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62 p.
tables

UNITED NATIONS DEVELOPMENT PROGRAMME
Project of the Government of the
State of Eritrea



Title : Strengthening of the Eritrean Standards Institution

Duration: 3 years

Number: DP/ER/96

Project Site: Asmara

Sector (Govt.Class): Industry (UNDP Class and code): Industry(05)

Sub-sector (Govt.Class): Manufacturing-Standardization (UNDP Class and code): Industrial Development Support service (0510)

Government Implementing Agency:
financing
Eritrean Standards Institution (ESI)

2,921,300

Executing Agency: The United Nations Industrial Development Organization (UNIDO)

<u>UNDP and cost-sharing</u>		
UNDP	IPF	\$
	Others(specify)	
	Govt.or third-party cost sharing(specify)	

Estimated starting date:
January, 1998

Government Inputs: In kind and services Grand Total: Eth.Birr 3,356,000

Signed:	Date:	Name/Title:
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on behalf of the Government		
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on behalf of the Executing Agency		
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on behalf of the United Nations Development Programme		

UN official exchange rate at date of last signature \$ 1.00= ??

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I. LEGAL CONTEXT**J. BUDGETS****K. ANNEXES****1. Work plan****ABBREVIATIONS**

MOTI	Ministry of Trade and Industry
ES	Eritrean Standard
ESI	Eritrean Standards Institution
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
TC	Technical Committee
Birr	Currency of Eritrea
PPER	Projet Performance Evaluation Report
MOH	Ministry of Health
MOC	Ministry of Constructions
NPD	National Project Director
CTA	Chief Technical Adviser
IMO	Internal methodologies of operation of ESI

1. Prior or Ongoing Assistance

- 1.1 Since the ESI has been recently established there are no prior or ongoing assistance projects. The draft project document on the establishment of the NQATC and the LMC are the first projects to be submitted to UNDP for its consideration and assistance. Simultaneously, ESI has requested UNICEF's assistance in setting up salt testing laboratories at the ports of Assab and Massawa. However, there are several prior or ongoing assistance programmes with the Min. of Trade and Industry. The programme objective being to revitalize and improve the performance of public as well as private enterprises through the supply of raw materials and spare parts and to rehabilitate the Eritrean cement factory through the supply of equipment and technical assistance. This is under the RRPE programme financed by 10A, the government of Italy, Sweden, Denmark, Germany, and Japan.
- 1.2 The total Italian contribution to the industrial sector is worth US\$ 3.00 million and has been utilized to rehabilitate three public enterprises, namely Asmara Ceramics Factory, Asmara Pickling Factory and Asmara Textile Factory. DANIDA committed US\$ 6.00 million for the provisions of goods and services to three public enterprises namely, Eritrean cement factory, Red sea soap factory and Asmara brewery. IDA, SIDA & Italy committed US\$ 15.00 million for the utilization of the importation of various equipment, spares, goods and raw materials for 10 beneficiary public enterprises. Japanese Grant fund of about US 175,000 will be used to fund the procurement of the machinery for the Barka wood and plastic factory.
- 1.3 The total allocation received for the private sector component is about US\$ 6.73 million (IDA US\$ 1.03 million Germany US\$ 4.70 million and GOE US\$ 1.0 million).

2. IMPACT ASSESSMENT

The immediate impact of the program was extremely satisfactory because capacity utilization of many enterprises increased over 80% on average and financial results of most industries in 1995 were positive. The funds provided under the program enabled majority of the enterprises to return to their normal level of operation within a relatively short period of time. Furthermore, most of the beneficiaries are now using their own funds to purchase production inputs. The program also helped the market to some extent and avoided the occurrence of an erratic consumption pattern which would have made it more difficult for the government to implement actions needed for promoting its programs. Other indirect benefits include price stability and employment creation.

A. CONTEXT

1. DESCRIPTION OF SUBSECTOR

Eritrea is a newly created, low income, land and labour-surplus country, whose scarce capital stock were further depleted by a long and ruinous war of independence only terminated in May 1991. Furthermore, the command economy imposed during the Ethiopian Derg regime has strangled the private sector and most industries have been destroyed.

Under Italian rule, Eritrea quickly developed a relatively sophisticated manufacturing and trade base by African colonial standards. By the end of the Italian period, in 1941 there were over 700 small and medium-scale industrial enterprises registered, and similar numbers of construction transport and trading concerns. Eritrean produced and exported foodstuffs, beverages, building materials, tires and paper products. Both industry and skill bases were further strengthened during the 1941 to 1952 of the British Military Administration. In 1975, all industries in Eritrea were nationalized by the Derg regime.

Eritrea had a relatively sophisticated, although now dilapidated, industrial capacity. Processed foods, soft and alcoholic drinks, textiles, leather goods, construction materials, metal, glasswork and petroleum products are all produced locally. In May 1991 there were 43 state owned industries at least partially operating in Eritrea. The industries were taken over by the new Eritrean government. All were operating well below capacity and remain in urgent need of foreign exchange for spare parts and raw materials. In addition, many industries were heavily indebted, largely to Ethiopian financial institutions. In 1992 output was only 50% of the government's target figures and in 1994 the output was increased to 75%.

2. HOST COUNTRY STRATEGY

The vision of the new Eritrea is articulated in the national development objectives of the country. The overriding national development objective is the creation of a modern, technologically advanced and internationally competitive economy within the next two decades. The national development effort will be directed, among others, to the realization of :

- improved agricultural production, through the development of irrigated agriculture,
- developed capital and knowledge-intensive and export-oriented industries services,
- an upgraded and technologically improved informal sector,
- a developed and systematic public health care system, and
- broad-based education incorporating widespread dissemination of skills and languages and extensive human capital formation.

To achieve the above-stated objectives, the government adopted a broad-based growth strategy that has aspects of rehabilitation, reconstruction and development covering all sectors of the economy. Major components of this strategy are human capital formation, with education and health as key inputs, export-oriented development both in industry and agriculture; infrastructural development to remove critical bottlenecks, environmental restoration and protection and the promotion of the private sector. The enterprise of this strategy is the establishment of an efficient, outward looking, private sector-led market economy, with the government playing a proactive role to stimulate

private economic activities.

The new Eritrean government has committed itself to a market-oriented economy and has decided to return all private properties to their private owners. It is also in the process of privatizing public enterprises. Twenty three public factories have been made ready for bidding to prospective investors. Public and private institutions, such as the chamber of commerce, the investment center and the Eritrean Standards Institutions are being strengthened to enhance their capacity of supporting the private sector.

In keeping with the above-stated development objectives and strategies, the government expounded a macro-policy framework designed to stimulate private investment and thus engender economic revival and growth.

B. JUSTIFICATION

1. PROBLEM TO BE ADDRESSED; THE PRESENT SITUATION

1.1 The problem to be addressed

Quality - in contrast to quantity - can usually not easily be expressed in objective terms, even though quality may be in several cases even more decisive for profit, costs or prices or, in general, for economic growth. Quality affects competitiveness of exports; quality will influence social satisfaction by securing or failing to secure "value for money" products for the consumers; quality is one major condition for the marketability of products; keeping/gaining of markets largely depends also on a stable, standard performance of goods just as on the compatibility of components and reliability of their performance etc. -

All in all: quality is a substantial factor of economy and prosperity, related to quality level of production and industrialization.

Consequently "quality" is a substantial concern of government, industry, trade and consumers, a consequence of and a sine qua non condition for industrialization and industrial development. Metrology, quality control and standardization are the substantial means - institutional conditions - for "materializing" quality, for specifying qualities in quantified terms.

These three activities are closely interrelated and form a unified control/feedback system with industry, trade, consumer interest and the government's industry policy. Standardization, metrology, quality control are considered as among the most powerful institutional means - both in developed and developing countries - for having impact on industrialization, for economizing industrial production, achieving appropriate quality of goods, facilitating export and trade, and protecting consumer interests.

Consequently, these responsibilities of standardization and quality control - though technical in nature - aim ultimately at economic outputs. Decisions on quality matters are also affecting unavoidably human and economic interests. Considering this great responsibility the reliability of tests is crucial. This has to be tested regularly in the operation system of a standardization and quality control institution, both with regard to the technical facilities as well as regarding procedures and human performance. Processing of test data is an essential means for meeting the goals of standardization and quality control. Creating public awareness on quality matters by Public Information is a condition for the efficiency of the institution.

In the competitive world of present day, the concept of quality has become a prime export strategy. Furthermore, the practice of quality assurance has gained increased global recognition as a tool in providing a greater measure of assurance that the contracts given to suppliers would be fulfilled satisfactorily. Following the rapid demand for and evolution in the application of quality assurance measures as expressed in formal documents of international standards - ISO 9000 series, ISO Guide 25 etc. - have now found wide application as a basis for contractual agreement between buyers and suppliers. The constitute standards for quality management systems that can be applied by all types of business such as manufacturing, distribution and service industries.

This project aims at establishing this kind of institution to gain the associated technical, economical, financial and social benefits for the country.

1.2 The present situation

The Proclamation establishing the ESI was given assent on the 20 September 1995 (Annex 3.) The Proclamation itself gives an adequate framework for ESI's present operation. The ESI is governed by the Standards Board, appointed by the Government.

a.) Ongoing activities

Already in the short period of ESI's existence the Institution has considerable activities followed through.

Standardization. Six Technical Committees have been established so far to assist standards formulation. 104 ES standards have been produced and will be approved by the Board during the 1996 working year. The 1977 Standardization Plan aims even at more higher target of adopting from Ethiopia 195 ES standards.

Testing. Due to lack of facilities only some very basic tests can be implemented, but some examples mentioned below prove, the determined strive of ESI is already exerting impact on the country's economy and serving beneficiaries.

- Several thousand tons per year oilseed is exported by Eritrea, in the last period under regular inspection of by ESI. Only visual inspection of impurities, measurement of volume-weight can be executed.

- The demand-market situation in cement attracts low quality import (5/6-of the demand is imported). In some cases ESI has already intervened of issuing import certificate due to insufficient documentary evidence on the quality of the consignment, and based on some tests made by the laboratory of Ministry of Construction.

- Mineral water import was refused on the bases of visual inspection by ESI and test results obtained from the Central Laboratory of the Ministry of Health.

Practically no testing equipment are presently available for ESI, not for standards development work (e.g. computers) and not for laboratory work.

Library services. Practically no books, standards and other information materials exist for ESI library operation. Other technical information sources are limited in Eritrea.

Legal metrology is an ESI activity with roots several years back, working as the Regional Office of the thattime supervising Ethiopian Standards Bureau for northern Ethiopia. In seven fields regular verifications are conducted (Annex 4), with poor technical facilities however (Annex 5.)

The quality system of ESI has already started to materialize, very rightly first for the operation of top management, by establishing documents for the Standards Board ("Rules of Procedures", "Basic Concepts of Standardization" etc.)

b.) Building

Fully aware of the substantial role ESI is playing in the overall socio-economic and industrial development of Eritrea the Government has donated a building in the centre of the capital a basement plus three stories, 2400 square meter total ground area building that, after reconstruction will provide a most suitable accommodation for ESI's all activities, still with ample space for development (Annex 6. layout of the building as at present). The building, being formerly hospital is well furnished with water and drain provisions, giving good conditions to fulfil requirements for the new laboratories.

Budget has been submitted for 1997 (Annex 7.) for preparing the reconstruction plans (Birr 50,000), and additional Birr 1,1 million to implement the reconstruction.

The 2/3 of the building is occupied at present by other governmental institutions, these will be transferred to other locations in Asmara, so that the entire building will serve ESI.

Reference is made to paragraph G. "Prior obligations and prerequisites" and to this B. paragraph's 4. "Project strategy" section.

c.) Staffing

Present graduated staff size and the plans for positions in 1997 are summarized in the table of Annex 8. A substantial, more than 100 % staff development trend is foreseen.

d.) Budget of ESI, 1996 and 1997 plan (Annex 7.)

The 1997 budget of ESI calculates with an increase of 60 %, indicating the Government's firm commitment to boost ESI development. It has to be underlined that as the figures show, ESI is already capable of earning revenues by its activities, pointing to the fact that after establishing and consolidating its operation ESI can turn to a self-reliant institution.

Summarizing the existing situation there can be hardly any doubt, that despite the great efforts and support the Government has already granted for ESI, the goals and benefits of standardization, quality assurance and testing can not be achieved unless a substantial technical assistance is provided to the ESI.

