzania. The centre has little budget available for training courses and their facilities are available for others to use. The contact details are;

Mr Richard Shayo, Principal  
P O Box 1241  
Moshi  
Tel +255 27 275 2293  
[shayojtz@yahoo.com](mailto:shayojtz@yahoo.com)

In view of the size of the country, JICA see a need for more similar centres and are thinking of establishing one in the south. It would be better to use any such funds for developing existing agricultural training centres rather than building new ones as the government would have problems finding additional staff for a new centre.

MAFC is just embarking on a programme to train 100 officers in FFS extension techniques. This is a positive sign and shows a clear commitment to the technique but this needs follow up with funding in District Agricultural Development Plans for extension workers to use these techniques back in the villages and preferable incorporation into the general syllabus for the training of extension officers. There is also a need for periodic in service courses to refresh and upgrade the skills of existing staff.

There is clear need for training at all levels in the construction, operation and maintenance of irrigation schemes and related skills in agricultural extension to make the best use of the schemes. There is a potential role for FAO to develop a package of capacity building measures to assist Tanzania with its proposed expansion of irrigated agriculture and adaptation to the ASDP. Some areas where FAO may have relevant experience are as follows;

#### ENGINEERS AT NATIONAL, ZONAL OR DISTRICT LEVELS

FAO has run a number of courses in smallholder irrigation development in Zimbabwe and Malawi. These courses cover the design of schemes using different technologies, irrigation agronomy, crop water requirements, contract management, social organisation and a range of other relevant topics. Course are typically around 16 weeks but could be tailored to suit the specific needs of Tanzania. Courses are very practical and hence a maximum class size of around 20 is recommended. Ideally such a course would be held in Tanzania, using Tanzanian staff where possible but bringing in external trainers where necessary.

#### TECHNICANS AT DISTRICT OR VILLAGE LEVEL

The Technical Cooperation Between Developing Countries programme could be a useful way of improving the skills of these staff through the placement of technical experts from India or elsewhere in South Asia where rice irrigation is very highly developed.

#### EXTENSION OFFICERS

FAO has considerable experience with extension using the Farmer Field School approach in Tanzania. This has proved highly successful in increasing productivity in irrigated schemes, and the method can have similar results with rain fed agriculture if the extension officers have the necessary skills. These techniques now need to be expanded to be included in the syllabus of agricultural training colleges and through in-service training brought to practicing officers. The skills are just as relevant with the shift to private sector providers but government officers also need to be equipped with skills in contract management.

### **4.6 Irrigation Policy and Strategy**

FAO have recently commenced work on an Irrigation Policy and Strategy. JICA and the World Bank both expressed a strong interest to be kept involved as key stakeholders in this process. JICA have recently completed a National Irrigation Master Plan which identifies areas where there is potential for irrigation. The developments proposed in the ASDP will have profound implications for the way in which any policy will be implemented.

Tanzania has an ambitious programme of irrigation development but there is already some concern over the availability of water resources to meet these demands. While there are undoubtedly resources available, this mission coincided with the imposition of stringent power cuts due to low water levels in the hydro-electric reservoirs. Good knowledge of the resources available and fair allocation of water rights to different users by the Ministry of Water are crucial if a significant increase in irrigation is to take place.

## **5. FOLLOW UP ACTIONS REQUIRED**

RO to send copies of the Farmer Field School Manual on Soil and Water Conservation, produced recently by FAO in Zimbabwe to Eng. Assenga, Mrs Phillip, Rommert Schram, Mr Abel Mero and Alex Carr.

Eng Assenga to send Training of Trainers course programme and materials to RO.

Eng Assenga to research availability of parts and qualified mechanics to repair motorised pumps, solar pumps, wind pumps and drip kits before considering any of the technologies suitable for widespread distribution.

Eng Assenga to evaluate costs and benefits of different technologies over their expected life span to determine which of them will be more viable for farmer uptake.

RO to send Rommert Schram an electronic copy of IWMI evaluation of small scale irrigation technologies.

