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SUPPORT TO SENAI-CETIQT APPLIED RESEARCH UNIT

DP/BRA/87/033

BRAZIL

Terminal report*

Prepared for the Government of Brazil
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Robert Hirschler,
chief technical adviser

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United Nations Industrial Development Organization
Vienna

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* Mention of company names and commercial products does not imply the endorsement of the United Nations Industrial Development Organization (UNIDO).

This document has not been edited.

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EXPLANATORY NOTES

Abbreviations and acronyms used in the report

ACL	Applied Colorimetry Laboratory
CCM	Computer(ized) Colour Matching
CETIQT	Centro de Tecnologia da Indústria Química e Têxtil (Technology Center of the Chemical and Textile Industry)
DN/DCI	Departamento Nacional / Diretoria de Cooperação Internacional (National Department / Directorate of International Cooperation)
NPA	Nucleo de Pesquisa Applicada (Applied Research Unit)
SENAI	Serviço Nacional de Aprendizagem Industrial (National Service for Industrial Training)
TF	Trust Fund
TRM	Tripartite Review Meeting
UCD	UNIDO Country Director

ABSTRACT

The DP/BRA/87/033 project has been a rather long, very complex and highly successful project. Its activities (under Advanced Authorization) had started a year before it was finally signed in December 1988, and continued until the first half of 1992. The original budget of the project was US$ 366,000 (UNDP inputs of US$ 305.000 and Government cost-sharing of US$ 61,000) covering 32 m/m of expertise, which, after several modification has reached a total of US$ 752,000 (UNDP 397,000 and Government 355,000), with 45,4 m/m expertise.

This report is not a detailed account of all project activities, but a brief analysis of the factors leading upto the sixfold increase of the Government cost-sharing during the lifetime of the project, and particularly the development of the follow-up: a US$ 2,300,000 self-financed trust fund project.

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A. A BRIEF HISTORY OF THE PROJECT

There had been 5 m/m of Preparatory Assistance in 1987/1988 before the project was finally approved in December 1988, following the first mission of the CTA. Due to the delay in the signing the Project Document, project activites started only in 1989 and were scheduled to terminate by the end of 1990.

In addition to the CTA/Consultant in Dyehouse Automation and CCM, six short-term consultant were scheduled for 1989/90 in garment costing, knitting, garment manufacturing, pattern making, textile effluent treatment and textile dyeing and finishing, reflecting the focal points of the project. A total of US$ 70,000 had been earmarked in the Project Document for equipment, this figure was practically reached in 1989 with the purchase of a laboratory dyeing machine, a computer for CCM and various instruments for the textile effluent laboratory.

There were 7 missions completed in 1989 by six consultants, and it has to be mentioned already here that CETIQT made a very critical evaluation of the performance of all them, and decided to cancel the return missions of two consultants whose professional performance was judged to have been below the expected level. In this first full year of the project (1989) 17 national counterparts were active in the project, in addition to the National Co-ordinator.

1990 was the year of the presidential elections in Brazil, and the project activities - due to the change of Government in March, with the preceding expectation standstill and the following initial shock of "Plano Brasil Novo" - practically stopped for the first half of the year. Nevertheless, following a meeting between the Resident Representative and project personnel a modest increase (UNDP 62,465 + cost-sharing 26,549) was made in the budget (Revision "J" of 06/09/90).

In June 1990 a Programming Mission (with the participation of the UCD, the Backstopping Officer, the CTA and the representative of SENAI DN/DCI) was conducted suggesting a "bridging project" to carry on activities after the closing of the project foreseen for the end of 1990, and the starting of a new project sometime in 1991.

During the tripartite review meeting of 27 November 1990 the activities until that date were reviewed, and an extension the project until August 1991 with additional input of US$ 107,350 was recommended (UNDP 30,000, cost sharing 77,350). This *Recommendation* was sent to Brasilia, and it was supposed to have been signed by ABC and UNDP in February 1991, unfortunately the corresponding *Budget Revision* has been delayed until June.

As SENAI/CETIQT has by early 1991 strengthened the involvement of industry in the project, the idea of an eventual Trust Fund project has been raised, and developed into a project proposal (*ANNEX 1.*) soon after the TRM, and was also sent to the UCD office in February 1991.

However, the concept of the Trust Fund proved to be premature, and upon indications from the UNDP and UCD offices that yet another major project budget revision of the DP project with extension until the end of 1991 was preferred to the Trust Fund, a new proposal was prepared in March 1991 (*ANNEX 2.*)

This proposal has been the basis for the next *Budget Revision "K"* which had been prepared in the field in May 1991 (the CTA and the Backstopping Officer together with UNDP and the UCD office), and signed in June 1991. This revision was not reflecting all the necessary changes, and it had to be revised yet again , to be signed as *Revision "L"* on the 19 September. A number of activities had already been done under Advanced Authorization, which made the eventual budget revision extremely complicated.

This last revision should have cleared all the pending problems, as all equipment purchases and personnel recruitment had been previously been done. By that time however the project budget has become so complicated, that neither UNDP nor UNIDO could give exact figures, which later led to miscalculating some of the expenditures. Also, due to the delay in signing *Budget Revision "L"* the last PAD could only be issued on 10 October 1991, and this inevitably led to some of the project activities having to been carried over to 1992.

B. PROJECT IMPLEMENTATION

There have been four major budget revisions for DP/BRA/87/033, the last three of which increasing the original budget to more than double.

REVISION	*UNDP*	*COST SHARING*	*TOTAL*	*INCREASE*
H (21/3/1990)	305,000	61,000	366,000	-
J (13/9/1990)	367,465	87,549	455,014	89,014
K (10/6/1991)	367,465	318,117	685,582	230,568
L (20/9/1991)	397,465	354,772	752,237	66,655

The original three focal points of the project (dyeing and finishing, effluent treatment and garment manufacturing) have been kept, but the extensions have been done mainly in the areas where the industrial demand was strongest: automation, CAD/CAM, colour matching.