2. EXPECTED END OF PROJECT SITUATION

An institution will exist, with all eight features by which any institution is characterized:

- located in an adequate, spacious, newly renovated building;
- equipped with appropriate instruments and facilities for agricultural and food-, chemical-, building and mechanical-, electrical-, textile and leather- products' testing, for legal metrology verifications and calibrations, for test data processing and information dissemination
- adequately staffed with personnel trained in the relevant technical matters and operational requirements;
- working as an organized, coordinated body operating on its own quality system and methodologies;

- delivering services and rendering assistance to target beneficiaries especially in implementing quality assurance schemes in industry and trade, protecting consumer interests, advising Government on quality policies;
- marketing its services, collecting, keeping and processing of test data concluding in assessed information on quality matters in the country; disseminating information on quality related matters
- fulfilling its functions as a national standardization, quality assurance, testing a legal metrology body, formulating national standards relevant to international standards and market requirements and actual technical conditions of production, develop procedures, laws, regulations, instructions and guidelines for testing and measurement;
- provided with adequate funds for operation.

By the completion of the project the ESI shall achieve an important objective of the national standardization efforts regarding the promotion of the export capacity of the country by defining, certifying and upgrading the quality levels of export items. Hence the ESI will provide the capability of improving the quality of export oriented production in the light of international market requirements as well as help introduce a possible shift from the export of raw materials to that of semi-finished or finished products.

On completion of the project ESI will be able to strengthen the national standardization practice by gradually introducing modern quality assurance practices in manufacturing plants and integrating quality assurance and industrial research with the national standardization procedure. It will be the place where research and training of personnel are undertaken, which will be directed towards continuous improvement, adoption and development of indigenous and imported technology.

Furthermore, it will be instrumental in providing pertinent research and test results necessary for the elaboration of certain standards where basic local data and information are required for their finalization. Such an exercise shall make possible the integration of the national standardization with quality assurance efforts in the light of prevailing national economic needs and physical requirements, thereby enabling the standardization process to grow roots in the indigenous soil.

Quality assurance and metrology as one of the legal powers and tasks of the ESI will be introduced in the national economy of the country by implementing the approved Eritrean Standards (ES) concerning quality requirements on the basis of the provisions of the Standards Mark and Fees Regulations and the Weights and Measures Regulations.

The need for further UNDP assistance will have to be assessed by the completion of this project.

3. TARGET BENEFICIARIES

The primary or direct beneficiary of the project will be the ESI, which will be well placed to fulfil a vital role in the economic development of the country. On successful completion of the project, the position of ESI as the leading authority in Eritrea as far as standardization, quality assurance and metrology are concerned, will be firmly established by merit as well as by decree.

Secondary beneficiaries will be all the users of the services of the ESI:

- Government and private enterprises engaged in the export/import of goods.
- All privately and government owned manufacturing enterprises.
- Customers who will be protected from being offered substandard products.
- The general public who will be protected in terms of health and safety.

Since standardization, quality assurance and metrology embrace all aspects of economy, the strengthening of ESI will benefit the entire nation. The quality of goods produced both for the home and export markets will be improved, productivity will be increased, vestage of materials will be reduced, and overall economy will be enhanced.

4. PROJECT STRATEGY AND INSTITUTIONAL ARRANGEMENTS

a.) The existence of the reconstructed building is prerequisite for accommodating project activities. As per the plans of the Government

- the reconstruction plans be finalized by December, 1997
 - the reconstruction work should start by January, 1998
and simultaneously
 - the project implementation should start by January, 1998
that is: release of UNDP funds for some project activities not related to the existence of the building (such as: fielding of CTA, implementing study tour, not however e.g. ordering of equipment etc.)
and
 - the reconstruction work be finished by December 1998
- The project will commence with the arrival of the CTA in January, 1998

The primary job of the CTA once in the field, is to

- assess readiness of the building to accommodate further project activities;
 - follow up renovation and make necessary modifications;
 - assess availability of posts for counterpart staff for the total project period;
 - assess the budget for ESI operation costs, current year, and commitment for subsequent project years,
 - revise equipment component taking into account the current prices;
 - arrange for fellowships and study tours
- and to prepare
- work programme of project;
 - modular matrix of project implementation (refer to point d. below);
 - initial report.

If satisfied with the conditions the CTA will - in phased manner according to modular matrix - start equipment requisition, recruitment of experts and other project activities.

b.) The key for the effectiveness of Standardization institutions' functional outputs is that their outputs are based on measured, objective data. This means also that laboratory work is the key factor in building up the operational system of this technical institution itself since only working conditions will provide the factual experiences that can be fed back for adjusting and improving the operation system to the real requirements. Establishment and operation of laboratory work (testing) is therefore a focal point of the project.

c.) Management and organization matters are as important in this kind of complex institution as the technical provisions and training. Management and operation should, therefore be based, on one hand, as much as possible on computer application - introduced first for project management and then transferring the practices successively for applications for ESI's overall operation. The establishment of, and operating the institution on a well conceived quality system is the other key issue the project implementation strategy is focusing on.

d.) The project will be implemented in a "modular system" (model in Annex 1/a.) that, in some other project has already been successfully adopted. These "modules" are considered to be project component aggregates that can be implemented simultaneously and - more or less - independently of other project components. Modules are periods between TPR-s, when on the assessment of progress delivering the outputs of the project, the TPR will authorize disbursement of funds for the next module. This modular implementation provides the advantage of a controlled and stepwise release of funds balanced to project delivery.

e.) The core of the experts' mission is considered to be the implementation of on-the-job training, devoting at least 50 % of their time and calculating the cost for this purpose. Experience shows, that training under "field conditions" - where many facilities are not readily available but prompt solutions have to be "invented", can be much more efficient than training under sterile, well established conditions. It is of great training value to experience and learn how the expert is overcoming problems.

5. REASONS FOR ASSISTANCE FROM UNDP/UNIDO

The functions of a standardization institution - like functions of ministries - represent a kind of domination over and influence on the whole industrial sector and trade, gaining and dealing with delicate information of national importance, pursuing activities that concern government policies (in fact, in many countries these institutions are of ministerial level). So any bilateral assistance would provide this kind of preference for, and may have the influence of the respective donor country. The UN system - international in character - can offer the necessary spiritual and technical assistance that is needed, without affecting the integrity, economic or technical interests of the country.

Eritrea after a lengthy thirty years war has recently (1991) become an independent country. The government has taken the arduous task of setting up the infrastructure necessary for the economic development of the country. One of the tasks being undertaken is the establishment of a national standards body in Eritrea. The international community have realized that Eritrea is ripe for a period of remarkable economic growth but that external financial assistance will be needed to start the process. The main aim of the project is to consolidate what has been already achieved and raise the level of technical and managerial competence of the ESI so that it will be able to command undisputed respect as the leading organization in this field. This will involve raising the testing and metrology laboratories to the extent of being eligible for accreditation according to international standards.

UNDP and UNIDO are, therefore well qualified to prepare and implement the proposed project, and it is only natural that the Government of Eritrea should request them to do so.

6. SPECIAL CONSIDERATIONS

The project will assist in the development of the private industrial sub-sector through improvement of the quality and competitiveness of products. It will also contribute towards control of pollution and protection of environment.

The project will enhance the promotion of intra-regional trade, technical co-operation and economic integration among African countries as envisaged in the Treaty Establishing the African Economic Community and the Treaty Establishing the Common Market for Eastern and Southern Africa.

7. CO-ORDINATION ARRANGEMENTS

The Ministry of Trade and Industry (MOTI) is going to have by the establishment of ESI in the frames of this project a substantial testing facility available. One of the major factors affecting ESI's efficiency is the maintenance of a close cooperation between MOTI and ESI.

Standardization having a substantive influence on the whole industrial sector as well as on trade and agriculture, a "hot line" mutual cooperation has to be maintained with the supervising ministry and related Government authorities. This two-way cooperation has to materialize in a guidance from the authorities towards ESI, identifying the main Government goals, plans, problems where ESI can make its contribution.

On the other hand, ESI has to maintain a regular information channel to the authorities - say a quarter-yearly reporting system - on the fact-findings of its operation: quality trends, assessment of imported goods' quality; performance of industrial production, price/quality relations, market surveillance findings, etc.; providing thus assistance to the Government. Establishing this mutual cooperation with the authorities is a key element for gaining and providing the benefits of standardization and quality control for the whole country. This will help to link standardization and quality control outputs with other activities in the sector and integrate the techno-economic system of the country.

Generally speaking, testing facilities in Eritrea are meagre. Two institutions which have testing capabilities may be partners to ESI in the future. One is operating under the Ministry of Constructions (MOC) with the task of soil testing and soil physics, as well as control of engineering constructions. The other is operating under the supervision of the Ministry of Health (MOH) on the compounds of the Central Hospital with the tasks focusing on public health, microbiology (patogen), and toxicology.

The profiles and borders of responsibilities and authorities of these institutions are already well defined by their respective laws. Healthy cooperation can be envisaged between these institutions being ESI's main responsibility directed towards industry, production and trade covering a new field not under the authority of the others.

The capabilities of Asmara University serve the purposes of education and can by no means considered to be replacement of the testing profile that ESI will be responsible for. Similarly, the information facilities of the University relate to education, social sciences and science, rather as to industry and standardization.

8. COUNTERPART SUPPORT CAPACITY

For the present a major part of counterpart in-kind contribution has been implemented by the donation of a spacious building for ESI, representing an estimate value of Birr..... ??

The allocation of additional Birr 1,05 million input for reconstruction, as well as doubled increase of staff size for the next year (Annexes 10. and 11.) can be rightly seen as firm commitment of the Government to pursue the establishment of the standardization infrastructure in the country and proof of its support capacity.

C. DEVELOPMENT OBJECTIVES

The development objective of this project is to assist the Government in its efforts to promote the development of efficient and competitive industries, improve the quality of Eritrean products intended for home and export market, control the quality of imported products, assist trade promotion and protect consumers' interest for reliable quality goods.

The role and activities of ESI must be seen within the overall framework for economic industrial development, particularly in its contribution to the promotion of the development programmes of the country, layed down especially in the documents:

- Macroeconomic Policy
- Reconstruction and arehabilitation Programme for Eritrea (World Bank)
- Investment and Land Law.

D. IMMEDIATE OBJECTIVES, OUTPUTS, AND ACTIVITIES

1. Immediate objective 1

To upgrade ESI to be capable of:

- a.) performing tests and assessing the quality of products and commodities in compliance with standards;
- b.) formulating national standards conforming with current status and development needs of industry, trade and consumers;
- c.) preparing laws, regulations, methodologies in the field of standardization, quality assurance, testing and metrology
- d.) operating on its own quality system.

1.1. Output 1

Four testing laboratories - served by general purpose workshop and sample reception unit - established,

capable to: identify quality of products by testing in compliance with standards; develop own operation methodologies and quality system; provide measuring and testing services for external clients,

established in the following areas:

- 1/i. **Food & agriculture** (incl. Microbiology, Sensory)-, **Chemical- and Instrumental-** analytical Testing Laboratory;
- 1/ii. **Building materials and Mechanical** Testing Laboratory (includes general appliances testing);
- 1/iii. **Textile & Leather** Testing Laboratory;

- 1/iv. **Electrical Testing Laboratory** (includes electric maintenance workshop);
- 1/v. General purpose **Workshop** (attached to mechanical testing laboratory. Responsible for basic maintenance and repair of testing equipment and building, and for providing workshop assistance for laboratories and testing procedures.);
- 1/vi. **Sample reception unit.**

ACTIVITIES FOR OUTPUT 1

- 1.1.1 Review and approve reconstruction plan of ESI's present building to accommodate laboratories and other rooms, facilities, furnitures needed for project implementation and follow up the reconstruction.
Guidance provided by the CTA (1-12)
- 1.1.2 Preparation of
 - detailed requisition lists of equipment, accessories, chemicals, books, etc.;
 - staffing plan;
 - operational budget.

CTA/NPD (1-6)
- 1.1.3 Preparation of Code of Practice (kind, range and volume of work) of the testing laboratories by the respective short term expert based on the findings of their field visits to industries
Respective short term experts (13-24)
- 1.1.4 Ordering of equipment in phase manner (see B/4 Project strategy)
CTA (subsequently to TPR-s)
- 1.1.5 Installation and operation of instruments by the expert.
Respective short term experts (13-26)
- 1.1.6 On-the-job training on laboratory practice.
Respective short term experts (13-30)
- 1.1.7 Preparing technical instructions (internal methodologies of operation - IMO) for the laboratories on preventive maintenance and proper use of equipment, and for the overall operation of the laboratory for establishing the lab's quality system following international standards.
Respective short term experts (13-26)

INPUTS: (See Inputs in detail in Section E.)

