

TIGRAI RURAL
DEVELOPMENT PROJECT

DRAFT PROJECT IMPLEMENTATION
DOCUMENT

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The main objectives of rural development in Central Tigray are considered to be the following:-

- (a) Halting the widespread degradation and erosion of land in order to conserve the physical resources base upon which the area's agriculture depends.
- (b) Improvement of living standards by raising agricultural production.
- (c) Improvement of the quality of rural life by increasing the availability of services and amenities.

2. THE DEVELOPMENT STRATEGY

The strategy for development of the rural sector should be based on the following principles:-

- (a) An integrated approach in which technical, social and institutional components are brought together into an overall development programme. The programme would start with land conservation and other measures needed to provide food security for the area, and work towards increasing and broadening the base of agricultural output and improving the social and economic infrastructure. Improvements in infrastructure and services would be needed not only for the efficient implementation of the programme but also to improve the quality of rural life, particularly as regards rural water supplies and health. Apart from the need to effect an overall increase in living standards, adoption of an increasingly broad-based programme would enhance its appeal to the local population and thereby stimulate their participation and enthusiasm.

THE RURAL DEVELOPMENT PROGRAMME FOR CENTRAL TIGRAI

1. GENERAL

Given the pattern of existing resources in the area, the main opportunities for development in Central Tigray lie in the field of rainfed agriculture. Water resources are insufficient to permit large-scale irrigation and conditions are not suitable for major industrial growth. Although there is no scope for expanding the cultivated area, much of the arable land is of high quality and, with conservation measures and the use of improved techniques, is capable of sustaining considerably better crop yields. With the correct methods of soil-water management, rainfall is normally sufficient for an annual crop.

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- (b) Development should be brought about with the cooperation and support of the communities which would be directly involved. Maximum use should be made of local initiative, the aim being that the rural population should undertake as much as possible of the work themselves, mainly on a voluntary unpaid basis. The Food-for-Work system should not be used except in cases where it is unavoidable, but there may be some scope for the selective use of incentive payments.
- (c) Extension work would be directed to the whole rural community rather than just to individual farmers, in order to achieve the necessary integration of activities at the village level. Particular attention would be paid to Peasant Associations.
- (d) Development should be based primarily on low-cost labour - intensive techniques which are within the comprehension of local farmers and fit into the existing socio-economic environment.
- (e) For practical reasons, especially the shortage of extension staff, development would initially have to be concentrated into selected areas, but as trained staff and supporting services became available it would be expanded into the other parts of the area.
- (f) In accordance with the official policy of decentralisation, the programme should be implemented by regional and local organisations.
- (g) Continuous updating and modification of the development programme would be required, in the light of changing circumstances and the additional data that will become available with time. Efficient monitoring of the programme's progress would be essential.
- (h) In order to provide the most suitable type of training for Tigray conditions and to overcome the shortage of the skilled agricultural staff required for the extension service, the development programme would as far as possible undertake its own staff training rather than rely on outside sources.

3. THE DEVELOPMENT PROGRAMME

3.1 General

The Development Programme involves two main components, firstly, direct measures to stabilise the resource base and to maintain and increase production, including soil conservation and the improvement of rainfed agriculture, provision of irrigation and water supplies, and forestry projects, and secondly, provision of the infrastructure and supporting services needed to implement the programme or improve social conditions in the area. These include the EPID (Extension and Project Implementation Department of the Ministry of Agriculture) extension service, a Regional Development Organisation for administration, coordination and planning, the National Water Resources Commission (NWRC), and various other Government agencies concerned with health services, roads, buildings, and physical infrastructure. Most of the official agencies involved are already in existence but need to be expanded and strengthened.

The programme has been broken down into three main parts by time scale and the level of planning detail. These are described in the Tigray Rural Development Study (TRDS) Main Report and can be summarised as follows:-

- (a) The Perspective Programme: This gives the overall development perspective. It covers in broad outline and in terms of indicative orders of magnitude the main proposals for development of each sub-sector.
- (b) The Action Programme: This is a more detailed programme for the first five years. It contains proposals for all the important sub-sectors and a number of specific projects and gives estimated costs and staff requirements. The Action Programme is intended to form the basis for financing and implementation, and to specify the measures required to initiate the development process.
- (c) Specific Projects for Immediate Implementation:
Several projects concerning groundwater and surface water irrigation, conservation, range management, vehicle servicing and repairs and appropriate technology have been planned in sufficient depth for implementation to begin in 1976. In two cases, the Illala Hand-dug

Well Project and the Quiha Catchment Stabilisation Pilot Project, execution has in fact already begun. The main function of these priority projects is to act as pilot schemes and provide data and guidelines for the overall development programme. Financing is already being arranged for these projects. In effect they form part of the Action Programme.

This project document is concerned with the five year Action Programme, particularly with the detailed programme of development over the next two years.

For planning purposes the Study Area of 12,760 km² has been sub-divided into 14 Rural Development Units (RDUs), all but two of which are on the Central Plateau. Wherever possible their boundaries have been made to coincide with administrative divisions. In certain cases, however, the existing administrative boundaries do not take full account of physical, ecological and other relevant factors and in these instances RDU boundaries have been defined on the basis of the physical and other factors listed above. At present the regional administration is reviewing existing awraja (district) and woreda (sub-district) boundaries with a view to revising them to fit more closely with the physical and socio-economic conditions of the area.

RDUs represent the physical area base upon which infrastructure development can be planned and in most cases would be convenient for implementation purposes. They should not, however, be regarded as the areas upon which the execution of all programmes would be based. In certain situations it may be desirable to develop only parts of an RDU and in others a specific area programme might cover adjacent parts of two RDUs and be managed as one unit.

Rural development would hinge upon agricultural extension, which would be the means whereby land conservation and rainfed crop and livestock improvement would be promoted throughout the area. Provision of roads, rural water supplies and other services would be phased in with the extension campaign as part of an integrated programme.

The phasing of development of different RDUs has been based mainly on two factors, firstly their relative priority in terms of productive potential, need for conservativation measures, ease of access and other aspects and, secondly, the rate at which trained staff can be made available to spread the extension programme into new areas. As a basic principle, however, the approach has not been to concentrate development into particular RDUs and, when it is virtually completed, to move onto other areas. At any one time the programme would instead be spread over a number of RDUs, which would be at varying stages of development. The build-up of extension staff in a RDU may extend over as long as five years. Apart from the socio-political desirability of spreading the programme as widely as possible, this has been done to phase the programme in with the existing extension network without undue disruption.

To indicate the development priority given to the 12 RDUs of the Central Plateau area, covering 9,670 Km², Table 3.1 shows the period in the overall rural development programme during which the build-up of extension staff would take place in each area. The project proposed in this document is also concerned primarily with this area, but certain aspects, such as roads and town supplies, would extend to the two RDUs in the Eastern Lowlands and to other parts of Tigrai Region. Moreover should additional resource data on Tigrai Region becoming available warrant a change in priorities as between the RDUs listed or by the substitution of new RDUs still to be identified, this could be affected during the planned monitoring reviews.

3.2 THE OVERALL DEVELOPMENT PROGRAMME

A brief outline of the overall development programme is given below, whilst a detailed description of the components and costs of the Action Programme (i.e. the proposed project) is to be found in Section 4. The main components of the programme are described in the TRDS Main Report and, in summary, would be as follows:-

- (a) Improvement of rainfed agriculture: A technical package to improve crop and livestock production and conserve land resources would be introduced to farmers on a large scale throughout the area. This would be undertaken by the EPID extension service and would be the single most important part of the rural development programme.

Table 3.1 Proposed Development Priorities of RDUs

RDU	Year	Extension staff build-up period						
		1	2	3	4	5	6	7
Makalle			_____					
Hauzien			_____	_____				
Senkata			_____	_____				
Hagere Selam			_____	_____				
Wikro					_____	_____		
Atsbi					_____	_____		
Maychew					_____	_____		
Debub					_____	_____		
Adi Gudom					_____	_____		
Samre					_____	_____		
Tsigereda					_____	_____		
Bora							_____	_____

Note: Year 2 of the programme is 1977-78 by the Gregorian Calendar and 1970 by the Ethiopian Calendar. Provision of additional extension staff would not start until Year 2. Unless otherwise stated, the dates shown in this document refer to the Gregorian Calendar.

- Conservation works on cultivated and uncultivated land.
- Introduction of controlled grazing schemes, such as the proposed Gaha project.
- Improved flaying and treatment of animal hides and skins.
- Use of insecticides to control sudden large-scale pest outbreaks.
- Poultry improvement through the supply of improved breeding stock.

Development of rainfed agriculture would include three main components, as follows:-

- Improvement of rainfed crop production
- Improvement of livestock production by raising draught power efficiency and increasing the output of livestock products.
- Conservation of arable and grazing land to reduce its erosion and degradation and thereby maintain the resource base.

These three components are closely linked. The purpose of soil conservation, for example, is primarily to help maintain crop and livestock production, while the main output of the livestock sector is draught power for arable cultivation. Most improvements in crop and livestock husbandry and in conservation should therefore be viewed in the context of an overall package to improve rainfed agriculture.

The suggested extension package would comprise two parts, firstly, the "Initial Package," containing only those improvements about which sufficient is already known for them to be introduced immediately and, secondly, other improvements which appear to be promising but for which further research and development is needed. In the immediate future the extension programme would be based on the Initial Package, the main components of which would be:-

- Use of selected seed.
- Conservation works on cultivated and uncultivated land.
- Introduction of controlled grazing schemes, such as the proposed Giba project.
- Improved flaying and treatment of animal hides and skins.
- Use of insecticides to control sudden large-scale pest outbreaks.
- Poultry improvement through the supply of improved breeding stock.

Other possible improvements which need further investigation include the use of improved cultivation equipment, better soil-water management, production of fodder crops, earlier planting, crop diversification, the use of fertilisers in certain areas, improved threshing equipment, rat control measures to protect farmers' grain stores, improved crop varieties, introduction of selected animal health measures, more efficient exploitation of edaphic grasslands and consolidation of arable holdings by land class.

A massive soil conservation programme is required, to protect the area's land resources. The main effort would be contour bunding on most of the cultivated land and some bench terracing on the remaining more steeply sloping cultivated land. There would also be a certain amount of gully control, construction of cut-off drains and other works. In general the target would be to stabilise critical areas within five years of the inception of the programme in any particular area. To complete the conservation of the land resources of the 12 RDUs, in the next 18 years farmers would be required to provide up to 70 mandays of labour per household per annum for the programme. In theory there is more than sufficient manpower to meet this target, but only experience will tell whether it will be attained. However, even if labour inputs were, say, half the level projected this would still be sufficient to provide some form of protection for all cultivated land.

(b) Irrigated agriculture: This would be developed on a much smaller scale than rainfed agriculture, because in most areas the physical resource base is not favourable for irrigation. The main components would be the improvement of existing surface water diversion schemes

Table 3.2 Estimated peak requirements of extension workers and related staff in the 12 RDUs of the Central Plateau.

Type of Staff	Number required
---------------	-----------------

1. General

on the Central Plateau and of flood spreading in the two RDUs of the Eastern Lowlands, the development of perennial groundwater irrigation from hand-dug wells, as at Illala, and some extension of flood spreading in the Shiket area.

2. Specialised Staff

(c) Forestry: The main projects would be the protection and management of Dessa forest and scrub thicket on the eastern escarpment and the establishment by Peasant Associations or farmer's cooperatives of plantations for the production of firewood, poles and charcoal. The scale of the forestry programme would depend to a great extent on the amount of land which rural communities are prepared to set aside for plantations.

To meet the calculated wood requirements of Central Tigray in 1985, some 30,000 hectares of plantations would be needed.

(d) Extension and training: To undertake the extension programme over the whole of the 12 RDUs on the Central Plateau, the peak staff requirements (in years 6-10) would be as shown in Table 3.2.

Table 3.2 illustrates the programme's massive staff requirements and emphasises the need for a large-scale training programme. This would be based on in-service training of Trainee Assistant Agents who would be selected from Grade 10 school leavers and would undergo a three year training period based on field experience and periodic short classroom courses at one of the two proposed Rural Training Centres.

Aspects of the programme which have been included in the proposed project. Apart from agricultural research, continuing surveys and investigations of soils, hydrology, hydrogeology, existing agriculture and other aspects in the RDUs would be needed for the detailed planning of RDU development.

(g) The Development Organisation: To control and coordinate the overall programme, a regional organisation would be

Table 3.2 Estimated peak requirements of extension workers and related staff in the 12 RDUs of the Central Plateau.

Type of Staff	Number required
1. <u>General extension</u>	
Extension Supervisors	12
Extension Agents	49
Assistant Extension Agents	240
Demonstrators	1200
2. <u>Specialised Staff</u>	
Conservation Agents	12
Assistant Conservation Agents	24
Cooperative Supervisors	3
Cooperative Agents	49
Animal Health Assistants	12
Community Development Workers	12
SFoDA Forest Technicians	4

- (e) Veterinary services: For reasons given in the TRDS Main Report, animal health should be given less attention than conservation and agricultural production. All the EPID Extension Agents and Assistant Agents would however, be given a short training in vaccination techniques, hides and skins processing, castration and disease recognition. One Livestock Assistant should be posted to each RDU to give advice and supervision on these aspects.
- (f) Research and Investigation: A major research programme is necessary to provide technical support for the agricultural improvement programme. The Institute of Agricultural Research (IAR) at Makalle has already initiated a suitable programme, with the assistance of FAO staff. This needs some strengthening in the fields of plant breeding and fodder and pasture and provision of the necessary additional staff has been included in the proposed project. Apart from agricultural research, continuing surveys and investigations of soils, hydrology, hydrogeology, existing agriculture and other aspects in the RDUs would be needed for the detailed planning of RDU development.
- (g) The Development Organisation: To control and coordinate the overall programme, a regional organisation would be

set up. It would be based on the existing Tigray Regional Development Committee comprising members from the Tigray Region administration and from the ministries and agencies involved in implementation and would be backed by a permanent Regional Development Secretariat (RDS). At the local level there would be Woreda Development Teams, consisting mainly of Government officers at woreda level and two representatives from Peasant Associations. These would help the regional organisation in planning, in the coordination of development in their areas and in reviewing progress. Each Woreda Development Team would send two representatives to the Awraja Development Committee, a body whose function would be to give advice on aspects such as development priorities and to facilitate coordination of the programme with the awraja administration.

- (h) Roads: A major road construction and improvement programme would be needed. Its main components would be the rehabilitation and improved maintenance of the existing network, which mainly links woreda capitals, and the construction of rural feeder roads to serve the areas within which the extension campaign would operate. As far as possible no village should be more than 5 km. from a feeder road. Access tracks to connect villages with the feeder roads would be constructed, the work being done mainly by the villagers themselves. Implementation of the link and feeder road programme would be the responsibility of the proposed Rural Roads Authority, working in close cooperation with EPID and the Regional Development Secretariat. In the TRDS Study Area the programme would comprise the construction or upgrading of 1065 km. of link roads and construction of 2200 km. of feeder roads.
- (i) Water Supplies: A major effort will be made to improve domestic water supplies to rural and urban communities. The National Water Resources Commission (NWRC) is setting up a Regional office to handle this programme, which will be based mainly upon spring capping, wells, hafirs (excavated ponds) and other simple forms of water

exploitation for village supplies. Some boreholes will also be installed. In the TRDS Study Area a total of about 1,700 improved rural water supplies would be needed.

- (j) Credit and Cooperatives: In general farm credit requirements will not be high. It is recommended that the present system used for the EPID Minimum Package Programme should be followed. Finance would be provided to farmers through EPID, funds being supplied by the Agricultural and Industrial Development Bank. Loans and the supply of inputs would be handled by the Marketing Assistants in the Cooperative Division of EPID. Every effort would be made to foster the setting up of viable cooperatives to take over these functions.
- (k) Marketing, processing and storage: Since the present crop and livestock marketing system appears to be operating reasonably efficiently, official intervention in the system should not be given priority and no specific measures are recommended in the development programme, except for some improvements in urban market facilities. Some changes may, however, be necessary when the Agricultural Marketing Corporation (AMC) begins functioning. Additional crop storage is urgently required to provide a famine reserve. Construction of stores has been proposed under the AMC programme and has not therefore been included here (on-farm storage is covered under the agricultural extension programme). Though not urgent, some improvement in stock route facilities is desirable and a project to do this has been prepared. No major investments in crop and livestock processing are suggested for the immediate future.
- (1) Land Reform and community development: Until more is known of Government's detailed land reform plans definite proposals cannot be made. As a general objective every effort should be made to strengthen the Peasant Associations, in order to increase local self-reliance, community self-help projects and rural participation in development. Major emphasis should also be given to the consolidation of holdings and the introduction of more rational land use. Since the extension staff would be given a thorough grounding in the

The basic components of the proposed project will be the following:

- sociological aspects of rural development, the requirement for specialised community workers would be limited; thus a total of four community development workers from the Ministry of Community Development and Social Affairs is proposed for the 12 RDUs of the Central Plateau. This should eventually be raised to one for each RDU.
- (m) Health Services: Improvement of health services will be an integral part of raising the quality of rural life. In addition to the Ministry of Health's plans for the expansion and upgrading of health stations and hospital facilities, a pilot project based on preventive medicine, health education, home economics and family planning has been formulated. This would be initiated in Makalle RDU and, during the five year Action Programme, would be extended to three other RDUs Hauzien, Senkata and Hagere Selam.
- (n) General Supporting Services: Additional services needed to support the development programme include the establishment of the Regional Workshop and Appropriate Technology Centre at Makalle, financing of which is already being finalised, and the provision of general services at RDU centres and staff housing.

The implications of these proposals in terms of staff and finance requirements and organisational aspects are summarised in Section 4, which details the Five Year Action Programme. In essence, the Action Programme constitutes the proposed project, which is the subject of this document.

4. THE PROPOSED PROJECT

4.1 General

As indicated in Section 3, the most important parts of the proposed project are the maintenance and expansion of rainfed agricultural production, through a massive soil conservation programme and through raising the standards of crop and livestock husbandry, and the improvement of the area's social and economic infrastructure, especially roads and water supplies. In line with these objectives,

the basic components of the proposed project will be the following:

- (a) A Regional Development Secretariat (RDS) would be set up to plan, coordinate and monitor the overall programme and act as a secretariat to the existing Tigrai Regional Development Committee. To enable it to perform this role effectively, the RDS would have five professional Ethiopian staff and, for the first five years, 3 or 4 expatriates (see Section 4.2).
- (b) A massive expansion in EPID's (the Extension and Project Implementation Department of the Ministry of Agriculture) operations in the area. At present EPID's extension activities are confined to five Minimum Package Programme Areas (MPPA's), which cover only a small proportion of the TRDS Study Area of 12,570 km² and the 120,000 farming families living in it. In the five MPPAs there are only 22 extension staff, working in most places on a fairly narrow range of activities concerned chiefly with the use of crop inputs (e.g. fertilisers) and only recently widened to cover soil conservation. Under the Action Programme's proposals both the scope and scale of EPID's operations would be greatly increased. Their extension work would be broadened to cover the main aspects of crop and livestock production through a community-orientated extension programme and they would be made responsible for the massive soil conservation programme required. By Year 5, 11 of the 12 RDUs on the Central Plateau would be included in EPID's extension and conservation programme. One of the main objectives during this period would be to initiate conservation work in all critical areas.

To handle the additional work involved, EPID's staffing would have to be increased rapidly, particularly of the lower cadres. The aim is that by means of a practically-orientated and realistic recruitment and training programme there would be by Year 5 of the proposed project 281 Extension and Conservation Agents and Assistant Agents and 668 Demonstrators in post.

Details of the extension and conservation work they would undertake and of EPID's operations are given in Section 4.3.

- (c) Water supplies: As described in Section 4.4 planning and implementation of the major water supply improvement programme would be the responsibility of the National Water Resources Commission (NWRC). The newly established NWRC Regional Office in Makalle will need to be strengthened and expanded considerably. Apart from local staff, in the first three years eight expatriates would be required; they would be particularly concerned with the six community water supply schemes proposed in the application to the Ministry of Overseas Development (ODM) in 1975.
- (d) A large-scale programme of road construction and up-grading would be initiated to improve road communications and facilitate implementation of the main parts of the rural development programme, as described in Section 4.5. A maintenance organisation with a capacity of maintain 2,500-3,000 km of secondary roads would be built up. This would cover the whole of Tigrai Region rather than just the TRDS Study Area. At the same time a construction unit would be established, for the up-grading or construction of 150-200 km. of link and feeder roads annually in the TRDS Study Area. Road improvement would be closely coordinated with the overall programme, priority being given to those RDUs where agricultural development would begin first.
- (e) In addition to these four main components, as part of the proposed project, some improvements would be made to a range of institutions and services at the Regional or local level. These include the Institute of Agricultural Research (IAR), the State Forestry Development Agency (SFoDA), the Ministry of National Community Development, the Veterinary Department, the Ministry of Health, the Poultry Breeding Centre, the RDU development centres and the Woreda Development Organisations. The proposed measures are described in Section 4.6.

The detailed proposals regarding staffing costs and other aspects refer primarily to the 12 RDUs which make up the

Central Plateau zone (9,760 km²) of the TRDS Study Area. In many cases, however, such as with the EPID Regional office, the NWRC Regional office, some of the six community water supply schemes, the Institute of Agricultural Research, the Regional Development Secretariat and the roads maintenance operation, the measures taken under the programme would benefit other parts of Tigray Region.

Table 4.1 summarises the estimated staff requirements of the proposed project. During the first three years between 17 and 23 expatriate specialists would be required, but these would then be phased out as further experienced Ethiopians became available. By Year 57, Ethiopian specialist staff, many of them graduates or persons of similar qualifications, would be working on the programme. Job descriptions for the main categories of specialist staff are given in Appendix A.

A considerable number of houses would be needed to accommodate the staff required for the project, both the expatriates and the local personnel. In preparing cost estimates, it has been assumed that except in the RDU development centres all housing would be rented. At present considerable difficulties are being experienced in obtaining rented accommodation, due to the recent nationalisation of urban housing. It is assumed that these difficulties will be satisfactorily resolved. If they are not a major building programme to house project staff may be required.

Almost 400 sub-professional staff would be involved, in the project, most being EPID Agents and Assistant Agents. These heavy staff requirements underline the need for a well thought-out and practical training programme. In addition, some 2,500 unskilled workers would be directly employed on the project.

A summary of the costs of the proposed project is given in Table 4.2, while Table 4.3 shows the estimated capital and recurrent expenditure by category, before the addition of physical and financial contingencies. Details are given in Appendices B and C. Cost have been calculated at 1975 prices.

Table 4.1 Summary of project costs (Eth \$ million)

SUMMARY OF STAFF REQUIREMENTS

Table 4.1

Agency/Category	Present staff available		Cumulative Number Required by Years									
			1		2		3		4		5	
			Local	Expat	Local	Expat	Local	Expat	Local	Expat	Local	Expat
A. Professional/Specialist												
Regional Secretariat Specialists, Cartographer	1	-	5	4	6	3	6	-	6	-	6	-
EPID - Specialists	1	4	4	6	5	5	6	5	7	3	7	2
- Supervisors	2	-	3	-	6	-	11	-	12	-	14	-
IAR - Specialists	-	-	1	1	2	1	2	1	2	1	2	1
SFODA - Forester	-	-	-	1	-	1	1	1	1	-	1	-
Community Development - CD Officer	2	-	2	-	4	-	8	-	9	-	11	-
Public Health - Doctor/Public Health Officer	-	-	-	1	-	1	1	1	1	-	1	-
NWRC - Engineers, Administration, Inspector Foreman, Driller, Mechanic	2	6	3	8	3	8	3	7	3	3	3	1
Rural Roads - Engineer Administrator, Accountant	-	-	3	1	3	1	4	1	5	-	4	1
- Inspectors of Works	-	-	6	1	7	1	8	1	8	-	8	-
TOTAL	8	10	27	23	36	21	50	17	54	7	57	4
B. Sub-professional												
Regional Secretariat - Draughtsman	-	-	1	-	1	-	1	-	1	-	1	-
EPID - Middle level: Agents, Asst. Agents.	34	-	40	-	86	-	138	-	206	-	281	-
- Trainee Assistant Agents	-	-	40	-	40	-	60	-	60	-	80	-
IAR - Technical Assistants	-	-	2	-	2	-	2	-	2	-	2	-
SFODA - Forest Rangers, Technicians	2	-	5	-	7	-	7	-	7	-	7	-
Veterinary Department - Animal Health Assistants	-	-	2	-	4	-	8	-	9	-	11	-
Public Health - Community Nurse, CD Workers	1	-	2	-	2	-	4	-	6	-	8	-
Regional Services - Inspector Works	-	-	1	-	1	-	1	-	1	-	1	-
Rural Roads - Middle level: Paymasters, Stores Controller, Surveyor, Draughtsman	-	-	7	-	7	-	7	-	7	-	7	-
TOTAL	37	-	100	-	150	-	228	-	299	-	398	-
C. Other staff												
Technicians	-	-	13	-	14	-	14	-	14	-	14	-
Demonstrators and village level workers	-	-	38	-	68	-	263	-	498	-	763	-
Clerks, Typists, Storemen, Dressers	-	-	31	-	36	-	38	-	39	-	41	-
Foremen, Chainmen and Assistants (Roads and Water)	-	-	75	-	99	-	99	-	99	-	99	-
Drivers, Plant Operators	-	-	70	-	83	-	94	-	95	-	98	-
Mechanics, Welders, Masons, Carpenters	-	-	77	-	85	-	85	-	85	-	85	-
Unskilled labour: Guards, Cooks, Banksmen, Plant Operator Assistants, Labourers	-	-	1787	-	2776	-	2496	-	2501	-	2511	-
TOTAL	-	-	2091	-	3161	-	3089	-	3331	-	3611	-

Table 4.2 Summary of project costs (Eth \$ million)

Year	1	2	3	4	5	Total	Local	Offshore
Total (see Table B.1 in Appendix B)	10.12	8.92	9.39	8.96	9.80	47.19	32.98	14.21
Physical Contingencies (5%)	0.50	0.45	0.47	0.45	0.49	2.36	1.65	0.71
Sub-total	10.62	9.37	9.86	9.41	10.29	49.55	34.63	14.92
Price Contingency*	1.60	2.48	3.86	4.99	7.04	19.97		
Total	12.22	11.85	13.72	14.40	17.33	69.52		

*Price contingencies, to allow for inflation, have been calculated on the basis of a 15 per cent price increase in the first year and a 10 per cent annual increase thereafter.