The implementation in 1991/1992 has complied with the figures of *Revision "L"* for 1991, the delay being mainly due to the delay in the signing of the *Budget Revision*.

Activities implemented vs. planned by budget line

BULI	PAD 1991		Actual 1991/1992	
	w/m	US$	w/m	US$
11-01	10.5	93,267	10.5	119,561.76*
11-10	1.5	14,000	1.1	11,021.43
11-11	1.5	14,000	1.0	14,695.47
11-12	2.0	22,500	2.2	26,079.49
11-13	0.5	3,500	0.5	3,500.00
11-14	0.5	3,500	0.5	3,500.00
11-15	0.5	3,500	0.5	3,500.00
11-50	5.5	58,655	4.8	57,441.33
11-52			*1.5*	*16,152.17*
11-54			*0.5*	*6,000.00*
11-55			*1.0*	*14,400.00*
11-56			*1.2*	*11,554.59*
11-57			*0.6*	*9,334.57*
11-xx	**22.5**	**212,922**	**21.1**	**239,299.48***

* Correction of US$ 15,310 applies due to mislaid MOD

BULI	PAD 1991	Actual 1991/1992
15-00	2,000	2,320.46
16-00	11,465	12,559.37
18-00	-	- 8,830.56
1x-xx	**226,387**	**245,348.75**
32-00	**4,000**	**9,073.38**
41-00	21,865	11,268.79
42-00	139,646	171,471.27
48-02	-	- 4,478.66
4x-xx	**161,511**	**178,261.40**
51-00	3,633	7,183.75
58-00	-	- 6.43
5x-xx	**3,633**	**7,177.32**
PROJECT TOTAL	**395,531**	**439,860.85**
		- 44,329.85

As can be seen from the above figures the final implementation follows fairly closely the agreements of the last TRM (of November 1990) resp. the subsequent modifications as specified in the *Budget Revisions "K"* and *"L"*. The discrepancy in the actual costs as compared to those budgeted if primarily due to the inaccurate "actual" figures on which these last two budget revisions were based. This of course seriously questions the actuality, or even the reliability of the information given by the UNIDO/UNDP databases.

C. MAJOR PROBLEMS

1. Lack of flexibility

This project has been regarded very successful both by the national project authorities (which is the most important), and by UNIDO (also not negligable). The success is more in terms of the technical merits (to be briefly described in D.), the problems to be mentioned are nearly exclusively related to project management, administration and execution.

The major drawback of the "classical" DP project is its inflexibility, the inertia of the mechanism which has caused major obstacles in responding to the needs of the industry. In an industrial environment it is well-nigh impossible to forecast in detail the equipment and expertise to be needed in one or more years time. It can be seen that this model has been based on UN agencies working with Government counterparts implementing institution building or strengthening, where the course of events could be planned well in advance.

As the sources from the IPF are getting extremely scarce, UNIDO inevitably has to turn to its only alternative: industry. This project has clearly illustrated that UNIDO has a lot to offer to the industry in developing countries, but that it cannot deliver under the current circumstances. If the concurrence of UNDP and UNIDO is needed for every minor modification in the List of Equipments or the Consultants to be hired, and it takes months, how can the project react to an industry request of fielding a specialist within a week or two (unplanned), or buy a piece of equipment immediately necessary to solve a production problem (unplanned).

2. Lack of counterparts

At the beginning of the project it was difficult to make the national project authorities dedicate full-time counterparts to the project. The recommendations of both TRM's included pleas for more counterparts, and it was only in the third year (1991) that sufficient number of qualified full-time staff was assigned to the project.

3. Lack of adequate consultants

This project has demanded very high-level consultants, and in two cases the consultants were not required to return for the second part of their split missions. As UNIDO tries more and more to attend the demands from industry the professional requirements get inevitably more and more stringent. While it is acceptable (though barely) to have somebody from the academic world to deliver some papers or seminars without in-depth practical knowledge and thorough industrial experience, the same is unimaginable if the task is trouble-shooting in a plant or the preparation of an industrial feasibility study.

UNIDO's roster of consultants is reasonably large, but it is getting more and more difficult soemtimes to get experts at the level required within the constrains of the UNIDO nomenclature. It has to be realized that in many cases UNIDO is (or at least should be) competing with private consulting companies. and while the price advantage is clearly on UNIDO's side it only works if the consultants needed are in fact available at this lower price.

D. ELEMENTS OF SUCCESS

1. Addressing the right problem

Without any doubt the most important element of a successful project is the addressing of the right (i.e. topical and important) problem in the right way. The approach used in this project has been that of addressing a few related topics, and as the project developed narrowing them down to those where the expected impact was the greatest. Starting with "Strengthening the SENAI/CETIQT Applied Research Unit" the project has succeeded in establishing (within NPA) the SENAI/CETIQT Applied Colorimetry Laboratory, then the International Technical Assistance Unit - with a number of Technical Assistance Projects already succesfully concluded with major textile companies.

The most interesting topics carried over to the new (ongoing) Trust Fund project have been colorimetry and computerized colour matching, CAD/CAM in weaving, printing and apparel, dyehouse automation and other computer applications in the textile and apparel industry.

2. Finding the right counterpart organization

Arguably the most important factor in making a project successful is to find the right counterpart organization. UNIDO personnel is not moving around in vacuum: the efficiency of implementing ideas depends mainly on the medium i.e. the counterparts. It is not easy to define what are the characteristics of the "right" institution. In the case of SENAI/CETIQT: a school and technology center with a good balance of training, technical assistance (i.e. direct links with the industry) and applied research; charismatic and professionally sound leadership and adequate infrastructure to be strengthened.

After the first few missions mutual trust has been established and the project could work (at least internally) with a minimum amount of bureaucracy and maximal efficiency. Sincerity - on both parts - is of course essential. Instead of agreeing out of politeness but without conviction, sincere criticism has helped to identify the weak points on both sides and overcome the difficulties in a reasonably short time. When the counterparts were not satisfied with the professional level of the UNIDO consultant they said so (and these consultants were promptly removed); but equally when the UNIDO experts needed more counterparts CETIQT has acted as fast as could.