- Five short-term experts;
- The present building of ESI reconstructed, adequately furnished and provided with necessary facilities;
- Equipment: \$ 1,520,000;
- Staff: 18 technical officers, 24 technical assistants;

1.2. Output 2

Standards Specification Department established,
capable to:

- produce standards:
 - relevant to actual technical conditions of production, properties of materials & products and development prospectives;
 - reflecting balanced technical, economical and social interests;
 - applying formulation methodologies;
- develop own operation methodologies and quality system, and

- produce in this way, by the termination of the project, total some 400 ES standards.

ACTIVITIES FOR OUTPUT 2

- 1.2.1 Implement technical visits to factories (standards formulation together with other sections' staff) to familiarize with, and base standards formulation on actual technical, economical aspects of technologies; started and guided by the CTA and other experts on their missions.
CTA and short term experts (6-30)
- 1.2.2 Preparation of two year standardization plan with view on economic, technical, social priorities of the country, based also on the findings of the implemented technical visits.
CTA/NPD (12, 24, 36)
- 1.2.3 Setting up and operating Technical Committees (TC)
- for the formulation of standards drafts, elaboration of methodologies, preparing operation manuals, standards formulation plans, etc.
- to serve as a forum for common learning and on-the-job training on the integrated standardization-quality control concepts and management issues.
Establishment and regular operation of some 10 TCs, and preparing some 400 ES standards.
CTA/NPD (1-36)
- 1.2.4. Establish and maintain regular co-operation with other sections of ESI, especially with laboratories, the Quality Assurance Department and Legal Affairs unit to apply their findings in standard formulation.
CTA (12-24)
- 1.2.5 Utilizing computer facilities in standards formulation-, publishing- and related management matters (correspondence, client data base, etc.);
CTA (12-24)
- 1.2.6 Preparing internal methodologies of operation for the overall operation of the Department for establishing the lab's quality system following international standards.
CTA (6-20)

INPUTS: (See Inputs in detail in Section E.)

- CTA, with partial contribution of other short term experts
- Staff, 4 technical officers;
- Budget to finance contribution of local experts in the TC work;
- Budget for printing, edition and distribution of ES Standards;
- Sufficient office area and meeting room;
- Computer facilities

1.3. Output 3

The Legal Affairs unit established, capable to:

- draft preparatory documents for laws, regulations (food law, accreditation law, Government' quality policy etc.);
- advise and elaborate guidelines on legal power of standards;
- negotiate Terms of Reference for co-operation borders of institutions and authorities with ESI;
- evaluate legal aspects of complaints concerning quality;
- operate its own quality system.
- etc.

ACTIVITIES FOR OUTPUT 3

- 1.3.1 Appointment of a Legal Affairs Officer
NPD (6-8)
- 1.3.2 Utilizing computer facilities
CTA (12-24)
- 1.3.3 Preparing internal methodologies of operation to fit into the overall operation of ESI and its quality system
CTA/NPD (6-20)

INPUTS: (See Inputs in detail in Section E.)

- CTA 36 MM;
- Staff, 1 technical officer;
- Budget for operation;
- Sufficient office area;
- Computer facilities.

1.4. Output 4

Approximately 18 technical officers and 25 national technical assistants trained in the use of laboratory equipment and performing tests

ACTIVITIES FOR OUTPUT 4

- 1.4.1 On-the-job training on laboratory practice, preparing corresponding testing and quality system methodologies, and on applications for services to clients (implementing monitoring programmes, etc.)
Respective short term experts (13-30)
- 1.4.2 Preparation of a one year self-training-programme by the respective experts for each laboratory implemented by the laboratory staff after the experts' departure.
Respective short term experts (13-30)
- 1.4.3 Sending ESI counterpart staff for respective fellowships.
CTA/NPD (4-36)

INPUTS: (See Inputs in detail in Section E.)

- Five experts;
- Staff, 18 technical officers, 25 technical assistants;
- Fellowship training, 17 MM;

1.5. Output 5

Approximately 4 technical officers trained in formulation and implementation of standards

ACTIVITIES FOR OUTPUT 6

- 1.5.1 On-the-job training by assisting actual standards formulation-, Technical Committee- and methodology formulation- work, and presenting lectures, conducting factory visits by the CTA and other experts during their mission.
CTA and respective short term experts (6-26)

INPUTS: (See Inputs in detail in Section E.)

- CTA, 36 MM with partial contribution of other experts;
- Staff 4 technical officers.

1.6. Output 6

Approximately 35 technical officers and 35 national technical assistants trained in the use of computer (word processing, database and data processing, spreadsheet applications)

ACTIVITIES FOR OUTPUT 6

- 1.6.1 On-the-job training on using of computers for word processing, data-base, spreadsheet, executed in groups and assisted in implementing applications for the individual units and activities of ESI.

CTA and respective short term experts (6-26)

INPUTS: (See Inputs in detail in Section E.)

- CTA, 36 MM with partial contribution of other experts;
- Staff, all technical officers (some 18) and technical assistants (some 25)

1.7. Output 7

The quality system of ESI as a whole and of individual units established

ACTIVITIES FOR OUTPUT 7

- 1.7.1 Coordination of quality systems of individual units of ESI, preparing adequate methodologies, based on international standards.

CTA/NPD (6-36)

- 1.7.2 On-the-job training, lectures and seminars on quality systems (ISO 9000, ISO Guide 25 and other).

CTA and short term experts (6-26)

- 1.7.3 Preparation of detailed requisition lists of necessary hardware and software, including facilities for utilizing computers in Local Area Network.

CTA(12-15)

- 1.7.4 Establishing computer applications for overall managerial activities of ESI and project management, requisition, inventory keeping, library management and documentation systems, standards formulation, test data processing, desktop publishing; approximately 15 simple and complex applications, during project period.

CTA and short term experts (6-26)

INPUTS: (See Inputs in detail in Section E.)

- Expert CTA;
- Staff: practically all technical officers (some 18) and technical assistants (some 25) of ESI
- Equipment: desktop computers with user friendly operation system, ancillary hardware and suitable software, photocopy machine and other management facilities

2. Immediate objective 2

To establish ways and means enabling the utilization of ESI

Infrastructure in service of the

- a.) industrial-economic policy of the Government;
- b.) industry and trade for producing, marketing, exporting, importing improved and reliable quality goods;
- c.) consumer for protecting interests, and by

- d.) compiling, processing and disseminating information on standards and quality related matters to serve broadest circles of clients and market ESI services.

ACTIVITIES FOR OUTPUT 1

- 2.1.1 Identify and appoint staff
NPD/CTA (3-15)
- 2.1.2 Establish and maintain regular co-operation with other sections of ESI, especially with laboratories, Standard Formulation and the Legal Affairs to exercise regular information feedback mutually.
NPD/senior ESI staff (12-30)
- 2.1.3 Establish and maintain regular liaisons with industry and trade, implement sampling procedures, quality monitoring, with cooperation of short term experts also as on-the-job training.
NPD/Short term experts (6-30)
- 2.1.4 Jointly with the laboratories organize "proficiency testing" for key procedures (approximately 2-5), and interlaboratory tests for some products (1-2 for each lab.) of special importance and evaluate following international standards, using also ISO Reference materials.
Short term experts/Senior ESI staff (18-36)
- 2.1.5 Utilizing computer facilities in evaluation and processing of test data as well as in management (correspondence, client data base, etc.);
CTA/NPD (12-24)
- 2.1.6 Preparing internal methodologies of operation for the overall conduct of the Department for establishing the department's quality system in compliance with international standards and for assisting clients
CTA/NPD (6-20)

INPUTS: (See Inputs in detail in Section E.)

- CTA 36 MM, with contribution of short term experts;
- Staff, 4 technical officers, 6 inspectors;
- Budget to finance operation;
- Sufficient office, sample reception and storing room area;
- For transportation, sampling, inspections one Pickup type car
- Computer facilities

2.1. Output 1

Quality Assurance Department established,

capable to:

- perform product and system certification;
- factory and shipment inspection, establishing and operating preshipment inspection;
- render advisory services in quality management system and promotion;
- maintain regular contacts with industries to facilitate ESI's assistance and co-operation;
- compile test data of ESI and external (factory, import protocols etc.) sources and process for quality, economy, technology etc. conclusions and feedback;
- produce regular status report for Government and public on quality status of essential goods;
- co-ordinate ESI own quality system establishment and operation;

2.2. Output 2

Public Information, Public Relation and Training Department,
capable to:

- organize and implement training, workshops and seminars on quality and standardization related matters;
- market ESI services among others by TV, Radio, Newspapers, social events, forming non-governmental organizations, consumer association, etc.
- compile information on quality findings from ESI internal sources and produce reports for Governenet and public;
- collect from consumer and disseminate for public quality related informations;
- perform desktop publishing to produce ESI Newsletter, pamphlets and other information materials;
- operate public technical standardization library utilizing also computer technics, including CD-ROM;
- develop own operation methodologies and quality system.

ACTIVITIES FOR OUTPUT 2**2.2.1 Appointment of staff**

NPD/CTA (12)

2.2.2 Preparation of requisition lists of expendable and nonexpendable equipment (standards, books, library, desktop publishing, CD-ROM);

CTA/short term experts (6, 12-26)

2.2.3 At the termination of each UNIDO expert's mission organize a workshop in their respective fields with the assistance of the experts and CTA.

NPD/short term experts (14-26)

2.2.4 On-the-job training in conjunction and in cooperation with Quality Assurance Department activities, Legal Affairs unit actions, field visits.

CTA/short term experts/senior ESI staff (6, 12-26)

2.2.5 Develop operation methodologies of the Section

CTA/NPD (24-30)

INPUTS: (See Inputs in detail in Section E.)

- Staff: one technical information officer, one assistant;
- Library- and office area adequately furnished;
- Standards, books, periodicals and library facilities, computer facilities;
- Fellowship training 3 MM;
- Government budget for regular book and standards requisition.

2.3. Output 3

Certifications awarded to approximately 15 factories/products

ACTIVITIES FOR OUTPUT 3**2.3.1 Implement factory visits and provide regular assistance to achieve certification of its product(s), by advising on and preparing conditions for certification (i.a. producing of company standards, establishing quality control, assess production quality level, advise on organization and management questions, perform tests at ESI laboratories for the factory etc.)**

NPD/CTA (6-36)

INPUTS: (See Inputs in detail in Section E.)

- Five experts;
- Staff, 18 technical officers, 24 technical assistants.

2.4. Output 4

Approximately 4 studies conducted on quality status of essential products drawing als conclusions on further actions (Co-ordinated by the QA Department)

ACTIVITIES FOR OUTPUT 4

- 2.4.1 Identify quality problems which have substantial implications to economic, technical or social questions of the country; set up priority according to the importance and availability of capacities to address solutions; conducting related seminars;
NPD/ESI senior staff/CTA (12-36)
- 2.4.2 Preparation of a Study for each selected topics (this can include specifying testing, sampling programmes, elaboration /adaptation/ of new testing methods, identification of test reliability etc.) concluding in a report providing facts and giving a feed-back to industry, trade, government etc. based on the analysis of these facts with recommendations for action.
NPD/ESI senior staff/CTA (18-36)
- 2.4.3 Follow-up activities to be implemented by ESI (e.g. issuing new standards, initiating new studies, providing technical assistance to factories etc.).
NPD/ESI senior staff/CTA (18-36)

INPUTS: (See Inputs in detail in Section E.)

- Five experts
- Staff: technical officers of Quality Assurance Department, Laboratory staff, Legal Affairs staff.

2.5. Output 5

Approximately 3 technical officers trained in quality assurance and laboratory accreditation

ACTIVITIES FOR OUTPUT 5

- 2.5.1 On-the-job training by consultation, lectures, participating on advisory field visits to factories by the CTA and other experts during their mission.
CTA/short term experts (6-26)

INPUTS: (See Inputs in detail in Section E.)

- Five experts
- Staff: technical officers of Quality Assurance Department.

3. Immediate objective 3

To establish laboratory facilities for legal and industrial metrology under ESI at Asmara headquartes

3.1 Output 1

Legal Metrology Department established
capable to:

- execute verification of mass, length and volume measures used in commercial transactions in Eritrea;
- operate its own quality system.