Over the five year period the total costs of the proposed project, allowing for inflation, are estimated to be Eth \$ 69.5 million, of which Eth \$ 24.1 million would be incurred in Years 1 and 2. About 70 per cent of these costs would be local and 30 per cent offshore; in this case local costs are taken to include third country costs, which would be relatively low. In the first two years third country costs are estimated to total only Eth \$ 0.57 million before the addition of contingencies.

Table 4.4 gives the breakdown of the costs by category over the two year and five year period. Fuller details are shown in Appendices B and C.

Over the whole programme staff salaries and associated costs would make up over half the total. Expatriate participation would be highest in the first two years and would thereafter be reduced as more trained and experienced Ethiopians become available. Most expenditure would thus be on recurrent rather than capital items, especially after Years 1 - 2.

Table 4.3 Summary of Cost (Eth \$ '000)

Agency	Years 1 - 2		Years 3 - 5		Total Capital	Total	Recurrent	Total	Local (1)	Off Shore
	Capital	Recurrent	Capital	Recurrent						
Regional Dev. Secretariat	169.7	1083.5	81.0	533.3	250.7	614.3	1616.8	1867.5	956.6	910.9
EPID Extension	527.0	2639.1	663.3	7776.9	1190.3	8440.2	10416.0	11606.3	9141.6	2464.7
EPID Conservationq	42.0	102.8	77.0	1726.0	119.0	1803.0	1828.8	1947.8	1893.3	54.5
EPID Training	296.4	409.0	4.5	541.2	300.9	545.7	950.2	1251.1	1087.0	164.1
SFOda	241.1	413.2	44.3	597.5	285.4	641.8	1010.7	1296.1	926.6	369.5
TAR	124.7	328.6	-	516.6	124.7	516.6	845.2	969.9	417.0	552.9
Veterinary Department	11.0	45.6	29.3	213.0	40.3	242.3	258.6	298.9	295.7	3.2
Poultry Breeding Centre	43.7	40.6	-	60.9	43.7	60.9	101.5	145.2	140.0	5.2
Min. of Community Dev. and Social Affairs	87.6	133.4	169.2	623.3	256.8	792.5	756.7	1013.5	744.2	269.3
Rural Health	21.0	309.2	86.0	593.6	107.0	679.6	902.8	1009.8	493.2	516.6
RDU Development Centres	286.3	39.6	808.8	115.9	1095.1	924.7	155.5	1250.6	1250.6	-
Woreda Development Organisation	157.2	54.9	353.7	259.6	510.9	613.3	314.5	825.4	459.9	365.5
NWRC Regional Office	557.5	1248.1	1105.4	1984.8	1662.9	3090.2	3232.9	4895.8	2469.1	2426.7
NWRC Engineering Services	110.0	1315.2	-	804.7	110.0	804.7	2119.9	2229.9	225.3	2004.6
NWRC Six Communities Water Supply	1155.0	-	504.0	-	1659.0	504.0	-	1659.0	770.7	888.3
Rural Roads	2818.5	4224.9	-	7880.7	2818.5	7880.7	12105.6	14924.1	11704.7	3219.4
Total (2)	6648.7	12387.6	3926.5	24228.1	10575.2	28154.6	36615.7	47190.9	32975.5	14215.4

(1) Including third country's costs, which over the first two years would total Eth \$574,000

(2) This total does not include physical or price contingencies.

Table 4.4 Breakdown of project costs
(percentages of total costs)

Item	Years 1 - 2 %	Years 1 - 5 %
1. Capital		
Buildings & construction	5.4	4.3
Vehicles, plant & equipment	<u>29.5</u>	<u>18.1</u>
Sub-total	34.9	22.4
2. Recurrent		
Expatriate staff	22.7	15.0
Local staff	25.1	38.7
Consumables	3.6	5.7
Vehicle O & M	10.0	13.1
Miscellaneous	<u>3.7</u>	<u>5.1</u>
Sub-total	<u>65.1</u>	<u>77.6</u>
3. Total	100.0	100.0

4.2 REGIONAL DEVELOPMENT SECRETARIAT

The establishment of an effective Regional Development Organisation would be crucial to the success of the overall programme. The key principle would be that control and coordination would be exercised mainly at the regional level rather than from Addis Ababa.

The basic unit for planning and implementation of the integrated rural development programme would be the Rural Development Unit (RDU), which would be fully integrated into the woreda or sub-district system. The RDU centre would be the woreda headquarters and its offices would be the offices of the Woreda Administration, Ministry of Land Reform, EPID and other agencies. A Woreda Development Team (WDT), which would be a local committee meeting at regular intervals, would be set up under the chairmanship of the Woreda Administrator within each woreda or RDU and the field officers of the various organisations involved in the programme would coordinate their activities through the WDT.

Each WDT would send two representatives to the Awraja Development Committees set up at each awraja (district) headquarters. These would play a less important part in the development process. They would not be involved in implementation, their main role being to advise the regional organisation on matters such as woreda development priorities.

At the Regional level overall policy making and control would be vested in the Tigray Regional Development Committee (TRDC). This would be chaired by the Chief Administrator of Tigray Region. Other members would include 1 or 2 representatives from each Awraja Development Committee, the proposed Regional Coordinator, as executive secretary, and the most senior officials from EPID, IAR, SFoDA, the Ministries of Agriculture, National Resources, Land Reform, Health, Education and Community Development, and the NWRC (National Water Resources Commission). Other members, for instance from the Rural Roads Organisation, would be co-opted as required.

The Tigray Regional Development Committee is already in existence, but its effectiveness will be limited until the proposed permanent Regional Development Secretariat (RDS) has been established. The main duties of the RDS would be the planning and coordination of development, data collection and the monitoring of on-going activities. An important part of its work would be to carry out additional investigations and planning studies over the whole Tigray Administrative Region as well as the TRDS Study Area. In this respect the main aspects would be:

- (a) Preparing the Regional Development Plan, incorporating and broadening as appropriate the TRDS programme for the Central Plateau.
- (b) Population, rural economy and land use studies, to provide a basis for development planning in other parts of Tigray.
- (c) Extension of the TRDS detailed reconnaissance land capability surveys and mapping to priority areas such as Hagere Selam, Adi Gudom, Atsbi and Maychew RDUs.

In terms of expenditure and staff inputs EPID, NWRC and the Ethiopian Roads Authority (ERA) would play the main role in the implementation of the programme. All are national agencies controlled from Addis Ababa. If the programme is to operate effectively it is

essential that their activities within Central Tigray be properly coordinated. This coordination would be a major task of the Regional Development Committee and the Regional Development Secretariat. Although the RDC and RDS would plan and coordinate they would not have executive control over the work of the agencies operating in the Region. In the event of disagreements over policy or execution, the Chief Administrator or his appointed delegate would take the matter up with the national headquarters of the agency concerned. Funds for each year's programme would be supplied to the Regional office of each agency from its headquarters in Addis Ababa. At the same time these organisations would give more authority and independence to their Regional offices than at present and would thereby reduce the inefficiencies which result from the need constantly to refer matters to Addis Ababa.

Apart from the funds required for its own operation the RDS would not have its own development budget, since, as described above, each of the main organisations involved would continue to receive funds from their headquarters. In certain cases, however, such as with international agencies like the World Food Programme, the RDS might become directly responsible for finance for specific projects.

Most of the coordination between Government organisations would be undertaken at the Regional, awraja or woreda level. Where such co-ordination is required at the national level, it would be effected through the Planning Commission of the Ministry of Planning.

To operate effectively the RDS would require a considerable number of high grade staff. It would have three sections, Planning, Finance and Statistics. These would be headed by staff from the Ministries of Planning and Finance and the Central Statistical Office (CSO) respectively. The Regional Coordinator would be appointed at Assistant Commissioner or Deputy Administrator level and would be responsible to the Chief Administrator of Tigray Region. In the first two years, until sufficient Ethiopian staff become available, the RDS would have four expatriate staff.

Detailed job descriptions for senior staff are given in Appendix A. In addition to the Regional Coordinator, and the Economist, Financial Controller and the Statistician, each of whom would lead a section, the Ethiopian staff on the RDS would include a Rural Sociologist, two Technical Assistants, a Cartographer, a Junior Draughtsman and other junior supporting personnel.

Expatriates would include the Regional Coordination Adviser, who would be responsible for both planning and execution until the Ethiopian Regional Coordinator had gained sufficient experience to take over, an Economist, a Rural Sociologist and a Land Classifier. The Land Classifier would be needed for only one year, to complete the detailed reconnaissance soils and land capability surveys proposed above. The expatriate staff would be phased out once the local staff were considered able to run the RDS satisfactorily. Training for local staff would be important during the early years.

Tables 3 and 4 in Appendices B and C show the capital and recurrent expenditure which would be needed for the Regional Development Secretariat over the next two years and five years; this is summarised below. Relatively little capital investment would be necessary, the biggest expense being staff costs.

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	169.7	81.0	250.7
Recurrent	<u>1,083.5</u>	<u>533.3</u>	<u>1,616.8</u>
Sub-total	1,253.2	614.3	1,867.5
Contingencies	<u>331.4</u>	<u>388.2</u>	<u>719.6</u>
Total	<u>1,584.6</u>	<u>1,002.5</u>	<u>2,587.1</u>

4.3 EXTENSION, CONSERVATION, TRAINING AND ASSOCIATION ACTIVITIES

Extension, conservation and training would form the main part of the agricultural development programme to be implemented by EPID (Extension and Project Implementation Department of the Ministry of Agriculture), initially in the 12 Central Plateau RDUs. The main components of the programme would be the following:

- (a) To initiate conservation measures in 11 of the 12 RDUs within the next five years; work in the remaining RDU, Bora, would begin in Year 6.
- (b) To improve rainfed agriculture over as wide an area as possible, extending outwards from the existing EPID MPP centres through the application of the 'Initial Package' of low cost measures.
- (c) A rapid build-up of the number of village level extension workers by training programmes based on informal on-the-job type instruction.

The associated activities concerned with agricultural research, forestry, veterinary service, poultry breeding, community development, health and the development of regional services would support the agricultural programme either directly or indirectly. They would support it either by making a direct impact on development activities or indirectly by helping to create an awareness amongst the rural population and thus contributing to their acceptance of development programmes.

4.3.1 The Extension Programme

The success of the whole rural development programme would hinge upon agricultural extension, which would promote soil conservation and rainfed crop and livestock improvement throughout the area. The spread of the programme would depend to a large extent upon the rate at which trained staff can be made available. At present there are 22 extension workers in five EPID Minimum Package Programme (MPP) centres in the Study Area. The MPP centres would form the initial bases for the spread of the expanded extension programme and would be absorbed into it. Until the expanded programme reaches them MPP areas would continue operating as at present, though with some changes in emphasis.

The main elements of the proposed expanded programme are as follows:-

- (a) At the junior level the existing EPID staff structure would be retained but the intensity of staffing would be substantially increased. An extension Supervisor would be in charge of each RDU, in which there would be 4 or 5 Extension Agents (EA), each being responsible for an area with a population of 2,000 to 2,500 farming families. Below this level EAs would have 4 or 5 Assistant Agents, each responsible for about 500 farmers in an area of on average some 4,000 hectares. Within this area would be a Demonstration Area of perhaps 700 - 800 hectares. This would be the focal point for initiating the proposed conservation agricultural improvement package and community/farmer training components of the programme, which can only be carried out effectively in situ. The Assistant Agents would each have 5 Demonstrators to assist them, who would normally be selected from each main village by the Peasant Association and would be employed only on a temporary basis, during the development period, i.e., for 10 to 12 years.

- (b) Specialised staff in support of the general extension staff would handle credit, input supply, marketing, co-operative development, conservation and animal husbandry. The Co-operative Division of EPID would be responsible for the first four activities while the Conservation Division and the Veterinary Department would handle the other two aspects.
- (c) In overall support of the programme at the EPID Regional Co-ordinators' office there would be graduate specialist staff in the following disciplines (See Table 4.5):

Agricultural Extension
Conservation (Planning)
Conservation (Implementation)
Agricultural Economics
Livestock/Range Management
Training

These Regional staff would concentrate their efforts mainly on the 12 RDUs, at least in the initial years, but they would also work in other parts of Tigrai.

Although the Training and Conservation specialists would deal with specific components of the programme they would nevertheless be members of the team responsible for the planning, implementation and evaluation of the Regional agricultural programme under the EPID Regional Co-ordinator. Training lower level staff would be an important aspect of all Regional specialists' work.

Initially expatriates would be required to back up and train local staff who would not have sufficient experience or expertise to undertake a programme of the scale and complexity which is envisaged. The expatriate staff would be phased out after three to five years, by which time the programmes should be functioning smoothly.

4.3.2 The Conservation Programme

During the first five years the emphasis in this programme would be on initiating the basic conservation programme aimed at dealing with the stabilisation of critical areas in the 12 Central Plateau RDUs. In any one area the programme would aim to complete the initial stabilisation within five years and the whole programme of protection works in 10 to 12 years. Based on staff work capacity and assuming the labour required to carry out the work would be available, the stabilisation phase would be completed

by the twelfth year and the full protection programme over the whole area within 18 years. This is considered to be a realistic target in relation to the urgency of the problem.

The main elements of the proposed conservation programme are as follows:-

- (a) Provision of a specialist team in the Region, capable of undertaking the necessary planning and implementation activities, consisting of three conservation specialists, two of whom would be expatriates initially. The Planner on the team, who would be an expatriate, would be responsible for the overall planning of the conservation programme, particularly the determination of the overall approach to rational land use in the Region and Peasant Association Areas as well as priorities within the programme. The other two team members, one expatriate and the other local, would be primarily responsible for the implementation, including development of demonstration catchments and initiation of improved farming techniques, training of staff and supervision of the on-going conservation programme in all MPPAs (Minimum Package Programme Areas) and RDUs.
- (b) In each RDU there would be one Conservation Agent supported by two Assistant Conservation Agents who would assist Extension Agents and Assistant Extension Agents in planning their individual catchment areas, give technical advice on actual layout of conservation works, deal with specific danger points requiring emergency treatment and help Assistant Extension Agents to train Demonstrators.
- (c) To deal with specific problems requiring emergency treatment a mobile emergency treatment unit under a technician and labour foreman would be set up.
- (d) Specialised survey equipment, hand tools and materials needed at all levels in the programme would be provided. At the Regional level sophisticated survey instruments and the basic tools, equipment and materials for the emergency team would be required. In each RDU simple survey instruments and hand tools would be essential to make effective

use of the large labour force employed under the programme. Materials such as cement and wire netting would be particularly important for the protection programmes.

- (e) Massive labour inputs would be required for conservation work. To complete the programme in the 12 RDUs within 18 years up to 70 mandays of labour would be required annually from each family farming in the area. Until considerable practical experience is gained, a definite policy regarding payments for conservation work cannot be specified and it would be necessary to maintain a flexible approach regarding this aspect. While it is obvious that as much as possible of the work should be carried out on a voluntary basis some allowance must be made for incentive payments.

In line with current EPID practice, provision has therefore been made to pay labour employed in marking contours and on works of a communal nature at rates equivalent to the present WFP (World Food Programme) rate of payment at 3 kg. grain per five hour day (equivalent in cash terms to Eth \$ 1.0 per day).

4.3.3 The Training Programme

The re-orientation of existing personnel and the training of new recruits will require a comprehensive training programme. To meet the heavy increase in staff requirements to implement the field programme it is proposed that training for Assistant Agents and Demonstrators should be largely informal in the field, backed by such classroom teaching as may be necessary.

The training of Assistant Agents is in fact the most critical and would be spread over three years. The first year would be conducted in the Makalle and Hauzien RDUs and would comprise some nine months of field training under the supervision of a selected Extension Agent backed up by three months classroom teaching. The class room teaching would be conducted at Rural Training Centres (RTCs) sited in the RDUs.

Demonstrator training would in the main, be carried out by Agents or Assistant Agents under the direction of Regional specialist staff. Short courses of classroom teaching would be given at the Rural Training Centres.

The specialist Training Officer would be responsible for organising the training courses for all staff. A local officer should be assigned to this post but he should be backed up by an expatriate specialist during the first year while the programme is being set up and the RTCs established. Once the Regional programme is operating effectively the expatriate should be posted to the national headquarters to co-ordinate activities in all Regions of the country.

The RTCs would also be used for training local community leaders, farmers and lower level government staff involved in rural development. They would not however, be elaborate institutions, their main requirement being the provision of dormitory space for 25-35 people, two classrooms, a dining room, kitchen and relaxation room. Each centre would be equipped with a personnel carrier in addition to a basic complement of all items of equipment which would be used by trainees in their field work.

4. 4.3.4 Staff requirements

EPID's staff requirements to implement this programme will be very large. Proposed staffing for the first five years of the programme is given in Table 4.5.

4.3.5 Other requirements

Detailed physical requirements and costs of the extension conservation and training programme are given in Appendix B. Amongst the major items are the following:

Buildings: In addition to expansion of EPID's Regional Coordination Office, 11 RDU offices and stores and two Rural Training Centres would be needed, together with the requisite furniture and equipment.

Vehicles: Over the five years 23 four wheel drive vehicles one truck, 132 motor cycles and two personnel carriers would be required.

Conservation work: Payments in cash or kind to local labour for conservation work are expected to total some Eth \$ 1.24 million during the next five years, a further Eth \$ 0.54 million being needed for tools and materials.

Table 4.5 EPID's staff requirements for the proposed programme (number)

Year	1	2	3	4	5
1. Expatriate staff					
Extension Specialist	1*	1	1	1	1
Conservation: Planning	1	1	1	-	-
Conservation: Implementation	1*	1	1	1	1
Livestock/Range Specialist	1*	1	1	-	-
Agricultural Economist	1*	1	1	1	-
Training Specialist	1	-	-	-	-
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	6	5	5	3	2
2. Local staff					
Regional specialists	4(1)	5	6	7	7
Supervisors: RDUs	2*	4	8	9	11
Supervisors: Co-op	1*	2	3	3	3
Principal of RTC	2	2	2	2	2
Extension Agents	18*	18	18	28	38
Conservation Agents	2*	4	8	9	11
Co-op Agents (Marketing Assistants)	14*	14	14	19	28
Extension Assistant Agents	-	40	80	130	180
Conservation Assistant Agents	4	8	16	18	22
Trainee AAs (extension & conservation)	40	40	60	60	60
Trainee Co-op Secy/Managers	-	-	-	-	20
Demonstrators	18	58	218	428	668
Clerical staff, drivers, guards, etc.	24	33	51	54	59

* In post at present; one of the four Ethiopian Regional specialists is in post.

4.3.6 Costs

The capital and recurrent costs of the extension, conservation and training programmes over the next two and five years are shown in Appendices B and C. They would be as follows:-

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
1. <u>Capital Costs</u>			
Extension	527.0	663.3	1,190.3
Conservation	42.0	77.0	119.0
Training	296.4	4.5	300.9
Sub total	865.4	744.8	1,610.2
2. <u>Recurrent Costs</u>			
Extension	2,639.1	7,776.9	10,416.0
Conservation	102.8	1,726.0	1,828.8
Training	409.0	541.2	950.2
Sub-total	3,150.9	10,044.1	13,195.0
Total	4,016.3	10,788.9	14,805.2
Contingencies	1,066.1	6,857.7	7,923.8
Overall Total	5,082.4	17,646.6	22,729.0

4.4 WATER SUPPLIES AND IRRIGATION

4.4.1 General

Water supplies and irrigation have been dealt with together, because both will be the responsibility of the National Water Resources Commission (NWRC) Regional office in Tigrai.

4.4.2 Rural water supplies

To improve rural water supplies in the TRDS Study Area, an estimated 850 spring capping installations, 510 hand-dug wells, 170 boreholes and 170 ponds would be needed. The criterion on which these numbers have been estimated is that most rural dwellings should be within 10 minutes walk of a perennial water source. As a basic principle the Government would not install improved supplies unless the local people are prepared to contribute most of the unskilled labour required.

Teams would be set up under the NWRC regional office to handle spring capping, hand-dug wells and pond construction. It is estimated that the annual rate of installation would be about 60 spring cappings, 40 hand-dug wells, 12 boreholes and 12 ponds. As far as possible, provision of improved water supplies should be phased in with the agricultural extension programme to form part of the integrated development package. In many cases improvement of a village's water supply could be offered as an inducement to the farmers to undertake conservation work. This approach has been used successfully in Agame awraja, to the north of the TRDS area. The main work on rural supplies would begin in 1977 and would aim to cover two RDUs simultaneously, taking two years per RDU. In the first two years of the Action Programme work would therefore be concentrated in Makalle and Hauzien RDUs.

To implement the programme a considerable amount of engineering investigation, design and supervision would be needed, particularly in the initial stages. At present rural water supply improvements are carried out by the Society of International Missionaries (SIM), the Provincial Health Office using some Dutch funds, Oxfam and the Development Through Co-operation (Zemetcha) campaign. When the NWRC Regional office is fully established in Makalle, this agency will organise and co-ordinate the rural water supply programme. Each village supply would be surveyed by staff from NWRC or, in some cases, from one of the other organisations mentioned above. For each village project, materials such as cement and tools would be provided and construction supervised by NWRC or other qualified staff. The measures required to strengthen the NWRC and enable it to undertake its water supply and irrigation work are described in Section 4.4.5.

4.4.3 Town water supplies

For the purposes of this development programme towns are defined as those communities with a population of 2,000 or more. At present there are 15 such communities (including Makalle) in the TRDS Study Area. Allowing for population growth during the next five years some communities such as May Nebri and Samre will achieve the 2,000 figure and have therefore also been included in the programme. In addition, any RDU centre which is not already a town, such as Tsigereda and Chelena, has been included.

Reconnaissance surveys have shown that urban water supplies in the TRDS Study Area are rudimentary and without any storage facility; only six towns have supplies to standpipes. Improved supplies should

be provided as part of the integrated development of the area. The benefits would be mainly social, in the form of better health and labour saved. As a planning criterion it has been assumed that a standpipe supply should be available to every 500 urban dwellers and that the average daily requirement would initially be ten litres per person, increasing by 0.5 litres per day per annum over the next 20 years.

It is considered that future requirements can be met from existing sources supplemented in places by boreholes. A detailed survey is required at each site followed, where necessary, by an exploratory drilling programme. At all sites a pumpset would be required to fill the storage tanks. The systems should be designed for 1995 projected demand levels.

The NWRC has been charged with the responsibility for all water development in the country. This responsibility includes town water supplies, and all such works in Tigrai should be co-ordinated by the Regional office in Makalle. At present the Society of International Missionaries (SIM) are involved in a drilling programme at Wikro and the Chinese aid programme have carried out exploratory drilling work at Maychew and are now installing a town water supply there. Both these programmes plus the TRDS programme should now come under the NWRC regional programme. NWRC would prepare a Town Supply Scheme for all towns and, over the next three years, would install water supplies for six communities in Tigrai, two of which would be in the TRDS area. Monitoring of the performance and the operation and maintenance of these six schemes should be given particular attention and would provide vital data for future planning. At this stage, therefore, no other urban water supply costs have been included in the Action Programme budget.

4.4.4 Irrigation development

Groundwater irrigation from shallow hand-dug wells appears to be the most promising form of irrigation, but there is scope for improving the existing small-scale surface systems found in the Central Plateau and flood spreading in Mahoni and also of extending the area of flood spreading in Shiket. In comparison with rainfed agriculture improvement, however, irrigation development would play only a minor part in the overall programme.

In the irrigation programme attention would be concentrated on small (say 5-20 hectares) hand-dug well schemes. These would be run by the local farmers themselves with the aid of technical assistance

from EPID extension staff and NWRC engineering personnel and farm credit supplied through EPID. The aim would be to promote a self-sustaining growth of this type of irrigation, which would require comparatively little direct Government involvement. Financing for a pilot project at Illala near Makalle, is already being arranged and implementation of a pilot stage has begun, three wells having been excavated.

Until the first results become available from Illala, it is difficult to assess the practical potential of this type of irrigation and the extent to which it might be developed in the area. In the two and five year budgets presented in Appendics B and C, therefore, no provision for the capital costs of developing further hand dug well schemes has been included in the present document. A proposed budget for irrigation would instead be prepared at a later stage, after the formulation of a detailed irrigation development programme by the Water Development Engineer and other members of the NWRC Regional Office staff. Taking account of the limited areas which are likely to be suitable from the viewpoint of both soils and aquifer conditions, it is provisionally estimated that some 500 - 1,000 hectares of well irrigation might be developed over the next ten years.

The surface irrigation programme would be limited in scale and would concentrate on the following:-

- (a) Improvement of existing perennial or seasonal irrigation schemes in the Central Plateau, such as Agula.
- (b) Improvement of existing flood spreading schemes in Mahoni.
- (c) Extension of flood spreading in Shiket.

Although in certain places there may be some unexploited perennial water sources in the Central Plateau most have already been developed. The emphasis would therefore be on the improvement of existing systems. Since these cover in total no more than 500 -800 hectares the scale of this programme will inevitably be small. At first the accent would be on installing better diversion structures and thereby enabling irrigation to continue from July to November (the present crude structures are swept away by the first floods of the rainy season, in July or August). The surface irrigation projects are

dependent on the maintenance of adequate river flows and are vulnerable to flooding caused by rapid runoff in the river catchments. Proper management of the upstream catchments would therefore, be essential to the successful development of surface irrigation.

The first project to be implemented will be the Agula Scheme, covering 150 hectares; this will act as a pilot project for similar development elsewhere. Arrangements for its financing are already being made.

As with groundwater irrigation, until practical results are available from this pilot project and detailed investigations of other potential schemes have been made, it is not possible to provide a meaningful estimate of the likely capital costs of surface irrigation development over the next five years. Apart from the Central Plateau, at present only limited information is available on the potential for improving and extending flood spreading in Mahoni and Shiket. The NWRC Water Development Section would study these areas as part of its investigation and planning programme over the next three years.