Eng. Assenga to assess staffing needs for phase 2 and propose a revised budget to cover allowances and transport for Zonal Irrigation Office staff and perhaps a TCDC consultant from Pakistan to investigate the introduction of the Persian wheel. FAOR should approach MAFC to request the secondment of the agreed number of staff to the project.

The NTE date of project UTF/URT/121/URT was 31<sup>st</sup> March 2006. Many of the Farmer Field School activities are still continuing, though financial agreements have already been signed. FAOR to request a budget revision to extend the NTE and allow for the expenditure of the outstanding balance of \$40,000 to complete the work.

FAOR to discuss with MAFC and the Ministry of Regional Administration and Local Government the development of a suitable package of capacity building work in irrigation and agricultural extension.



## ANNEX 1 – PROGRAMME FOR MISSION

<b>Date</b>	<b>Morning</b>	<b>Afternoon</b>
Mon May 22	Travel Harare to Dar es Salaam	Travel Harare to Dar es Salaam
Tues May 23	Travel Dar es Salaam to Mwanza	FFS training
Wed May 24	Magu irrigation project	Practice assembly of drip kit
Thu May 25	Drip kit assembly training	Drip kit assembly training
Fri May 26	Cooperatives training	Write BTOR on GCP/URT/123/JPN
Sat May 27	Travel Mwanza to Dar es Salaam	Walk on Dar es Salaam waterfront!
Sun May 28	Write BTOR on GCP/URT/123/JPN	Catch up on e-mails
Mon May 29	Meet FAOR and AFAOR	Read papers on UTF/URT/121/URT
Tues May 30	Meet JICA	Read papers on UTF/URT/121/URT
Wed May 31	Travel from Dar to Iringa (RUFJI)	Travel from Dar to Iringa (RUFJI)
Thu June 1	Visit DED and Mangalali Scheme	Luganga Scheme
Fri June 2	Travel to Mbarali, visit DED. Ruanda-Majenje scheme	Ipatagwa and Igomelo Schemes
Sat June 3	Travel Iringa to Tanga (PANGANI)	Travel Iringa to Tanga (PANGANI)
Sun June 4	Catch up on e-mails	Swim in Indian Ocean!
Mon June 5	Meet RAS, Travel to Korogwe	Mombo and Mahenge schemes
Tues June 6	Travel to Moshi, meet DED	Soko Irrigation Scheme
Wed June 7	Travel to Hai, Meet DED, Longoi scheme.	Travel to Dar es Salaam
Thu June 8	Meet FAOR	Meet Director of Irrigation
Fri June 9	Meet World Bank	Write BTOR on UTF/URT/121/URT
Sat June 10 <sup>th</sup>	Write BTOR on UTF/URT/121/URT	Travel Dar es Salaam to Addis Ababa

## ANNEX 2 - PEOPLE MET

### DAR ES SALAAM

Mr James Yonazi	Assistant FAO Representative
Mrs Louise Setshwaelo	FAO Representative
Mr Rommert Schram	Associate Professional Officer, FAO Tanzania
Mr Abel Mero	Field Management Officer UTF/URT/121/URT
Mr Alex Carr	FAO Emergency Consultant
Mr Hirofumi Hoshi	Chief of Agriculture Sector Unit, JICA
Eng M Futakamba	Director of Irrigation and Technical Services
Mr Henry Gordon	Agriculture & Rural Development Economist, World Bank

### MWANZA

Engineer Phillip Assenga	National Project Officer GCP/URT/123/JPN
Mrs Happiness Phillip	Trainer of Trainers in FFS (Min. of Ag. & Food Security)
Mr Gerald Runyuro	FAO Programme Assistant
Mr Saidi Johari	Programme Assistant, World Food Programme
Mr Loutandula Mabimbi	DALDO, Magu District Council
Mrs Apolonia Magere	Assistant DALDO, Magu District Council
Mr Makoko Mjungu	Department of Cooperatives, Mwanza