ACTIVITIES FOR OUTPUT 1

3.1.1 Suitable laboratory space allocated for verification and keeping of mass and other reference standards.

CTA/NPD (12)

3.1.2 Identify needed new equipment.

CTA (6)

3.1.3 Delivery of equipment

CTA (18)

3.1.4 Installation of equipment, for 8 metrologists and 6 inspectors on-the-job training provided.

Short term expert (15-21)

INPUTS: (See Inputs in detail in Section E.)

- One short term metrology expert (6 MM);
- 8 metrologists, 6 inspectors;
- Fellowship training 4 MM
- Equipment
- Office area

E. INPUTS**1. FROM THE GOVERNMENT****1.1 Building**

A newly reconstructed building of total ground area 2400 m², equipped with ancillary facilities in specific laboratories - i.a. for installations of fume hoods, air conditioners, exhaust fans, stabilized electricity supply etc. - electricity and water supplies and fittings, drainage, reservoir to prevent chemicals' accidental direct access to the communal system, provided with appropriate furnishing, all according to the requirements of the specific laboratories and sections.

The full completion of the building reconstruction is scheduled for December 1997.

1.2 Staff

The ESI executive staff including the General Manager, Department, Division and Laboratory Heads shall be counterparts to the Project Manager and his international staff for all matters pertaining to reaching the stated objectives of the project, together with the technical officers and technical assistants needed for the efficient implementation of the project. The counterpart staff available for the project in various units of ESI is listed in Annex 9.

1.3 In-country transportation costs

The Government bears the cost and responsibility for all transport of equipment from the point of arrival in the country.

1.4 Operational costs

The Government will bear all operational costs of ESI including those related to project activities, such as: duplicating, printing, editing and distributing costs of standards,

brochures; costs of organizing and conducting seminars, workshops; DSA and travel expenses for ESI staff on field trips in the country; cost of utilizing the facilities of other laboratories; financing local experts' contribution to standards formulation work, participation in Technical Committee and Work Group Teams; consumables for the technical Workshop; subscription fees of foreign technical periodicals - ordered by the project - after one year.

1.5 Working facilities for the project

The Government provides working facilities for project activities and UNIDO experts including offices, furnishings, office supplies and services necessary for the efficient conduct of work on the project.

1.6 Government contribution

The estimated cost of the above inputs from the Government for the project period is approximately ??.....Birr.

2. FROM UNDP/UNIDO

2.1 Personnel

The following international staff will be assigned to the project (see Job Descriptions in Annex 13.):

a) Chief Technical Adviser (CTA), expert in standardization, in organization, operation of testing laboratories and in quality assurance, in the application of these disciplines on national level and in factories. He will be required to implement for the project the expert's duties in these fields.

His special task will be to assist implementation of computer applications in management of ESI and in all units in their specific work, as well as to provide training for staff.

Start of his mission will coincide with starting of building reconstruction, lasting approximately for one year. He will have to assess appropriateness of the reconstruction plans whether they describe a building fully suitable to fit to project requirements - especially to fulfil all needs of various laboratories, concerning i.a. area, layout, water- and electricity- supply, drainage and facilities for safe exit of waste to the communal system, placement and capacity of exhausts, air-conditioning and stabilized electricity supply etc. Follow-up control of compliance with plans will be required from him too.

A detailed, full requisition list of equipment will be prepared by him for all laboratories and activities of the project, so as all conditions for laboratory work and other project activities will be available once the experts arrive. Equipment will be ordered thereafter in a phased manner in accordance with project progress.

Project management will be advised by the CTA on placements for study tours and fellowship training.

The CTA will be responsible to UNDP/UNIDO for the overall operation of the project and for the coordination of the work of international experts, or subcontractors according to the Work Plan. Specific responsibilities in connection with phasing and starting

various project activities are outlined in section B/4 (Project strategy). The CTA's assignment is planned for 36 months.

b) Standardization, testing, quality assurance, metrology cover, by nature, a very broad spectrum of technical and economical fields requiring a variety of laboratories, relevant professional expertise, organization skills etc. to cover all aspects of and to gear all these activities to materialize finally in the establishment of an efficient standardization institution. There will be 7 experts/consultants - total 36 MM - in the following areas:

Subject	Total MM
- Food testing	6
- Chemical & instrumental analysis	4
- Building materials and mechanical testing, responsible also for general workshop	5
- Textile and leather testing	6
- Electrical testing and calibration, responsible also for electric workshop	6
- Standards information and public relations	3
- Metrology (mass, length and volume)	6

The experts will work under the supervision of the CTA. Their main duty will be, in general, to provide on-the-job training for ESI staff, install equipment and train on proper operation and preventive maintenance, elaborate working methodologies, establish Good Management and Good Laboratory Practice (following international standards), utilize computer applications, assist establishment of the unit's quality system, participate in planning and executing services of ESI to industries and other clients (e.g. monitoring, test data processing, laboratory work harmonization, promote co-operation with other laboratories, etc.)

Additionally, each expert is expected to assist ESI by implementing a national seminar to disseminate knowledge about standardization and quality assurance in the respective sectors and to promote utilization of project inputs - ESI's already established capabilities - for industry, trade and consumers.

2.2 Training

Individual fellowships - primarily attachment training - of national qualified staff at foreign national standards institutes, laboratories and other suitable organizations in which the relevant activities are well established, will be implemented in 7 fields total 21 MM:

Fellows	Subject	Total M/M
1	Food testing	2
1	Chemical & instrumental analysis	2
1	Building materials and mechanical testing	2
2	Textile and leather testing	4
2	Electrical testing and calibration,	4
1	Instrument repair & maintenance	3
2	Legal metrology	4

Study tours will be implemented on topics concerning institution management, regional cooperation, standardization, quality assurance, legal metrology, five fellows, each 0,5 MM.

2.3 Equipment

Non-expendable equipment	US \$	1,520,000
Expendable equipment	US \$	35,000
Total	US \$	1,555,000

Objective data, based on precise measurements is the core of quality assurance, quality control, standardization - in one word the sine qua non for producing adequate quality goods and services. All this needs, however, precision instruments, several times even sophisticated instruments, and in addition a great variety of them in order to be able to measure the even greater varieties of properties of goods.

Establishment of standardization, testing and metrology institution infrastructure requires, therefore, a very precisely specified instrumentation list composed of several thousand items, accessories, fittings, and spare parts. It is not possible to produce during project formulation mission's time this equipment list with the necessary precision, but will be prepared on the following basis:

- the CTA once in the field will have approximately one year time to compile the equipment list, consulting reference materials, UNIDO Purchase Section, catalogues and price lists;

- the equipment list of a recently terminated, in scale and objective very similar UNIDO standardization and quality assurance project's full equipment list has been handed over to ESI that, to a very good extent can be basis for instrument identification already now, and later for the CTA. In fact, this is a 140 page booklet composed of several thousand items with precise specifications prepared by experts of the respective fields. (DP/NEP/84/031 Assistance to the Nepal Bureau of Standards; instruments procured in the period 1987 to 1992);

- the equipment cost given in this Project Document is based on the actual disbursement prices made in that Nepal project, giving thus a sound basis for the calculation of this project's budget. The data (US \$) are specified in relation to each laboratory type, and is summarized hereunder. An average 30 % instrument price increase has been taken into consideration for the 5-6 years elapsed since then.

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NAME OF UNIT/FUNCTION	Disbursement actual in similar proj. 1987-92	With 30 % price increase	Adjusted to local requirements, rounded figures
Vehicles (two)	18.543	24.106	30.000
Food, Chem, Instr. lab.	230.372	299.484	300.000
Building & Mech. lab.	233.513	303.567	250.000
Text & Leather & Aircond	276.472	359.414	300.000
Electr test & calibr. &EI. wshop	233.620	303.706	280.000
General workshop	18.620	24.206	80.000
Legal metrology	48.620	63.206	150.000
Quality assurance (computer etc.)	23.472	30.514	30.000
Public info, PR, books	38.532	50.092	50.000
Building electrification safety	98.229	127.698	50.000
TOTAL	1.219.993	1.585.991	1.520.000

Ancillary equipment to be procured on project funds are listed in Annex 10. Quantities, where not stated, will be determined together with the labs' and units' other instruments (for computers and UPS), respectively when building construction plans are available (for stabilizers, exhaust fans, AC-s)

The planned distribution of expenditures on equipment for the specific laboratories and sections throughout the project period is summarized in Annex 11.

A tentative preliminary list of equipment is attached in Annex 12.

Justification of the equipment component

a.) Justification for the necessity for identifying a relatively high equipment component has already been mentioned above. The appropriateness of equipment is guaranteed by the facts mentioned also above and by being identified by experts of the respective fields, and scrutinized then by the CTA and UNIDO backstopping.

b.) Preventive maintenance and basic repair will be secured for the instruments of the project by a mechanic and electric/electronic workshop established in the frames of the project; preventive maintenance schedule will be established for each laboratory by the respective expert. One fellowship training is foreseen in Instrumentation repair & maintenance to have expertise available for ESI in this field also for the future.

c.) Several light industry tests need temperature and humidity controlled atmosphere for reliable results and also some legal metrology activities need air-conditioning; adequate sets will be set up for this purpose.

d.) To protect the valuable equipment provided by the project from electric hazards electric safety installations (stabilizer, uninterruptible power supply) will be installed.

e.) The considerable volume of data coming in consequence of the newly established laboratory testing, legal metrology, quality assurance and standardization activities of ESI, (test data storing, retrieving, processing, statistical analysis, administration, etc.) will be taken care of by computer (provided with appropriate peripherals and

softwares). Substantially increased managerial tasks (inventory keeping, correspondence, financing etc.) will also be served by computer.

f.) Verification of commercial weights and measuring bars, petrol pumps affects basic consumer interests needing urgent solution; corresponding verification instruments will be procured and operated.

g.) Basic video and audio equipment, teaching/training and library appliances, desktop publishing facilities will be provided for the Information unit, being these activities precondition for the efficient utilization and marketing of quality concepts and ESI's new established services for industry and consumers.

h.) Two vehicles will be procured for the project. A diesel pickup four wheel drive will be required for training and advisory, calibration, verification services all over the country and to facilitate collaboration with other testing laboratories and industries. The other vehicle, Sedan type will be used by the CTA for project management and the international staff to execute field work.

i.) Expendable costs will be utilized primarily to procure international standards (ISO, ASTM, IEC etc.), basic technical books, periodicals and also some essential consumables (computer diskettes, chemicals, etc.).

F. RISKS

Instruments, as a rule, need maintenance and repair. Securing these services is however a rather complex and multifaceted task, including problems such as lack of spare parts and adequate procurement provisions, lack of local repair facilities, lack of maintenance skills and trained specialists, lack of routine maintenance procedures (repair manuals), lack of budgetary provisions and adequate organization to administer procedures, lack of precision instruments needed for calibration of instruments, etc. These problems are acting as a serious constraint to the technical, medical, educational and scientific community in Eritrea and are hampering the contribution that these disciplines could make towards meeting the development goals of the country.

While these problems are *not* affecting immediately the implementation of the project, the proper functioning of ESI in longer terms is at risk - so as other institutions too which apply precision instruments in their work, like hospitals, scientific institutions etc. - if appropriate solutions are not introduced for the country in this matter. The solution of this question is obviously far beyond the capacities of the project; necessary preventive measures were included however in the project design: each expert of the laboratories will have to establish a preventive maintenance scheme for its instruments. One fellowship training will be implemented in the field of Instrument repair & maintenance to have these skills available for ESI also for later.

G. PRIOR OBLIGATIONS AND PREREQUISITES

The Government of the State of Eritrea is aware, that the existence of the fully accomplished and appropriately furnished building, provided with all necessary facilities for ESI's operation including laboratories is prerequisite for UNDP assistance.

The donation of this building that has already materialized on representing an estimate value of Birr..... ?? and the additional Birr 1,05 million input for reconstruction already presented for inclusion into the 1997 financial plan is proof, however, of the

firm commitment of the Government for pursuing the establishment of the standardization infrastructure in the country.

As per the plans of the Government, the full reconstruction, furnishing operational readiness is to be achieved by December, 1998.

Reference is made to section 4. of paragraph B. "Project strategy".

The project document will be signed by UNDP, and UNDP assistance to the project will be provided, subject to UNDP receiving satisfaction that the prerequisites listed above have been fulfilled or are likely to be fulfilled. When anticipated fulfilment of one or more prerequisites fails to materialize, UNDP may, at its discretion, either suspend or terminate its assistance.