3. The time element

Building up a project is very time-consuming, and the constant presence of a UNIDO consultant (CTA, Project Manager) is essential. This issue is very much debated within UNDP and sometimes UNIDO as well, claiming that it is not cost-effective to have UN personnel for months or years attached to the project. Our experience has shown that it is possible to give good papers and seminars in a succession of short missions, but it is not possible to make a long-lasting effect without spending considerable time with the project.

CETIQT itself had experienced a period of several years when UNIDO experts came and went, gave some helpful advice but were not there when needed for helping in the implementation. It has been by the demand of the national project authorities that the CTA of this project spent most of 1991 in mission, and that was the period when the work on which the 2.3 million $ Trust Fund project is based has been performed. Based on this positive experience the new TF project has already been drafted so that there is "full-time" CTA and another medium-term expert post already in the initial project document. Their task is train a team of national

(also full-time) counterparts, establish links with and give technical assistance to industrial units and coordinate the work of shorter term specialists (UNIDO consultants) invited to the project.

This long-time immersion into the project is also necessary for the consultants to identify themselves - upto a limit - with the counterpart institution. There is of course the danger that with time the UNILO expert will take on the attitude of the counterparts which he or she is supposed to change, but this should be regarded much more the weakness of the expert himself than the disadvantage of the long-term approach.

In a really good project the separation of who is UNIDO and who is counterpart is only permissible for administrative purposes. All project personnel must think in terms of a team, and the question "whom do you work for, the counterpart institution or UNIDO" should make no sense.

E. RECOMMENDATIONS

All the professional recommendations of the DP/BRA/87/033 project have either been already implemented or built into the follow-up TF project. This project cannot be "copied" in other fields or other countries, because there is no secret recipe to make a project successful.

In order to utilize the positive aspects of this project the following is recommended:

1. The Trust Fund project modality should be employed in all cases when projects activities are related to the private industry, and flexibility and quick response are necessary.

2. UNIDO should reconsider its internal mechanisms, because even without the contrains of the regular UNDP projects it is not fully ready to react as the Trust Fund would require.

3. A completely new mentality is necessary when dealing with self-financed Trust Fund projects: in these cases UNIDO has to realize and accept that - within the limits permitted by its constitution - UNIDO has to **serve** the Trust Fund donor (he who pays the piper calls the tune!), it is providing a paid service and definitely not **giving favours.**

ANNEX 1.

TRUST FUND PROJECT PROPOSAL 15 February 1991

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

P r o j e c t D o c u m e n t

COUNTRY:	Brazil
PROJECT NUMBER:	SF/BRA/91/...
PROJECT TITLE:	High-level Technical Assistance for the Brazilian Textile Industry
SCHEDULED START:	March 1991
SCHEDULED: COMPLETION	December 1991
ORIGIN AND DATE OF OFFICIAL REQUEST:	SENAI letter dated .....
TRUST FUND DONOR/BENEFICIARY:	SENAI/CETIQT International Technical Assistance Unit
TRUST FUND CONTRIBUTION:	US$ 200,000.00 (Incl. UNIDO support costs)

_____ _____

Agreed on behalf of SENAI/CETIQT Date

_____ _____

Agreed on behalf of UNIDO Date

1. LEGAL CONTEXT WITH TERMS OF REFERENCE

This Project Document shall be the instrument referred to as such in the Technical Co-operation Trust Fund Agreement between the United Nations Industrial Development Organization and SENAI/ CETIQT, signed by the Parties on ....

Revision to this project document may only be made with the written agreement of the authorized representative of the Donor according to Article III, of the aforementioned Trust Fund Agreement.

2. OBJECTIVES

a) Development Objective

To improve the quality and increase the quantity of textile fabrics produced by up-to-date, high-efficiency methods and equipment to be competitively exportable; in accordance with the government policy as declared in the Integrated Sectorial Program of the Textile and Garment Industries (PROGRAMA SETORIAL INTEGRADO DAS INDUSTRIAS TEXTEIS E DE CONFECCAO) by Resolution #17 of 8 November 1989 of the Industrial Development Council (CONSELHO DE DESENVOLVIMENTO INDUSTRIAL) of Brazil.

b) Project Objective

The purpose of the project is to establish and launch the activities of the CETIQT International Technical Assistance Unit, capable of providing high-level education, training and technical assistance in the special fields of textile computer applications (CAD/CAM, colour matching, dyehouse automation, process optimization etc). In the frame of the project the CETIQT International Technical Assistance Unit is going to provide - with the participation of UNIDO consultants - technical assistance (direct support) to participating textile companies in Brazil in the introduction, implementation and application of high-level advanced techniques of textile and garment manufacturing.

3. BACKGROUND AND JUSTIFICATION

(a) Justification (Development Hypothesis)

The textile manufacturing industry in Brazil has in recent years developed at a much lower rate than those in the U.S.A., Western Europe and particularly the Far East. The lack of interest on the part of the entrepreneurs in investing in this field - due to the economic climate of the country on the one hand, and the government's policy of severe import restriction on equipment and machinery (particularly on those having microprocessor-based or computerized controls) on the other hand - have resulted in the Brazilian textile industry falling behind the technical level of the industrially developed countries.

In addition to the obsolescence of machinery and equipment, the technical level and cost efficiency of the processes, technologies and even the dyes and chemicals used in the dyeing, printing and finishing sector of the Brazilian textile industry has also become lower, in many cases much lower, than that needed for production of high quality and efficiency.

The former Government, recognizing the necessity to remedy this situation had changed its previous policies. This change has been approved by the present government, and the drastic reduction of import quotas has been announced recently both for textiles (making it imperative for the industry to modernize its production techniques to remain competitive), and for equipment (making it possible to install really up-to-date machinery). This is a faster than originally planned realization of the Integrated Sectorial Program of the Textile and Garment Industries (PSI) which has called, among others for:

- the liberation of importing textile machinery and equipment;
- the acquisition of new technologies for the Brazilian textile industry from abroad;
- giving priority, in the importing procedures, to computerized production control systems, process optimization and CAD/CAM systems in the textile industry; and
- the introduction of special training courses in modern production-administration techniques such as JUST-IN-TIME, QUICK-RESPONSE, etc.