4.4.5 The National Water Resources Commission (NWRC) Regional Organisation

To plan, coordinate and implement the water supply and irrigation programme, a major expansion in the newly - established NWRD organisation in Tigrai will be necessary. A total of eight expatriate staff would be provided for periods of between two and five years, in order to help set up the NWRC Regional organisation, implement the six proposed community water supply schemes, train local staff and initiate the investigation and planning work required for water supplies and irrigation. Apart from the Team Leader, a water engineer, there would be a water development engineer responsible for hydrological monitoring, rural water supplies and minor irrigation schemes, a hydrogeologist, a driller, two specialist formen, a mechanic for drilling rigs and other special equipment, and an administrative officer. Provision of six of the eight expatriate staff is already being considered by the Ministry of Overseas Development (ODM). Local staff would include three qualified engineers, four engineering and groundwater technicians, a driller and a full range of supporting personnel.

Table 4.7 shows the projected requirements of technical staff for NWRC over the next five years. Fuller details are given in Appendices B and C.

Table 4.6 NWRC Staff Requirements

Year	1	2	3	4	5
<u>1. Expatriate</u>					
Team Leader	1	1	1	1	-
Water Development Engineer	1	1	-	-	-
Hydrogeologist	1	1	1	-	-
Driller	1	1	1	-	-
Admin. officer	1	1	1	1	-
Foreman - water supply	1	1	1	-	-
Foreman - mech/electrical	1	1	1	-	-
Specialist mechanic	1	1	1	1	1
	8	8	7	3	1
<u>2. Local</u>					
Water Development Engineer	1	1	1	1	1
Engineer - Engineer/electrical	1	1	1	1	1
Assistant engineer	1	1	1	1	1
Technicians	8	8	8	8	8
Driller	1	1	2	2	2
Foreman	23	23	23	23	23

As regards equipment, NWRC will use the two percussion drilling rigs now in Tigrai and will take over the TRDS rotary drilling rig in 1976. when the TRDS exploratory drilling programme is finished. Provided that the drilling performance during the next two years is satisfactory, a further rotary rig would be purchased in Year 3 of the proposed project. Six dewatering pumps, one compressor (to replace the existing TRDS machine), one turbine test pump, a range of workshop equipment, nine four - wheel drive vehicles, two four - wheel drive trucks and four motor cycles would also be required.

The budgets in Appendices B and C include the cost of the construction materials and equipment for the six water supply schemes and the proposed village water supplies provided during the Action Programme. As regards buildings, three field offices and stores would be constructed; the budget does not include NWRC Regional offices, equipment and other expenditure not attributable directly to this programme or already provided from other sources.

Total NWRC capital and recurrent costs during the five year period are summarised below and are detailed in Appendix B:

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
1. Capital costs			
NWRC Regional Office	557.5	1,105.4	1,662.9
Engineering Services (1)	110.0	-	110.0
Six Community (2)			
Water Supplies	<u>1,155.0</u>	<u>504.0</u>	<u>1,659.0</u>
Sub Total	1,822.5	1,609.4	3,431.9
2. Recurrent costs			
NWCR Regional Office	1,248.1	1,984.8	3,232.9
Engineering Services	1,315.2	804.7	2,119.9
Six Community			
Water Supplies	-	-	-
Sub Total	2,563.3	2,789.5	5,352.8
3. Contingencies	<u>1,152.8</u>	<u>2,515.1</u>	<u>3,667.9</u>
Total	<u>5,538.6</u>	<u>6,914.0</u>	<u>12,452.6</u>

Notes:

1. "Engineering Services" refers specifically to the provision of six expatriate staff and follows the terminology used in the 1975 proposal to ODM for the Domestic Water Supply Project.

2. The item "Six Community Water Supplies" refers specifically to the water supply project for six communities and, as with note (1) above, follows the terminology used in the 1975 proposal. The cost shown should be regarded as only a very rough estimate; detailed estimates will be prepared by the NWRC team as part of their work programme.

4.5 ROADS

Tigray Region is served by an extensive road network, of which the main Addis Ababa-Adigrat-Asmara and Addis Ababa-Gondar-Adua-Asmara trunk roads are the backbone. In addition to the trunk roads there is a system of some 2,700 kms of secondary roads connecting the principal towns and villages and penetrating to all but the most inaccessible areas of the Region.

The existing secondary roads, which were built mainly by the Tigray Development Organisation (TDO) between 1962 and 1974, were constructed to very basic dry weather standards by largely labour-intensive

methods. These roads generally lack proper drainage or surfacing and thus require regular maintenance to keep them in motorable condition. However, owing to the failure of TDO, through lack of funds, very limited maintenance work has been carried out during the past two years. As a result a large proportion of the network is rapidly falling into a severe state of disrepair. River and stream crossings and sections over mountainous country were particularly badly affected during the unusually wet 1975 rainy season.

A national study of rural roads was carried out by the Crown Agents during 1975, its aim being to prepare an overall programme for construction and maintenance of secondary roads in each of the 14 administrative Regions of Ethiopia. In preparing this proposal for road development in Tigrai account has been taken of the draft report of the Crown Agents' Study together with the following:

- (a) The Pilot Rural Roads Project being undertaken by the Crown Agents in Wollo.
- (b) The Ethiopian Roads Authority (ERA) project for reconstruction of the Adua-Sekota-Makalle road.
- (c) ERA preliminary proposals for road maintenance work in Tigrai.
- (d) The EPID Minimum Package Phase II road proposals.

With the need to mount a maintenance operation rapidly and the vital importance of upgrading existing and constructing some new roads for the rural development programme, a rural roads organisation should be established in Tigrai as soon as possible. This could be achieved by reactivating the TDO under the overall control of the Rural Roads Division of the ERA, until decisions are taken on the Crown Agents' proposal to set up a Rural Roads Authority.

4.5.1 Programme Components

The roads programme would have two main components, concerned with maintenance and construction respectively. These are as follows:

(a) Maintenance:

The aim would be to establish a capacity to maintain all existing secondary roads in Tigrai Region. There is virtually no local experience of how this operation should be organised, because in all programmes carried out to date the emphasis has been on construction work.

The plan would be to build up a Regional maintenance organisation and capacity, in order to undertake regular maintenance work using labour-intensive methods backed up, where necessary, by machines.

(b) Construction.

The construction programme proposals are confined to roads in the TRDS Study Area and are based on a single construction unit as outlined in the Crown Agents' draft report. A similar unit has been established in Wollo. A combination of labour-intensive and mechanical construction methods is proposed, because both could be effectively employed in the varied topography of the Central Plateau and escarpment areas, and abundant labour is available on the densely settled plateau. Since a large proportion of the roads would follow existing alignments the need is largely for rehabilitation and up-grading. The Crown Agents have suggested that this would best be achieved by a form of special maintenance or major repairs which would restore roads to an acceptable standard.

4.5.2 Construction Standards

The standards developed by the Crown Agents have been adopted as the basis for planning and assessing the construction programme requirements. The two standards applicable to roads in Tigray are the following:

- (a) RR30 specifications for link roads connecting RDU or Woreda development centres to the trunk roads.
- (b) RR10 specifications for roads linking Woreda or RDU centres with each other and for feeder roads penetrating rural areas.

The specifications given in the Crown Agents' report for these categories provide for the following:

- 4 to 6 m. formation and 10 - 15 m. cleared width;
- paved fords and culverts;
- gravelled sections and top course over embankments of black cotton soils.

The plan would be to build up a Regional maintenance organisation and capacity, in order to undertake regular maintenance work using labour-intensive methods backed up, where necessary, by machines.

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The specifications given in the Crown Agents' report for these categories provide for the following:

- 4 to 6 m. formation and 10 - 15 m. cleared width;
- paved fords and culverts;
- gravelled sections and top course over embankments of black cotton soils.

Modifications to these specifications should be made by the Regional Engineer in consultation with the ERA to provide for items such as construction to a standard formation width and drainage works. Feeder roads in particular may require special consideration and a system of progressive improvements would be investigated in the Makalle and Hauzien RDU's initially.

4.5.3 Phasing

The phasing of the road programme cannot be determined in isolation from the needs of the other components of the development programme in the Region. In particular, the agricultural development programme requires link and feeder road in the RDUs in which conservation and extension components are being implemented.

The phasing proposed is as follows:

(a) Maintenance:

The immediate need would be to ensure that roads linking Awraja and Woreda capitals to the main road network and the Regional capital are maintained in motorable condition. Once this objective has been achieved other roads serving specific agricultural, administrative or tourist needs would be included in the programme. Setting up the organisation, staff recruitment and procurement of equipment would be tackled on a progressive basis. Two years have been allowed for the operation to achieve full strength, by which time a capability to handle 2,500 to 3,000 kms per annum should have been established.

(b) Construction:

New construction and up-grading should follow the phasing proposed for the agricultural development programme in the RDUs. Thus roads in Makalle and Hauzien RDUs would have the highest priority in the first two years, followed by Senkata, Hagera Selam, Wikro, Adi Gudom, Atsbi, Maychew, Samre, Debub and Tsigereda. This phasing also accommodates the need for roads to serve specific projects scheduled for immediate implementation, namely - Protection of the Dessa escarpment forest, the Agula Irrigation Improvement Project, the Illala Valley Hand-dug Well Irrigation Project and the Giba Valley Grazing Improvement Project.

The capacity of the unit proposed might be 150 to 200 kms per year, made up as follows:

- Upgrading and construction of 75 to 100 km of link roads to RR30 or RR10 standards;
- Construction of 50 to 150 km per year of feeder roads to RR10 standard.

A phased programme for the first five years based on the above priorities and construction capability, is shown in Table 4.7 the first year's programme allows 6 to 9 months for procurement and delivery of equipment and setting up the roads organisation in the Region. Construction by labour intensive methods would commence some three months after the arrival of the Regional Engineer and supporting technical staff.

Table 4.7 Phasing of Link Road Construction

From	To	Construction standard	Distance km	Cumulative km	Possible phasing (Year)
Senkata	Hauzien	RR30	25	25	1
Makalle	Tselewa	RR10	14	39	1
Wikro	Dessa	RR30	32	71	2
Hauzien	Senefti	RR10	20	91	2
Makalle	Samre	RR30	51	142	2/3
Wikro	Atsbi/Dera	RR10	60	202	3
Maykeyih	Samre	RR10	60	262	3
Adi Gudom	Debab	RR30	37	299	3/4
Maycnew	Manoni	RR30	18	317	4
Mahoni	Rakata	RR10	15	332	4
Mahoni	Chercher	RR10	36	368	4
Wargba	Machaire	RR10	20	388	4/5
Dungulat	Gijet/Yechila	RR10	67	455	5

The following roads would be built in the first two years:

Link Roads:

RR30 Standard:

- 25 kms from Senkata to the RDU development centre at Hauzien.
- 32 kms from Wikro to Dessa forest via Agula to serve the irrigation improvement and the forest protection projects.
- 51 kms from Makalle to the RDU centre at Samre and to serve parts of Makalle and Adi Gudom RDUs.

- RR10 Standard:
- 14 kms from Makalle to Tselewa serving the Illala Valley area, which would be developed for irrigation purposes.
 - 20 kms from Hauzien to Senefti, which is near to the site for a Rural Training Centre and an irrigation improvement scheme.

Feeder Roads

- RR10 Standard:
- 150 kms of feeder roads in the Makalle, Hauzien, Senkata and Hagere Selam RDUs to serve areas being developed under the agricultural extension and conservation programme.

4.5.4 Staffing

The programme would require an experienced roads engineer to be responsible for its direction and control at the Regional level, under the overall direction of the ERA Rural Roads Division. A strong team of supporting staff to deal with administration, planning and layout of work and the supervision and control of site operations would also be necessary. During the establishment phase of the programme, covering the first three years of operations, the Regional Engineer and Senior Mechanical Inspector would be expatriates. Once the project was operating smoothly, however, and staff had been trained to take over the management duties involved, local staff would be assigned to all posts. Thus the terms of reference for the expatriates would be to set up a viable organisation and to train local staff.

Staff requirements are summarised in Table 4.8. The senior staff required for the project would be the Regional Engineer, a Roads Engineer, an Administrative Assistant, an Accountant and a Senior Mechanical Inspector (see Appendix A for job descriptions). Other middle and low level staff, in the various categories shown below and detailed in Appendix B, would number 176 in 1976/77 and 203 in 1977/78. Skilled artisans, particularly carpenters and masons needed for the construction of culverts and river crossings, are a large proportion of staff in these categories.

Unskilled labour requirements have been assessed on the basis of the estimates in the Rural Roads Study, the Crown Agents' experience in Wollo and the ERAs' preliminary proposals for a maintenance operation in Tigrai. The construction programme would effectively employ a labour force of some 900 labourers, gang leaders and guards for ten months in each year.

Maintenance operations are likely to be more seasonal and would be carried out mainly during the six months immediately following the wet season when a large, widely spread, labour force would be required. During the first year up to 670 labourers and gang leaders would be employed and in the second year this number might be doubled.

Table 4.8 Staff Requirements (numbers)

Category	Year 1		Year 2 and following years	
	Constr- uction	Maint- enance	Constr- uction	Maint- enance
Planning and administration	25	3	25	6
Inspection and supervision	27	7	27	14
Plant operation	37	9	37	18
Artisans and site workers	40	5	40	10
Plant maintenance and repair	20	3	20	3
Total:	149	27	149	54

4.5.5 Buildings, Equipment and Materials

No equipment and buildings, which could be taken over to form the nucleus for the new rural roads unit, are available from the defunct TDO operations. Provision has therefore been made for all the facilities required to be purchased or constructed.

(a) Buildings:

During the first year a Regional depot would be constructed with 6 offices, 2 stores, and 2 workshop bays for carrying out minor repairs and maintenance work on earth-moving plant (conventional vehicles would be maintained by the Regional Government Garage). A design for such a depot with 450 m floorspace, estimated to cost Eth. \$112,500, is given in the Crown Agents' draft report. Accommodation would be rented during the first year's operations. Temporary camps would be set up for construction gangs at selected sites along the routes being worked on and are budgeted for at Eth. \$25,000 per annum. Details are given in Appendix B.

(b) Plant and Equipment:

The plant requirements have been estimated on the assumption

that a combination of labour-intensive and mechanised methods would be employed. A basic complement of earthmoving, compaction, rock crushing and transport units is budgeted for, based on the draft Rural Roads report, the EPID Minimum Package Phase II proposals and the actual experience of the Pilot Project in Wollo. Details are given in Appendix B. Office furniture, survey equipment and workshop tools required to equip the Regional depot are budgeted for at Eth. \$50,400. Four-wheel drive vehicles would be required by all supervisory staff and are provided for accordingly; six Land Rovers would be provided for the construction team and two for each maintenance unit.

(c) Materials and Tools:

Hand tools required for unskilled labour, carpenters and masons are included in the budget at the rate of \$300 for a 10 man gang to cover picks, shovels, forks, wheelbarrows, crowbars and hammers (see Appendix B for details). Materials required for the programme include cement, explosives, poles, shuttering and wire for the construction of culverts and river crossing. Local materials would be used as far as possible (see Appendices B and C for details).

4.5.6 Costs

The overall costs of the project over five years, allowing for physical and financial contingencies, amount to Eth. \$21.6 million, and Eth. \$8.9 million over two years, as shown below and as detailed in Tables 30 and 31 of Appendices B and C.

	1-2 Years (Eth \$ 000)	3-5 Years (Eth \$ 000)	Total (Eth \$ 000)
Capital	2,818.5	-	2,818.5
Recurrent	4,224.9	7,880.7	12,105.6
Sub-total	7,043.4	7,880.7	14,924.1
Contingencies	1,845.0	4,794.2	6,639.2
TOTAL:	8,888.4	12,674.9	21,563.3

The apportionment of costs, over five years, to the construction and maintenance programmes is estimated as follows:

	Construction (Eth \$ 000)	Maintenance (Eth \$ 000)
Capital	1,944.0	874.5
Recurrent	7,473.1	4,632.5
TOTAL:	9,417.1	5,506.0
	(855 kms)	(12,500 kms)

The indicative overall average unit costs of construction and maintenance, assuming that the equipment would have been fully depreciated and discounting allowances for inflation (i.e. using constant 1975 prices), are estimated as:

Construction	\$ 11,014 per km.
Maintenance	\$ 440 per km per year.

Specific costs cannot be assigned to the two road standards proposed.

4.6 ASSOCIATED ACTIVITIES

The associated activities mentioned above are important components of the rural development programme. They are described below.

4.6.1 Forestry

Timber resources in Central Tigray are being heavily overexploited, current output being well above the level that can be maintained from the existing resources on a long term basis. Almost all is used for firewood, which is a vital necessity of daily life in the area. Unless steps are taken immediately to conserve existing forest resources and to develop new sources of supply through the establishment of plantations, the situation will become increasingly critical.

During the next five years the main components of the forestry programme to be undertaken by the State Forest Development Authority (SFoDA) would be as follows:-

- (a) Demarcation and control of existing forests and scrub: A total of 10,400 hectares of existing escarpment montane forest and scrub thicket in three areas at Dessa, Maychew and above Shiket would be surveyed, demarcated and brought under a system of controlled exploitation; almost all this work would be completed in the first two years.

Survey and inventory of the remaining 100,000 - 110,000 hectares of scrub and thicket on the eastern escarpment would be started after demarcation of the first areas has been completed. Development would include cutting and marking boundaries, constructing access roads and carrying out fuelwood and charcoal burning trials on *Tarconanthus* and other species.

(b) Afforestation: In conjunction with the EPID agricultural extension and conservation programme, the target would be to establish about 11,000 hectares of plantations for firewood and pole production over five years, of which some 1,800 hectares might be planted in the first two years. Ten forest nurseries would be set up at strategic locations in the RDUs as these are brought under the EPID extension programme; six are scheduled for establishment during the first two years. They would be run by SFoDA (State Forestry Development Agency) staff and would each produce seedlings sufficient for some 300 hectares per annum. EPID extension staff would work closely with SFoDA in the selection of land for plantations and in gaining the agreement and cooperation of the Peasant Associations and local communities involved. Apart from seedling production, SFoDA staff would advise on the silvicultural aspects of the planting and subsequent management of plantations by Peasant Associations.

(c) Species trials: Trials would be undertaken by SFoDA to identify the most promising tree species for firewood and pole production.

Execution of the forestry work in the five year Action Programme would be the responsibility of SFoDA, the only other agency directly involved being EPID, on the plantations. To undertake the programme effectively SFoDA would be strengthened by the assignment of an expatriate forester for the first three years, by the recruitment and training of an Ethiopian forester in the third year, and by the recruitment of other staff as required. In addition to the forester, by Year 2, SFoDA would have three Rangers and 20 Forest Guards responsible for the escarpment demarcation and control and four Technicians dealing with seedling production and afforestation.

Tables 10 and 11 in Appendices B and C show the estimated capital and recurrent costs of the forestry programme over the next two years and five years. These would be as follows:-

(Eth \$ 000)	Years 1 - 2	Years 3 - 5	Total
Capital	241.1	44.3	285.4
Recurrent	413.2	597.5	1,010.7
Sub total	654.3	641.8	1,296.1
Contingencie	175.0	374.7	549.7
Total	829.3	1,016.5	1,845.8

4.6.2 Agricultural Research

A well organised programme of applied research is essential for the successful long term development of Central Tigray's agriculture. A considerable number of possible forms of crop and livestock improvement have been identified, but many of these cannot be introduced until further research and development has been done. This is particularly important in the case of cultivation equipment, crop varieties, diversification of cropping, fodder production and the adoption of earlier planting and better soil-water management techniques.

Agricultural research is the responsibility of the Institute of Agricultural Research (IAR), which has a regional station at Makalle. It has carried out limited trials in the area since 1973 and has recently been strengthened by the appointment of a Dryland Agronomist, a Soil and Water Conservation Specialist and a Mechanisation (Appropriate Technology) specialist from FAO. Additional offices and research station buildings are under construction.

Under the proposed re-organisation of the IAR, Makalle is to be developed as the Northern Regional Agricultural Research Headquarters serving Tigray, Wollo, Eritrea and Begemdir. The proposed research programme would cover a wide range of activities, including the following:

- (a) Variety improvement by selection of promising local material, particularly of wheat, barley, chickpeas and lentils.
- (b) Development of forage crops and suitable conservation methods.

- (c) Introduction and screening of new food and industrial crops, especially cereals, oilseeds, grain legumes vegetables and fruits.
- (d) Development of improved implements and related farming practices, including aspects such as soil - water management and earlier planting.
- (e) Monitoring of soil moisture and climate.

To enable IAR to undertake its full programme two Forage/Pasture Specialist (one Ethiopian and one expatriate) and one Plant Breeder (Ethiopian) would be added to the staff establishment at Makalle for at least the next five years. To provide the necessary support for these staff, two additional Technical Assistants, two drivers and two guards would be recruited, two vehicles purchased and additional office space and other buildings and equipment acquired during the next two years.

Tables 12 and 13 in Appendices B and C show the capital and recurrent costs involved in this strengthening of the IAR regional organisation. These would be as follows:-

(Eth \$ 000)	Years 1 - 2	Years 3 - 5	Total
Capital	124.7	-	124.7
Recurrent	328.6	516.6	845.2
Sub total	453.3	516.6	969.9
Contingencies	121.0	316.2	437.2
Total	574.3	832.8	1,407.1

4.6.3 Veterinary Services

The Veterinary Department of the Ministry of Agriculture would participate in the development programme in close liaison with EPID, in addition to continuing their present clinical services and inoculation campaigns. One Animal Health Assistant would be posted to each RDU. They would advise and assist all Extension Agents and Assistant Extension Agents with vaccinations, improvement of hide and skin curing and recognition of the main livestock diseases.

Four additional Animal Health Assistants would be appointed by the end of the second year and by Year 5 the number employed would have risen to 11. Each would have a motor cycle and basic equipment such as clinical equipment and hide and skin drying racks.

Tables 14 and 15 in Appendices B and C show the additional capital and running costs which would be incurred by the Veterinary Department over the next 2 years and 5 years. These would be as follows:

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	11.0	29.3	40.3
Recurrent	<u>45.6</u>	<u>213.0</u>	<u>258.6</u>
Sub total	56.6	242.3	298.9
Contingenies	<u>16.1</u>	<u>151.6</u>	<u>167.7</u>
Total	<u>72.7</u>	<u>393.9</u>	<u>466.6</u>

4.6.4 Poultry Breeding Centre:

As part of the agricultural extension programme, a concerted effort would be made to raise egg and poultry meat output in rural areas, by the sale of improved breeding stock to farmers. Stock would be supplied from the existing poultry unit in Makalle, which is at present run by the Ministry of National Resources. To cope with the demands of the programme the unit would be expanded to include a pilot breeding and distribution unit. If this pilot project proves to be a success other units would be established in various centres.

Capital and recurrent costs of the Centre are given in Tables 16 and 17 of Appendices B and C and would be as follows:-

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	43.7	-	43.7
Recurrent	<u>40.6</u>	<u>60.9</u>	<u>101.5</u>
Sub total	84.3	60.9	145.2
Contingencies	<u>20.0</u>	<u>37.3</u>	<u>57.3</u>
Total	<u>104.3</u>	<u>98.2</u>	<u>202.5</u>

4.6.5 Community Development:

Community development will play an important part in the programme to raise agricultural production and improve the quality of rural life. Much of the conservation and extension programme would depend on the involvement of whole rural communities rather than just individual farmers.

Initially four Community Development Workers from the Ministry of National Community Development and Social Affairs (MNCD and SA) would be posted to work in the RDUs being developed during the first two years and by the end of the five years this would have been increased to 11, one for each RDU in the programme. Their main function would be to assist with the training and orientation of other staff involved in rural development, as well as members of local communities. The objective would be to create an understanding of the process of community development in the initial stages of the programme and to prepare communities for participation in the programme. The MNCD and SA has a senior officer in charge of the regional programme assigned to the RDS who would direct the work of these staff. He would be assisted by the Rural Sociologist.

Each CD worker would have an office in the RDU centre and a four wheel drive vehicle to enable him to perform his duties effectively.

The additional capital and recurrent costs incurred by the Ministry during the Action Programme and in the first two years of the project are summarised below and shown in detail in Tables 18 and 19 of Appendices B and C.

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	87.6	169.2	256.8
Recurrent	<u>133.4</u>	<u>623.3</u>	<u>756.7</u>
Sub total	221.0	792.5	1,013.5
Contingencies	<u>61.7</u>	<u>495.5</u>	<u>557.2</u>
Total	282.7	1,288.0	1,570.7

4.6.6 Health Services

A programme to improve health services in Tigray is already being implemented by the Ministry of Health assisted by certain international agencies. It is based mainly on expanding the present network of Health Stations and Health Centres and extending their range of services. Even if all the proposed improvements are made, however, health services will still reach only a small proportion of the total population.

A major improvement to rural health services might well be achieved by the introduction of a new form of programme based on preventive medicine directed particularly at the vulnerable group of women of child-bearing age and children under five. It is proposed that a pilot project for

such a scheme should be initiated by the Ministry of Health during the first two years of the project in Makalle RDU. Provided that this is successful, during the five years of the Action Programme it would be extended to Hauzien, Senkata and Hagere Selam.

The services covered would include health education, sanitation, nutritional guidance, immunisation and vaccination, maternal and child health services, family planning guidance and recognition of major and treatment of minor illnesses.

To implement the health project there would be village level health workers, each being responsible for 3 or 4 villages in an area which could be covered on foot in one day. By the end of Year 2 20 such staff would be in post, rising to 95 by Year 5. Supervision and backup should be provided by one mobile team per RDU, consisting of a Community Nurse and a Community Development Worker. A full-time doctor/public health officer would be assigned to the Regional Public Health Office to supervise the programme.

As shown in the detailed budgets given in Table 20 of Appendices B and C, the main costs would be staff, vaccines and other materials. Total costs would be as follows:

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	21.0	86.0	107.0
Recurrent	309.2	593.6	902.8
Sub total	330.2	679.6	1,009.8
Contingencies	85.8	417.5	503.3
Total	416.0	1,097.1	1,513.1

4.6.7 Woreda RDU Development Organisation

To carry out effectively the coordination functions of the Woreda Development Team (WDT) its chairman, the Woreda Administrator, must be provided with the necessary transport and accommodation facilities. Each WDT would have one four wheel drive vehicle with which to travel round its RDU and an office in which meetings would be held, reports prepared and records stored. No additional staff would be required. Since 11 RDUs are to be developed during the Action Programme, these facilities would be provided for 11 Woreda Development Organisations

over the next five years. The project would be supervised and controlled by the Inspector of Works in the Chief Administrators office.