H. PROJECT REVIEW, REPORTING AND EVALUATION

The project will be subject to tripartite review (joint review by representatives of the Government, executing agency and UNDP) at least once every 12 months, the first such meeting to be held within the first 12 months of the start of full implementation. The national project director, together with the senior project officer of the United Nations executing agency - when present -, shall prepare and submit to each tripartite review meeting a Project Performance Evaluation Report (PPER). Additional PPERs may be requested, if necessary, during the project.

A project terminal report will be prepared for consideration at the terminal tripartite review meeting. It shall be prepared in draft sufficiently in advance to allow review and technical clearance by UNIDO at least four months prior to the terminal tripartite review.

The project shall be subject to evaluation 20 months after the start of full implementation. The organization, terms of reference and timing will be decided after consultation between the parties to the project document, plus any associated United Nations agency.

The time schedule of reviews is attached as Annex 2.

I. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Agreement between the Government of the State of Eritrea and the United Nations Development Programme signed by the parties on 18 June, 1994. The Host Country Implementing Agency shall, for the purpose of the Standard Basic Assistance Agreement refer to the Government Co-operating Agency described in that Agreement.

The following type of revisions may be made to this project document with the signature of the UNDP Resident Representative only, provided he/she is assured that the other signatories of the project document have no objections to the proposed changes:

- (a) Revisions in, or addition of, any of the Annexes of the project document;

(b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of inputs agreed to or by cost increases due to inflation, and

(c) Mandatory annual revisions which rephase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility.

J. Budgets

				1996	1997	1998	1999	2000
			Expert Pro Forma Cost:	14,000	14,800	15,600	16,400	17,200
			PROJECT PERSONNEL					
	BL		MM	Total	1997	1998	1999	2000
	11-01	Chief Technical Adviser	36.0			12.0	12.0	12.0
				590,400		187,200	196,800	206,400
	11-50	Food testing consultant	6.0				6.0	
				98,400			98,400	
	11-501	Chemical testing & instrumental anal.	4.0				4.0	
				65,600			65,600	
	11-512	Building mat & mech. testing consult	5.0				5.0	
				82,000			82,000	
	11-52	Textile and leather testing consultant	6.0					6.0
				103,200				103,200
	11-531	Electrical testing and calibration cons.	6.0				6.0	
				98,400			98,400	
	11-545	Standards info. and public rel. consult.	3.0					3.0
				51,600				51,600
	11-55C	Metrology consultant	6.0				6.0	
				98,400			98,400	
	11-99	Subtotal experts	72	1,188,000		187,200	574,000	361,200
			Pro Forma cost: secretary=400, driver 300					
			1secr+1driver 36-36 Mo, 1driver 18 Mo					
	13	ADMIN SUPPORT PERSONNEL						
	13-00	Support personnel		31,500		8,400	10,500	12,600
	13-99	Subtotal support personnel		31,500		8,400	10,500	12,600
	15	OFFICIAL TRAVEL						
	15-00	Project travel		5,000		1,000	2,000	2,000
	15-99	Subtotal official travel		5,000		1,000	2,000	2,000

J. Budgets

BL			MM	Total	1997	1998	1999	2000
		16	MISSION COST (3 TPR=3x5,000, 1 In-depth=25,000)					
		16-00	Mission cost		40,000	5,000	30,000	5,000
		16-99	Subtotal mission costs		40,000	5,000	30,000	5,000
		19-99	Total - Personnel component	72.	1,264,500	201,600	616,500	380,800
			Component % =		42.6			
fel-	mon-		Fellowship Pro Forma Cost average:		6,000			
low	th	31	INDIVIDUAL FELLOWSHIPS		MM			
1	2	31-00	Food testing	2.0	12,000	12,000		
1	2	31-01	Chemical & instrumental analysis	2.0	12,000	12,000		
1	2	31-02	Building materials and mechanical tes	2.0	12,000	12,000		
2	2	31-03/04	Textile and leather testing	4.0	24,000		24,000	
2	2	31-05/06	Electrical testing and calibration,	4.0	24,000		24,000	
1	3	31-07	Instrument repair & maintenance	3.0	18,000			18,000
2	2	31-08/09	Legal metrology	4.0	24,000		24,000	
			STUDY TOUR					
5	0.5	32-00	Standardiz, metrol, testing, Q. assuran	2.5	15,000	9,000	3,000	3,000
		39--99	Subtotal training	23.5	141,000	69,000	51,000	21,000
			Component % =		4.7			
		40	EQUIPMENT					
		41-00	Expendable equipment		35,000	8,000	15,000	12,000
		42-00	Non-expendable equipment		1,520,000	430,000	600,000	490,000
		49-99	Subtotal equipment		1,555,000	438,000	615,000	502,000
			Component % =		52.3			
		50	MISCELLANEOUS					
		51-00	Sundries		10,000	2,000	4,000	4,000
		51-99	Subtotal miscellaneous		10,000	2,000	4,000	4,000
		9-99	PROJECT TOTAL		2,970,500	710,600	1,286,500	907,800

ANNEXES

- Annex 1. Work plan
- Annex 1/a Project implementation "Modular matrix" model
- Annex 2. Schedule of projet revisions
- Annex 3. Proclamation (Law) No. 75/95 (20 Sept. 1995) establishing the Eritrean Standards Institution (ESI)
- Annex 4. Ongoing verification activities in legal metrology
- Annex 5. List of the present testing and measuring instruments of ESI
- Annex 6. Layout of ESI building as at present **still to be attached**
- Annex 7. Annual Budget of ESI for 1996 and 1997 plan
- nnex 8. Graduated staff size 1996 and development in 1997
- Annex 9. Staffing plan for the project
- Annex 10. Computers an ancillary equipment to be procured on project funds
- Annex 11. Equipment cost disbursement distribution for the project period
- Annex 12. Preliminary list of equipment **still to be attached**
- Annex 13. Job Description of international staff **still to be attached**

MODULAR PROJECT IMPLEMENTATION MATRIX Model for Module 1.

MODULE 1. (Prodoc signature 1997 - TPR September 1998)

MODULE COMPONENT	SUCCESS CRITERIA	RESPONSIBLE	FINALIZATION DATE
1.1 Ordering Sedan type vehicle	Delivery by Dec 1997	Ordering by NPD	Upon Prodoc signature
1.2 Selection of CTA	Confirmed by Dec 1997	Selection by NPD	Upon Prodoc signature
1.3 Fielding of CTA	Available on 1 January, 1998	Gov. action	
1.4 Initial report of CTA	-Work plan -assessment of building reconstr. plans -assesment of staffing -ordering of 2 computers & accessories	CTA	31 January
1.5 Monitoring bldg rec. progress	Bimonthly summary progress reports	CTA	3-5-7-9 months
1.6 Countpt staff available	As required by Prodoc	NPD	April
1.7 Identifying, placing fellowships	Implementation start September	NPD/CTA	March
1.8 Finalizing detailed equipment requisition list	Submitted to UNIDO in July with phased ordering schedule	CTA/NPD CTA	July July
	<u>NOTE:</u> Orders may not be placed before TPR' approval		
1.9 Identifying experts	Confirmed by September	CTA/NPD	April
1.10 Standards Department	Success criteria in Output 1.2, half year report on quantified delivery	Std. Dept. Head	July
1.11 Legal Affairs unit	Success criteria in Output 1.3, half year report on quantified delivery	L.A.U. Head	July
1.12 Output 1.5	Success criteria in Output 1.5, half year report on quantified delivery	Std. Dept. Head	July
1.13 Quality Assurance Dept	Success criteria in Output 2.1, half year report on quantified delivery	QA. Dept. Head	July
1.14 Legal metrology	Success criteria in Output 3.1 half year report on quantified delivery	Metrology Head	
1.15 Reporting PPER submitted to UNIDO	CTA	July	
1.16 TPR	assesseing progress, If satisfied -authorizes expenditures for next Module (instrument ordering, expert fielding etc.	CTA/UNIDO/NPD	September

August 1998

MODULE 2. (September 1998 - In-depth Evaluation, September 1999)

MODULE COMPONENT	SUCCESS CRITERIA	RESPONSIBLE	FINALIZATION DATE
2.1 Laboratory Building	- Ready to accommodate laboratories for operation (accomplished electrification, plumbing, lab-benches, etc)	NPD	Dec.1998

Etc, etc.

Answer 1/2

**SCHEDULE OF PROJECT REVIEWS,
REPORTING AND EVALUATION**

Initial Report of CTA	January	1998
First Project Performance Evaluation Report	July	1998
First Tripartite Review Meeting	September	1998
Second Project Performance Evaluation Report	June	1999
In-depth Evaluation Mission and Second Tripartite Review Meeting	September	1999
Third Project Performance Evaluation Report and Terminal Report	September	2000
Third Tripartite Review Meeting	November	2000

PROCLAMATION NO 75/1995
A PROCLAMATION TO PROVIDE FOR THE
ESTABLISHMENT OF THE ERITREAN
STANDARDS INSTITUTION

Whereas, the improvement of the standards of living of the Eritrean people and the continued expansion of the over-all economy make it necessary to introduce and promote standardization, quality assurance and metrology;

Whereas, the protection of the interests of domestic consumers, the securing of wider markets abroad for Eritrean products the safeguarding of domestic market from inferior quality products and achieving and sustaining global competitiveness will better be served by means of introducing standardization, quality assurance and metrology; and

Whereas, these objectives may better be achieved through and served by the establishment of an Eritrean Standards Institution entrusted with the preparation and promotion of standards on national, regional and international bases and charged with ensuring the adoption of such standards with respect to products;

Now, therefore, it is hereby proclaimed as follows:

1. Short Title

This Proclamation may be cited as the "Eritrean Standards Institution Establishment Proclamation NO 75/1995".

2. Definitions

In this Proclamation, unless the context otherwise requires:

- (1) "Board" shall mean the Standards Board.
- (2) "Standard" shall mean a document that provides for common and repeated use, guidelines, rules or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.
- (3) "Eritrean Standard" shall mean any standard approved and declared by the Board.
- (4) "Product" shall mean the result of activities which transform inputs into outputs.
- (5) "Etalon" shall mean material measure, measuring instrument, reference material or measuring system intended to define, realize, conserve or reproduce a unit or more value of a quantity to serve as reference.
- (6) "Measuring Instruments" shall mean instruments determined by the Institution to be used for measuring weights, length, power, energy, time, temperature or any other quantum.
- (7) "International system of Units (SI)" shall mean the coherent system of units adopted by the International Organization for Standardization.
- (8) "Person" shall mean any natural or juridical person.
- (9) "Standards Mark" shall mean the mark applied, or authorized to be applied, by the Institution on products to indicate their conformity to Eritrean Standards.
- (10) "Trader" shall mean any person licensed by the appropriate Government office or instituted by law to engage in trade or commerce.
- (11) "Producer" shall mean any person licensed by the appropriate Government office or instituted by law to engage in producing manufactured goods.

3. Establishment

- (1) There is hereby established the Eritrean Standards Institution (hereinafter referred to as the "Institution") as an autonomous body having separate juridical personality.
- (2) The Institution shall be the sole organ for standardization, quality assurance and metrology.

4. Head Office

The shall have its head office in Asmara and may establish branch offices wherever it deems it appropriate.

5. Transfer of Assets and Liabilities

The assets and liabilities of the Eritrean Standards Office are hereby transferred to the Institution.

6. Objectives of the Institution

The objectives of the Institution shall be to promote standardization, quality assurance and metrology activities throughout the country.