### IRINGA DISTRICT

Mr Philemon Mpwehwe	DALDO
Mr Verdiam Manlanga	Irrigation Technician
Mrs Fadhila Weronga	Livestock Officer
Mrs Rose Luvanga	Horticulture Officer (FFS Trainer)
Mr S K Ndongole	SPFS District Action Officer (FFS Trainer)
Mr Gabriel Fuime	DED
Mr Steven Ulaya	Acting DED
Mr Rajabu Mpinge	Irrigation Technician, Luganga (FFS Trainer)
Mr P Shayo	Extension Officer, Luganga (FFS Trainer)

### MBARELI DISTRICT

Mr Alex Mlowe	Agronomist, Mbareli District
Mr Johannes Simtam	Acting DALDO
Mr Jonathan Katunzi	Acting DED
Mr Ramadhani Makombe	Irrigation Technician, Igomelo (FFS Trainer)
Mr Raphael Aron Magomela	Extension Officer, Ruanda-Majenje
Mr Andreas Ligonere	Extension Officer, Ruanda-Majenje (FFS Trainer)
Mr Francis Mwasumbi	Extension Officer, Ipatagwa (FFS Trainer)

### TANGA REGION

MR Lamek Tunga	Regional Agricultural Advisor
Mr Kishero	Assistant Administrative Secretary

**KOROGWE DISTRICT**

Mr M W J Mjema  
Mrs Ruth Luhwa  
Mr Herbert Sonje  
Mr Steven Kessy  
Mr Mashambo Mbwambo  
Mr C Mngodo  
Mr Mbogetana  
Mr Sagati  
Mr Bago  
Mr Mwende

DALDO  
SPFS District Action Officer (FFS Trainer)  
Assistant Director of Extension  
Village Irrigation Technician, Mahenge (FFS Trainer)  
Village Extension Officer, Mahenge (FFS Trainer)  
Ward Extension Officer, Mahenge  
Chairman of Mombo Scheme  
Ex Chairman of Mombo Scheme  
Manager of Mombo Scheme  
Village Extension Officer, Mombo

**MOSHI DISTRICT**

Mr Robert Kitimbo  
Mr Emanuel Ngoiya  
Eng Rajab Mweta  
Mr Alfred Mzava

DED  
Agricultural Project Coordinator  
Acting District Irrigation Engineer  
Scheme Extension Officer, Soko (FFS Trainer)

**HAI DISTRICT**

Eng O Swai  
Mr David Mrema  
Dr Kweka  
Mr F Miti  
Mr J Msengesi

District Irrigation Engineer  
District Crop Officer  
DALDO  
DED  
Irrigation Technician, Longoi Scheme

### ANNEX 3 – ToR FOR EVALUATION OF UTF/URT/121/URT

The full terms of reference are shown below but following discussions with Femke Griffioen it was agreed to reduce the time for the mission from 3 to 2 weeks and that the activities crossed out would not be possible at this stage of the project.

- Visit the farmer field school programme under implementation in (a representative sample of) the 15 irrigation schemes of Rufiji, and Pangani Basin, and hold consultations with agricultural support staff involved (village and district level) as well as the farmers.
- Provide technical backstopping to farmer field schools in water management and agronomy related issues.
- Assess the improvements being achieved by the farmer field schools in increasing the productivity (yield and economically).
- ~~○ Define specified targets for each of the irrigation schemes in achieving high water use efficiency by achieving the design water allowances in practice during dry and wet season, and define a farmer field school programme to achieve those targets.~~
- Assess the farmer participation in forming registered SACA for farmer field school implementation, and provide concrete recommendations for improvement if so required.
- Assess the effectiveness and stability of the market strategies implemented by the farmer groups, and consult with identified marketing stakeholders on changing conditions to which the strategy needs to be adjusted.
- Present findings in a comprehensive report of findings and recommendations.
- ~~○ Provide general supervision and technical guidance to the two national consultants (Marketing and Horticulture), and assure their inputs in the training programme.~~
- ~~○ Participate as a resource person & facilitator in the training program in the fields of water management and participatory training and extension.~~
- Assist the National Coordinator in the general coordination, monitoring and reporting of the farmer field school programme to be implemented by the DALDO offices