Capital and recurrent costs for these Woreda Development Organisations are summarised below and are given in detail in Tables 23 and 24 of Appendices B & C:

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	157.2	353.7	510.9
Recurrent	<u>54.9</u>	<u>259.6</u>	<u>314.5</u>
Sub total	212.1	613.3	825.4
Contingencies	<u>58.0</u>	<u>381.3</u>	<u>439.3</u>
Total	<u>270.1</u>	<u>994.6</u>	<u>1,264.7</u>

4.6.8 RDU Services:

Each RDU should have a town developed as a focal point or centre in which services and amenities to support the integrated development programme are available. In some RDUs there are also sub-centres which would be developed, but to a lower standard than for the main centres. The services and amenities to be provided are mainly water and electricity supply (finance for electricity supply is not being requested in this document), staff, housing, improvement of open markets, and urban roads. Water supplies are dealt with in Section 4.4 and Woreda Development Organisation facilities in (g) above.

Overall supervision of this part of the programme would be the responsibility of the Inspector of Works in the Chief Administrators office. He would employ two foremen to control the urban road and market improvement and components of the work. In each centre construction would be phased over 1 or 2 years and would involve housing for senior staff in 10 RDU centres, improvement of open markets in 13 centres and sub-centres and urban road construction in 11 centres.

Proposed capital and recurrent expenditure on RDU centres over the next five years is shown in Tables 21 and 22 of Appendices B and C and is summarised below:-

<u>(Eth \$ 000)</u>	<u>Years 1 - 2</u>	<u>Years 3 - 5</u>	<u>Total</u>
Capital	286.3	808.8	1,095.1
Recurrent	39.6	115.9	155.5
Sub total	325.9	924.7	1,250.6
Contingencies	94.6	569.8	664.4
Total	320.5	1,494.5	1,915.0

A.1 Regional Development Secretariat (RDS)

A.1.1. Post: Regional Co-ordinator

Job Description: Overall responsibility for direction of the secretariat and to coordinate between local administration, Regional agencies and ministries, the secretariat and the Central Government; to be Executive Secretary of the Regional Development Council.

Qualifications: High planning and administrative experience.

Assignment: Long term

Recruitment: Local

A.1.2. Post: Regional Co-ordination Adviser/Regional Planner

Job Description: To be responsible for the secretariat until the Regional Co-ordinator is appointed and thereafter to be responsible for the day-to-day work of the RDS, preparation of the Regional plan and direction of further studies required in the region. Co-ordination of implementation of specific projects and programmes.

Recruitment: Expatriate

Assignment: 2 years in first instance

Qualifications: Agriculturist or economist with experience of regional planning, rural development administration and project work.

A.1.3. Post: Economist (Two posts)

Job Description: To prepare and gather the material required for preparation and review of the regional development plan, preparation, appraisal and monitoring progress of specific projects or programmes.

Recruitment: One local, one expatriate.

Assignment: Local - long term
Expatriate - 2 years in first instance

Qualifications: Economist or agricultural economist with experience of regional planning, project preparation and appraisal.

APPENDIX A

STAFF JOB DESCRIPTIONS

Job descriptions for the most important categories of staff required to carry out the Action Programme i.e. the proposed project described in this project document are as follows:-

A.1 Regional Development Secretariat (RDS).A.1.1. Post: Regional Co-ordinator

Job Description: Overall responsibility for direction of the secretariat and co ordination between local administration, Regional agencies and ministries, the secretariat and the Central Government; to be Executive Secretary of the Regional Development Committee.

Qualifications: Wide planning and administrative experience.

Assignment: Long term

Recruitment: Local

A.1.2. Post: Regional Co-ordination Adviser/Regional Planner

Job Description: To be responsible for the Secretariat until the Regional Co-ordinator is appointed and thereafter to be responsible for the day-to-day work of the RDS. preparation of the Regional plan and direction of further studies required in the Region. Co-ordination of implementation of specific projects and programmes.

Recruitment: Expatriate

Assignment: 2 years in first instance

Qualifications: Agriculturalist or economist with experience of regional planning, rural development administration and project work.

A.1.3. Post: Economist (Two posts)

Job Description: To prepare and gather the material required for preparation and review of the regional development plan, preparation, appraisal and monitoring progress of specific projects or programmes.

Recruitment: One local, one expatriate.

Assignment: Local - long term
Expatriate - 2 years in first instance

Qualifications: Economist or agricultural economist with experience of regional planning, project preparation and appraisal.

A.1.4. Post: Financial Controller

Job Description: To prepare regional development estimates and costing of projects, checking expenditure and preparing financial statements on progress.

Recruitment: Local assignment by Ministry of Finance.

Assignment: Long term

A.1.5. Post: Statistician

Job Description: Collection and compilation of regional statistics; monitoring of progress of the regional development plan.

Recruitment: Local assignment by Central Statistics Office

Assignment: Long term

A.1.6. Post: Rural Sociologist (2 posts)

Job Description: To be responsible for the community development aspects of planning and co-ordination of the implementation of community development, extension and co-operative programmes, particularly the preparation and orientation of staff; further research on community organisations.

Recruitment: One expatriate, one local.

Assignment: Local - long term

Expatriate - 2 years

Qualifications: Rural Sociologist with experience of rural development.

A.1.7. Post: Land Classifier

Job Description: Carry out detailed reconnaissance land classification mapping within the RDUs selected for development during the second and third years of development and not already surveyed. i.e. Hagere Selam, Adi Gudom, Atsbi, Maychew, Dehub and Samre. Extend reconnaissance survey to cover the areas west of the escarpment in Tembien and to the north in Agame, Adua and Axum Awrajas.

Recruitment: Expatriate

Assignment: One year in the first instance.

Qualifications: Qualified land classifier with experience of land classification for agricultural development using aerial photographs.

A.1.8. Post: Cartographer (Senior)

Job Description: To supervise the RDS cartographic section including map compilation, care and use of aerial photographs, preparation of reports and supporting graphics; to prepare an index of maps.

Recruitment: Local

Assignment: Long term

Qualifications: Recognised diploma in cartography or technical drawing with experience in a cartographic/draughting unit.

A.2 EPIDA.2.1. Post: Extension Agriculturalist (2 posts)

Job Description: To assist the Regional Co-ordinator in the supervision of EPID field activities particularly the co-ordination of extension, conservation and livestock components; to assist with the preparation of new programmes with due attention to policy guidelines from EPID headquarters; to provide technical guidance and training for field staff; to liaise with IAR on new developments.

Recruitment: Local and expatriate

Assignment: Expatriate, five years. Local, long term.

Qualifications: Qualified agriculturalist with wide extension experience.

A.2.2. Post: Agricultural Economist (2 posts)

Job Description: To assist with supervision of EPID field activities, particularly with marketing and credit; to prepare agricultural development plans and programmes for the Region; to liaise with the Agricultural and Industrial Development Bank, IAR and the AMC.

Recruitment: Local and expatriate

Assignment: Expatriate, four years. Local long term.

Qualifications: Qualified agricultural economist or agriculturalist with experience or post-graduate economics training.

A.2.3. Post: Conservationist (Planning)

Job Description: Plan conservation programmes for RDUs and specific projects, determine the overall approach to rational land use as well as priorities and needs in accordance to EPID guidelines. Assist with training staff in conservation planning. Supervise land use planning activities by RDU staff.

Recruitment: Expatriate

Assignment: 2 years

Qualifications: Qualified Agriculturalist with specialisation and experience in conservation and land use planning.

A.2.4. Post: Conservationist (Implementation) (2 posts)

Job Description: Co-ordinate and supervise the implementation of soil and water conservation programmes including training staff in the practical aspects of conservation work. Assist with the development of improved implements to achieve conservation objectives.

Recruitment: Local and expatriate

Assignment: Expatriate, five years, Local, long term.

Qualifications: Qualified Agriculturalist or Agricultural Engineer with wide experience of soil and water conservation work.

A.2.5. Post: Livestock/Range Management Specialist (2 posts)

Job Description: Supervision of the livestock production aspects of the programme including planning and implementation of grazing control schemes, improvement of fodder production and nutrition generally, improvement of hides and skins; development of improved implements and liaison with the IAR and Veterinary Department.

Recruitment: Local and expatriate

Assignment: Expatriate, three years, Local, long term.

Qualifications: Qualified agriculturalist with specialisation and experience in animal husbandry, range management and/or nutrition.

A.2.6. Post: Training Officer (2 posts)

Job Description: To plan and organise a training programme for subordinate agricultural staff within Tigray Region.

This will comprise:-

- (a) The planning, setting up and operation of rural training centres.
- (b) Drawing up curriculum, syllabus and course content aspects of the instruction.
- (c) Organisation of teaching timetables and maintenance of training and follow up reports and records.
- (d) The expatriate will in addition be required (after initial service in Makalle) to serve in EPID headquarters in Addis Ababa to organise similar schemes on a national scale.

Recruitment: One expatriate, one local

Assignment: Expatriate - one year
Local - long term

Qualifications:

- (a) Recognised Agricultural Qualification
- (b) Teaching qualification and/or teaching experience.
- (c) preferably wide experience in rural training programmes.

A.2.7. Post: Supervisor (Agriculture and Co-operatives)

Job Description: To be responsible for agricultural or co-operative aspects of the EPID development programme within an RDU or MPP area including:

- (a) Collection of data and preparation of plans for the area.
- (b) Supervision of the extension and co-operative development programme.
- (c) Recruitment and training of junior staff.
- (d) Member of Woreda Development Team.

Qualifications: Agricultural graduate or Agent with appropriate experience, proven capability and up-grading training at the National University.

A.2.8. Post: Agent

Job Description: To be responsible for supervision of agricultural activities in an area within an RDU in which 2,000 to 2,500 farmers live including:

- (a) Direct supervision of 4 to 5 Assistant Agents and participation in their training programmes.
- (b) Organisation of demonstrations, field days and meetings with Peasant Associations.
- (c) Recruitment and training of Demonstrators

Qualifications: Ambo/Jimma Diploma or promotion from Assistant Agent Grade following not less than three years satisfactory service and suitable training.

A.2.9. Post: Assistant Agent

Job Description: To be responsible for extension work with 500 farming families, including the following:

- (a) Selection and development of a 'Demonstration' area ([±] 800 hectares).
- (b) Day to day supervision of 'Demonstrator' grade staff.
- (c) Day to day control of specific programmes such as conservation, village grazing control schemes, vaccination of livestock.
- (d) Recruitment and training of Demonstrators.

Qualifications: Grade 10 school leavers followed by appropriate training.

A.2.10. Post: Demonstrator

Job Description: To affect the implementation of simple agricultural improvement in a specific village area.

Employment conditions: Short term employees for the duration of the development programme ([±] 10 years)

Qualifications: 2 to 3 years schooling.

A.2.11 Post: Marketing Assistant (Co-operative Agent)

Job Description: To be directly responsible for sales of inputs for cash or on credit, collection of credit repayments. Organisation of village co-operatives in extension Agent areas.

Qualifications: Upgrading from Assistant Agent grade following appropriate in-service training.

A.3 SFoDAA.3.1. Post: Regional Forester (2 posts)

Job Description: Responsible for forestry aspects of the regional development programme including escarpment protection and control, village afforestation, WFP conservation afforestation and species trials.

Recruitment: Expatriate and Local

Qualifications: Forester with experience of afforestation in dry areas and of inventory work.

A.3.2. Post: Forest Ranger

Job Description: To be responsible for the day to day management of a forest protection and control area on the eastern escarpment.

Recruitment: Local

Qualifications: Grade 12 school leavers followed by local forestry training course.

A.3.3. Post: Forest Technician

Job Description: To supervise the establishment and operation of two to three nurseries growing seedlings for the village afforestation programme. Advise agricultural staff and farmers on management of plantations.

Recruitment: Local

Qualifications: Grade 12 school leavers followed by local forestry training course.

A.4 IAR Primary DepartmentA.4.1. Post: Cereal Plant Breeder

Job Description: To be responsible for developing selection and breeding programmes for wheat, barley and possibly teff and to liaise with the national cereals breeding programmes.

Recruitment: Local

Assignment: Long term

Qualifications: Qualified agriculturalist specialised in plant breeding or cereals agronomy and experience of field breeding programmes.

A.4.2. Post: Forage/Pasture Specialist (2 posts)

Job Description: To develop research programmes for screening fodder/browse/pasture species, for trials of methods of production and conservation of fodder and for the establishment of demonstration systems in the area.

Recruitment: Local/Expatriate

Assignment: 5 years

Qualifications: Qualified agriculturalist specialised in pasture and fodder science. Wide experience of range management in semi-arid areas and fodder conservation trials and testing.

A.7 Ministry of HealthPost: Doctor or Public Health Officer

Job Description: To be responsible for the rural health pilot project and its evaluation and for preparation of proposals for extension of the rural health programme.

Recruitment: Local/expatriate

Assignment: 5 years

Qualification: Recognised medical or public health qualification with experience of rural health programmes.

A.5 Veterinary DepartmentPost: Animal Health Assistants

Job Description: To carry out vaccinations, improvement of hides and skin curing, castration and disease recognition work as required in the overall agricultural programme. Training of agricultural extension staff in animal health aspects.

Qualifications: Debre Zeit Diploma and appropriate field experience.

A.6 Ministry of Community Development and Social AffairsPost: Community Development Officer

Job Description: To assist with the community development aspects of the rural development programme including the following:

- (a) Collection of sociological data necessary for planning RDUs.
- (b) Advise and assist extension staff in community development matters.
- (c) Assist with training and orientation of extension staff.
- (d) To be a member of the Woreda Development Team.

Qualifications: Awassa Institute Diploma and appropriate field experience.

A.7 Ministry of HealthPost: Doctor or Public Health Officer

Job Description: To be responsible for the rural health pilot project and its evaluation and for preparation of proposals for extension of the rural health programme.

Recruitment: Local/expatriate

Assignment: 5 years

Qualification: Recognised medical or public health qualification with experience of rural health programmes.

A.9.2 Post: Driller (2 posts)

Job Description: Responsible for all drilling and well testing operations with drilling rigs taken over from TRS and supplied under the development programme by British Aid.

Recruitment: Local

Assignment: Expatriate, three years, Local, long term.

A.8 Regional Development Centres

Post: Inspector of Works (Regional Services)

Job Description: Supervision of the programme for the provision of improved services and amenities in RDU development centres including:

- (a) Construction of Woreda administration offices and housing for staff.
- (b) Improvement of open markets
- (c) Planning and construction of roads in the urban area.

Recruitment: Local

Qualifications: Wide experience of all types of building and construction work in rural areas and simple town planning.

A.9 National Water Resources Commission

A.9.1 Post: Hydrogeologist

Job Description: To assist with all aspects of the regional development programme involving groundwater including:

- (a) Data collection and measurements to evaluate the groundwater sources of the region and its present or potential use.
- (b) Well and borehole siting in connection with the water supply programme.
- (c) Monitoring and supervision of borehole drilling and well testing operations.

Recruitment: Expatriate

Assignment: 5 years

Qualifications: Geologist with appropriate experience of groundwater development.

A.9.2 Post: Driller (2 posts)

Job Description: Responsible for all drilling and well testing operations with drilling rigs taken over from TRDS and supplied under the development programme by British Aid.

Recruitment: Local

Assignment: Expatriate, three years. Local, long term.

PAGE MISSING

1997 and 1998

	1997	1998	Total	Local	Off-shore
...	276.6	256.9	533.5	956.6	915.9
...	2074.1	3224.6	5298.7	9141.6	2454.7
...	556.0	551.0	1107.0	1893.3	54.3
...	186.9	186.6	373.5	1007.0	164.1
...	177.0	152.3	329.3	429.6	369.3
...	172.2	172.2	344.4	477.0	922.9
...	76.8	93.8	170.6	245.7	3.2
...	20.3	20.3	40.6	140.0	9.2
...	222.1	315.1	537.2	704.3	257.3
...	187.4	250.0	437.4	400.2	316.9
...	318.6	515.3	833.9	1038.6	
...	210.4	228.4	438.8	500.9	261.3
...	986.0	997.0	1983.0	2667.1	2106.7
...	249.2		249.2	305.3	2700.6
...				1000.0	1000.0
...	2146.1	2167.2	4313.3	1776.7	2536.6
...	9203.9	9004.6	18208.5	31990.1	14113.6
...	409.7	409.7	819.4	1000.0	710.6
...	9563.6	9403.9	18967.5	32990.1	14824.2
...	2431.9	2300.7	4732.6	5700.0	
...	11207.6	14306.6	25514.2	38690.1	14712.6

1997 and 1998

TABLE B.1 5 - Year Project Cost by Agency and Year Eth \$'000

	Year					Total	Local	Off-shore
	1	2	3	4	5			
Regional Development Secretariat	661.9	591.2	178.8	178.8	256.8	1867.5	956.6	910.9
Extension and Project Implementation	1489.1	1677.0	2341.5	2814.1	3284.6	11606.3	9141.6	2464.7
Conservation	49.8	95.0	246.0	596.0	961.0	1947.8	1893.3	54.5
Training for Extension	551.2	154.2	180.4	184.9	180.4	1251.1	1087.0	164.1
SFOA	329.4	324.9	292.5	177.0	172.3	1296.1	926.6	369.5
IAR	230.3	223.0	172.2	172.2	172.2	969.9	417.0	552.9
Veterinary	20.7	35.9	71.8	76.8	93.7	298.9	295.7	3.2
Poultry Breeding Centre	64.0	20.3	20.3	20.3	20.3	145.2	140.0	5.2
MNCD & SA	88.2	132.8	252.3	222.1	318.1	1013.5	744.2	269.3
Rural Health	186.6	143.6	242.2	187.4	250.0	1009.8	493.2	516.6
RDU Development Centre	102.9	223.0	290.6	318.6	315.5	1250.6	1250.6	-
Woreda Development Organisation	96.7	115.4	182.5	210.4	220.4	825.4	459.9	365.5
NWRC Regional Office	958.7	846.9	1107.2	986.0	997.0	4895.8	2469.1	2426.7
Engineering Services	767.6	657.6	555.5	249.2	-	2229.9	225.3	2004.6
Six Community Water Supplies Project	651.0	504.0	504.0	-	-	1659.0	770.7	888.3
Rural Roads	3868.5	3174.9	2756.1	2562.3	2562.3	14924.1	11704.7	3219.4
Total (excl cont)	10116.6	8919.7	9393.9	8956.1	9804.6	47190.9	32975.5	14215.4
5% Contingency	505.8	448.0	469.7	447.8	490.2	2359.5	1648.8	710.8
Sub Total	10622.4	9365.7	9863.6	9403.9	10294.8	49550.4	34624.3	14926.2
Price Contingency 1/	1593.4	2481.9	3861.6	4990.7	7039.6	19967.2		
Total (inc cont)	12215.8	11847.6	13725.2	14394.6	17334.4	69517.6		

Note: 1/ 15% year 1 and 10% years 2-5.

TABLE B.2

Five Year Development Project Cost by Agency and Item

Ech \$'000

Agency	Capital Items						Recurrent Items						Sub Total
	A Buildings & Construction	B Vehicles/ Plant	C Equipment	Sub Total	A1 Expatriate Salaries etc	A2 Local Salaries	B Consumable	C Vehicle O & M	D Misc.	E P. Diem/ trans etc	Total		
Regional Development Secretariat	94.5	129.0	27.2	250.7	688.8	476.0	118.2	205.0	67.5	61.3	1616.8	1867.5	
EPID - Extension	255.8	697.2	237.3	1190.3	1968.0	5989.7	154.5	943.3	631.3	729.2	10416.0	11606.3	
EPID Conservation	-	-	119.0	119.0	-	1240.0	588.8	-	-	-	1828.8	1947.8	
EPID Training	142.4	99.0	59.5	300.9	98.4	272.5	276.6	162.0	108.3	32.4	950.2	1251.1	
SFOA	46.0	79.6	159.8	285.4	295.2	259.9	205.2	171.0	51.4	28.0	1010.7	1296.1	
IAR	78.0	34.0	12.7	124.7	492.0	163.0	48.4	87.5	16.5	37.8	845.2	969.9	
Veterinary Department	-	33.8	6.5	40.3	-	183.6	17.4	27.2	-	30.6	258.6	298.9	
Poultry Breeding Centre	21.9	-	21.8	43.7	-	42.0	55.0	-	-	4.5	101.5	145.2	
MNCD & SA	22.6	221.0	13.2	256.8	-	346.8	44.3	297.6	-	68.0	756.7	1013.5	
Rural Health	-	100.0	7.0	107.0	295.2	228.2	211.5	96.4	14.0	57.5	902.8	1009.8	
RDU Dev. Centres	1095.1	-	-	1095.1	-	84.8	56.3	-	-	14.4	155.5	1250.6	
Woreda Dev. Org.	149.5	325.0	36.4	510.9	-	-	16.9	297.6	-	-	314.5	825.4	
NWRC Reg Office	30.0	628.0	1004.9	1662.9	787.2	1378.6	26.2	727.9	60.5	252.2	3232.9	4895.8	
NWRC Engineering Services	-	110.0	-	110.0	1869.6	-	-	180.0	70.3	-	2119.9	2229.9	
NWRC Six Comm. Water Supply	-	147.0	1512.0	1659.0	-	-	-	-	-	-	-	1659.0	
ERA Rural Roads	112.5	2655.6	50.4	2818.5	590.4	7586.4	891.6	2988.6	48.6	-	12105.6	14924.1	
Total 1/	2048.3	5259.2	3267.7	10575.2	7084.8	18251.5	2710.9	6184.1	1068.4	1315.9	36615.7	47190.9	

Note: 1/ Excludes Contingencies

TABLE B.3.

REGIONAL DEVELOPMENT SECRETARIAT

CAPITAL COST Eth. \$'000

Unit	%	YEAR						Total		
		1	2	3	4	5	Off-shore			
Component No		\$	No	\$	No	\$	No	\$	Local	Off-shore
A. Building										
Offices 1/	-	-	315	94.5	-	-	-	-	94.5	94.5
Sub Total									94.5	94.5
B. Vehicles 2/										
Vehicle 4WD	90	3	51.0	-	-	-	4	68.0	119.0	11.9
Saloon car	90		-	-	-	-	1	10.0	10.0	1.0
Sub Total								78.0	129.0	116.1
C. Equipment										
Office furniture 3/	10	10	5.0	4	2.0	-	-	-	7.0	6.3
Office equipment 4/	60		9.0	1.2	1.0	-	1.0	1.0	13.2	5.3
Miscellaneous items 5/	60		5.0	2.0	-	-	-	-	7.0	2.8
Sub Total			19.0	5.2	1.0	1.0	1.0	1.0	27.2	14.4
Total Capital			70.0	99.7	1.0	1.0	1.0	79.0	250.7	121.8
									128.9	

Notes on RDS TABLE B.3

CAPITAL

- 1/ Twelve offices for specialist, library and clerical staff (13 x 15m²) storage 15m², drawing office (50m²), duplicating room (20m²), toilets etc (35m²) total 315m² @ \$300 per m².
- 2/ Saloon car and one Land Rover taken over from TRDS, further three vehicles purchased for sociologist, land classifier and superintendent (regional services), 5 vehicles replaced year 5.
- 3/ Fourteen offices @ \$500 each, four desks, chairs, filing cabinet, book shelves, security safe, map storage, light tables.
- 4/ Office equipment to include 2 typewriters, calculating machines, duplicating machine (ex TRDS), photocopier (ex TRDS), map printing machine (ex TRDS), stores, viewers, total cost \$10200 (replace 10 per cent per annum).
- 5/ Training and survey equipment.

Notes on RDS TABLE B.4

RECURRENT

- 1/ Staffing levels to retain flexibility to enable it to conform to government policy on regionalisation.
- 2/ To complete land classification in "study area" and reconnaissance in Tigray Region.
- 3/ To assist an Economist and Statistician.
- 4/ Including typing materials, equipment, repair and servicing, postage, cables, cleaning materials, water, insurance, cost \$600/month.
- 5/ Includes mapping, photocopying, duplicating paper and materials, drawing implements.
- 6/ At 2½ per cent of building costs.
- 7/ At 35 cts/km, 2,500 kms/year.
- 8/ At estimated 30 cts/Km, 20000 Km/year.
- 9/ Two Ethiopian specialists year 2, 1 scholarship to year 5 at 6 months each. Cost per man \$5000/course.
- 10/ Travel only, \$400/post.
- 11/ Travel and per diem, estimated \$1500 for staff other than office based.

TABLE B.5. Notes on Extension and Project Implementation - Capital Costs

- 1/ Six offices for specialists and clerical staff, 12m² each.
- 2/ Four offices for Supervisor, Animal Health Specialist, Clerk and general use; 3 @ 9m²; 1 @ 12m². Conference room 30m² (5m x 6m). Cost Eth. \$160/m².
- 3/ Store room 80m² @ Eth. \$100/m².
- 4/ 5 Land Rovers transferred from TRDS in Year 1 for expatriate specialists, replaced in Year 4. Local specialists share vehicles, RDU supervisors one each.
- 5/ Truck with removable sides and seats to be used for transport of general goods or personnel.
- 6/ Provision for one motor cycle per Agent and Co-operative Agents. Arrangement for loan/purchase scheme to be investigated.
- 7/ Office furniture costings

	Cost/Unit Spec.	HQ middle grade	RDU	Agents
Desks	150	1	4	2
Chairs	25	2	38	2
Book shelf	60	1	1	2
Filing cabinet	500	-	1	-
Large table	150	-	1	-
Bench	30	-	-	2
Gas lamp	50	-	-	1
Safe (local)	250	-	-	-
Total	1350	910	2260	950

8/ Office equipment:

Headquarters: Typewriter, calculator, dyeline printer, photocopier, electronic stencil cutter.