These goals may only be achieved in a reasonably short time-scale with significant outside help. The Constitution of UNIDO as a specialized agency adopted 8 April 1979, gave its Secretariat a clear mandate (among many others) to build up co-operation between the entrepreneurial sectors of developing countries and those of industrialized countries.

SENAI/CETIQT - the largest textile and garment technological center of the SENAI system - has a long tradition of international co-operation. The impact of particularly the two latest projects - DP/BRA/87/033 and SI/BRA/89/801 - has been considerable, raising new demands from the industry for continuing - and extending - technical assistance. CETIQT, with its extensive experience and connections as well as its increasing acceptance as a center of excellence in a number of fields, is ideally suited to play the role of multiplicator in international technical assistance projects.

This is clearly indicated by the willingness of many textile companies throughout the country to contribute to the financing of further projects. In the frame of the Trust Fund Project CETIQT is going to establish and launch the activities of its International Technical Assistance Unit, drawing its resources partly from CETIQT's own budget, but mainly from the contributions of private industry and eventually those of third party donors. Utilizing these resources international experts will be fielded to provide direct assistance for participating industries under the co-ordination of CETIQT.

This approach has the clear advantage over individual Trust Fund Projects with companies that the activities of the experts are co-ordinated, and thus services of 1 or 2 weeks duration or even less for any one company become viable. Further advantages of this approach are that CETIQT provides counterparts, who will, in the future, also be able to provide technical assistance on their own, as well as participate in the educational and training programs of CETIQT at a higher level. Finally, through the Trust Fund Project the very latest techniques and equipment shall be implemented in CETIQT, providing thereby the facilities to train future textile technicians and engineers at the state-of-the-art level.

(b) Approach (Project Hypothesis)

The Trust Fund Project is planned to operate in the following manner. CETIQT makes individual agreements with textile manufacturing companies of the private sector of providing the technical assistance they require in a number of fields related to textile and garment manufacturing: e.g. recipe and process optimization, preparation of feasibility studies and development concepts, assistance in investment decisions (specification and selection of equipment and machinery), special training courses etc.

The companies pay CETIQT for these services according to an agreed schedule, and CETIQT pays UNIDO through the Trust Fund for the services provided. The Trust Fund is thus only between CETIQT and UNIDO, while the participating private companies make individual Technical Assistance Agreements with CETIQT. Following UNIDO rules and regulations concerning the operation of Trust Funds CETIQT will only make commitments involving UNIDO services if those are already covered either by the contributions or by the resources of CETIQT.

The participating companies may receive through the Trust Fund only expertise, fellowships or study tours ; under no conditions are they going to receive equipment through the project. On the other hand, approx. 40 to 60% of the Trust Fund budget will be used to purchase specialized equipment for CETIQT (computers, special and general purpose software, laboratory equipment, demo material etc.) in order to constantly update and upgrade its educational, training and applied research facilities.

During the first phase of the project about 40% of the US$ 200.000 is budgeted for the modernization of the textile computer applications laboratory of CETIQT for teaching and training basic and advanced level computer applications with simultaneous upgrading of the computer facilities of the related departments For this purpose the following - preliminary - list of equipment is envisaged:

2 i486 based computer systems
(computer dept., applied colorimetry lab);
4 80386 based computer systems
(technical library, physics and chemistry lab., fashion and marketing dept., education secretariat)
18 80386SX based computer systems
(textile computer applications laboratory)

Related pieces of equipment (printers, software etc.) are being purchased through the ongoing DP/BRA/87/033 project.

The other 60% of the budget will serve to bring experts to the project participating in the International Technical Assistance activities (CTA, CAD/CAM expert and other consultants), with special reference to the preparations for the coming International Textile Machinery Exhibition (ITMA '91), for which the textile companies need preview seminars, courses etc. These are going to be organized mainly in the frame of the National Textile Conference (VI CNTTC) in July 1991 at CETIQT.

4. OUTPUT

The Output of the Trust Fund project will be the International Technical Assistance Unit of CETIQT with increased capabilities to train textile professionals at the state-of-the-art level in computerized textile and garment applications, as well as the increase in the level of knowledge of professionals in the Brazilian textile and garment industry.

5. ACTIVITIES

Specification of equipment FEBRUARY/MARCH 1991 Placing orders MARCH 1991 Installation of equipment MAY 1991 Fielding of consultants MAY/AUGUST 1991

6. PROJECT INPUTS

(a) Through the Trust Fund

Personnel

		m/m	US$
11-01	Chief Technical Adviser/ Consultant in Dyeing-Printing-Finishing	4.5	40,000
11-02	Consultant in CAD/CAM applications	1.5	12,000
11-03	Short term consultants	5.0	50,000
11-99	Sub-total international experts	10.5	102,000

	UNIDO support costs (13%)		13,260
16-00	UNIDO staff-member mission	0.5	6,000
	Equipment		
41-00	Expendable equipment Auxiliary equipment and application SW		4,000
42-00	Non-expendable equipment Computer systems for CETIQT		70,000
49-99	Total equipment component		74,000
	UNIDO support costs (5%)		3,700
51-00	Sundries		1,040
99-99	**Project total**		**200,000**

(b) Trust Fund donor contribution in kind

- Project Personnel: 5 counterparts
- Full DSA and local travel of international experts
- Offices
- Translations
- Locally available minor equipment
- Sundries

STATUS REPORT AND RECOMMENDATIONS FOR THE REVISION OF PROJECT DP/BRA/87/033

(March 1991)

1. INTRODUCTION

During the last tripartite review meeting of 27 November 1990 the activities until that date were reviewed, and an extension of the project until August 1991 with additional input of US$ 107,350 was recommended. These recommendations have been approved at all levels and the project revision is now being finalized.