## ANNEX 4 – LIST OF ABBREVIATIONS

AFAOR	Assistant FAO Representative
AGL	Agriculture Department - Land and Water Development Division
AGLW	Water Resources, Development and Management Service
ASDP	Agricultural Sector Development Programme
BTOR	Back to Office Report
DALDO	District Agriculture and Livestock Development Officer
DED	District Executive Director
FAO	Food and Agricultural Organisation
FAOR	FAO Representative
FFS	Farmer Field School method of Extension
IWMI	International Water management Institute
JICA	Japanese International Cooperation Agency
KATC	Kilimanjaro Agricultural Training Centre
MAFC	Ministry of Agriculture, Food Security and Cooperatives
NTE	Not To Exceed (end date of project)
RAS	Regional Administrative Secretary
RBM/SIIP	River Basin Management/Smallholder Irrigation Improvement Programme
RO	Reporting Officer
SACA	Savings and Credit Association
SACCO	Savings and Credit Cooperative
SAFR	Sub-regional Office for Southern and East Africa
SPFS	Special Programme for Food Security
ToR	Terms of Reference
TOT	Training of Trainers
TCDC	Technical Cooperation between Developing Countries
TSh	Tanzanian Shillings
WUA	Water Users Association

**ANNEX 5 - TRAINING SCHEDULE IN FFS FOR IRRIGATION & EXTENSION STAFF – 22/05 – 09/06/2006**

<b>DAYS/TIME</b>	<b>8:00 – 10:00</b>	<b>10:00 – 10:30</b>	<b>10:30 – 12:30</b>	<b>12:30 – 14:00</b>	<b>14:00 – 16:00</b>
22/05/06	<ul style="list-style-type: none"> <li>• REGISTRATION</li> <li>• INTRODUCTION</li> <li>• OPENING</li> <li>• GROUP LEADERSHIP</li> </ul>	<b>TEA BREAK</b>	<ul style="list-style-type: none"> <li>• NORM SETTING</li> <li>• LEVELLING OF EXPECTATION</li> </ul>	<b>LUNCH BREAK</b>	<ul style="list-style-type: none"> <li>• GROUP DYNAMIC &amp;</li> <li>• ICE BREAKER</li> </ul>
23/05/06	FFS CONCEPT		HOW TO START & RUN FFS		CONTENTS OF FFS
24/05/06	<b>FIELD</b>		<b>WORK - LAND</b>		<b>PREPARATION</b>
25/05/06	LOW COST MICRO-TUBE DRIP SYSTEM		LOW COST MICRO-TUBE DRIP SYSTEM		LOW COST MICRO-TUBE DRIP SYSTEM
26/05/06	S/TOPIC -SACCOS		SACCOS		SACCOS
29/05/06	ECOSYSTEM CONCEPT		ECOSYSTEM		ECOSYSTEM
30/05/06	FIELD WORK		FIELD WORK		ORGANIC FARMING
31/05/06	FIELD WORK		LOAN AGREEMENT FORM PREP.		AGRO-ECOSYTEM ANALYSIS (AESA) THEORY
01/06/06	AESA PRACTICAL		AESA DATA PROCESSING & DRAWING		AESA PRESENTATION & DISCUSSION
02/06/06	EXCURSION - LUBUGA		EXCURSION		EXCURSION
05/06/06	FIELD WORK		BENEFICIAL INSECTS		ROOT & PLANT VESSELS/INSECT ZOO
06/06/06	MOTORIZED WATER PUMPS		TREADLE PUMP		WIND WATER PUMP
07/06/06	PEST MGT – HORT CROPS		PEST MGT – HOT CROPS		FFS ACTION PLAN
08/06/06	GROUP WORK ACTION PLAN		ACTION PLAN		ACTION PLAN PRESENTATION & DISCUSSION
09/06/06	<b>SOLAR WATER PUMP</b>	<b>WAY FORWARD &amp; EVALUATION</b>	<b>CLOSING &amp; CERTIFICATION</b>		