RDU: Typewriter, spirit duplicator, adding machine

Notes on Extension and Project Implementation - Capital Costs (continued)

	1	2	3	4	5	Total
<u>9/</u> Costs for co-ordinators office includes:						
Camping equipment						5000
Balances (10)						1000
Livestock & Crop survey equipment						3500
Land survey equipment						6000
<u>10/</u> RDU office equipment includes:						
Scale and balances						400
Demonstration tools and implements						3000
Miscellaneous						300
<u>11/</u> Agent equipment includes:						
Scale and balance						400
Sprayer (knapsack)						200
Duster						50
Tools						60
Cultivation equipment						350
Miscellaneous						50

TABLE B.6. (continued)

EXTENSION AND PROJECT IMPLEMENTATION

RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR										Total Local	Off-shore		
			1		2		3		4		5				No	No
			\$	No												
B. Consumable Materials and Services																
Office supplies and service			9.5		10.0		10.5		11.0		11.5		52.5			
- Coordinators office																
Office supplies and services			6.0	4	12.0	8	24.0	9	27.0	11	33.0	102.0				
- RDUs	3000/RDU															
Sub Total			15.5		22.0		34.5		38.0		44.5	154.5	154.5			
C. Vehicle Operation and maintenance																
4WD vehicles	8750	20	78.8	12	105.0	18	157.5	18	157.5	18	157.5	656.3	616.9			
Truck	11000	20	11.0	1	11.0	1	11.0	1	11.0	1	11.0	55.0	44.0			
Motor cycle	800		29.6	42	33.6	51	40.8	69	55.2	91	72.8	232.0	232.0			
Sub Total			119.4		149.6		209.3		223.7		241.3	943.3	892.9			
D. Miscellaneous																
Training visits and courses unspecified			10.0		10.0		10.0		10.0		10.0	50.0	50.0			
Demonstrations & field days	5/ 3.0		6.0	4	12.0	8	24.0	9	27.0	11	33.0	102.0	102.0			
Seed scheme	6/		-		20.0		40.0		80.0		90.0	230.0	230.0			
Building maintenance	7/		-		2.2		4.2		4.7		5.7	16.8	16.8			
House rental (expatriates)	3300		16.5	5	16.5	5	16.5	3	9.9	2	6.6	66.0	66.0			
Office rental - coord. office			7.2								7.2	7.2	7.2			
Agents offices	1200		8.4	10	12.0	18	21.6	28	33.6	38	45.6	121.2	121.2			
Maintenance furniture & equipment	8/		3.5		5.0		8.0		9.7		11.9	38.1	38.1			
Sub Total			51.6		77.7		124.3		174.9		202.8	631.3	631.3			

RECURRENT COSTS Eth. \$'000

EXTENSION AND PROJECT IMPLEMENTATION

TABLE B.6 (continued)

Unit Cost	% Off-shore	YEAR										Total Local	Off-shore	
		1		2		3		4		5				β
		No	\$	No	\$	No	\$	No	\$	No	\$			
E. Per diems & Travel	-	5	12.0	5	12.0	5	12.0	3	7.2	2	4.8	48.0		
Expatriate specialists	-	3	5.7	4	7.6	5	9.5	6	11.4	6	11.4	45.6		
Local specialists	-	3	5.1	6	10.2	11	18.7	12	20.4	14	23.8	78.2		
Supervisors	-	34	30.6	36	32.4	40	36.0	56	50.4	77	69.3	-		
Agents	-	4	2.6	48	31.2	96	62.4	148	96.2	202	131.3	323.7		
Asst. Agents	-	9	1.8	12	2.4	18	3.6	18	3.6	18	3.6	15.0		
Drivers	-													
Sub Total			57.8		95.8		142.2		189.2		244.2	729.2	-	
Total Recurrent Costs			1133.1		1506.0		2141.0		2531.8		3104.1	10416.0	2018.4	

TABLE B.6

Notes on Extension and Project Implementation: RECURRENT COSTS.

- 1/ Include three expatriate specialists at present assigned to Tigrat.
- 2/ Includes junior personnel working in the Study Area KDUS.
- 3/ Vehicle running costs estimated on the following basis:

4 WD vehicles	25000 Km per year at 35 cents/Km.
Truck	20000 Km per year at 55 cents/Km.
Meter cycle	10000 Km per year at 8 cents/Km.

Note meter cycle costs may be paid as allowances to agents.

- 4/ Training involving visits to centres or areas of interest and relevant to the development programme.
- 5/ Cost of farmer demonstration and materials for field days including mass media material.
- 6/ To cover premium to selected farmers and assistance with village seed stores.
In later years to cover multiplication of genetically improved seed.
- 7/ Costed at 2½% of building costs.
- 8/ Costed at 5% of equipment and furniture costs (see capital cost).

TABLE B.7. Notes on Conservation - Capital and Recurrent Costs

- 1/ Survey equipment at each RDU HQ includes quickset level, levelling staff, compasses, measuring tapes, ranging rods.
- 2/ Equipment phased in with Assistant Agents to include one compass, measuring tapes, clinometer or abney level.
- 3/ Labour for marking contours and communal works costed on the basis of Eth. \$1.00 per day or the equivalent of grain provided under WFP programmes (3Kg per 5 hour day).
- 4/ Materials for construction of works costed on the basis of Eth. \$5.00 per ha of cultivated land conserved.
- 5/ Hand tools phased in with Demonstrations costed at \$600 per post to cover the following:

- 5 Line Levels
- 20 Shovels
- 20 Picks
- 20 Forks
- 10 Hammers
- 10 Crowbars

TABLE B.8.

Notes on Training for Extension: CAPITAL COSTS

- 1/ Cost of improving existing buildings at Ayn Alem. Includes addition to kitchen, bathroom, toilets, relaxation area, and principals house.
- 2/ Cost of buildings at Hauzien based on 16.5 m^2 per student place at Eth \$160/m² plus Eth \$5,000 for principals house.
- 3/ Standard truck fitted with removable sides, cover and seats.
- 4/ Eth \$500 per student place, replaced after 5 years.
- 5/ Eth \$350 per student place, replaced after 5 years.

TABLE B.9.

TRAINING FOR EXTENSION

RECURRENT COSTS Eth \$'000

ITEM	UNIT COST	% OFF-SHORE	No.	YEAR					TOTAL LOCAL OFF-SHORE	
				1	2	3	4	5		
A.1 Personnel: Expatriate Training Specialist	1/ 98400	100	1	98.4	-	-	-	-	98.4	98.4
Sub Total				98.4					98.4	98.4
A.2 Personnel: Local										
Training Specialist	9000	-	1	9.0	1	9.0	1	9.0	45.0	45.0
Principal RTC	6400	-	2	12.8	2	12.8	2	12.8	64.0	64.0
Clerk/Typist	4800	-	2	9.6	2	9.6	2	9.6	48.0	48.0
Drivers	3100	-	3	9.3	3	9.3	3	9.3	46.5	46.5
Cook	1000	-	2	2.0	2	2.0	2	2.0	10.0	10.0
Labour	2/ 980	-	12	11.8	12	11.8	12	11.8	59.0	59.0
Sub Total				54.5	54.5	54.5	54.5	54.5	272.5	272.5
B. Materials and supplies										
Feed	3/ 650/SP	-	55	35.8	55	35.8	80	52.0	80	52.0
Training materials	100/SP	-	55	5.5	55	5.5	80	8.0	80	35.0
Building materials	4/	-		-				3.5		14.0
Sub Total				41.3	44.8	63.5	63.5	63.5	276.6	276.6
C. Vehicle operation & maintenance	5/									
Personnel carrier	11000	-	2	22.0	2	22.0	2	22.0	2	22.0
4 WD	8750	-	1	8.8	1	8.8	1	8.8	1	8.8
Meter cycle	800	-	2	1.6	2	1.6	2	1.6	2	8.0
Sub Total				32.4	32.4	32.4	32.4	32.4	131.2	131.2

TABLE B.11.

STATE FORESTRY DEVELOPMENT AGENCY (SFDA)

INDICATED COSTS ARE \$1,000

ITEM	YEAR					TOTAL	LOCAL	OFF-GROUND
	1	2	3	4	5			
A.1 Personnel (Equivalent)	100	95.4	1	58.4	1	255.2	-	255.2
Sub Total	100	95.4	1	58.4	1	255.2	-	255.2
A.2 Personnel (Local)								
Tractor	3	13.4	3	13.4	3	40.2	17.0	23.2
Tractor	2	8.0	4	17.8	4	32.2	13.4	18.8
Tractor	1	1.5	2	3.0	2	6.5	2.6	3.9
Tractor	10	6.4	20	12.8	20	32.0	12.8	19.2
Sub Total	16	29.3	19	47.0	19	95.5	45.6	49.9
B. Tractor and trailer \$20,000 (10 year life) for nursery operation.								
3. Meter cycles for Afforestation Technicians, one spare unit allowed for.								
4. Nursery establishment costs to cover: sheds, levelling, water supply tools; each nursery producing 90,000 seedlings.								
6. Vehicle operation								
4.30 Planning	1	5.8	1	5.8	1	17.4	6.8	10.6
Afforestation								
2 tractors	1	3.0	2	6.0	2	12.0	6.0	6.0
1 meter cycles	2	1.5	4	3.2	4	6.4	3.2	3.2
1 hired transport	1	6.0	5	30.0	10	66.0	22.5	43.5
Sub Total	5	16.3	11	35.0	17	61.4	28.5	32.9

TABLE B.10.

Notes on SFDA: CAPITAL COSTS

1. Housing for rangers 40 m² at \$160: \$6,500.
2. " " guards \$1,000.
3. Tractor and trailer \$20,000 (10 year life) for nursery operation.
4. Meter cycles for Afforestation Technicians, one spare unit allowed for.
5. Nursery establishment costs to cover: sheds, levelling, water supply tools; each nursery producing 90,000 seedlings.

TABLE B. 11 (CONT.)

ITEM	UNIT COSTS	%	OFF-SHORE No.	YEAR					TOTAL LOCAL OFF-SHORE	
				1	2	3	4	5		
	\$		No.	\$	No.	\$	No.	\$	No.	\$
D. Miscellaneous										
Escarpment control		-	-		2.6	4.7	5.2	5.2	17.7	17.7
: road maintenance		-	-							
: charcoal burning experiments		-	-		5.0	5.0	-	-	15.0	15.0
: horse feed and uniforms		-	5	1.2	1.9	1.9	1.9	1.9	8.8	8.8
House Rent (expatriate)	3300	-		3.3	3.3	3.3	-	-	9.9	9.9
Sub Total				9.5	12.8	14.9	7.1	7.1	51.4	51.4
E. Per diems and travel										
Forester	2400	-	1	2.4	2.4	4.8	1	2.4	14.4	14.4
Rangers and Technicians	360	-	5	1.8	2.5	2.5	7	2.5	11.8	11.8
Drivers	200	-	1	.2	.4	.4	2	.4	1.8	1.8
Sub Total				4.4	5.3	7.7	5.3	5.3	28.0	28.0
TOTAL RECURRENT				181.2	232.0	266.5	165.5	165.5	1010.7	698.5
									312.2	312.2

TABLE B.11.

Unit	YEAR					Total
	1	2	3	4	5	
Off-shore						
Cost	\$ No.	\$				
						Local
						Off-shore

Notes on SFODA: RECURRENT COSTS

1. Nursery running costs to cover materials, labour and supplies estimated at 6 cents per seedling.
2. 4 WD drive vehicle running costs estimated on basis of 25,000 Km per year at 35 cents.
3. Tractor operating costs estimated at \$5.00 per hour for 600 hours per year.
4. Hire of vehicle for transportation of seedlings; 2,250 Km per nursery area at \$1.00.
5. Charcoal production trials 20 ha per annum.
6. Horse feed at \$120 per horse; uniforms for guards at \$75 per year.

A. Buildings

- Offices 1/
- Plant breeding
- Siloes
- Greenhouse 2/

Sub Total

B. Vehicles

- 4WD Pick up

Sub Total

C. Equipment

- Furniture 3/
- Irrigation laboratory
- and sundries

Sub Total

Total Capital

Notes: 1/ 2ha² @ Rth. \$250/ha
 2/ Based on actual cost of construction at Holaria Research Station.
 3/ Specialist staff desks, chairs, book shelf, filing cabinet 1950.

TABLE B.12.

INSTITUTE OF AGRICULTURAL RESEARCH (IAR)

CAPITAL COSTS Eth. \$'000

	Unit Cost	Off-shore %	YEAR										Total Local Off-shore \$		
			1		2		3		4		5				
			No	\$	No	\$	No	\$	No	\$	No	\$			
A. Buildings															
Offices 1/	6000	-	2	12.0											18.0
Plant breeding cage				10.0											10.0
Silos				5.0											5.0
Glasshouse 2/					1	45.0									45.0
Sub Total				27.0		51.0									78.0
B. Vehicles															
4WD Pick up	17000	90	2	34.0											34.0
Sub Total				34.0											34.0
C. Equipment															
Furniture 3/			2	1.8	1	.9									2.7
Irrigation laboratory and sundries		50		10.0											10.0
Sub Total				11.8		.9									12.7
Total Capital				72.8		51.9									124.7
															89.1
															35.6

Notes: 1/ 24m² @ Eth. \$250/m²
 2/ Based on actual cost of construction at Holetta Research Station.
 3/ Specialist staff desk, chairs, book shelf, filing cabinet \$900.

TABLE B.13.

INSTITUTE OF AGRICULTURAL RESEARCH

RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR										Total Local \$	Total Off-shore \$		
			1		2		3		4		5					
			No	\$	No	\$	No	\$	No	\$	No	\$				
A.1 Personnel - expatriate																
Forage/Pasture specialist	98400	100	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	492.0	492.0
Sub Total				98.4		98.4		98.4		98.4		98.4		98.4	492.0	492.0
A.2 Personnel - local																
Forage Pasture specialist	10000		1	10.0	1	10.0	1	10.0	1	10.0	1	10.0	1	10.0	50.0	50.0
Plant Breeder	10000			-	1	10.0	1	10.0	1	10.0	1	10.0	1	10.0	40.0	40.0
Technical Assistants	4500		2	9.0	2	9.0	2	9.0	2	9.0	2	9.0	2	9.0	45.0	45.0
Drivers	1800		2	3.6	2	3.6	2	3.6	2	3.6	2	3.6	2	3.6	18.0	18.0
Guards	980		2	2.0	2	2.0	2	2.0	2	2.0	2	2.0	2	2.0	10.0	10.0
Sub Total				24.6		34.6		34.6		34.6		34.6		34.6	163.0	163.0
B. Materials and supplies																
Office supplies		20		1.0		1.0		1.0		1.0		1.0		1.0	5.0	5.0
Hand tools				.5		.5		.5		.5		.5		.5	2.5	2.5
Sundry materials & lab supplies 1/		20		6.0		7.2		7.2		7.2		7.2		7.2	34.8	28.0
Building maintenance 2/				-		.7		1.8		1.8		1.8		1.8	6.1	6.1
Sub Total				7.5		9.4		10.5		10.5		10.5		10.5	48.4	40.6
C. Vehicle operation																
4WD 3/	8750	20	2	17.5	2	17.5	2	17.5	2	17.5	2	17.5	2	17.5	87.5	87.5
Sub Total				17.5		17.5		17.5		17.5		17.5		17.5	87.5	87.5

TABLE B.13. (continued)

INSTITUTE OF AGRICULTURAL RESEARCH

RECURRENT COSTS Eth. \$'000

Unit Cost	Off-shore %	YEAR										Total Local Off-shore \$		
		1		2		3		4		5				
		No	\$	No	\$	No	\$	No	\$	No	\$			
D. Miscellaneous														
House rental	3300	1	3.3	1	3.3	1	3.3	1	3.3	1	3.3	1	3.3	16.5
Sub Total			3.3		3.3		3.3		3.3		3.3		3.3	16.5
E. Per Diems and travel														
Forage/pasture specialist	2400	1	2.4	1	2.4	1	2.4	1	2.4	1	2.4	1	2.4	12.0
Local specialists	1750	1	1.8	2	3.5	2	3.5	2	3.5	2	3.5	2	3.5	15.8
Technical Assistants	800	2	1.6	2	1.6	2	1.6	2	1.6	2	1.6	2	1.6	8.0
Drivers	200	2	.4	2	.4	2	.4	2	.4	2	.4	2	.4	2.0
Sub Total			6.2		7.9		7.9		7.9		7.9		7.9	37.8
Total Recurrent			157.5		171.1		172.2		172.2		172.2		172.2	845.2
														517.3

Notes: 1/ Includes: Operating costs of pump Eth. \$1000
Greenhouse costs Eth. \$1200 (from year 2 onwards)
Seeds, fertilizers
and pesticides Eth. \$5000

2/ Costed at 2 1/2% of building and greenhouse capital costs

3/ 25000Kms per year @ 35 cents/Km

TABLE B.14 Veterinary Department CAPITAL COSTS Eth \$ '000

Unit Cost	Off-shore %	Veterinary Department					Total \$	Local	Off-shore					
		1	2	3	4	5								
No	%	No	%	No	%	No	%	No	%					
B. Vehicles														
Motor cycle 1/ 2250	-	2	4.5	2	4.5	4	9.0	3	6.8	4	9.0	33.8	33.8	-
Sub Total			4.5		4.5		9.0		6.8		9.0	33.8	33.8	-
C. Equipment														
Tools, implements and misc. 500	50	2	1.0	2	1.0	4	2.0	1	1.5	2	1.0	6.5	3.3	3.2
Sub Total			1.0		1.0		2.0		1.5		1.0	6.5	3.3	3.2
Total Capital			5.5		5.5		11.0		8.3		10.0	40.3	37.1	3.2

D. Vehicle Operation														
Unit Cost	Off-shore %	Veterinary Department					Total \$	Local	Off-shore					
		1	2	3	4	5								
No	%	No	%	No	%	No	%	No	%					
Motor cycle 2/ 800	-	2	1.6	4	3.2	8	6.4	9	7.2	11	8.8	27.2	27.2	-
Sub Total			1.6		3.2		6.4		7.2		8.8	27.2	27.2	-
E. Car dispatch and travel 800	-	2	1.6	4	3.2	8	6.4	9	7.2	11	8.8	30.6	30.6	-
Sub Total			1.6		3.2		6.4		7.2		8.8	30.6	30.6	-
Total Equipment			3.2		6.4		12.6		14.4		18.8	61.9	61.9	-

Notes on Veterinary Department

TABLE B.14

Capital Costs

- 1/ Life 3 years, no residual value
- 2/ Basic equipment kits; annual materials under "Recurrent".

TABLE B.15

Recurrent Costs

- 1/ 1 per RDU
- 2/ 10,000 Km per year at 8 cents/Km.

CAPITAL COSTS EST. 1960
 VETERINARY BREEDING CENTER
 TABLE B.14
 TABLE B.15

	1	2	3	4	5	6
	1	2	3	4	5	6
Buildings						
Breeding House <u>1/</u>	5.7					
Breeding House <u>2/</u>	1.2					
Office, food store <u>3/</u>	7.3					
Incubator room <u>4/</u>	7.3					
Sub Total	21.5					
Equipment						
Breeding Stock <u>5/</u>	2.2					
Sub Total	2.2					
Recurrent Costs						
Breeding Stock <u>5/</u>	8.1					
Troughs, tanks	3.5					
Electricity and water	10.0					
Sub Total	21.6					
Total Capital	43.7					

TABLE B.16

POULTRY BREEDING CENTRE

CAPITAL COSTS Eth \$'000

	Unit Cost	% Off-shore	1 2 3 4 5					Total \$	Local	Off-shore		
			No	\$	No	\$	No				\$	No
A. Buildings												
Raising House <u>1/</u>	5760	-	1	5.7	-	-	-	-	-	5.7	5.7	-
Breeding House <u>2/</u>	1200	-	1	1.2	-	-	-	-	-	1.2	1.2	-
Office, food store <u>3/</u>	7500	-	1	7.5	-	-	-	-	-	7.5	7.5	-
Incubator room <u>4/</u>	7500	-	1	7.5	-	-	-	-	-	7.5	7.5	-
Sub Total			21.9							21.9	21.9	-
C1 Breeding Stock <u>5/</u>	100	90	2.2	0.2	-	-	-	-	-	0.2	-	-
Sub Total			0.2							0.2	-	0.2
C2 Equipment												
Brooders and <u>6/</u> incubators		-	8.1	-	-	-	-	-	-	8.1	8.1	-
Troughs, nests		-	3.5	-	-	-	-	-	-	3.5	3.5	-
Electricity and water		-	10.0	-	-	-	-	-	-	10.0	10.0	-
Sub Total			21.6							21.6	21.6	-
Total Capital			43.7							43.7	43.5	0.2

TABLE B.17

POULTRY BREEDING CENTRE

RECURRENT COSTS ETH \$'000

Unit Cost	% Off-shore	1					2					3					4					5					Total \$	Local	Off-shore	
		No	\$																											
A. Personnel																														
Technician	-	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	1	5.4	5.0	-	
Labour	-	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	4	2.5	20.0	-	
Casual Labour	-		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5	5.0	-	
Sub Total			8.4		8.4		8.4		8.4		8.4		8.4		8.4		8.4		8.4		8.4		8.4		8.4		42.0	42.0	-	
B. Operating Costs																														
Building maintenance			1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		5.0	5.0	-	
Electricity 1/			0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		0.6		3.0	3.0	-	
Water			1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		1.9		9.5	9.5	-	
Drugs and vaccines	100		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		5.0	5.0	-	
Food			4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		20.0	20.0	-	
Stationery			0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5		2.5	2.5	-	
Hire transport			2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0		10.0	10.0	-	
Sub Total			11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		11.0		55.0	55.0	5.0	
E. Per diems and travel																														
Technician		1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1	0.9	4.5	4.5	-
			0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		0.9		4.5	4.5	-	
Total Recurrent			20.3		20.3		20.3		20.3		20.3		20.3		20.3		20.3		20.3		20.3		20.3		20.3		101.5	96.5	5.0	

Notes on Poultry Breeding Centre

Table B.16

Capital Costs

- 1/ 8 houses, 6m x 6m = 288 m² at Eth \$20/m².
- 2/ 1 house, 6m x 10m = 60 m² at Eth \$20/m².
- 3/ 15m x 5m = 75 m² at Eth \$100.
- 4/ 15m x 5m = 75 m² at Eth \$100.
- 5/ 200 day old chickens, 20 cockerels, includes airfreight.
- 6/ 1 brooder Eth \$100, 16 Incubators at Eth \$500 each.

Table B.17

Recurrent Costs

- 1/ At small industries rate
- 2/ 5 m³ per day at Eth \$0.50.
- 3/ Day old chicks to 6 weeks, 25 tonnes at Eth \$100.
Breederers 15 tonnes at Eth \$100.

TABLE B.18

MINISTRY OF NATIONAL COMMUNITY DEVELOPMENT AND SOCIAL AFFAIRS

CAPITAL COST ETH.\$'000

Unit	%	YEAR										Total	Local	Off-Shore			
		1		2		3		4		5					Total	Local	Off-Shore
		No	\$	No	\$	No	\$	No	\$	No	\$						
A. Building RDU office <u>1/</u>	-	4	7.6	4	7.6	1	1.9	2	3.6	1	1.9	22.6	22.6	-			
Sub Total			7.6		7.6		1.9		3.6		1.9	22.6	22.6	-			
B. Vehicles 4 wheel drive <u>2/</u>	90	2	34.0	2	34.0	4	68.0	1	17.0	4	68.0	221.0	22.1	198.9			
Sub Total			34.0		34.0		68.0		17.0		68.0	221.0	22.1	198.9			
C. Equipment																	
Office furniture <u>3/</u>	-	2	1.0	2	1.0	4	2.0	1	0.5	3	1.5	6.0	6.0	-			
Office equipment <u>4/</u>	60	2	0.2	2	0.2	4	0.4	1	0.1	3	0.3	1.2	0.5	0.7			
Tools, miscellaneous equipment	-	2	1.0	2	1.0	4	2.0	1	0.5	3	1.5	6.0	6.0	-			
Sub Total			2.2		2.2		4.4		1.1		3.3	13.2	12.5	0.7			
Total Capital			43.8		43.8		74.3		21.7		73.2	256.8	57.2	199.6			

TABLE B.18 Notes on MINISTRY OF NATIONAL COMMUNITY DEVELOPMENT

CAPITAL COSTS

- 1/ Offices should be part of EPID Complex. 12m² at Eth.\$160/m². Constructed one year in advance.
One Community Development Worker per RDU.
- 2/ Replaced after four years, one per Community Development Worker.
- 3/ Desk, two chairs, bookcase and filing cabinet.
- 4/ Shares EPID RDU clerical services.

TABLE B.19

RECURRENT COSTS

- 1/ One per RDU.
- 2/ At 35 cents/km, 25000 km/year.
- 3/ Covers food etc. Uses EPID personnel carriers.