The project activities have continued successfully since then, and further demands have been raised by the industry to amplify the technical assistance activities of the project. Since, however, it had been agreed during the tripartite review meeting that there would be no further extensions and revisions and the project would be definitely closed by August 1991, CETIQT has prepared a proposal for a new project in the form of a Trust Fund. This proposed Trust Fund Project would have had a total budget of US$ 200,000 (plus contributions in kind) and covered entirely by CETIQT's own resources, coming to a large extent from private industry contributions.

During preliminary discussions about this proposal it was made clear that neither ABC nor UNDP would support a Trust Fund project now. However, appreciating the importance and the advantages of continuing these activities under SENAI/CETIQT and private industry financing, both ABC and UNDP might agree to yet another revision of the ongoing project.

Accordingly, it is recommended that the project activities be extended until the end of the year (December 1991) with a budget revision reflecting the additional input of US$ 200,000 cost - sharing and US$ 40,000 contribution in kind, the total extension of US$ 240,000 being covered by CETIQT.

It is very important that this latest revision be authorized as soon as possible for two reasons. First, most of the experts are foreseen to be fielded in July to participate in the VI CNTTC, the biennial national (now international) conference of textile and garment technology, with an expected participation of 3,000

textile professionals. Since the task of the experts will include the delivery of a 3-4 hours paper as well as a 12-15 hours training course, they have to be given due time for preparation.

Secondly, the equipment component - for upgrading the Applied Colorimetry Laboratory and modernizing the CETIQT Textile Computer Laboratory - has to be installed by May and all equipment has to be operational by June so that these important new facilities may be presented under working conditions by the time of the conference.

The modified *Work Plan*, the *Job Descriptions* of the experts and the detailed *List of Equipment* have been prepared and included in the *Appendix* to this proposal so that the recruitment of the experts and the requisition of the equipment may commence as soon as the revision is approved.

In order to clarify matters a brief review of the present status of each project element is also given below.

2. INTERNATIONAL EXPERTS

The emphasis would be on the continuation of the technical assistance program for the industry as well as on organizing papers and training courses giving a preview and orientation for textile professionals planning to visit the International Textile Machinery Exhibition (ITMA '91) in September/October in Hanover.

A total extension of 11.5 m/m is recommended, budgeted at US$ 114,000.00:

	m/m	US$
11-01 CTA	6.0	56.500
11-12 Consultant in CAD/CAM	2.0	25.000
11-13 Consultant in Spinning	0.5	3.300
11-14 Consultant in Weaving	0.5	3.300
11-15 Consultant in Knitting	0.5	3.300
11-50 Unspecified	2.0	22.000
11-99 SUB-TOTAL	11.5	114.000

The pro-forma costs include international travel (except for 11-13 to 11-15 who would be staying in Brazil on another project), salaries and the 13% UNIDO support costs, but no DSA in Brazil which is recommended to be paid directly by CETIQT and it is budgeted as contribution in kind.

A. Status of currently existing posts

11-01 CTA/Consultant in Dyehouse Automation (3 months)
Currently on mission until 5th of May, extension of 6 months is recommended.

11-10 Consultant in Effluent Treatment (1.5 m/m)
Under recruitment, mission planned for April/May 1991. No extension is planned under this post, if it becomes necessary post 11-50 may be used.

11-11 Consultant in Dyeing and Finishing (1.0 m/m)
The post has been opened for Mr. Corbishley, whose mission is planned for April 1991.

11-53 (Unspecified) 1.5 m/m
The post has been opened for Mr. Aspinall currently on mission. Eventual further mission under 11-50.

11-54 (Unspecified) 1.0 m/m
Post used for Consultant in Textile Quality Control. Job Description attached, mission of Government Nominee (Dr. G. Aschner) planned for July.

11-50 Unspecified, 1.0 m/m
Post reserved to be used as required by the technical assistance activities.

B. New and extended posts

11-01 CTA (6 m/m extension)
Detailed program included in Job Description.

11-12 Consultant in CAD/CAM Applications (2.0 m/m, new)
Detailed program included in Job Description. Recruitment of Government Nominee (Dr. A. Siegler) will be initiated as soon as revision is approved.

11-13 to
11-15 Consultants in Spinning, Weaving, Knitting
(0.5 - 0.5 m/m each, new posts)
These posts take advantage of the consultants' presence in Brazil on another project, and only contain the extension of their missions to enable their participation at the VI CNTTC in July (see Job Descriptions), delivering papers and training courses.

11-50 Unspecified, 2.0 m/m
To be utilized in a flexible manner according to the needs of the technical assistance program.

3. UNIDO STAFF MEMBER MISSION

One mission is foreseen in the previous revision for July, which is needed for project monitoring and participation of the Backstopping Officer at the VI CNTTC, an addition mission is recommended for the terminal Tripartite Review Meeting in December 1991.

4. FELLOWSHIPS

Preparations for the participation of 3 counterparts at the Conference of Latin American Textile Chemists and Colorists are going as scheduled. All 3 papers submitted have been accepted by the organizers.

5. EQUIPMENT

In October 1990 (before the tripartite meeting) US$ 55.000 was added to the budget for purchasing the following items (Requisitions # 90/9 and 90/10)

Item	Description	Budgeted	Actual	Status
1	Tingiomat Ting-B	9.000	9.000	installed
2	HT-Wash Tester BFA	16.000	16.000	installed
3	Electronic balances	5.000	4.500	ordered
4.	386/33 computer	7.000	-	order pending
5.	386 laptop computer	6.000	6.300	delivered
6.	ACS-DATACOLOR SW	10.000	7.500	delivered
7.	Installation	2.000	-	order pending
TOTAL		**55.000**	**43.300**	
Pending			**11.700**	**(net)**

The last project revision has recommended further US$ 42.000 (net) for equipment, but, as the revision has not yet been approved, it is still pending. Thus, there is an amount of US$ 11.700 + 42.000 = US$ 53.700 (net) or US$ 60.700 (gross) available for equipment as soon as the last recommended revision is authorized and purchase ordered.