7. Powers and Duties of the Institution

The Institution shall, for the fulfillment of its objectives, have the powers and duties to:-

- (1) prepare compulsory Eritrean Standards relating to products, practices and processes in the economic sector and follow up the implementation of same;
- (2) revise said standards, from time to time, as necessary;
- (3) waive temporarily the enforcement of compulsory Eritrean standards, where it finds that special circumstances so justify;
- (4) affix the standards mark to products which conform to Eritrean Standards;
- (5) examine or test products to ensure conformity to Eritrean Standards and conduct study and research for this purpose;
- (6) certify import and export products which conform to Eritrean Standards;
- (7) maintain national Etalons and certified reference materials and operate their dissemination through the provision of calibration services;
- (8) inspect and certify the conformity of measuring instruments to Eritrean Standards and seize those which do not conform;
- (9) enter, during all reasonable hours, into factories, business premises or other relevant places to ensure, by inspection and investigation, whether products, practices and processes conform to Eritrean Standards;
- (10) order, subject to prior notice and opportunity for a hearing, the closure of factories or business undertakings or the cessation of operations or ban the movement of products where products, their processes and preparations do not conform to compulsory Eritrean Standards,
- (11) provide consultancy services and training in standardization, quality assurance and metrology;
- (12) establish a documentation centre and libraries pertaining to standardization;
- (13) ensure the constant flow into the country of up-to -date scientific and technological data pertaining to standardization, quality assurance and metrology;
- (14) organize seminars and exhibitions with a view to promoting the purposes of standardization;
- (15) represent the government and participate in all conferences, seminars or meetings regarding standardization ;
- (16) delegate its powers and duties, in part, to the extent necessary for efficiently implementing Eritrean Standards;
- (17) enter into contracts;
- (18) sue and be sued in its own name;
- (19) collect fees and charges approved by the Board for the services it renders;
- (20) own property, and
- (21) carry out such other similar activities necessary for the attainment of its objectives.

8. Adoption of the International System of Units and Custody of the National Etalons

- (1) The International System of Units is hereby adopted as the legal system of measurements in Eritrea.

- (2) The Institution shall procure, acquire and have custody of the National Etalons to maintain the traceability of measurement and the system of units specified under sub-article (1) of this Article
- (3) The basic, supplementary and derived units of measurements for use in Eritrea and their symbols are as set out and defined under Eritrean Standards.

9. Obligation of Trader or Producer

- (1) Any trader or producer shall have the obligation of providing free of charge information and samples to the Institution upon request
- (2) The Institution shall request for samples only to the extent necessary to perform its duties.

10. Organization of the Institution

The Institution shall have the following organization:

- (1) A Standards Board (hereinafter called the "Board");
- (2) A General Manager;and
- (3) necessary staff.

11. Composition of the Board

The Board shall consist of the following members:-

- 1) The Minister of Commerce & Industry Chairman
- 2) A representative of the Ministry of Construction Member
- 3) A representative of the Ministry of Agriculture..... “
- 4) A representative of the Ministry of Health “
- 5) A representative of the Ministry of Finance “
- 6) A representative of the Ministry of Transport “
- 7) A representative of the Ministry of Energy, Mines
and Water Resources “
- 8) A representative of the Ministry of Marine Resources..... “
- 9) A representative of the University of Asmara “
- 10) The Secretary General of the Chamber of Commerce..... “
- 11) The General Manager of the Institution..... Member & Secretary

12. Powers and Duties of the Board

The Board shall:

- (1) be vested with all the powers and duties of the Institution and shall determine the policies of the Institution and issue its policy guidelines;
- (2) organize the activities of the Institution and ensure that said activities are properly carried out;
- (3) issue its own rules of procedure and approve the financial, administrative and technical manuals of the Institution;
- (4) form technical, administrative and/or financial affairs committees, as may be necessary, for the proper performance of its functions;
- (5) approve the annual budget and work programme of the Institution;and
- (6) determine fees and charges to be collected by the Institution for the service it renders.

13. Meetings of the Board

- (1) The Board shall meet twice a year and on such other occasion as the chairman may decide, or upon the request of the majority of its members
- (2) There shall be a quorum where more than half of the members of the Board are present.
- (3) Decisions of the Board shall be made by majority vote and in case of a tie the chairman shall have a casting vote.

14. The General Manager

- (1) The General manager shall be appointed by the Government upon the recommendation of the Board.
- (2) The General Manager shall be the Chief Executive Officer of the Institution and shall direct and supervise its operations and administration, subject to the general direction of the Board.

- (3) without limiting the generality sated in sub-article (2) of this Article, the General Manager shall:-
- (a) organize and administer the Institution;
 - (b) employ and administer personnel;
 - (c) submit to the Board, for approval, the annual budget and work programme of the Institution;
 - (d) effect expenditure in accordance with the approved budget and work programme;
 - (e) submit to the Board, within three months after the end of the budget year, the annual financial and activity report of the Institution;
 - (f) represent the Institution in all its dealings with third parties;
 - (g) delegate his powers to other staff of the Institution whenever he deems it necessary for the proper functioning of the Institution; and,
 - (h) perform such other duties as may be entrusted to him by the Board.

15. Funds and Budget

- (1) The Institution shall have funds from the following sources:
- (a) fees and charges collected by the Institution for the service it renders,
 - (b) Government subsidy, and
 - (c) contributions or donations from domestic or international sources.
- (2) The funds referred to in sub-article (1) of this Article shall be lodged in a bank account in the name of the Institution and be expended in accordance with the annual work programme and budget of the Institution.
- (3) The Institution shall set aside and hold as reserve for such purposes as the Board may determine, any portion of the fund which remains uncommitted at the end of the fiscal year.
- (4) The budget year of the Institution shall be the same as that of the Government.

16. Books of Accounts

- (1) The Institution shall maintain complete and accurate books of accounts with supporting documents.
- (2) The books of accounts and all financial documents of the Institution shall be audited annually by the Auditor General or by auditors designated by him.

17. Annual Report

The Institution shall prepare and publish an annual report of its activities and the progress made during the year under review.

18. Power to Issue Regulations

The Minister of Commerce and Industry may, upon the recommendation of the Board, issue regulations for the proper carrying out of the provisions of this proclamation.

19. Penalty

Any person who contravenes the provisions of this Proclamation or regulations issued hereunder shall be punished in accordance with the Transitional Penal Code of Eritrea.

20. Effective Date

This Proclamation shall come into force on the date of its publication in the Gazzette of Eritrea laws.

Done at Asmara, this 20th day of September, 1995
Government of Eritrea

Ongoing verification activities in legal metrology

Subject	Number of verifications per year
Balances	8.000
Linear measures	500
Capacity measures	300
Fuel pumps and flowmeters	300
Tank trailers	60
Underground tanks	10
Total	9.170
Pieces of weights	26.000

LIST OF INSTRUMENTS USED BY WEIGHT & MEASURES DEPARTMENT

<u>S/NO</u>	<u>INSTRUMENTS</u>	<u>CAPACITY</u>	<u>QUANTITY</u>
1	Balance	20 kgs.	
1			
2	"	5 "	1
3	"	2 "	1
4	Metal Meter 100 centimeter Length	100 cm	
1			
5	A set of weights	20 Gr.	2
6	A set of weights	50 "	1
	" " " "	100 "	1
	" " " "	200 "	1
	" " " "	500 "	1
	" " " "	1 kg	1
	" " " "	2 "	2
	" " " "	5 "	1
	" " " "	10 "	1
	" " " "	20 "	5
7	Saw		1
8	Metal Brush		1
9	File		1
10	Screw Driver		1
11	Pliers		1
12	Hammer		1
13	Spencer		1
14	Plumber Press Pliers		1
15	Puncher		1
16	Chisel		1
17	Vise		1
18	Grinding Stone		1
19	Calibrated Cylinder	20 Lt.	1

LIST OF EQUIPMENT USED BY QUALITY CONTROL DEPT

<u>EQUIPMENTS</u>	<u>CAPACITY</u>	<u>QUANTITY</u>
1. SIEVES:		
a) Operature diameter	0.5 mm	1
b) " "	1 mm	1
c) " "	4.5 mm	1
d) " "	5.5 mm	1
e) " "	6.5 mm	1
f) " "	7.5 mm	1
g) " "	8.5 mm	1
2. AVERY SCALE	2 lb.	1
Weight	500 gr	1
"	200 gr	2
"	100 gr	1
3. SENSITIVE BALANCE		
Weight	20 gr.	1
"	10 gr.	2
"	5 gr	2
"	2 gr.	2
"	1 gr.	1
4. STEEL SEAL PRESS		
5. STEEL SEAL PLIERS		
6. SAMPLING SPEAR		
7. MOISTURE TESTER		1
8. MICROSCOPE (BINOCULAR)	3 X	1
9. SACK SIEVE		1
10. SPRAY NOZLES AND CONNECTION		1
11. TAPE (METER)	20 Mts.	1

LIST OF EQUIPMENT USED FOR CALIBRATION OF TRUCK,
GROUND TANKERS & FUEL PUMPS

<u>EQUIPMENTS</u>	<u>CAPCITY</u>	<u>QUANTITY</u>
1. Flow meter	3 (inch)	2
2. Measuring Can	20 Lts.	1
3. Steel Scale Plier		1
4. Steel Scale Press		1
5. Set of Screw Drivers 4	S.M.C.	
6. Hammer		1
7. Oper Wrench 8	6/7 inch-20/22 inch	
8. Ajustable Wrench	8 inch	1
9. Puip Wrench	18 inch	1

BUDGET AND REVENUE OF ESI 1996 AND 1997 PLAN		
ANNUAL BUDGET FOR ESI 1996 AND 1997 PLAN (Birr)		
BUDGET LINE	1996	1997 plan
Salary & allowances	230,719	494,662
Recurrent exp.	474,582	507,598
Other exp.	62,300	58,550
-Books	100,000	100,000
Donation & Membership	93,600	93,600
Fixed asset	608,000	360,000
Capital exp.		
-consultancy (bldg. renov.)		50,000
-bldg. renovation		600,000
-oper. & maint. of equipment		40,000
-expendable equipment		33,000
-tax & duties for equipment		170,000
TOTAL	1,569,201	2,507,410
REVENUE OF ESI FOR 1996 AND 1997 PLAN (Birr)		
Verifications	205,000	209,000
Inspection oil seeds	130,000	126,000
Other (license fee, sales etc.)	2,000	3,000
Subtotal	337,000	338,000
Government subsidy	1,232,201	2,169,410
TOTAL	1,569,201	2,507,410

GRADUATED STAFF SIZE 1996 AND DEVELOPMENT IN 1997

NAME OF POSITION	STAFF	STAFF
	AT PRESENT 1966	DEVELOPMENT 1997
General Manager	filled	
Head of Legal Unit		post approved
Head of Standards Spec. Dept		post approved
Standards Eng.- Engineering	filled	
Standards Eng.- Biological	filled	
Standards Eng.- Biological	filled	
Head of Quality Assurance Dept.		post planned
Quality Assurance Officer (Biological)		post planned
Quality Assurance Officer (Engineering)		post planned
Quality Assurance Officer (Engineering)		post planned
Quality Assurance Inspector	filled	
Quality Assurance Inspector		post planned
Quality Assurance Inspector		post planned
Quality Assurance Inspector		post planned
Quality Assurance Inspector		post planned
Head of Metrology Dept.		post planned
Head of Legal Metrology		post planned
Weights & Measures Inspector	filled	
Calibration Inspector	filled	
Head of Documentation		post planned
Head of Massawa Branch Office		post planned
Chemist		post planned
Lab Technician		post planned
Head of Assab Branch Office	filled	
Chemist		post planned
Lab Technician		post planned
Total	8	19

STAFF DEVELOPMENT PLAN FOR THE PROJECT

E. = Engineer, T. = Technician

UNIT	AVAIL-		DEVELOP		DEVELOP		DEVELOP		DEVELOP		TOTAL	
	ABLE		MENT		MENT		MENT		MENT		AT	
	1996		1997		1998		1999		2000		2000	
	E.	T.	E.	T.	E.	T.	E.	T.	E.	T.	E.	T.
Gen. manager	1										1	0
TESTING LABORATORIES												
FOOD& CHEM& INSTR LAB - Head	1										1	0
- Food & preparation					1		1				0	2
- Technology (meat)					1	1		1			1	2
- Technology (vegetable)						1	1	1			1	2
- Sensory testing								1			0	1
- Microbiology								1			0	1
Food total											3	8
CHEMICAL LAB			1								1	0
- General chem. lab.					1			1		1	1	2
- Chem. technol. lab.							1	1		1	1	2
- Instrumental analytical lab.					1		1	1		1	2	2
- Pesticide lab.									1	1	1	1
Chem total											6	7
BUILDING MAT&MECH LAB - Head	1				1	1		1		1	2	3
MECHANICAL LAB - Head											0	0
- Gen. workshop							1	1			1	1
Bldg & Mech total											3	4
ELECTRICAL LAB - Head					1						1	0
- Electr. testing & calibr.									1	2	1	2
- Electr. maintenance & repair							1	1			1	1
Electr total											3	3
TEXTILE & LEATHER LAB - Head					1		1	1		1	2	2
Text & Leath total											2	2
LAB. STAFF DEVELOPMENT	3	0	1	0	6	4	6	12	2	8	18	24
LEGAL AFFAIRS												
STANDARDIZATION	3		1								4	0
INFORMATION			1					1			1	1
Q-ASSURANCE		1			1	1	1	1	1	2	3	5
METROLOGY HEAD OFFICE												
- Weights, measures, calibr.		2	1		1			2			2	4
REGI. OFF. MASSAWA			1	1	1						2	1
REGI. OFF. ASSAB	1		1	1							2	1
Metrology total											8	6
TOTAL TECHNICAL STAFF	7	3	8	2	10	5	7	16	3	10	35	36