Unit	Year	1	2	3	4	5	Total	Local	Off-Shore
A. Personnel									
Community Development Officer									
Driver									
Sub Total							61.2	61.2	-
B. Consumable materials									
Sticks, periodically									
Stationery							17.0	17.0	18.7
Tools, implements							8.6	8.6	-
Materials							17.0	17.0	-
Maintenance of building							1.7	1.7	-
Sub Total							44.3	44.3	18.7
C. Vehicle operation and maintenance									
4 wheel drive									
Sub Total							297.6	238.1	59.5
D. Per diems and travel									
Field days									
Per diem							3.4	3.4	-
development effort							57.8	57.8	-
Driver							6.8	6.8	-
Sub Total							68.0	68.0	-
Total Recurrent							756.7	687.0	69.7

TABLE B.19

MINISTRY OF NATIONAL COMMUNITY DEVELOPMENT AND SOCIAL AFFAIRS

RECURRING COSTS ETH.\$'000

Unit	%	YEAR					Total	Local	Off-Shore					
		1	2	3	4	5								
Cost	Off-Shore	No	\$	No	\$	No	\$	No	\$					
A. Personnel														
Community Development Officer	-	2	16.8	4	33.6	8	67.2	9	75.6	11	92.4	285.6	285.6	-
Driver	-	2	3.6	4	7.2	8	14.4	9	16.2	11	19.8	61.2	61.2	-
Sub Total			20.4		40.8		81.6		91.8		112.2	346.8	346.8	-
B. Consumable materials														
Books, periodicals	60	2	1.0	4	2.0	8	4.0	9	4.5	11	5.5	17.0	17.0	6.8
Stationery	-	2	0.5	4	1.0	8	2.0	9	2.3	11	2.8	8.6	8.6	8.6
Tools, implements	-	2	1.0	4	2.0	8	4.0	9	4.5	11	5.5	17.0	17.0	17.0
Materials	-	2	-	4	0.2	8	0.4	9	0.5	11	0.6	1.7	1.7	1.7
Maintenance of Building	-	2	-	4	0.2	8	0.4	9	0.5	11	0.6	1.7	1.7	1.7
Sub Total			2.5		5.2		10.4		11.8		14.4	44.3	44.3	34.9
C. Vehicle operation and maintenance														
4 wheel drive	20	2	17.5	4	35.0	8	70.0	9	78.8	11	96.3	297.6	238.1	59.5
Sub Total			17.5		35.0		70.0		78.8		96.3	297.6	238.1	59.5
E. Per diems and travel														
Field days	-	2	0.2	4	0.4	8	0.8	9	0.9	11	1.1	3.4	3.4	3.4
Per diems	-	2	3.4	4	6.8	8	13.6	9	15.3	11	18.7	57.8	57.8	57.8
Development officer	-	2	0.4	4	0.8	8	1.6	9	1.8	11	2.2	6.8	6.8	6.8
Driver	-	2	0.4	4	0.8	8	1.6	9	1.8	11	2.2	6.8	6.8	6.8
Sub Total			4.0		8.0		16.0		18.0		22.0	68.0	68.0	68.0
Total Recurrent			44.4		89.0		178.0		200.4		244.9	756.7	687.0	69.7

TABLE B.20

RURAL HEALTH SERVICES

CAPITAL AND RECURRENT COSTS Eth. \$'000

Unit Cost	% Off-shore	YEAR										Total Local Off-shore \$			
		1		2		3		4		5					
		No	\$	No	\$	No	\$	No	\$	No	\$				
CAPITAL															
B. Vehicles															
4WD station wagon	90	1	20.0	-	1	20.0	1	20.0	1	20.0	2	40.0	100.0	10.0	90.0
C. Equipment															
Refrigerators & cool boxes	90	1	1.0	-	2	2.0	1	2.0	1	1.0	3	3.0	7.0	.7	6.3
Total Capital			21.0	-	-	22.0	21.0	43.0	107.0	10.7	96.3				
RECURRENT															
A.1 Personnel - expatriate															
Doctor/Health Officer		1	98.4	1	98.4	1	98.4	-	-	-	-	-	295.2	295.2	
A.2 Personnel - local															
Health Officer	10000			1	10.0	1	10.0	1	10.0	1	10.0	10.0	30.0		
Community Nurse	4800	1	4.8	2	9.6	3	14.4	4	15.2	4	15.2	15.2	48.8		
Community Dev. Worker	3000	1	3.0	1	6.0	3	9.0	4	12.0	4	12.0	12.0	33.0		
Drivers	2400	1	2.4	1	4.8	2	7.2	4	9.6	4	9.6	9.6	26.4		
Village level workers	360	20	7.2	20	72.0	70	25.2	95	34.2	95	34.2	34.2	90.0		
Sub Total			17.4	17.4	46.6	65.8	81.0	228.2	228.2	228.2	228.2	228.2			
B. Materials															
Vaccines, stationery and supplies	50	1	31.0	-	1	31.0	1	31.0	1	31.0	1	31.0	124.0	62.0	62.0
	50			1	12.5	1	12.5	2	25.0	3	37.5	37.5	87.5	43.7	43.8
Sub Total			31.0	12.5	43.5	56.0	68.5	211.5	105.7	105.8	105.8	105.8			

TABLE B.20. (continued)

RURAL HEALTH SERVICES

CAPITAL AND RECURRENT COSTS Eth. \$'000

Unit Cost	% Off-shore	YEAR										Total Local \$	Off-shore		
		1		2		3		4		5					
		No	\$	No	\$	No	\$	No	\$	No	\$				
C. Vehicle operation															
4WD Station wagon	8750	20	1	8.8	1	8.8	2	17.5	3	26.3	4	35.0	5	77.1	19.3
D. Miscellaneous															
Training programmes				3.5		-		3.5		3.5		3.5		14.0	-
E. Per diems & travelling				6.5		6.5		10.7		14.8		19.0		57.5	-
Total Recurrent				165.6		143.6		220.2		166.4		207.0		902.8	420.3

TABLE B.21

RDU DEVELOPMENT CENTRES

CAPITAL COSTS ETH.\$'000

Unit	%	YEAR										Total	Local	Off-Shore			
		1		2		3		4		5					Total	Local	Off-Shore
		No	\$	No	\$	No	\$	No	\$	No	\$						
A. Building and Construction																	
Housing <u>1/</u>	-	89.9	155.8	148.2	115.2	38.4	547.5	547.5	-	-	-	-	-	-	-		
Roads <u>2/</u>	-	-	33.0	87.0	137.0	199.0	456.0	456.0	-	-	-	-	-	-	-		
Marketing improvements <u>3/</u>	-	-	7.6	22.8	30.4	30.8	91.6	91.6	-	-	-	-	-	-	-		
Sub Total		89.9	196.4	258.0	282.6	268.2	1095.1	1095.1									
Total Capital		89.9	196.4	258.0	282.6	268.2	1095.1	1095.1									

TABLE B.22

RDU DEVELOPMENT CENTRES

RECURRENT COSTS ETH. \$ '000

Unit	%	YEAR										Total	Local	Off-shore		
		1		2		3		4		5					\$	
Cost	Off-shore	No	\$	No	\$	No	\$	No	\$	No	\$	No	\$	No	\$	
A. Personnel																
Inspector of works	-	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4	32.0
Foreman	-	1	4.8	3	14.4	3	14.4	2	9.6	2	9.6	2	9.6	2	9.6	52.8
Sub Total			11.2		20.8		20.8		16.0		16.0		16.0		16.0	84.8
B. Consumable materials																
Housing maintenance	-		-		2.2		6.1		9.8		12.7		30.8			
Market maintenance	-		-		-		0.4		1.5		3.0		4.9			
Road maintenance	-		--		-		1.7		6.0		12.9		20.6			
Sub Total			2.2		8.2		17.3		28.6		56.3		56.3			
E. Per diems and travel																
		2	1.8	4	3.6	4	3.6	3	2.7	3	2.7	3	2.7	3	2.7	14.4
Total Recurrent			13.0		26.6		32.6		36.0		47.3		155.5			155.5

TABLE B.22

RDU DEVELOPMENT CENTRES

RECURRENT COSTS ETH. \$'000

Unit	%	YEAR										Total	Local	Off-shore	
		1		2		3		4		5					\$
Cost	Off-shore	No	\$	No	\$	No	\$	No	\$	No	\$	No	\$	No	\$
A. Personnel															
Inspector of works	-	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4	1	6.4
Foreman	-	1	4.8	3	14.4	3	14.4	2	9.6	2	9.6	2	9.6	2	9.6
Sub Total			11.2		20.8		20.8		16.0		16.0		16.0		84.8
B. Consumable materials															
Housing maintenance	-	-	-		2.2		6.1		9.8		12.7		30.8		
Market maintenance	-	-	-		-		0.4		1.5		3.0		4.9		
Road maintenance	-	-	--		-		1.7		6.0		12.9		20.6		
Sub Total					2.2		8.2		17.3		28.6		56.3		56.3
E. Per diems and travel															
		2	1.8	4	3.6	4	3.6	3	2.7	3	2.7	3	2.7	3	2.7
Total Recurrent			13.0		26.6		32.6		36.0		47.3		155.5		155.5

Notes on RDU DEVELOPMENT CENTRES

TABLE B.21

CAPITAL COSTS

- 1/ In all RDU centres with population under 6000, Cost per centre \$38,400.
- 2/ Costed on basis of one km per 300 families at Eth.\$20,000 per km.
- 3/ Improvement of markets in all RDU centres and sub centres with population under 6000.
Cost per market for surfacing, water and market stalls: Eth.\$7600 (population over 2500)
Eth.\$4000 (population under 2500)

RECURRENT COSTS

TABLE B.22

- 1/ To supervise construction and maintenance of works at Woreda level.
- 2/ Foreman for electricity, market and roads programmes (salary and allowances).
- 3/ At 2½ per cent of capital cost
- 4/ At 5 per cent of capital cost.

A. Buildings

Offices 1/

Sub Total

B. Vehicles

4 Wheel Drive 2/

Sub Total

C. Equipment

Office furniture

Office equipment

Sub Total

Total Capital

TABLE B.23

WOREDA DEVELOPMENT ORGANISATION

CAPITAL COSTS Eth \$'000

	Unit Cost	% Off-shore	YEAR										Total \$	Local	Off-shore		
			1		2		3		4		5						
			No	\$	No	\$	No	\$	No	\$	No	\$					
A. Buildings																	
Offices 1/	11500	-	2	23.0	2	23.0	3	34.5	3	34.5	3	34.5	3	34.5	149.5	149.5	-
Sub Total				23.0		23.0		34.5		34.5		34.5		34.5	149.5	149.5	-
B. Vehicles																	
4 Wheel Drive 2/	25000	90	2	50.0	2	50.0	3	75.0	3	75.0	3	75.0	3	75.0	325.0	32.5	292.5
Sub Total				50.0		50.0		75.0		75.0		75.0		75.0	325.0	32.5	292.5
C. Equipment																	
Office furniture 3/	1600	10	2	3.2	2	3.2	3	4.8	3	4.8	3	4.8	3	4.8	20.8	18.7	2.1
Office equipment 4/	1200	60	2	2.4	2	2.4	3	3.6	3	3.6	3	3.6	3	3.6	15.6	6.2	9.4
Sub Total				5.6		5.6		8.4		8.4		8.4		8.4	36.4	24.9	11.5
Total Capital				78.6		78.6		117.9		117.9		117.9		117.9	510.9	206.9	304.0

TABLE B.24

WOREDA DEVELOPMENT ORGANISATION

RECURRENT COSTS Eth \$'000

YEAR

	Unit Cost	% Off-shore	YEAR					Total \$	Local	Off-shore					
			1	2	3	4	5								
	No	\$	No	\$	No	\$	No	\$	No	\$					
B. Consumable materials															
Stationery	300	20	2	0.6	4	1.2	7	2.1	10	3.0	11	3.3	10.2	8.2	2.0
Building maintenance 1/	290	-	-	2	0.6	4	1.2	7	2.0	10	2.9	2.9	6.7	6.7	-
Sub Total			0.6	1.8	3.3	5.0	6.2	16.9	14.9	2.0					
C. Vehicle Operation and Maintenance															
4 Wheel drive 2/	8750	20	2	17.5	4	35.0	7	61.3	10	87.5	11	96.3	297.6	238.1	59.5
Sub Total			17.5	35.0	61.3	87.5	96.3	297.6	238.1	59.5					
Total Recurrent			18.1	36.8	64.6	92.5	102.5	314.5	253.0	61.5					

Notes on Woreda Development Organisation

Table B.23

Capital Costs

- 1/ One office (72 m²) per Woreda, phased in with extension work.
- 2/ Station wagon 4 wheel drive vehicle, replaced after 5 years.
- 3/ Per office: 2 each; desks, large tables, bookcases, filing cabinet; 20 chairs; 1 typist table.
Total cost Eth \$1,600.
- 4/ 1 typewriter, cost Eth \$1,200.

Table B.24

Recurrent Costs

- 1/ 2½% of construction costs.
- 2/ 25,000 km per year at 35 cts/km

TABLE B.25. (continued) NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE 1/ CAPITAL COSTS Eth. \$'000

Unit	% Off-shore component	YEAR												Total \$		
		1		2		3		4		5		Local \$	Off-shore			
		No	\$	No	\$	No	\$	No	\$	No	\$					
Tools - Ponds ^{15/}	-	6	1.5	6	1.5	6	1.5	6	1.5	6	1.5	6	1.5	7.5	7.5	-
Cement/steel - handdug wells	-	40	2.6	40	2.6	40	2.6	40	2.6	40	2.6	40	2.6	13.0	13.0	-
- spring capping	-	60	12.4	60	12.4	60	12.4	60	12.4	60	12.4	60	12.4	62.0	62.0	-
Pipe and fittings:-	50	60	19.8	60	19.8	60	19.8	60	19.8	60	19.8	60	19.8	99.0	49.5	49.5
spring cappings ponds	50	12	4.0	12	4.0	12	4.0	12	4.0	12	4.0	12	4.0	20.0	10.0	10.0
Survey and office equipment ^{16/}	90	2	20.0	1	1.3	-	-	-	-	-	-	-	-	20.0	2.0	18.0
Office furniture ^{17/}	-	2	2.6	1	1.3	-	-	-	-	-	-	-	-	3.9	3.9	-
Sub Total			168.4	147.1	229.8	229.8	229.8	229.8	229.8	229.8	229.8	229.8	229.8	1004.9	232.6	772.3
Total Capital			343.4	214.1	384.8	354.8	365.8	1662.9	341.6	1321.3						

Costs based on...
 Provision for...
 Possible constraint to proposed development.
 Materials and equipment for steel water supplies including boreholes
 excluding equipment for 50 and Engineering services project except
 at 1/4
 Costing estimate based on 12 wells to 1500 per day per year
 12000 at \$70/m.
 10 years operating.

Notes for Table B.25.

- 1/ Covers requirements for rural domestic water supply programme; includes only incremental expenses incurred for this programme. Irrigation costs shown in separate project proposals but engineer costed in Table . Engineering services project costs shown in Table & .
- 2/ One field office required for each RDU during construction phase; built one year in advance, remains to service 2 RDUs. The other is rented for a 2 year period. Costs based on Eth. \$160 per m².
- 3/ One per RDU and one for expatriate mechanic in NWRC workshop.
- 4/ Two per RDU.
- 5/ One for regional office; one for rural water supplies work.
- 6/ Replacement Compressor for TRDS rig.
- 7/ Provision here for borehole test pump if one of IDA rigs becomes available for use on rural water supplies.
- 8/ 2 per RDU on dewatering handdug wells and springs during construction; 2 for diversion during irrigation scheme construction.
- 9/ Lump sum provision.
- 10/ Provision for second drilling rig for use on rural water supplies in RDUs. Discussions in Feb 1976 with NWRC reveal that only TRDS rig likely to be available for drilling rural water supplies in RDUs and also 6 communities project - thus rig availability is possible constraint to proposed development.
- 11/ Materials and equipment for rural water supplies including boreholes; excluding equipment for HQ and Engineering services project except at 16/
- 12/ Casing estimate based on 12 wells to 100m per rig per year; 1200m at \$70/m.
- 13/ 10 teams operating.

Notes for Table B.25.

- 1/ Covers requirements for rural domestic water supply programme; includes only incremental expenses incurred for this programme. Irrigation costs shown in separate project proposals but engineer costed in Table . Engineering services project costs shown in Table & .
- 2/ One field office required for each RDU during construction phase; built one year in advance, remains to service 2 RDUs. The other is rented for a 2 year period. Costs based on Eth. \$160 per m.
- 3/ One per RDU and one for expatriate mechanic in NWRC workshop.
- 4/ Two per RDU.
- 5/ One for regional office; one for rural water supplies work.
- 6/ Replacement Compressor for TRDS rig.
- 7/ Provision here for borehole test pump if one of IDA rigs becomes available for use on rural water supplies.
- 8/ 2 per RDU on dewatering handdug wells and springs during construction; 2 for diversion during irrigation scheme construction.
- 9/ Lump sum provision.
- 10/ Provision for second drilling rig for use on rural water supplies in RDUs. Discussions in Feb 1976 with NWRC reveal that only TRDS rig likely to be available for drilling rural water supplies in RDUs and also 6 communities project - thus rig availability is possible constraint to proposed development.
- 11/ Materials and equipment for rural water supplies including boreholes; excluding equipment for HQ and Engineering services project except at 16/
- 12/ Casing estimate based on 12 wells to 100m per rig per year; 1200m at \$70/m.
- 13/ 10 teams operating.

TABLE B.26.

NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE

RECURRENT COST Eth. \$'000

Unit	%	YEAR					Total			
		1	2	3	4	5				
Off-shore		1	2	3	4	5	Local	Off-shore		
Component No		\$	No	\$	No	\$	No	\$		
98400	100	98.4	1	98.4	1	98.4	1	98.4	492.0	492.0
98400	100	98.4	1	98.4	1	98.4	1	98.4	295.2	295.2
Sub total		196.8	196.8	196.8	196.8	98.4	98.4	98.4	787.2	787.2
A.1 Personnel (expat)										
Makalle HQ Office										
Mechanic										
Hydrogeologist										
Sub total										
A.2 Personnel (local)										
Makalle HQ Office										
4800	-	9.6	2	9.6	2	9.6	2	9.6	48.0	48.0
4800	-	4.8	1	4.8	1	4.8	1	4.8	24.0	24.0
4800	-	4.8	1	4.8	1	4.8	1	4.8	24.0	24.0
4800	-	4.8	1	4.8	2	9.6	2	9.6	38.4	38.4
10800	-	10.8	1	10.8	2	21.6	2	21.6	86.4	86.4
7200	-	3.6	1	7.2	1	7.2	2	14.4	46.8	46.8
Counterpart staff for										
Engineering services 1/										
7800	-	7.8	1	7.8	1	7.8	1	7.8	39.0	39.0
7800	-	7.8	1	7.8	1	7.8	1	7.8	39.0	39.0
7800	-	7.8	1	7.8	1	7.8	1	7.8	39.0	39.0
1800	-	10.8	6	10.8	6	10.8	6	10.8	54.0	54.0
Field office staff										
1800	-	41.4	23	41.4	23	41.4	23	41.4	207.0	207.0
2400	-	9.6	4	9.6	4	9.6	4	9.6	48.0	48.0
1800	-	3.6	2	3.6	2	3.6	2	3.6	18.0	18.0
1800	-	5.4	3	5.4	3	5.4	3	5.4	27.0	27.0
1000	-	10.0	10	10.0	10	10.0	10	10.0	50.0	50.0
1000	-	7.0	7	7.0	7	7.0	7	7.0	35.0	35.0
Mason - handdug well										
- spring cap										

TABLE B.26. (continued)

NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE

RECURRENT COST Eth. \$'000

Unit	%	YEAR										Total			
		1		2		3		4		5			Local	Off-shore	
		Cost	Component No	\$	No	\$	No	\$	No	\$	No				\$
Labour	-	1800	10	18.0	10	18.0	10	18.0	10	18.0	10	18.0	90.0	90.0	-
Handdug well team	-	3000	7	21.0	7	21.0	7	21.0	7	21.0	7	21.0	105.0	105.0	-
Spring cap team	-	12000	6	72.0	6	72.0	6	72.0	6	72.0	6	72.0	360.0	360.0	-
Pond excavation team	-														
SUB Total				260.6		264.2		279.8		287.0		287.0	1378.6	1378.6	-
B. Consumable materials				5.0		5.0		5.0		5.0		5.0	25.0	20.0	5.0
Book stationery	20			-		0.3		0.3		0.3		0.3	1.2	1.2	-
Maintenance of buildings	-														
Sub Total				5.0		5.3		5.3		5.3		5.3	26.2	21.2	5.0
C.1 Vehicle operation and Maintenance				22.5		22.5		22.5		22.5		22.5	112.5	90.0	22.5
Vehicle 4WD	20	7500	3	18.0	2	18.0	2	18.0	2	18.0	2	18.0	90.0	72.0	18.0
Truck 4WD	20	9000	2	3.2	4	3.2	4	3.2	4	3.2	4	3.2	16.0	16.0	-
Motor cycles	-	800													
Sub Total				43.7		43.7		43.7		43.7		43.7	218.5	178.0	40.5
C.2 Drilling operation				20.0		20.0		20.0		20.0		20.0	160.0	160.0	-
Fuel and oil (rig)	-	30000	1	30.0	1	30.0	2	60.0	2	60.0	2	60.0	240.0	24.0	216.0
Mud etc.	90	1500	6	9.0	12	9.0	12	18.0	12	18.0	12	18.0	63.0	6.3	56.7
Drill bits	-														
Fuel and oil (dewatering pumps)	-	720	1	0.7	6	4.3	6	4.3	6	4.3	6	4.3	17.9	17.9	-
Fuel and oil (test pumps)	-	3600	1	3.6	1	3.6	2	7.2	2	7.2	2	7.2	28.8	28.8	-
Sub Total				54.3		66.9		129.5		129.5		129.5	509.4	237.0	272.7

TABLE B.26. (continued)

NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE

RECURRENT COST Eth. \$'000

Unit	Off-shore Component No	YEAR										Total Local Off-shore \$		
		1		2		3		4		5				
		\$	No											
D. Miscellaneous	-	2.5	1	2.5	1	2.5	1	2.5	1	2.5	1	2.5	12.5	12.5
Services office HQ	-	1.0	2	2.0	2	2.0	2	2.0	2	2.0	2	2.0	9.0	9.0
RDU	-	1.2	1	1.2	1	1.2	1	1.2	1	1.2	1	1.2	6.0	6.0
Rent field office	-	6.6	2	6.6	2	6.6	2	6.6	2	6.6	2	6.6	33.0	33.0
House rent	-													
Sub Total	-	11.3		12.3		12.3		12.3		12.3		12.3	60.5	60.5
E. Per diems, travel	-	43.6		43.6		55.0		55.0		55.0		55.0	252.2	252.2
Total Recurrent	-	615.3		632.8		722.4		631.2		631.2		631.2	3232.9	2127.5 1105.4

TABLE B.27

NWRC ENGINEERING SERVICES 1/

CAPITAL COSTS ETH \$'000

Unit Cost	% Off-shore Component	YEAR										Total \$			
		1		2		3		4		5					
		No	\$	No	\$	No	\$	No	\$	No	\$				
B.1 Vehicles 2/															
S/Wagon 4WD	90	1	25.0	-	-	-	-	-	-	-	-	-	25.0	2.5	22.5
Pick up 4WD	90	5	85.0	-	-	-	-	-	-	-	-	-	85.0	8.5	76.5
Sub Total			110.0	-	-	-	-	-	-	-	-	-	110.0	11.0	99.0
Total Capital			110.0	-	-	-	-	-	-	-	-	-	110.0	11.0	99.0

Notes 1/

Based on estimates given in Domestic Water Supplies Project Tigre Province submitted by Sir M. MacDonald and Partners in 1975.

2/ 4 year life.

1/ Unit costs have been modified to conform to those adopted in the Avonish Programme.
 2/ Individual staff rates are given in the Domestic Water Supplies Project.
 3/ Dollars requested for 3 years and not 1 year as in proposal.
 4/ To construct and supervise small irrigation projects.

TABLE B.28

NWRC ENGINEERING SERVICES 1/

RECURRENT COSTS Eth. \$'000

Unit	%	YEAR										Total		
		1		2		3		4		5			Local	Off-shore
Cost	Component No	\$	No	\$	No	\$	No	\$	No	\$	No	\$		
A. Personnel (expat) 2/														
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	393.6
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	295.2
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	295.2
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	295.2
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	393.6
98400	100	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	196.8
Sub Total														
		590.4		590.4		492.0		196.8		1869.6		-		1869.6
B. Vehicles														
7500	20	45.0	6	45.0	6	45.0	6	45.0	6	45.0	6	45.0	6	180.0
C. Miscellaneous														
3300	-	19.8	6	19.8	5	16.5	2	6.6	2	6.6	2	6.6	2	62.7
400	-	2.4	6	2.4	5	2.0	2	0.8	2	0.8	2	0.8	2	7.6
Sub Total														
		22.2		22.2		18.5		7.4		70.3		70.3		70.3
Total Recurrent														
		657.6		657.6		555.5		249.2		2119.9		214.3		1095.6

Notes 1/ Unit costs have been modified to conform to those adopted in the Action Programme.

2/ Individual staff rates are given in the Domestic Water Supplies Project.

3/ Driller requested for 3 years and not 1 year as in proposal.

4/ To construct and supervise small irrigation projects.