CETIQT has US$ 60.000 available for the modernization of its Textile Computer Laboratory, and further US$ 21.000 for minor equipment, and this revision recommends to increase the budget for equipment by the US$ 81.000 (incl. 13% UNIDO support costs). The total uncommitted balance for 1991 is thus 60.700 + 81.000 = 141.700 (gross) or US$ 125.400 net. The list of equipment recommended to be purchased as soon as possible is attached as *Appendix 3*.

6. ADDITIONAL INPUT RECOMMENDED FOR 1991

International experts

	m/m	US$
11-01 CTA/Consultant Dyehouse Automation	6.0	56.500
11-12 Consultant in CAD/CAM Applications	2.0	25.000
11-13 Consultant in spinning	0.5	3.300
11-14 Consultant in weaving	0.5	3.300
11-15 Consultant in knitting	0.5	3.300
11-50 Short-term consultants	2.0	22.000
11-99 International Experts	11.5	114.000

(Pro-forma costs include international travel, salary and UNIDO support costs, no DSA in Brazil)

Other Personnel Costs

16-00 UNIDO Staff Mission	5.000

Equipment

41-00 Expendable Equipment	6.000
42-00 Non-Expendable Equipment	75.000
49-99 Total Equipment (incl. 13[illegible])	81.000
99-99 TOTAL	200.000

CETIQT Cost Sharing Payment Schedule:
(including previously committed US$ 36.050)

March 1991	100.000
May 1991	80.000
August 1991	56.050
TOTAL	236.050

CETIQT Contribution in kind 40.000

7. WORK PLAN FOR 1991

1.	4th mission of CTA (4 m/m) Mission in progress	JAN/MAY 1991
2.	Mission of 11-53 (1.5 m/m) Consultant Dyeing/Finishing, in progress	MARCH 1991
3.	Installation of laboratory equipment 2 lab dyeing machines installed 2 electronic balances ordered 1 laptop computer delivered ACS-DATACOLOR SW delivered	MARCH 1991
4.	Placing orders for further equipment (Applied Colorimetry Laboratory, Textile Computer Laboratory) - in progress	MARCH 1991
5.	Mission of 11-11 (1.0 m/m) Post opened for Mr. Corbishley	APRIL 1991
6.	3rd mission of 11-10 (1.5 m/m) Consultant in Effluent Treatment To be recruited	APRIL 1991
7.	Fellowships (3 counterparts) Papers accepted by conference organizers	MAY 1991
8.	1st mission of 11-12 (0.5 m/m) Consultant in CAD/CAM Applications	MAY 1991
9.	5th mission of CTA (2.0 m/m)	MAY/JULY 1991
10.	Mission of 11-54 (1.0 m/m) Consultant in Textile Quality Control	JULY/AUGUST 1991
11.	Participation at the VI CNTTC UNIDO Staff Mission Mission of 11-12 (CAD/CAM - 0.5 m/m) Mission of 11-13 (Spinning - 0.5 m/m) Mission of 11-14 (Weaving - 0.5 m/m) Mission of 11-15 (Knitting - 0.5 m/m)	JULY 1991
12.	7th mission of CTA (4.0 m/m) Includes ITMA and study tour with counterparts, and terminal TRM	SEPT/DECEMBER 1991

13.	3rd mission of 11-12 (0.5 m/m) Consultant in CAD/CAM. Includes ITMA and study tour with counterparts	SEPT/OCTOBER 1991
14.	4th mission of 11-12 (0.5 m/m) Consultant in CAD/CAM, ITMA review seminars	NOVEMBER 1991
15.	Missions of short-term consultants (3.0 m/m)	as required
16.	Terminal Tripartite Review Meeting	DECEMBER 1991

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-01

POST TITLE	Chief Technical Adviser/ Consultant in Dyehouse Automation
DURATION	6 months (split missions)
DATES REQUIRED	2 months in May/July 1991 4 months in September/December 1991
DUTY STATIONS	Rio de Janeiro with travel within the country; travel within Europe (U.K., Germany, Switzerland, Austria) and home-base work
DUTIES	In addition to his duties as Chief Technical Adviser the consultant will specifically be expected to:

- Visit selected manufacturers of dyehouse automation and CAD/CAM equipment to collect information required for the work of the SENAI/CETIQT International Technical Assistance Unit, as well as for the preparation of ITMA preview materials.

- Prepare ITMA preview materials (at home base) in textile dyeing, printing and finishing describing the state-of-the-art in machinery and equipment for

(a) a 3-4 hours seminars in what are the trends and novelties to be expected at ITMA'91;
(b) a 15 hours training course on the state-of-the-art in dyeing/printing/finishing.

- Present the materials (a) at and (b) after the VI CNTTC (6th International Congress of Textile and Garment Technology) in Rio de Janeiro.

- Prepare and organize a detailed program for a group of 8-12 professionals to visit ITMA'91, and also to visit selected textile dyeing/printing/finishing companies to study the latest technology under production conditions.

- Prepare an evaluation material on the novelties shown and trends to be expected after ITMA'91 (home-base) by the end of October 1991.

- Conduct ITMA'91 Evaluation Seminars on dyeing/printing/ finishing of 12 hours duration (including 3 hours on CAD/CAM in printing in cooperation with the Consultant in CAD/CAM Applications), at 3 selected locations in November 1991.

- Participate in the work of the SENAI/CETIQT International Technical Assistance Unit as required, providing technical assistance to the participating textile companies.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS — Textile chemist with extensive industrial experience in dyeing/printing/finishing, full acquaintance with up-to-date Computerized Colour Matching systems, Dyehouse Colour Kitchens and Chemicals Dispensing systems, familiarity with Management Information Systems and CAD/CAM systems.

LANGUAGE — English. Spanish or Portuguese an asset.