**COMPUTERS AND ANCILLARY EQUIPMENT
TO BE PROCURED ON PROJECT FUNDS**

NAME OF EQUIPMENT	NOTE
Two vehicles	Sedan, pickup, diesel
Electric stabilizers	for separate electr. networks in labs
Air conditioner (temp. and humidity control)	for textile lab.
Air conditioner (temp. control)	for metrology
Uninterruptable Power Supply (UPS)	for computers
Computers, LAN connection	to all labs, technical units, administration
Exhaust fans for fumehoods	fumehoods themselves not on UN funds,
	locally manufactured

**EQUIPMENT COST
DISBURSEMENT DISTRIBUTION**

Name of unit/function	Equipment cost	Scheduled disbursement		
		1998	1999	2000
Vehicles (two)	30,000	15,000	15,000	
Food, Chem, Instr. lab	300,000	100,000	200,000	
Building & Mech. lab.	250,000	100,000	150,000	
Text & Leath & Aircond	300,000			300,000
Electr test&calibr. &El. wshop	280,000		140,000	140,000
General workshop	80,000		80,000	
Legal metrology	150,000	150,000		
Quality assurance (computer etc.)	30,000	15,000	15,000	
Public info, PR, books	50,000			50,000
Building electrification safty	50,000	50,000		
TOTAL	1,520,000	430,000	600,000	490,000

BUILDING MATERIALS AND MECHANICAL TESTING

NO	DESCRIPTION	COST(US\$)
1	Finess Apparatus with-air permeability cell , perforated disc aspirator, U tube manometer, manometer liquid, calibration powder and chattway spatula	450
2	Le-chatelier flask (six pieces)	300
3	Vicat apparatus with consistency plunger, plastic mould, set of six needles final needle and supporting plastic disc	400
4	Sounds test (sounds) Le-chatelier-mould, Brass ring mould (6pcs), spare contact point and 100 gm. weight (3pcs).	350
5	Automatic Flexure tension Machine with testing jaw, and place mould	5,000
6	Sieve shaker	1,300
7	Set of sieves for standard sand	250
8	Standard Sand	500
9	Sample containers sample trays, cement package tube sampler	600
10	Water absorption of concrete testing -cap for smooth horizontal surface, cap for rough surface, reservoir, capillary tube and scale	750
11	Hydraulic Operating Universal Testing Machine - Max cap. 1000 kN (100 ton.f). Accessories to include automatic stress/strain recorder, full range of jaws, extensometers, transverse tool for testing concrete beams	70,000
12	Compression Machine 2500 kn load frame. Max, vertical clearance 330 mm. max width between columns 254 mm. Plate diameter 310 mm. Ram travel 63 mm. Complete with control console, platens, 1000 kN flexural and transverse load frame, roller bearers and load pacing unit	10,000
13	Furnace Internal dimensions 178mmx153mmx365mm, max temperature 1200° C. Load rating 3.2 kw.	1,500
14	Vibro consistometer comprising vibrating table, specimen pot, slump cone, graduated rod and plate	3,000
15	Mixer capacity 56 dm ³ , mixing pan 6.35 mm. diameterx330mm deep. Fitted with pan tipper	3,500

16	Weighing Machine 50 kg. capacity counter platform scale. Accuracy 20 g. platform size 460mmx305mm	500
17	Weighing Machine 25 kg capacity semi-automatic balance. scale reading 200 g. sensitivity 1 gm. complete with set of weights	1,000
18	To pan balance 1500 g. capacity top pan balance. Readability 0.01 g. Independent tarring. Top pan diameter 127 mm.	1,500
19	Test Sieves 20 standard test sieves with brass mesh or perforated plate. Sieve diameter 200mm. & 300mm Aperture size ranging 0.075 mm. up to 75.0 mm complete with lids and receivers	1,000
20	Drying oven Internal dimension 600mmx960mmx430mm. temperature range 40° C.to 160° C. temprature fluctuation $\pm 0.5^{\circ}$ C	1,500
21	Vibrating table Table size 305mmx610mm. Max load capacity 136 kg. vibrating amplitude 1.2 mm peak to peak. Frequency 50 cycles/sec	3,500
22	Curing Tank Internal dimensions 1630mmx860mmx510mm temperature control 20° C $\pm 1^{\circ}$ C. Recirculation rate of pump 455 litres/hr. complete with stand and racks	1,500
23	Moisture conditioning oven International dimensions 680mmx790mmx790mm. temprature range up to 60° C. Temprature fluctuation $\pm 0.1^{\circ}$ C. Humidity range 0 to 95% RH.	6,000
24	Los Angeles Abrasion Machine Steel cylinder 711mm diameter x 508mm long. Rotational speed 30 rpm. Complete with abrasive changes	4,000
25	Bench mounted Mixer Capacity 11.4 dm ³ . Speed range 61 to 361 rpm. Motor rating 375 w, complete with stainless steel bowl and beaters.	2,500
26	Flow Table Cast bronze flow table top complete with tripod flow mould, base plate and calipers	700
27	Abrasion Machine for the abrasion testing of cement tiles etc. variable speed rotating grinding surface. Adjustable load application	4,000
28	Jolting Apparatus vibrating platform complete with guard, time switch eccentric mechanism etc.	3,000
29	Mortar Mixer Capacity 5.7 dm ³ , speed range 61 to 259 rpm Motor rating 124 w. complete with stainless steel bowl, and beaters.	1,500
30	Le-chatelier Water Bath	

	with temprature control to 20 ° C, complete with mould and steam tank	2,000
31	Electronic top pan balance - full subtractive tare, 16 kg. capacity	3,000
32	Rockwell Hardness tester test loads 60,100 and 150 kg, dial type indicator, 10 spare steel balls, set of standard anvils two c-scale test blocks, one B scale test block	12,000
33	Certified Rockwell hardness blocks. one 20-30 HRC, one 35-55 HRC, one 56- 65 HRC, one 40-60 HRC, one 80-100 HRC	1,000
34	Pipe testing machine max. capacity of 1000 kn. size range 300 mm to 1800 bore max. length 2600 mm.	60,000
	Total	208,000

TEXTILE AND LEATHER TESTING EQUIPMENT

NO.	DESCRIPTION	COST (US \$)
1	<p>Shirley analyser MK II cotton lint/trash analyser with Aerodynamic separation and collection technique to provide consistent test results in five factions:-</p> <ul style="list-style-type: none"> Lint (clean cotton), Primary trash, Fine trash, Trash larger than 150 microns, Dust between 50 and 150 microns, <p>Specification of analyser includes built-in single phase drive motor, fan and two stage filters. Supply voltage 220-240v 50/60 HZ single phase,</p>	32,500
2	<p>Balance (electronic) Auto-calibration, stand by power mode, Dust and shock proof. Capacity 400 gm., Readability 0.01 gm., precision 0.007 gm, pan-size 140 mm.</p>	3,900
3	<p>Moisture tesing oven 100 gm. pan capacity, recirculating forced draught for determination of moisture content or region Built in thermostat to maintain working temperature (105°C) preset timer up to 30 mins with warning Dail and vernier balance, magnetic damping, power rating 8 amps.</p>	6,500
4	<p>International calibration cotton standards: used to clibrate testing instruments, (WIRA cotton fineness meter. SPL fineness maturity tester. Pressley tester, spinlab Fibrograph, etc.) ½ lb packages per type. International calibration cotton standards categories: A,B,C,D,E,F,G,H,I and K.</p>	1,105
5	<p>Wira single fibre strength tester: Conforms to requirement. Suitable for assessment line processing damage and routine quality control of textile materials. Wide range (0-500 gm.) fibre breaking strength by digital display. Pen recorder for load extension curves traverse speed and chart speed selectable pen recorder BBC servogar 120. Chart drive, Chart speed 10/30/60/120/300/600 mm/min Test length 10/20 mm. Fine extension 10 mm. 10mm-680 % 20" -290% Fibre traverse speed 30/60/120 mm/min, strength require 0-20, 0-200, 0-500 accuracy 1% electromagnetic fibre clamps, selectable</p>	6,500
6	<p>Single thread tester Machine for testing the single thread strength operated on the pendulum and rochet and paul system. A larger circular dial indicator the breaking strength. According 500 mm. test length with jaw travel of 200 mm, allowing for 40% extension. Ref. 788M 0-5 kg. 0-25 kg.</p>	7,475
7	<p>Electronic Tensile Tester: Digital readout of actual load, 4½ digits, dual range with peak hold racity. Accuracy AL BS 1610. Digital readout of extension compression to 0.01 mm. Test speed digital selection from 5 to 1000 mm/min and fast return. Accuracy ± 1%.</p>	60,000
8	<p>Polarising microscope Built in high intensity 6v 20w low voltage halogen illumination system,</p>	

	variable intensity control voltmeter, main supply pilot lamp, fuse. Polariser, rotatable and graduated for transmitted light, a heat filter, will accept 32 mm. dia. day-light blue or green filter.	6,000
9	Projectina micro macro projection 4002. Projection microscope:-Magnification range 3x-500x. Transmitted light, 12v, 50 watt transformer. Macro objective soxM. 20xM,10xM	10,000
10	Torision balance 5 mg. capacity, with a resolution of 0.1 mg, 250° scale, 330 mm/divided into 500 equal division of 10 micrograms per division	700
11	Yarn count test, warp recl, Hand driven swift will collapsible arm, traverse mechanism to spread yarn evenly across swift, 38 mm. for 4-8 reeling positions.	10,500
12	ASTM cotton yarn appearance standards: A series of photographic standards representing grades A,B,C, and D in six ranges of yarn numbers. Grade "A" is the highest.	1,500
13	Tapered yarn inspection boards: Colour black. Designed to warp all types of yarn onto black, tapered, aluminum boards, size 575x250x160mm.	1,500
14	User Tester 1 Model B Evenness testing for yarns, rovings and slivers manufactured from staple fibres. Measuring range: 4 tex to 80k tex (Nm 250 80 g/m). Sensitivity: 4 ranges available $\pm 100\%$, $\pm 50\%$, $\pm 25\%$, $\pm 12.5\%$. Range of Display. 0.5 to 40.0 %. Material feed. 4,8,25,50,100,200 or 400 m/min. Evaluating time 1,2.5,5,7.5 or 10 mins. Chart speed: 2.5, 5, 10, 25, 50, or 100 cm/min.	60,000
15	Yarn twist testing: Instrument to accommodate test lengths from zero to (10 ins) 250 mm, accommodated in spring loaded head and tailstock jaws, the yarn specimen are pre-tensioned by the application of clip and ring weights. Clamp distance accuracy $\pm 0.5\text{mm}$, of $\pm 2\%$, Magnifying lens attachment.	6,500
16	Air permeability test shirley Four range test for single or multi-layer fabric without edge leak. Bench mounting with compressor. Sample holder with clamp. Adjust guard and test area controls for pressure drop registered on two dials. Range-0.5-0.05 cm^3/s , 0.5-3.5 cm^3/s , 3.0-35.0 cm^3/s , 30.0-350.0 cm^3/s . Sample area 1 inch (5 cm^2), pressure drop 0.25 mm W-C, voltage 220/240v 50/60Hz	10,500
17	Cotton Finess Meter Calibrated to give direct readout of micronaire value	3,400
18	Finess and Maturity Tester For the rapid testing of finess and maturity, together with micronaire value.	10,000
19	Comb Sorter For sorting cotton fibres into staple length upto a max. of 150mm	3,500
20	Crimp tester For measurement of yarn length at known tension. Tension ranges 0 to 0.35 g. and 0 to 0.175 g.	1,000