TABLE B.29

NWRC SIX COMMUNITY WATER SUPPLIES PILOT PROJECT

CAPITAL COSTS ETH \$'00

	Unit Cost	% Off-shore	YEAR										Total	Local	Off-shore	
			1		2		3		4		5					
			No	\$	No	\$	No	\$	No	\$	No	\$				
B.2 Plant and Equipment																
Workshop equipment 1/	42000	90		42.0										42.0	4.2	37.8
Plant for construction 1/	105000	90		105.0										105.0	10.5	94.5
Sub Total				147.0										147.0	14.7	132.3
C. Materials and equipment																
Water supply equipment including operation and maintenance 2/	252000	50	2	504.0	2	504.0	2	504.0						1512.0	756.0	756.0
Sub Total				504.0	504.0	504.0	504.0							1512.0	756.0	756.0
Total Capital				651.0	504.0	504.0	504.0							1659.0	770.7	888.3

TABLE B.30

ETHIOPIAN ROADS AUTHORITY: RURAL ROADS

CAPITAL COSTS ETH \$'000

	Unit Cost	%	Off-shore	YEAR										Total \$	Local	Off-shore		
				1		2		3		4		5						
				No	\$	No	\$	No	\$	No	\$	No	\$					
A. Buildings																		
Office and Depot	1/ 250	-	-	450	112.5	-	-	-	-	-	-	-	-	-	-	112.5	112.5	-
B. Vehicles and Plant																		
Construction Unit	2/	75	-	1	418.8	1	418.8	-	-	-	-	-	-	-	-	1818.0	454.5	1363.5
Maintenance Unit	3/ 418800	90	-	1	418.8	1	418.8	-	-	-	-	-	-	-	-	837.6	83.8	753.8
Sub Total					2236.8		418.8									2655.6	538.3	2117.3
C. Equipment																		
Furniture	1350	-	-	4	5.4	-	-	-	-	-	-	-	-	-	-	5.4	5.4	5.4
Tools - Workshop	4/	50	-	-	30.0	-	-	-	-	-	-	-	-	-	-	30.0	15.0	15.0
Survey and Drawing Equipment		50	-	-	15.0	-	-	-	-	-	-	-	-	-	-	15.0	7.5	7.5
Sub Total					50.4											50.4	27.9	22.5
Total Capital					2399.7		418.8		-	-	-	-	-	-	-	2818.5	678.7	2139.8

TABLE B.31

ETHIOPIAN ROADS AUTHORITY: RURAL ROADS

RECURRENT COSTS ETH \$'000

Unit Cost	% Off-shore	YEAR										Total \$	Local	Off-shore					
		1		2		3		4		5									
		No	\$	No	\$	No	\$	No	\$	No	\$								
A.1 Personnel:Expatriate																			
Regional Engineer	98400	100	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	-	590.4	590.4
Senior Mechanical Inspector	98400	100	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	1	98.4	-	-	-
A.2 Personnel:Local 1/																			
Construction Team		-	0.5	490.0	1	980.0	1	980.0	1	989.6	1	989.6	1	989.6	1	989.6		4429.2	4429.2
Maintenance Team	350800		1	350.8	2	701.6	2	701.6	2	701.6	2	701.6	2	701.6	2	701.6		3157.2	3157.2
Sub Total			840.8	1681.6	1681.6	1681.6	1691.2	1691.2	1691.2	1691.2	1691.2	1691.2	1691.2	1691.2	1691.2	1691.2		7586.4	7586.4
B. Materials and Supplies																			
Office running costs		-	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2		36.0	36.0
Construction Team 2/	120000	-	60.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0		540.0	540.0
Maintenance Team 3/	29200	-	29.2	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4		262.8	262.8
Workshop 4/		-	6.0	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7		52.8	52.8
Sub Total			102.4	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3	197.3		891.6	891.6
C. Vehicle and Plant																			
Operation		-	184.5	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0		1660.5	1660.5
Fuel: Diesel 5/	45cts	-	16.3	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5		146.3	146.3
: Benzine	65cts	-	18.6	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2		203.4	203.4
Lubricants		-	93.2	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3		489.2	489.2
Spares 6/		50																	
Sub Total			312.6	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0		2499.4	2499.4
D. Miscellaneous																			
Rental: Housing Specialists	3300	-	2	6.6	2	6.6	2	6.6	2	6.6	2	6.6	2	6.6	2	6.6		19.8	19.8
Rental: Offices/store 7/		-	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6		9.6	9.6
Furniture and Equipment		-																	
Maintenance		-																	
Building maintenance 8/		-																	
Sub Total			16.2	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4		48.6	48.6
Total Recurrent			1468.8	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1	2756.1		11026.0	1079.6

TABLE B.31

Notes on Rural Roads - RECURRENT COSTS

1/ Local Staff, required for construction and maintenance operations

	Annual Salary		Construction		Maintenance	
	Eth \$		Number	Cost Eth \$	Number	Cost Eth \$
Engineer	9600		1*	9600	-	-
Administrative Assistant	9600		1	9600	-	-
Accountant	8400		1	8400	-	-
Typist/clerk	4800		2	9600	1	4800
Surveyor Draughtsman	6000		2	12000	-	-
Personnel Officer	6300		1	6300	-	-
Paymaster	7200		1	7200	-	-
Stores Controller	5400		1	5400	-	-
Assistant Storekeeper	2800		2	5600	-	-
Works Inspector/Supervisors	8400		3	25200	1	8400
Mechanical Inspector	9100		2	18200	-	-
Mechanical Chargehand	4800		2	9600	-	-
Foremen	4800		6	28800	6	28800
Assistant Foremen	1800		18	32400	18	32400
Chainmen	2500		4	10000	-	-
Plant Operators	5000		7	35000	3	15000
Drivers	4000		15	60000	4	16000
Machine Operators	2500		9	22500	-	-
Mechanics	4200		4	16800	1	4200
Assistant Mechanics	1800		5	9000	1	1800
Welder	4800		2	9600	-	-
Masons and Carpenters	2400		20	48000	5	12000
Tyre men	2100		3	6300	1	2100
Electrician	3600		2	7200	-	-
Fuel clerks	3200		8	25600	-	-
Timekeepers	2100		6	12600	-	-
Assistant Masons	1200		12	14400	-	-
Drillers	1440		4	5800	-	-
Banksmen/Operator Assistants	720		6	4300	2	1400

TABLE B.31 Notes on Rural Roads - RECURRENT COSTS (continued)

	Annual Salary		Construction		Maintenance	
	Eth \$		Number	Cost Eth \$	Number	Cost Eth \$
Gang Leaders	720		80	57600	60**	25200
Labourers	540		800	432000	600**	189000
Guards	540		15	8100	6	3200
Cooks	540		2	1100	1	500
Dressers	3000		2	6000	2	6000
Total				979,800		350,800

* Second Engineer appointed in Year 4

** Costs budgeted assuming 50 gang leaders and 500 labourers are employed for 6 months of the year.

2/ Materials required for construction purposes estimated as follows:-

ITEM	COST Eth \$
Cement 400 tons at \$90	36,000
Hand tools \$300 per 10 workers	25,000
Explosives	20,000
Timber, wire etc.	10,000
Temporary camps and shelters	25,000
Tools for carpenters and masons	4,000
Total	\$120,000

3/ Materials for maintenance estimated per team as follows:-

Cement	7,200
Hand tools \$300 per 10 workers	12,000
Timber, wire etc.	10,000
Total	\$29,200

TABLE B.31 Notes on Rural Roads - RECURRENT COSTS (continued)

4/ Workshop running costs estimated as follows:-

ITEM	Cost Eth \$
Power \$200 per month	2,400
Water \$100 per month	1,200
Cleaning materials and sundries	3,600
Small tools 15 per cent	4,500
Total	\$11,700

5/ Fuel requirements and costs estimated on average consumption per working hour or km.

	Hours	Litres/Hours
Diesel Dozer	1,800	20
Grader	1,800	20
Roller	1,000	10
Loader	1,800	15
Compressor	1,000	10
Generator	2,500	10
Truck	2,000	10
Crusher	1,500	10
Tractor	1,000	10
Miscellaneous	1,000	5

Total requirements: 520,000 litres per annum for construction.

150,000 litres per annum for maintenance (per unit).

Benzine Land rover 25,000 Km 5 Km/lt

Total requirements: 30,000 litres per annum for construction

10,000 litres per annum for maintenance (per unit).

6/ Spares costs estimated at 10 per cent of initial cost of vehicles and plant

7/ Estimated on basis of renting offices during first year while depot being constructed, require 6 offices and 2 stores.

8/ Costed at 2½ per cent of building cost.

TABLE C.1

2 - YEAR PROJECT COST BY AGENCY AND YEAR

Eth.\$'000

Agency	YEAR		Total	Breakdown of Costs		
	1	2		Local	Third Country	Off-shore
RDS	661.9	591.2	1253.1	467.1	27.1	786.0
EPID	1489.1	1677.0	3166.1	1965.4	175.3	1200.7
Conservation	49.8	95.0	144.8	128.8	2.6	16.0
Training	551.2	154.2	705.4	574.2	32.2	131.2
SFODA	329.4	324.9	654.3	394.9	27.3	259.4
IAR	230.3	223.0	453.3	210.9	19.4	242.4
Veterinary Dept	20.7	35.9	56.6	55.6	13.7	1.0
Poultry Breeding Centre	64.0	20.3	84.3	82.1	5.4	2.2
MNCD & SA	88.2	132.8	221.0	147.3	8.8	73.7
Health	186.6	143.6	330.2	89.2	2.2	241.0
RDU Dev. Centres	102.9	223.0	325.9	325.9	28.8	-
Woreda Dev. Org.	96.7	115.4	212.1	102.5	11.4	109.6
NWRC Regional office	958.7	846.9	1805.6	938.0	83.4	867.6
NWRC Engineering services	767.6	657.6	1425.2	127.4	10.8	1297.8
Six Community water supplies	651.0	504.0	1155.0	518.7	50.4	636.3
Rural Roads	3868.5	3174.9	7043.4	4352.7	76.1	2690.7
Total (excluding contingency)	10116.6	8919.7	19036.3	10480.7	574.9	8555.6
5% contingency	505.8	446.0	951.8			
Sub Total	10622.4	9365.7	19988.1			
Price 1/ contingency	1593.4	2481.9	4075.3			
Total (incl' contingency)	12215.8	11847.6	24063.4			

Note: 1/ 15% in year 1 and 10% year 2.

TABLE C.2

TWO YEAR DEVELOPMENT PROJECT BY AGENCY AND ITEM

ETH \$ '000

Agency	Capital Items						Recurrent Items					
	A	B	C	A1	A2	B	C	D	E	Total		
	Buildings & Construction	Vehicles & Plant	Equipment	Sub Total	Expatriate Salaries etc	Local salaries	Consumables	Vehicle O & M	Misc.	P.Diem/ travel	Sub Total	Total
Regional Development Secretariat	94.5	51.0	24.2	169.7	688.8	190.4	44.5	82.0	52.5	25.3	1083.5	1253.2
EPID	177.8	248.6	100.6	527.0	984.0	1065.7	37.5	269.0	129.3	153.6	2639.1	3166.1
Conservation	-	-	42.0	42.0	-	40.0	62.8	-	-	-	102.8	144.8
Training	142.4	94.5	59.5	296.4	98.4	109.5	86.1	64.8	36.3	14.4	409.0	705.4
SFODA	46.0	68.3	126.8	241.1	196.8	84.1	48.6	51.7	22.3	9.7	413.2	654.3
IAR	78.0	34.0	12.7	124.7	196.8	59.2	16.9	35.0	6.6	14.1	328.6	453.3
Veterinary Department	-	9.0	2.0	11.0	-	32.4	3.0	4.8	-	5.4	45.6	56.6
Poultry Breeding Centre	21.9	-	21.8	43.7	-	16.8	22.0	-	-	1.8	40.6	84.3
MNCD & SA	15.2	68.0	4.4	87.6	-	61.2	7.7	52.5	-	12.0	133.4	221.0
Health	-	20.0	1.0	21.0	196.8	34.8	43.5	17.6	3.5	13.0	309.2	330.2
RDU Development Centres	286.3	-	-	286.3	-	32.0	2.2	-	-	5.4	39.6	325.9
Woreda Development Organisation	46.0	100.0	11.2	157.2	-	-	2.4	52.5	-	-	54.9	212.1
NWRC Regional Office	10.0	232.0	315.5	557.5	393.6	524.8	10.3	208.6	23.6	87.2	1248.1	1805.6
NWRC Engineering Services	-	110.0	-	110.0	1180.8	-	-	90.0	44.4	-	1315.2	1425.2
Six Community Water Supplies	-	147.0	1008.0	1155.0	-	-	-	-	-	-	-	1155.0
Rural Roads	112.5	2655.6	50.4	2818.5	393.6	2522.4	299.7	981.6	27.6	-	4224.9	7043.4
Total	1030.6	3838.0	1780.1	6648.7	4329.6	4772.8	687.1	1910.1	346.1	341.9	12387.6	19036.3

TABLE C.3

REGIONAL DEVELOPMENT SECRETARIAT

CAPITAL COST Eth. \$'000

	Unit Cost	% Off-shore Component No	YEAR		Total \$	Local (3rd Country)	Off-shore
			1	2			
A. Building Offices 1/	300/m ²	-	-	315	94.5	94.5	-
Sub Total			-		94.5	94.5	-
B. Vehicles 2/ Vehicle 4WD Saloon car	17000 10000	90 90	51.0	-	51.0	5.1	45.9
Sub Total			51.0	-	51.0	5.1	45.9
C. Equipment Office furniture 3/ Office equipment 4/ Miscellaneous items 5/	500	10 60 60	5.0 9.0 5.0	4	2.0 1.2 2.0	7.0 10.2 7.0	0.7 6.1 4.2
Sub Total			19.0		5.2	24.2	11.0
Total Capital			70.0		99.7	112.8	56.9
						(10.8)	

See Notes to Appendix Table B.3.

TABLE C.4

REGIONAL DEVELOPMENT SECRETARIAT

RECURRENT COST Eth. \$'000

Unit Cost	%	Off-shore Component No	YEAR		Total \$	Local (3rd Country)
			1	2		
			\$ No	\$		
A.1 Personnel (expatriate) 1/						
98400	100	1	98.4	1	98.4	
98400	100	1	98.4	1	98.4	
98400	100	1	98.4	1	98.4	
98400	100	1	98.4		-	
Sub Total			393.6		295.2	688.8
A.2 Personnel (local)						
14400	-	1	14.4	1	14.4	
10500	-	1	10.5	1	10.5	
10500	-	1	10.5	1	10.5	
10500	-	1	10.5	1	10.5	
10500	-	1	10.5	1	10.5	
Other Staff						
5400	-	2	10.8	2	10.8	
6400	-	1	6.4	1	6.4	
3600	-	1	3.6	1	3.6	
3600	-	2	7.2	2	7.2	
1800	-	5	9.0	5	9.0	
600	-	3	1.8	3	1.8	
Sub Total			95.2		95.2	190.4
Sub Total						190.4
						(190.4)

TABLE C.4 (continued)

REGIONAL DEVELOPMENT SECRETARIAT

RECURRENT COST Eth. \$'000

	Unit Cost	% Off-shore Component	YEAR		Total \$	Local (3rd Country)	Off-shore
			1	2			
B. Consumable materials							
Stationery and office ^{4/}	7200	20	7.2	7.2	14.4	11.5	2.9
Drawing office materials ^{5/}	15000	20	15.0	15.0	30.0	24.0	6.0
Building maintenance ^{6/}		-	-	-	-	-	-
Sub Total			22.2	22.2	44.4	35.5 (7.1)	8.9
C. Vehicle Operation							
Vehicle 4WD ^{7/}	7500	20	35.0	35.0	60.0		
Saloon car ^{8/}	6000	20	6.0	6.0	12.0		
Sub Total			41.0	41.0	82.0	65.6 (9.8)	17.4
D. Miscellaneous							
Training abroad	9600	100	5.0	10.0	15.0	-	15.0
Office rental	3300	-	9.6	4.8	14.4	14.4	-
House rent		-	13.2	9.9	23.1	23.1	-
Sub Total			27.8	24.7	52.5	37.5 (-)	15.0
E. Per diems and travel							
Expatriate ^{10/}	400	-	1.6	1.2	2.8		
Local staff ^{11/}	1500	-	10.5	12.0	22.5		
Sub Total			12.1	13.2	25.3	25.3 (-)	-
Total Recurrent			51.9	491.5	1083.4	354.3 (16.9)	729.1

Note: See Notes to Appendix B.4

TABLE C.5

EXTENSION AND PROJECT IMPLEMENTATION

CAPITAL COST Eth. \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd Country)
			1		2			
			No	\$	No	\$		
A. Buildings								
Regional coordination office <u>1/</u>	300/m ²		72	21.6		21.6	21.6	
RDU offices <u>2/</u>	115000		4	46.1	4	92.2	92.2	
RDU Stores <u>3/</u>	8000		4	32.0	4	64.0	64.0	
Sub Total				99.7	78.1	177.8	177.8 (2.2)	
B. Vehicles								
4WD pick-ups <u>4/</u>	17000	90	4	68.0	3	119.0	11.9	
Truck <u>5/</u>	35000	90	1	35.0		35.0	3.5	
Motor cycles <u>6/</u>	2250	-	37	83.3	5	94.6	94.6	
Sub Total				186.3	62.3	248.6	110.0 (94.6)	
C. Equipment								
Office furniture	1350		8	10.8	1	12.2	12.2	
- specialists <u>7/</u>	910		2	1.8	2	3.6	3.6	
- middle grade	2260		2	4.5	2	9.0	9.0	
- RDU offices	950		7	6.7	3	9.6	9.6	
- Agents								
- coordination								
- office <u>8/</u>		80	2	11.3	2	11.3	2.3	
- RDU office	2125	80		4.3		8.6	1.7	
Sundry equipment								
and tools								
- coordination								
- office <u>9/</u>		50		15.5		20.5	10.2	
- RDU office <u>10/</u>	3700	50	2	7.4	2	14.8	7.4	
- Agents <u>11/</u>	1100	30	7	7.7	3	11.0	7.7	
Sub Total				70.0	30.6	100.6	63.7	
Total Capital Costs				356.0	171.0	527.0	351.5 (108.8)	

Note(1) 50% of equipment = 3rd country cos; (2) For notes see Appendix B.5

TABLE C.5.

EXTENSION AND PROJECT IMPLEMENTATION

RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore		YEAR				Total \$	Local (3rd Country)	Off-shore
		No	%	1		2				
				No	%	No	%			
A.1 Personnel - Expatriate	98400	5	100	5	492.0	5	492.0	984.0	-	984.0
Specialists in Extn. Cons. Livestock, Economics										
A.2 Personnel										
Specialists	9000	3		4	27.0	4	36.0	63.0		
Supervisors: RDUs	8300	2		4	16.6	4	33.2	49.8		
Supervisors: Co-ops	8300	1		2	8.3	2	16.6	24.9		
Agents: Extn/Conservation	5400	20		22	108.0	22	118.8	226.8		
Agents: Co-ops (MAS)	4000	14		14	56.0	14	56.0	112.0		
Asst. Agents: Extn/conservation	3300	4		48	13.2	48	158.4	171.6		
Trainee Asst. Agents	1200	40		40	48.0	40	48.0	96.0		
Trainee: Secretary/Manager	-									
Demonstrators	720	18		58	13.0	58	41.8	54.8		
Clerical staff	4800	4		6	19.2	6	28.8	48.0		
Drivers	3100	9		12	27.9	12	37.2	65.1		
Guards RDUs	980	4		8	3.9	8	7.8	11.7		
General labour	980	20		26	19.6	26	25.5	45.1		
Social Benefits 10%					36.1		60.8	96.9		
Sub Total					396.8		668.9	1065.7		1065.7
B. Materials and services										
Office supplies & services					9.5		10.0	19.5		
- coordinators office	3000				6.0		12.0	18.0		
- RDUs										
Sub Total					15.5		22.0	37.5		37.5 (7.5)

TABLE C.6 (continued)

EXTENSION AND PROJECT IMPLEMENTATION

RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd Country)	Off-shore
			1		2				
			No	\$	No	\$			
C. Vehicle operation & maintenance									
4WD pickups	8750	20	9	78.8	12	105.0	183.8	147.0	36.8
Truck	11000	20	1	11.0	1	11.0	22.0	17.6	4.4
Motor cycle	800		37	29.6	42	33.6	63.2	63.2	
Sub Total				119.4		149.6	269.0	227.8	41.2
D. Miscellaneous									
Training visits & courses unspecified	30		2	10.0	4	10.0	20.0	20.0	
Demonstrations & field days				6.0		12.0	18.0	18.0	
Seed scheme				-		20.0	20.0	20.0	
Building Maintenance				-		2.2	2.2	2.2	
House Rental (expats)	3300		5	16.5		16.5	33.0	33.0	
Office rental - coordinators office	1200		7	7.2	10	-	7.2	7.2	
- Agents				8.4		12.0	20.4	20.4	
Maintenance furniture & equip				3.5		5.0	8.5	8.5	
Sub Total				51.6		77.7	129.3	129.3	(7.6)
E. Per diems & travel									
Expatriate specialists	2400		5	12.0	5	12.0	24.0	24.0	
Local specialists	1900		3	5.7	4	7.6	13.3	13.3	
Supervisors	1700		3	5.1	6	10.2	15.3	15.3	
Agents	900		34	30.6	36	32.4	63.0	63.0	
Asst. Agents	650		4	2.6	48	31.2	33.8	33.8	
Drivers	200		9	1.8	12	2.4	4.2	4.2	
Sub Total				57.8		95.8	153.6	153.6	(-)
Total Recurrent Costs				1133.1		1506.0	2639.1	1613.9	1025.2

For notes see Appendix B.6.

TABLE C.7

CONSERVATION

CAPITAL AND RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd Country)	Off-shore
			1	2			
	No		\$	No	\$		
<u>CAPITAL</u>							
C. Equipment							
Regional emergency team			10.0		10.0	10.0	
RDU Headquarters team 1/	2	50	10.0	2	20.0	10.0	10.0
RDU Field team 2/		50		40	12.0	6.0	6.0
Total Capital Cost			20.0		42.0	26.0	16.0
						(2.6)	
<u>RECURRENT</u>							
A. Labour 3/							
Sub Total			5.0		40.0	40.0	-
			5.0		40.0	40.0	-
B. Materials and supplies							
Materials - emergency team			10.0		20.0	20.0	
Materials - RDU works			4.0		8.0	8.0	
Hand tools - RDU works	18		10.8		34.8	34.8	
Sub Total			24.8		62.8	62.8	-
						(-)	
Total Recurrent Costs			29.8		102.8	102.8	-

Note: For notes see Appendix B.7

TABLE C.8 TRAINING FOR EXTENSION CAPITAL COSTS Eth \$'000

ITEM	UNIT COST	% OFF-SHORE	YEAR		TOTAL (3rd Country)	LOCAL (3rd Country)	OFF-SHORE
			1	2			
			No. \$	No. \$			
A. Buildings							
Makalle RTC		-	45.0	-	45.0	45.0	-
Hauzien RTC		-	97.4	-	97.4	97.4	-
Sub Total			142.4		142.4	142.4 (14.4)	
B. Vehicles							
Personnel carrier	35000	90	2 70.0	-	70.0	63.0	7.0
4 WD station wagon	20000	90	1 20.0	-	20.0	18.0	2.0
Meter oycle	2250	-	2 4.5	-	4.5	4.5	-
Sub Total			94.5		94.5	85.5 (4.5)	9.0
C. Equipment							
Furniture	500/SP	-	70 35.0	-	35.0	35.0	-
Equipment	350/SP	20	70 24.5	-	24.5	19.6	4.9
Sub Total			59.5		59.5	54.6 (2.0)	4.9
TOTAL CAPITAL COST			296.4		296.4	282.5 (20.9)	13.9

Note: For notes see Appendix B.8.

RECURRENT COSTS Eth \$'000

TRAINING FOR EXTENSION

TABLE C.9.

ITEM	UNIT COST	%	OFF-SHORE	No.	YEAR		TOTAL	LOCAL (3rd Country)	OFF-SHORE
					1	2			
				No.	\$	\$			
A.1 Personnel: expatriate									
Training Specialist	1/ 98400	100		1	98.4	-	98.4	-	98.4
Sub Total					98.4		98.4		98.4
A.2 Personnel: Local									
Training Specialist	9000	-		1	9.0	9.0	18.0	18.0	
Principal RTC	6400	-		2	12.8	12.8	35.6	35.6	
Clerk/Typist	4800	-		2	9.6	9.6	19.2	19.2	
Drivers	3100	-		3	9.3	9.3	18.6	18.6	
Cook	1000	-		2	2.0	2.0	4.0	4.0	
Labour	980	-		12	11.8	11.8	23.6	23.6	
Sub Total					54.5	54.5	109.0	109.0	
B. Materials and supplies									
Feed	3/ 650/SP	-		55	35.8	35.8	71.6	71.6	
Training materials	100/SP	-		55	5.5	5.5	11.0	11.0	
Building maintenance	4/	-			-	3.5	3.5	3.5	
Sub Total					41.3	44.8	86.1	86.1	
C. Vehicle operation and maintenance									
Personnel carrier	5/ 11000	-		2	22.0	22.0	44.0	35.2	8.8
4 WD	8750	-		1	8.8	8.8	17.6	14.1	3.5
Motor cycle	800	-		2	1.6	1.6	3.2	3.2	
Sub Total					32.4	32.4	64.8	52.5	12.3
								(3.2)	

TABLE C.9 (CONTD)

ITEM	UNIT COST	%	YEAR		TOTAL	LOCAL (3rd Country)	OFF-SHORE
			1	2			
		OFF-SHORE	No.	\$	\$		
D. Miscellaneous		20	55	16.5	33.0	26.4	6.6
Services	300	-	1	3.3	3.3	3.3	
House rental	3300	-					
<u>6/</u>							
Sub Total				16.5	36.3	29.7 (2.6)	6.6
E. Per diems and travel		-	1	2.4	2.4	-	-
Training specialist: expatriate	2400	-	1	2.0	4.0	-	-
Training specialist: local	2000	-	2	3.4	6.8	-	-
Principal RTC	1700	-	3	.6	1.2	-	-
Drivers	200	-					
<u>7/</u>							
Sub Total				6.0	14.4	14.4 (-)	
TOTAL RECURRENT COSTS				254.8	409.0	291.7 (11.3)	117.3

Note: For notes see Appendix B.9.

CAPITAL COSTS Eth \$'000

SPeDA

TABLE C.10

ITEM	UNIT COST	OFF-SHORE	No.	YEAR		TOTAL	LOCAL (3rd Country)	OFF-SHORE
				1 \$	2 \$			
A. Buildings								
Escarpments control		-		36.0	10.0	46.0	46.0	-
; ranger housing	1/			36.0	10.0	46.0	46.0	-
Sub Total							(-)	
B. Vehicles								
4 WD Pick-up	17000	90	1	17.0	-	17.0	1.7	15.3
Afforestation: tractors	20000	90	1	20.0	20.0	40.0	4.0	36.0
; meter cycles	2250	-	3	4.5	6.8	11.3	11.3	-
Sub Total				41.5	26.8	68.3	17.0	51.3
							(11.3)	
C. Equipment and works								
Survey equipment		100		6.0	-	6.0	-	6.0
Escarpment designation and demarcation	3000/1000ha	-	5.7	17.1	4.7	31.2	31.2	-
Escarpment control: roads	5000/1000ha	-	5.2	20.0	4.2	47.0	47.0	-
; horses	200	-	3	.6	-	.6	.6	-
Nurseries	7000	-	3	21.0	3	42.0	42.0	-
Sub Total				70.7	56.1	126.8	120.8	6.0
							(6.0)	
TOTAL CAPITAL COSTS				148.2	92.9	241.1	183.8	57.3
							(17.3)	

Note: For notes see Appendix B.10

SFODA

TABLE C.11.

ITEM	UNIT COST	% OFF-SHORE	No.	YEAR		TOTAL	LOCAL (3rd Country)	OFF-SHORE
				1	2			
A.1 Personnel (Expatriate)	98400	100	1	98.4	1	98.4	196.8	196.8
Perester								
A.2 Personnel (Local)	4450	-	3	13.4	3	13.4	26.8	
Rangers: escarpment control	4450	-	2	8.9	4	17.8	26.8	
Technicians: Afforestation	1800	-	1	1.8	2	3.6	5.4	
Drivers: Afforestation	840	-	10	8.4	20	16.8	25.2	
Guards: Escarpment control								
Sub Total				32.5		51.6	84.1	84.1
B. Materials and supplies	5400	-	3	16.2	6	32.4	48.6	48.6
Nurseries: Afforestation								
Sub Total				16.2		32.4	48.6	48.6
C. Vehicle operation	8750	-	1	8.8	1	8.8	14.1	3.5
4 WD Pick-up	3000	-	1	3.0	2	6.0	7.2	1.8
Afforestation: tractors	800	-	2	1.6	4	3.2	4.8	
: meter cycles								
: hired transport	2250		3	6.8	6	13.5	20.3	
Sub Total				20.2		31.5	51.7	5.3
D. Miscellaneous								
Escarpment control:								
: road maintenance						2.6	2.6	
: charcoal trials				5.0		5.0	10.0	
: horse feed and				1.2		1.9	3.1	
guards uniforms				3.3		3.3	6.6	
House rent	3300							
Sub Total				9.5		12.8	22.3	(-)

CAPITAL COSTS BY YEAR \$'000

TABLE C.11 CONTD.