BACKGROUND INFORMATION — See attached.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-12

POST TITLE	Consultant in CAD/CAM Applications
DURATION	2.0 months (4 split missions)
DATES REQUIRED	0.5 month in May 1991 0.5 month in July 1991 0.5 month in Sept/Oct 1991 0.5 month in Nov/Dec 1991
DUTY STATIONS	Travel in Europe (1st mission), Rio de Janeiro with travel within the country (2nd and 4th missions); Hanover with travel within Europe including home-base work (3rd mission).
PURPOSE OF PROJECT	To provide high-level training for textile specialists
DUTIES	The consultant will be a member of an international team assigned to SENAI/CETIQT to assist the assimilation of information available through the 11th International Textile Machinery Exhibition (ITMA'91). Under the overall guidance of the CTA the consultant will be expected to prepare material for, and conduct lectures, seminars, training courses as well as lead a study tour in his special field and will specifically be expected to:

- Organize visits to the major manufacturers of CAD/CAM equipment in the U.K., Belgium and Germany in May 1991 in order to collect preliminary information and to prepare ITMA preview materials in CAD/CAM applications in weaving, knitting and printing for

(a) a 3-4 hours seminar discussing the trends and novelties to be expected at ITMA;

(b) a 15 hours training course, broken down into:

- 6 hours "Principles of CAD/CAM in the Textile Industry"

- 3 x 3 hours CAD/CAM in weaving, knitting, printing.

- Prepare the materials (a) and (b) and send them to CETIQT for translation by the end of June 1991.

- Present the materials (a) at and (b) after the VI CNTTC (6th International Congress of Textile and Garment Technology) in Rio de Janeiro.

- Prepare and organize a detailed program for a group of 8-12 professionals (weaving, knitting and printing) to visit the CAD/CAM related exhibitors at ITMA'91 as well as selected companies, where CAD/CAM applications may be studied in practice.

- Lead the group through ITMA and the factory visits in September/October 1991.

- Prepare an evaluation material on the novelties shown and trends to be expected after ITMA'91 (home-base) by end of October 1991.

- Conduct - at 3 selected locations - ITMA'91 Evaluation Seminars on CAD/CAM applications in weaving, knitting and printing (3 hours each) in November 1991.

- Visit selected companies and give technical assistance in CAD/CAM applications.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS	Physicist or electrical engineer with high-level knowledge of computer-aided design systems, and experience in textile applications.
LANGUAGE	English. Spanish or Portuguese an asset.
BACKGROUND INFORMATION	See attached.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-13

POST TITLE	Consultant in spinning technology
DURATION	0.5 month
DATE REQUIRED	July 1991
DUTY STATION	Rio de Janeiro
PURPOSE OF PROJECT	To provide high-level training for textile specialists
DUTIES	The consultant will be a member of an international team assigned to SENAI/CETIQT to assist the assimilation of information available through the 11th International Textile Machinery Exhibition (ITMA'91). Under the overall guidance of the CTA the consultant will be expected to prepare material for, and conduct a seminar and a training course and will specifically be expected to:

- Collect preliminary information and prepare and send for translation to CETIQT (by 15th June 1991) ITMA preview materials in textile spinning describing the general trends and the state-of-the-art in machinery and equipment for

(a) a 3-4 hours seminar in what are the trends and novelties to be expected at ITMA '91;
(b) a 15 hours training course on the state-of-the-art in spinning.

- Present the materials (a) at and (b) after after the VI CNTTC (6th International Congress of Textile and Garment Technology) in Rio de Janeiro.

- Propose a detailed program for a group of professionals to visit ITMA'91, and also to visit selected textile spinning companies to study the latest technology under production conditions.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS	Spinning technologist with extensive industrial experience, full acquaintance with up-to-date production methods and machinery, ability to deliver lectures, seminars and courses.
LANGUAGE	English. Spanish or Portuguese an asset.
BACKGROUND INFORMATION	See attached.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-13

POST TITLE	Consultant in weaving technology
DURATION	0.5 month
DATE REQUIRED	July 1991
DUTY STATION	Rio de Janeiro
PURPOSE OF PROJECT	To provide high-level training for textile specialists
DUTIES	The consultant will be a member of an international team assigned to SENAI/CETIQT to assist the assimilation of information available through the 11th International Textile Machinery Exhibition (ITMA'91). Under the overall guidance of the CTA the consultant will be expected to prepare material for, and conduct a seminar and a training course and will specifically be expected to:

- Collect preliminary information and prepare and send for translation to CETIQT (by 15th June 1991) ITMA preview materials in textile weaving describing the general trends and the state-of-the-art in machinery and equipment for

(a) a 3-4 hours seminar in what are the trends and novelties to be expected at ITMA '91;

(b) a 15 hours training course on the state-of-the-art in weaving.

- Present the materials (a) at and (b) after after the VI CNTTC (6th International Congress of Textile and Garment Technology) in Rio de Janeiro.

- Propose a detailed program for a group of professionals to visit ITMA'91, and also to visit selected textile weaving companies to study the latest technology under production conditions.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS	Weaving technologist with extensive industrial experience, full acquaintance with up-to-date production methods and machinery, ability to deliver lectures, seminars and courses.
LANGUAGE	English. Spanish or Portuguese an asset.
BACKGROUND INFORMATION	See attached.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-13

POST TITLE	Consultant in knitting technology
DURATION	0.5 month
DATE REQUIRED	July 1991
DUTY STATION	Rio de Janeiro
PURPOSE OF PROJECT	To provide high-level training for textile specialists

DUTIES

The consultant will be a member of an international team assigned to SENAI/CETIQT to assist the assimilation of information available through the 11th International Textile Machinery Exhibition (ITMA'91). Under the overall guidance of the CTA the consultant will be expected to prepare material for, and conduct a seminar and a training course and will specifically be expected to:

- Collect preliminary information and prepare and send for translation to CETIQT (by 15th June 1991) ITMA preview materials in textile knitting describing the general trends and the state-of-the-art in macninery and equipment for

(a) a 3-4 hours seminar in what are the trends and novelties to be expected at ITMA '91;
(b) a 15 hours training course on the state-of-the-art in knitting.

- Present the materials (a) at and (b) after after the VI CNTTC (6th International Congress of Textile and Garment Technology) in Rio de Janeiro.