21	Fibre length machine For measurement of length of individual fibres under controlled tension. Fitted with 2mm scale for cotton fibre.	2,500
22	Moisture Monitor For Indication of moisture content in percentage gain. rechargeable battery operation. Percentage regain range 2.4 to 20.0	2,000
23	Roving Reel For the measurement of the length of rovings, slubbing and drawings. Drum circumference 1m. width 300mm. Universal creel	1,000
24	Yarn Examining Machine Motor driven examining machine. Complete with black taper boards.	1,500
25	Universal Strength Tester For tensile testing of yarn, hanks and fabrics. Ten measuring ranges from 0-480 kg. to 0-1 kg. Accuracy $\pm 1\%$ of full scale deflection. Speed of traverse 50 to 600 mm/min. Complete with recorder, extesion counter, yarn grips, hank grips, jaws for cloth specimens.	10,000
26	Wash wheel For determination of colour fastness to washing at various temperatures and to dry cleaning. Machine to accomodate eight stainless steel test vessels 134 mm long x 76 mm diameter.	5,000
27	Xenontest 150S, light and weather fastness tester voltage 220V, 50Hz. Dimension width 820 mm, depth 550 mm, height 1590 mm.	60,000
28	Warp Tension Meter To measure the tension in warp yarns, Measuring range 0 to 25 kg and 0 to 50 kg.	600
29	Top pan balance Capacity 1500 g. Resolution 0.01 g. pan diameter 127 mm.	1,500
30	Thickness Guage Range of pressure 20-2000 gm/cm ² , area of press foot 325 mm ² , Range of thickness 0-25 mm. sensitivity 0.01 mm.	1,500
	Total	328,680

LEATHER

	Cost(US\$)
Lastometer To measure the tendency of upper leather to crack or tear in lasting. Maximum load 80 kg. Distension measured to 0.01 mm.	1,500
Snag Tester To assess the resistance of leather to snagging and scratching in wear.	2,200
Upper Leather Waterproofness Tester To test the waterproofness of upper leather under conditions of flexing. Machine to accommodate up to three testpieces.	2,000
Impact Scuff Tester To test upper leathers for thier resistance to damage when struck a single glancing blow	2,000
Viewing Box To assess the severity of damage produced by the Impact Scuff Tester.	900
Wrinkleometer To assess the tendency of upper leather to form pleats or wrinkles where shortening occurs during lasting.	300
Permeability/Absorption Apparatus To measure the moisture permeability and absorption of leather under conditions which exist in practice	2,000
Upper Leather Flexing Machine To measure the flexing endurance of light leathers and their surface finishes. Machine to be supplied with four stations.	1,500
Finish Heat Resistance Tester To assess the effect of heat on the colour and appearance of the finish of leather.	800
Leather Shrinkage Temperature Determination To measure the shrinkage of leather in water at varying tempratures.	1,500
Bottom Leather Water Penetration Machine To measure the water resistance of sole leather under dynamic test condition.	3,200
Soling Materials Abrasion Machine To test the abrasion resistance of soling and heeling materials.	4,500

Bottom Leather Grain Crack Tester

To determine the resistance of bottom leather to grain crack in a single bend 700

Miscellaneous Equipment

Including grey scales, piece glasses, sample cutter, stroboscobe, air conditioning etc. 20,000

Total 43,100

ELECTRICAL PRODUCTS

Universal Test Instrument for Electrical Domestic Appliances Instrument to be capable of making earth conductor tests, insulation resistance measurement, leakage current measurements, continuity testing and resistance measurement.	Cost(US\$) 520
D.C. Micro Ammeter (Class 0.5) Precision light spot instrument with moving coil movement. Measuring range 0.75 to 750 μ A	1,500
Multimeter AC and DC current and resistance measurement. AC current voltage 1.5, DC current voltage 1.5, Resistance 1.5. Number of measuring ranges 55.	780
DC Micro Voltmeter (Class 0.5) Precision light spot instrument with moving coil movement Measuring range 0.3 to 300 mv.	1,500
Clip.on Voltammeter For maximum 600 A. AC and 600 V AC. Measuring ranges 15, 60 and 600 A; 150, 300 and 600 V.	780
Clip.on Wattmeter For measurement of active power with single phase and three phase currents and reactive power with three phase currents. Measuring range 15A to 600A; 7.5, 30 and 300 kw.	780
Clip-on Power Factor Meter For measurement of $\cos \phi$ with three phase current and for determination of phase rotation and energy direction. Measuring range 15 to 1500A; 150 to 600V. Frequency range 40 to 60Hz.	780
Insulation Tester with Magneto Generator For measurement of consumer installations, for voltage measurement and for indication of current type and polarity.	780
Insulation Tester for Battery Operation For measuring the insulation resistance of conductors, systems, machines etc. When they are not under voltage.	1,300
Power Measuring Set For measurement in single phase and three wire systems with unbalanced load. Frequency range 15 to 65Hz.	3,640
Transformer Ratio Tester For the measurement of the no-load ratio of power transformers. Measuring range of the no-load ratio 1 to 1011.	5,000

R.L.C. Measuring Bridge	
For percentage measurement of apparent resistances by comparison with external standards. Resistance range 0.1Ω to $110M\Omega$, self inductive range $10\mu H$ to $1100H$. Capacitance range $10 pF$ to $1100pF$.	1,800
High Voltage Testing Unit	
Test voltage range 80 to 110 kv. For liquid and solid insulating materials. To be supplied with a full range of accessories.	1,500
Digital Timer	
For measurement of working time of relays or the tripping time of switches. Range 0 to 99.99 seconds. Resolution 10ms.	520
Lightmeter	
For measuring level of illumination in two ranges 0-500 lux and 0-2000 lux	900
AC/DC Breakdown. Leakage and Ionisation Tester	
Testing voltage 0-4kv and 0-12 kv. Breakdown periods from 1ms to 5ms indicated. Ionisation indication.	3,400
Calibration generator	
Three square wave output modes 10Hz to 1MHz. Amplitude calibration from $200\mu V$ to 100 V.	2,200
Time Mark Generator	
Marker outputs 1ns to 5s. Crystal frequency 1MHz, stability within 1 part in 10^5 . External trigger output.	2,000
Signal Generator	
Levelled variable output 250kHz to 250MHz. Digital readout of frequency. Amplitude range 5mv to 5.5V.	1,800
Signal Generator	
Levelled variable output 245MHz to 1050LMHz Frequency modulation capability. Amplitude range 0.5v to 4.0v.	2,800
Dual Beam Oscilloscope	
400 MHz bandwidth. Dual beam with full vertical cross over switching. 1GHz/division calibrated sweep. LGH2 direct access unit.	3,600
Miscellaneous Equipment	6,500
Distablize power supply units	3,400
Total	47,780

MAINTENANCE WORKSHOP

NO	DESCRIPTION	COST (US\$)
1	Center Lathe 90/260 Center distance 1625 mm. with accesories	15,000
2	Power Hack saw Kasto 210/240, Full Hydraulic with cooling device cutting range round max. 210mm, Flat/square 240x190/210x210 mm, cutting speed 16/32m/min.	3,250
3	Bench drilling Machine (Ax2-7)	2,200
4	Grinding Machine (TS-300)	3,000
5	Plate and round steel shear (TYPE 2BR-5/400)	1,300
6	Threading Machine Tornado Cutting range 1/16-2", M6-60 mm.	3,600
7	Hand lever quillotine 505 cutting (shearing) length 1060mm, max thickness 2mm.	4,500
8	Universal folding Machine Hand operated, working length 1020mm, thickness 2mm.	6,800
9	Welding rectifier Electrodes 1.5-6 mm, welding current 10-300 A	4,100
10	Spot welding gun	2,500
11	Slip bending Roll Hand operated working length 1020mm, thickness 2mm.	7,550
12	Compressor EPC 550-2-350 motor 4 kw, 350L-15Bar	3,800
13	Circular saw 1710 complete with sliding table and accessories	5,400
14	Surface and thickneser AD 280 k with stand	1,850
15	Milling, Drilling and Boring Machine (Bridge port type) Table size 1070 mmx22mm, longitudinal traverse 760 mm cross traverse 305 mm, vertical traverse 405 mm, 2HP motor with infinitely variable speed of 50 to 3750Rpm. Accessories to include slotting attachment, right angle arbor support bracket, dividing head, rotary table, collets, arbors, swivel vice, clamps and equipment cabinet.	15,000
16	Miscellaneous Equipment's to Include guillotine, gas welder etc.	10,000
17	Miscellaneous small tools To include taps, dies, reamers, drills, rolling cutters, hand tools, inspection equipment	10,000
	Total	99,850

METROLOGY CENTERE

A. LENGTH.

NO	DESCRIPTION	COST(US\$)
1	Guage block set including pieces of 200, 300, 400 and 500 mm steel accuracy. Grade 0/ISO-3650	1,700
2	MI-0 guage block set	3,200
3	Tesa UPC guage block measuring sets (two sets) No. type 16, 10401	9,500
4	Tesa model Electronic length measuring instrument type 4190190	6,100
5	Option for measuring certainty and calibration report type 16,90021	4,000
6	Universal measuring table	11,000
7	Transversal center support	5,650
8	Attachment for cheking micro meters	2,800
9	Support for dial indicator and electronic measuring probs	870
10	Cylindrical feelers	1,200
11	Large flat feeler	750
12	Table with accommodation for accessories	5,600
13	Dual axis photoelectric auto callimator	23,500
14	Inuar steel measuring tape 13 mm wide No 308-IN/15m (2pcs)	400
15	Inuar steel measuring tape 13 mm wide No 308-IN/20m	500
16	Ring guages one set of reference quality ring guages in size range 10 mm diameter to 100 mm diameter	1,700
Total		78,470

B. MASS MEASUREMENT

NO	DESCRIPTION	COST(US\$)
1	Electronic comparator balance 2086	6,800
2	Sartorius comparator C 500	7,300
3	Weight set 1 mg-10g mettler 73226	1,200
4	Weight set 1 mg-50 g mettler 73336	2,300
5	Weight set 100 g-5 kg.	5,700
6	Weight set 10 kg. mettler 73338	3,700
7	Weight set 2kg-10 kg. mettler 73343	1,700
8	Weight set 1 mg-1 kg mettler 73342	1,200
9	Standard weight 1 kg.	2,400
10	General purpose hydrometer type brand 2998163 (alcoholometer, saccharimeter, dewar- flasks)	1,500
11	Volumetric flasks, volumetric pipettes, measuring cylinders	4,000
12	25 kg. capacity reference balance (15mg. sensitivity)	4,500
13	5 kg. capacity reference balance (4 mg sensitivity)	2,500
14	200 g. capacity reference balance (0.5 mg sensitivity)	1,000
15	20 g capacity reference balance (0.025 mg. sensitivity)	1,500
	Total	47,300

C. ELECTRICAL UNITS

NO	DESCRIPTION	COST(US\$)
1	Transvolt, standard cell enclosure	5,200
2	Direct current comparator potentiometer	32,000
3	Constant temperature oil bath	11,500
4	DC reference standard	1,500
5	Calibrator	21,000
6	Transconductance Amplifier	7,500
7	Precision Power Amplifier	14,000

8	Digital multimeter (2pcs)	2,300
9	DC-Power Supply	7,600
10	Power meter	5,000
11	Energy meter	15,000
12	Standard resistors (10 pcs)	10,000
13	Voltage/current calibrator	5,000
14	Voltage Standards	4,000
	Total	141,600

Assistance to the Eritrean Standards Institution (ESI)

Issues - 96.08.15

1. Very prudent of the government to go for the establishment of this infrastructure (quality control, standardization, metrology) right at the very beginning of development. Badly needed!
2. Building reconstruction should be precondition or prerequisite, i.e. during the reconstruction period (one year: 1998) the project should already run (with components not requiring the building), or only after accomplishment should be the Prodoc signed (both sides of the dilemma)
3. Phased implementation should be followed (in "modules" = on delivery of a module funds can be released for the next, applied however, in a somewhat flexible, not rigid form). It is coupled with TPR-s.
 - Equipment e.g. should not be ordered in one shot and dumped until experts will install.)
4. At midterm an in-depth evaluation is to be implemented to initiate technical corrections if necessary
5. No way, equipment component by such institutions can not be pushed below some 50%
6. Three years for project implementation is at a stressed pace, requiring very efficient project management and cooperation from partners (government, UNDP, UNIDO). Dilemma: longer implementation is probably more efficient but costs more.
7. Staff size is now on a reasonable level, but should not be reduced by any argument.
8. Experts' assistance may be implemented also by subcontracting an agency.

I will prepare my report in Vienna, and submit together with the "polished" form Prodoc. - (Nomaste!)