ITEM	UNIT COST	% OFF-SHORE	YEAR		TOTAL	LOCAL (3rd Country)	OFF-SHORE
			1	2			
			No.	No.	\$		
E. Per diems and travel	2400	-	1	1	2.4	4.8	4.8
Forester	360	-	5	7	1.8	4.3	4.3
Rangers and technicians	200	-	1	2	.2	.6	.6
Drivers							
Sub Total			4.4	5.3	9.7	9.7	202.1
TOTAL RECURRENT			181.2	232.0	413.2	211.1 (10.0)	

Note: For notes see Appendix B.11

TABLE C.12

INSTITUTE OF AGRICULTURAL RESEARCH

CAPITAL COSTS Eth. \$'000

	Unit Cost	No	YEAR		Total \$	Local	
			%			(3rd Country)	Off-shore
			Off-shore	No			
			1	2			
A. Buildings							
Offices 1/	6000	2	12.0	1	6.0	18.0	
Plant breeding cage 1/			10.0			10.0	
Silos			5.0		45.0	5.0	
Glasshouse 2/						45.0	
Sub Total			27.0		51.0	78.0	78.0 (7.8)
B. Vehicles							
4 WD Pick up	170	2	34.0		-	34.0	3.4 (-)
Sub Total							30.6
C. Equipment							
Furniture 3/			1.8		.9	2.7	2.7
Irrigation laboratory & sundries			10.0			10.0	5.0
Sub Total			11.8		.9	12.7	7.7 (4.4)
Total Capital			72.8		51.9	124.7	89.1 (12.8)
							35.6

Note: For notes see Appendix C.12

TABLE C.13 INSTITUTE OF AGRICULTURAL RESEARCH RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd Country)	Off-shore
			1		2				
			No	\$	No	\$			
A.1 Personnel - expatriate									
Forage/Pasture specialist	98400	100	1	98.4	1	98.4	196.8	196.8	
A.2 Personnel - local									
Forage/Pasture specialist	10000		1	10.0	1	10.0	20.0		
Plant Breeder	10000		1	10.0	1	10.0	10.0		
Technical Assistants	4500		2	9.0	2	9.0	18.0		
Drivers	1800		2	3.6	2	3.6	7.2		
Guards	980		2	2.0	2	2.0	4.0		
Sub Total				24.6		34.6	59.2	-	
B. Materials and supplies									
Office supplies	20			1.0		1.0	2.0	.4	
Hand tools				.5		.5	1.0		
Sundry materials 1/	20			6.0		7.2	13.2	2.6	
Building maintenance 2/				-		.7	.7		
Sub Total				7.5		9.4	16.9	3.0	
C. Vehicle operation									
4 WD 2/	8750	20	2	17.5		17.5	35.0	7.0	
D. Miscellaneous - House rentals									
	3300		1	3.3		3.3	6.6	-	

TABLE C.13 (continued)

INSTITUTE OF AGRICULTURAL RESEARCH

RECURRENT COSTS Eth. \$'000

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd Country)
			No			
			1	2		
E. Per diems & travel						
Expat. specialist	2400		1	2	2.4	4.8
Local specialists	1750		1	2	1.8	5.3
Technical Assistants	800		2	2	1.6	3.2
Drivers	200		2	2	.4	.8
Sub Total					6.2	14.1
Total Recurrent					157.5	171.1
					328.6	121.8 (6.6)
						206.8

Note: For notes see Appendix B.13

TABLE C.14

VETERINARY DEPARTMENT

CAPITAL COST Eth. \$'000

	Unit	%	YEAR		Total	Local	Off-shore
			1	2			
Cost	No	Off-shore	\$	No	\$		
B. Vehicles							
Motor cycle	1/ 2	-	4.5	2	4.5	9.0	-
Sub Total			4.5		4.5	9.0	(9.0)
C. Equipment							
Tools, implements and miscellaneous	2/ 500	50	1.0	2	1.0	2.0	1.0
Sub Total			1.0		1.0	2.0	(1.0)
Total Capital			5.5		5.5	11.0	(9.1)

Note: For notes see Appendix B.14.

TABLE C.15

VETERINARY DEPARTMENT

RECURRENT COSTS Eth. \$ '000

Unit	%	YEAR		Total	Local	Off-shore
		1	2			
Cost	Off-shore	No	\$	No	\$	\$
A. Personnel						
Animal health assistant 1/	-	2	10.8	4	21.6	32.4
Sub Total			10.8	21.6	32.4	32.4 (-)
B. Consumable materials						
Tools and implements	-	2	0.5	4	1.0	1.5
Materials for extension programme	-	2	0.5	4	1.0	1.5
Sub Total			1.0	2.0	3.0	3.0 (0.3)
C. Vehicles operation and maintenance						
Motor cycle 2/	-	2	1.6	4	3.2	4.8
Sub Total			1.6	3.2	4.8	4.8 (4.3)
E. Per diems and travel						
	-	2	1.8	4	3.6	5.4
Sub Total			1.8	3.6	5.4	5.4 (-)
Total Recurrent			15.2	30.4	45.6	45.6 (4.6)

Note: For notes see Appendix B.15.

TABLE C.16

POULTRY BREEDING CENTRE

CAPITAL COSTS Eth. \$'000-----

	Unit	%	YEAR		Total	Local (Third country)	Off-shore
			Off-shore				
			1	2			
	Cost	No	\$	No	\$		
A. Buildings							
Raising house	1/	-	5.7	-	5.7	5.7	-
Breeding House	2/	-	1.2	-	1.2	1.2	-
Office, foodstore	3/	-	7.5	-	7.5	7.5	-
Incubator room	4/	-	7.5	-	7.5	7.5	-
Sub Total			21.9	-	21.9	21.9 (2.2)	-
C ₁ Breeding Stock	5/	90	0.2	-	0.2	0-	0.2
Sub Total			0.2	-	0.2	0-	0.2
C ₂ Equipment							
Brooders and incubators	6/	-	8.1	-	8.1	8.1	-
Troughs, nests		-	3.5	-	3.5	3.5	-
Electricity and water		-	10.0	-	10.0	10.0	-
Sub Total			21.6	-	21.6	21.6 (2.2)	-
Total Capital			43.7	-	43.7	43.5 (4.4)	0.2

Note: For notes see Appendix B.16.

TABLE C.17

POULTRY BREEDING CENTRE

RECURRENT COSTS Eth.\$'000

	Unit Cost	% Off-shore	year		Total \$	Local (Third country)	Off-shore
			No				
			1	2			
A. Personnel							
Technician	5400	-	1	1	5.4	5.4	10.8
Labour	720	-	4	4	2.5	2.5	5.0
Casual Labour		-			0.5	0.5	1.0
Sub Total					8.4	8.4	16.8 (-)
B. Operating Costs							
Building maintenance					1.0	1.0	2.0
Electricity					0.6	0.6	1.2
Water					1.9	1.9	3.8
Drugs and vaccines		100			1.0	1.0	2.0
Food					4.0	4.0	8.0
Stationery					0.5	0.5	1.0
Hire transport					2.0	2.0	4.0
Sub Total					11.0	11.0	22.0 (1.0)
E. Per diems and travel							
Technician	900				0.9	0.9	1.8
Total Recurrent					20.3	20.3	40.6 (1.0)

Note: For notes see Appendix B.17

TABLE C.18

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd country)	Off-shore
			1		2				
			No	\$	No	\$			
A. Buildings									
RDU Office	1900	-	4	7.6	4	7.6	15.2	15.2	-
Sub Total				7.6		7.6	15.2	(1.5)	-
B. Vehicles									
4 Wheel drive	17000	90	2	34.0	2	34.0	68.0	6.8	61.2
Sub Total				34.0		34.0	68.0	(-)	61.2
C. Equipment									
Office furniture	500	-	2	1.0	2	1.0	2.0	2.0	-
Office equipment	100	60	2	0.2	2	0.2	0.4	0.2	0.2
Tools, miscellaneous equipment	500	-	2	1.0	2	1.0	2.0	2.0	-
Sub Total				2.2		2.2	4.4	4.2	0.2
Total Capital				43.8		43.8	87.6	26.2	61.4
								(1.9)	

Note: For notes see Appendix B.18

MINISTRY OF NATIONAL COMMUNITY DEVELOPMENT AND SOCIAL AFFAIRS

TABLE C.19

YEAR

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd country)	Off-shore
			1 No \$	2 No \$			
A. Personnel							
Community Development Officer ^{1/}	8400	-	2	16.8	33.6	50.4	-
Driver	1800	-	2	3.6	7.6	11.2	-
Sub Total				20.4	40.8	61.2	-
						(-)	
B. Consumable Materials							
Books, periodicals, stationery	500	60	2	1.0	2.0	3.0	1.8
Tools, implements	250	-	2	0.5	1.0	1.5	-
Materials	500	-	2	1.0	2.0	3.0	-
Maintenance of buildings	50	-	4	-	0.2	0.2	-
Sub Total				2.5	5.2	7.7	1.8
						(0.6)	
C. Vehicle Operation and maintenance							
4 Wheel drive ^{2/}	8750	20	2	17.5	35.0	52.5	10.5
Sub Total				17.5	35.0	52.5	10.5
						(6.3)	
E. Per diems and travel							
Field days	100	-	2	0.2	0.4	0.6	-
Per diems	1700	-	2	3.4	6.8	10.2	-
Development Officer	200	-	2	0.4	0.8	1.2	-
Driver							
Sub Total				4.0	8.0	12.0	-
						(-)	
Total Recurrent				44.4	89.0	133.4	12.3
						(6.9)	

Note: For notes see Appendix B.19

TABLE C.20.

RURAL HEALTH SERVICES

CAPITAL AND RECURRENT Eth. \$'000

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd Country)	Off-shore
			No				
			1	2			
CAPITAL							
A. Vehicles							
4WD Station Wagon	20000	90	1	20.0	-	2.0 (-)	18.0
B. Equipment							
Refrigerators & cool boxes	1000	90	1	1.0	-	0.1 (-)	0.9
Total Capital				21.0	-	2.1	18.9
RECURRENT							
A.1 Personnel - expatriate							
Doctor/Health Officer	98400	100	1	98.4	1	98.4	196.8
A.2 Personnel - local							
Community Nurse	4800		1	4.8	1	4.8	9.6
Community Development worker	3000		1	3.0	1	3.0	6.0
Drivers	2400		1	2.4	1	2.4	4.8
Village level workers	360		20	7.2	20	7.2	14.4
Sub Total				17.4	17.4	34.8 (-)	-
B. Materials							
Vaccines, stationery and supplies	31000 12500	50 50	1	31.0	- 1	12.5	15.5 6.3
Sub Total				31.0	12.5	43.5	21.8 (2.2)

TABLE C.20 (continued)

RURAL HEALTH SERVICES

CAPITAL AND RECURRENT Eth. \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd Country)	Off-shore
			1		2				
			No	\$	No	\$			
C. Vehicle Operation 4 WD	8750	20	1	8.8	1	8.8	17.6	14.1 (-)	3.5
D. Miscellaneous Training programmes				3.5		-	3.5	3.5 (-)	-
E. Per diems and travelling Expatriate and local staff				6.5		6.5	13.0	13.0 (-)	-
Total Recurrent				165.6		143.6	309.2	87.1 (2.2)	222.1

Note: For notes see Appendix B.20

RDU DEVELOPMENT CENTRES

CAPITAL	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd country)	Off-shore
			1	2			
			No	No			
A. Buildings/construction		-	89.9	155.8	245.7	245.7	-
Housing 1/		-	-	33.0	33.0	33.0	-
Roads 2/		-	-	7.6	7.6	7.6	-
Marketing improvement 3/		-	-	-	-	-	-
Sub Total			89.9	196.4	286.3	286.3	-
Total Capital			89.9	196.4	286.3	286.3	-

RDU DEVELOPMENT CENTRES

RECURRENT	RDU DEVELOPMENT CENTRES			Sub Total	RECURRENT COSTS	ETH \$'000
	No	1	3			
A. Personnel						
Inspector of Works	6400	1	1	6.4	12.8	-
Foreman 1/	4800	1	3	4.8	19.2	-
Sub Total				11.2	32.0	-
B. Consumable materials						
Housing maintenance 2/				2.2	2.2	-
Sub Total				2.2	2.2	-
E. Per diems and travel	900	2	4	1.8	5.4	-
Total Recurrent				13.0	39.6	-

Note: For notes see Appendix B.21

TABLE C.23

WOREDA DEVELOPMENT ORGANISATION

CAPITAL COST ETH \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd country)	Off-shore
			1		2				
			No	\$	No	\$			
A. Buildings									
Offices 1/	11500	-	2	23.0	2	23.0	46.0	-	
Sub Total				23.0		23.0	46.0	0.4	
B. Vehicles									
4 Wheel drive 2/	25000	90	2	50.0	2	50.0	10.0	90.0	
Sub Total				50.0		50.0	10.0	90.0	
C. Equipment									
Office furniture 3/	1600	10	2	3.2	2	3.2	0.6	5.8	
Office equipment 4/	1200	60	2	2.4	2	2.4	1.9	2.9	
Sub Total				5.6		5.6	2.5	8.7	
Total Capital				78.6		78.6	58.5	98.7	
							(4.9)		

Note: For notes see Appendix B.23

TABLE C.24

WOREDA DEVELOPMENT ORGANISATION

RECURRENT COSTS ETH \$'000

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd country)	Off-shore
			1		2				
			No	\$	No	\$			
B. Consumable materials									
Stationery	300	20	2	0.6	4	1.2	1.4	0.4	
Building maintenance 1/		-		-	2	0.6	0.6		
Sub Total				0.6		1.8	2.0 (0.2)	0.4	
C. Vehicle Operation and maintenance									
4 Wheel drive 2/	8750	20	2	17.5	4	35.0	42.0	10.5	
Sub Total				17.5		35.0	42.0 (6.3)	10.5	
Total Recurrent				18.1		36.8	44.0 (6.5)	10.9	

Note: For notes see Appendix B.24

TABLE C.25. NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE CAPITAL COSTS Eth. \$'000

	Unit Cost	% Off-shore Component	No	YEAR		Total \$	Local (3rd Country)	Off-shore
				1	2			
				\$	\$			
A. Buildings								
Field Office	8000	-	1	8.0	-	8.0	8.0	-
Store	2000	-	1	2.0	-	2.0	2.0	-
Sub Total				10.0	-	10.0	10.0	-
B.1 Vehicles								
Vehicle 4WD	17000	90	3	51.0	-	51.0	5.1	45.9
Motor cycle	2250	-	4	9.0	-	9.0	9.0	-
Truck 4WD	25000	90	2	50.0	-	50.0	5.0	45.0
Sub Total				110.0	-	110.0	19.1	90.9
B.2 Plant and equipment								
Compressor	61000	90	-	-	1	42.0	4.2	37.8
Test pumps (vertical turbine)	42000	90	-	-	-	42.0	4.2	37.8
Dewatering pumps (centrifugal)	5000	90	6	30.0	-	30.0	3.0	27.0
Spare parts for plant		90		25.0	-	25.0	5.0	45.0
Drilling rig (incl. spares)	120000	90	-	-	-	-	-	-
Sub Total				55.0	67.0	122.0	12.2	109.8

TABLE C.25 (continued) NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE CAPITAL COSTS Eth. \$'000

	Unit Cost	% Off-shore Component	YEAR		Total \$	Local (3rd Country)	Off-shore
			1	2			
			\$ No	\$ No			
C. Materials and equipment							
Casing	84000	90	84.0		168.0	16.8	151.2
Hand pumps and spares	1000	-	20.0	20	40.0	40.0	-
Tools - handdug wells	100	-	1.0	10	2.0	2.0	-
- spring capping	75	-	0.5	7	1.0	1.0	-
- ponds	250	-	1.5	6	3.0	3.0	-
Cement/steel - handdug wells	65	-	2.6	40	5.2	5.2	-
- spring capping	206	-	12.4	60	24.8	24.8	-
Pipes and fittings - spring capping	330	50	19.8	60	39.6	19.8	19.8
- ponds	330	50	4.0	12	8.0	4.0	4.0
Survey and office equipment	1300	90	20.0	1	20.0	2.0	18.0
Office furniture		-	2.6	1	3.9	3.9	-
Sub Total			168.4		315.5	122.5 (50.0)	193.0
Total Capital			343.4		557.5	163.8 (60.0)	393.7

Note: For notes see Appendix B.25

TABLE C. 26.

NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE

RECURRENT COSTS Eth. \$'000

	Unit	Cost	%		YEAR		Total \$	Local (% 3rd Country)	Off-shore	
			Off-shore	Component No	1	2				No
A.1 Personnel (expatriate)										
Mechanic	98400		100	1	98.4	1	98.4			
Hydrogeologist	98400		100	1	98.4	1	98.4			
Sub Total					196.8		196.8		393.6	
A.2 Personnel (local)										
Makalle HQ Office										
Engineer/technician	4800		-	2	9.6	2	9.6		19.2	
Hydrogeologist	4800		-	1	4.8	1	4.8		9.6	
Groundwater technician	4800		-	1	4.8	1	4.8		9.6	
Driller	4800		-	1	4.8	1	4.8		9.6	
Drill Crew	10800		-	1	10.8	1	10.8		21.6	
Pump maintenance crew	7200		-	0.5	3.6	1	7.2		10.8	
Counterpart staff for Engineering services										
Assistant engineer	7800		-	1	7.8	1	7.8		15.6	
Engineer mechanical/electrical	7800		-	1	7.8	1	7.8		15.6	
Water development engineer	7800		-	1	7.8	1	7.8		15.6	
Driver	1800		-	6	10.8	6	10.8		21.6	
Field Office Staff										
Foreman	1800		-	23	41.4	23	41.4		82.8	
Technician	2400		-	4	9.6	4	9.6		19.2	
Storeman	1800		-	2	3.6	2	3.6		7.2	
Driver	1800		-	3	5.4	3	5.4		10.8	
Mason - handdug well	1000		-	10	10.0	10	10.0		20.0	
- spring capping	1000		-	7	7.0	7	7.0		14.0	
Sub Total					196.8		196.8		393.6	

(-)

393.6

(-)

TABLE C.26. (continued)

NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE

RECURRENT COSTS Eth. \$'000

	Unit Cost	%	Off-shore Component No	YEAR		Total \$	Local (% 3rd Country)	Off-shore
				1	2			
				\$	No			
Labour								
Handdug well team	1800	-	10	18.0	10	18.0	36.0	
Spring capping team	3000	-	7	21.0	7	21.0	42.0	
Pond excavation team	12000	-	6	72.0	6	72.0	144.0	
Sub Total				260.6		264.2	524.8	-
B. Consumable materials								
Books, stationary		20		5.0		5.0	10.0	2.0
Maintenance of buildings		-		-		0.3	0.3	-
Sub Total				5.0		5.3	10.3	2.0
C.1 Vehicle operation and maintenance								
Vehicle 4WD	7500	20	3	22.5	3	22.5	45.0	9.0
Truck 4WD	9000	20	2	18.0	2	18.0	36.0	7.2
Motor cycles	800	-	4	3.2	4	3.2	6.4	-
Sub Total				43.7		43.7	87.4	16.2
C.2 Drilling Operation								
Fuel and oil (rig)	20000	-	1	20.0	1	20.0	40.0	-
Mud etc	30000	90	1	30.0	1	30.0	60.0	54.0
Drill bits	1500	90	6	-	6	9.0	9.0	8.1
Fuel and oil (dewatering pumps)	720	-	1	0.7	6	4.3	5.0	-
Fuel and oil (test pumps)	3600	-	1	3.6	1	3.6	7.2	-
Sub Total				54.3		66.9	121.2	62.1

TABLE C.26 (continued) NATIONAL WATER RESOURCES COMMISSION REGIONAL OFFICE RECURRENT COSTS Eth. \$'000

	Unit Cost	%	Off-shore Component No	YEAR		Total \$	Local (% 3rd Country)	Off-shore
				1	2			
				\$	No			
D. Miscellaneous								
Services office HQ	2500	-	1	2.5	1	2.5	5.0	
RDU	1000	-	1	1.0	2	2.0	3.0	
Rent field office	1200	-	1	1.2	1	1.2	2.4	
House rent	3300	-	2	6.6	2	6.6	13.2	
Sub Total				11.3		12.3	23.6	-
E. Per diems, travel				43.6		43.6	87.2	-
Total Recurrent				615.3		632.8	1248.1	473.9
								(23.4)

Note: For notes see Appendix B.26

TABLE C.27

NWRC ENGINEERING SERVICES

CAPITAL COSTS Eth. \$'000

	Unit Cost	% Off-shore Component	YEAR		Total \$ (3rd Country)	Local \$ (3rd Country)	Off-shore \$
			1	2			
			No	No			
B.1 Vehicles							
Station Wagon 4WD	25000	90	1	25.0	25.0	2.6	22.5
Pick up 4WD	17000	90	5	85.0	85.0	8.5	76.5
Sub Total				110.0	110.0	11.0	99.0
						(-)	
Total Capital				110.0	110.0	11.0	99.0
						(-)	

Note: For notes see Appendix B.27

TABLE C.28

NWRC ENGINEERING SERVICES

RECURRENT COST Eth. \$'000

	Unit Cost	% Off-shore Component	YEAR		Total \$	Local (3rd Country)	Off-shore
			1	2			
			\$ No	\$ No			
A.1 Personnel (expatriate)							
Team leader	98400	100	1	98.4	98.4		
Foreman - water supply	98400	100	1	98.4	98.4		
Foreman - mechanical/electrical	98400	100	1	98.4	98.4		
Driller	98400	100	1	98.4	98.4		
Administrative officer	98400	100	1	98.4	98.4		
Engineer water development	98400	100	1	98.4	98.4		
Sub Total				590.4	590.4	1180.8	1180.9
B. Vehicle operation							
Sub Total Vehicle 4WD	7500	20	6	45.0	45.0	90.0	72.0 (10.8)
C. Miscellaneous							
House rent	3300	-	6	19.8	19.8	39.6	-
Local air fare	400	-	6	2.4	2.4	4.8	-
Sub Total				22.2	22.2	44.4	44.4 (-)
Total Recurrent				657.6	657.6	1315.2	1198.9 (10.8)

Note: For notes see Appendix B.28

TABLE C.29

NWRC SIX COMMUNITY WATER SUPPLY PILOT PROJECT

CAPITAL COSTS ETH \$'000

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd country)	Off-shore
			1	2			
			No	No			
B.2 Plant and Equipment							
Workshop equipment	42000	90	1	42.0	-	42.0	
Plant for construction	105000	90	1	105.0	-	105.0	
Sub Total				147.0	-	147.0	132.3
C. Materials and Equipment							
Water supply equipment including operation and maintenance	252000	50	2	504.0	2	1008.0	504.0
Sub Total				504.0	504.0	1008.0	504.0
Total Capital				651.0	504.0	1155.0	636.3

Note: For notes see Appendix B.29

CAPITAL COSTS ETH \$'000

RURAL ROADS

TABLE C.30

	Unit Cost	% Off-shore	YEAR				Total \$	Local (3rd country)	Off-shore
			1		2				
			No	\$	No	\$			
A. Buildings									
Offices and Depot 1/	250	-	450	112.5	-	112.5	112.5 (11.3)	-	
B. Vehicles and Plant									
Construction Unit 2/		75	1	1818.0	1	1818.0	454.5	1363.5	
Maintenance Unit 3/	418800	90		418.8	1	837.6	83.8	753.8	
Sub Total				2236.8		2655.6	538.3 (26.9)	2117.3	
C. Equipment									
Furniture	1350	-	4	5.4	-	5.4	5.4	15.0	
Tools - Workshop 4/		50		30.0	-	30.0	15.0		
Survey and Drawing Equipment		50		15.0	-	15.0	7.5	7.5	
Sub Total				50.4	-	50.4	27.9 (3.0)	22.5	
Total Capital				2399.7		2818.5	678.7 (41.2)	2139.8	

Note: For notes see Appendix B.30

TABLE C.31

	Unit Cost	% Off-shore	YEAR		Total \$	Local (3rd country)	Off-shore
			1	2			
			No	No			
A.1 Personnel:Expatriate							
Regional Engineer	98400	100	1	98.4	196.8		196.8
Senior Mechanical Inspector	98400	100	1	98.4	196.8		196.8
Sub Total				196.8	393.6	-	393.6
A.2 Personnel:Local 1/							
Construction Team		-	5	490.0	1470.0	1470.0	
Maintenance Team		-	1	350.8	1052.4	1052.4	
Sub Total				840.8	2522.4	2522.4	-
B. Materials and Supplies							
Office running costs		-		7.2	14.4	14.4	
Construction Team 2/	120000	-		60.0	180.0	180.0	
Maintenance Team 3/	29200	-		29.2	87.6	87.6	
Workshop 4/		-		6.0	17.7	17.7	
Sub Total				102.4	299.7	299.7	-
C. Vehicle and Plant Operation							
Fuel: Diesel 5/	45cts	-		184.5	369.0	553.5	
: Benzine	65cts	-		16.3	32.5	48.8	
Lubricants		-		18.6	46.2	64.8	
Spares 6/		50		93.2	221.3	157.2	157.3
Sub Total				312.6	669.0	824.3	157.3
D. Miscellaneous							
Rental: Housing	3300	-		6.6	13.2	13.2	
: Offices/Stores 7/		-		9.6	9.6	9.6	
Furniture and Equipment Maintenance		-		2.0	2.0	2.0	
Building Maintenance 8/		-		2.8	2.8	2.8	
Sub Total				16.2	27.6	27.6	
Total Recurrent				1468.8	4224.9	3674.0	550.9
						(-)	(34.9)

Note: For notes see Appendix B.31