- Propose a detailed program for a group of professionals to visit ITMA'91, and also to visit selected textile knitting companies to study the latest technology under production conditions.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS	Knitting technologist with extensive industrial experience, full acquaintance with up-to-date production methods and machinery, ability to deliver lectures, seminars and courses.
LANGUAGE	English. Spanish or Portuguese an asset.
BACKGROUND INFORMATION	See attached.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

U N I D O

Request from the Government of Brazil

J O B D E S C R I P T I O N

DP/BRA/87/033/11-13

POST TITLE	Consultant in textile quality control
DURATION	1.0 month
DATE REQUIRED	July/August 1991
DUTY STATION	Rio de Janeiro with travel within the country
PURPOSE OF PROJECT	To provide high-level training for textile specialists
DUTIES	The consultant will be a member of an international team assigned to SENAI/CETIQT providing technical assistance for the Brazilian textile industry. Under the over-all guidance of the National Project Director and the CTA the consultant will be expected to prepare material for, and conduct seminars and a training course as well as provide technical assistance to selected textile companies in his special field and will specifically expected to:

- Prepare a 3-4 hours seminar paper on "Total Quality Management in the Textile Industry" to be presented at the VI CNTTC 6th International Congress of Textile and Garment Technology), and send it for translation to CETIQT by 15th June 1991.

- Prepare a 12-15 hours course material on the state-of-the-art in textile quality control concepts and methods to be presented at CETIQT and another location.

- Conduct consultations for CETIQT professors of various fields of textile manufacturing (spinning, weaving, knitting, finishing) on the special problems of quality control in their respective fields.

- Visit selected textile companies, survey and evaluate the level of their QC systems, and make recommendations for improvements.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS	Degree in textile/mechanical engineering, high-level knowledge of the state-of-the-art practice, concepts and methods of and minimum 10 years experience in textile quality control.
LANGUAGE	English. Spanish or Portuguese an asset.
BACKGROUND INFORMATION	See attached.

STATE-OF-THE-ART IN TEXTILE TECHNOLOGY TRAINING COURSES
22 JULY to 26 JULY 1991

	Section A	Section B
22/07 MONDAY		
9-12 a.m.	Spinning	Dyeing/printing/finishing
14-17 p.m.	Spinning	Principles of CAD/CAM
23/07 TUESDAY		
9-12 a.m.	Spinning	Dyeing/printing/finishing
14-17 p.m.	Spinning	Principles of CAD/CAM
24/07 WEDNESDAY		
9-12 a.m.	Weaving	Dyeing/printing/finishing
14-17 p.m.	Weaving	CAD/CAM in printing
25/07 THURSDAY		
9-12 a.m.	Weaving	CAD/CAM in knitting
14-17 p.m.	CAD/CAM in weaving	Knitting
26/07 FRIDAY		
9-12 a.m.	-	Knitting
14-17 p.m.	-	Knitting

LIST of EQUIPMENT for DP/BRA/87/033

1. *DESKTOP COMPUTERS (e.g.ASHFORD, AST)*

All systems with the following configuration:

- 1.2 MB + 1.44 MB floppy drives
- 14" or 16" 1024*768 monitor (e.g. NEC Multisync 3D or 4D)
- 16 bit VGA w. 512 K or 1 MB RAM
- MS DOS 4.01 or 5.0 (if available next month)
- MS Windows 3.0
- MS Mouse

(a) *i486/25 or 80386/33 (4 systems, c. US$ 22.000)*

8MB RAM
200 MB hard disk
UPS (external or internal)

(b) *80386SX/16 or 80386SX/20 (20 systems, c. US$ 44.000)*

4MB RAM
16 units with 40 MB, 4 units with 80-120 MB hard disk
16 units with common or individual UPS
4 units with external or internal individual UPS

2. *NOTEBOOK COMPUTERS (3 units, c. US$ 12.000)*

80386SX/16 or 80386SX/20 (e.g. TEXAS TravelMate 3000 or SANYO MBC-18NB or AST Premium)

4 MB RAM; 20 or 40 MB hard disk drive;
Internal 3.5" 1.44 MB diskette drive;
1 parallel, 2 serial and 1 external VGA ports;
Microsoft bus mouse;
carrying case, 2 battery packs, accessories (if any)

3. *PRINTER SHARING and FILE TRANSFER (c. US$ 5.000)*

for 16 resp. for 6 computers located in the same room
(e.g. Systemizer Plus by CONNEXPERTS or
ExcellNET by Excelltech Inc.)

4. PRINTERS (total of 12, c. US$ 15.000)

(a) Hewlett Packard LaserJet III (1 unit)

- HP LaserJet PostScipt cartridge
- 2MB memory
- toner

(b) Hewlett Packard LaserJet IIP (7 units)

(c) Hewlett Packard PaintJet or PaintJet XL
or KODAK DICONIX COLOR 4 (1 unit)

(d) CANON BJ-10e (3 units)

- ink cartridges
- travel case
- 2 battery packs

5. DATA DISPLAY UNIT (2 units, c. US$ 10.000)
with overhead projector
full color VGA
e.g. In Focus Pc Viewer 5000CX or
Proxima DataDisplay Versacolor or
Magnabyte Model 6000)

6. MULTIPLEXER CONTROLLER (1 unit, c. US$ 500)

for six RS-232C peripheral devices
(e.g. BayTech 529H Multiplexer controller or similar)

7. MINI-MODEMS (one pair with 70 m cable, c. US$ 1.000)

for file transfer between 2 computers

8. SCANNERS (total of 4, c. US$ 3.000)

(a) 2 B/W scanners with OCR software for scanning text
(e.g. CAERE "TYPIST")

(b) 2 Full color / grey scale scanners for graphics

9. *FILM RECORDER (1 unit, c. US$ 5.000)*
e.g. POLAROID DIGITAL PALETTE CI-300

10. *NUMERIC KEYPAD (1 unit, c. USS 200)*
to be used in a chemical laboratory

11. *SOFTWARE (1 each, total of c. US$ 8.000)*

- ADOBE Illustrator
- ADOBE Type Manager
- ASYMETRIX TOOLBOOK
- CLIPPER 5.0
- DBase IV 1.1
- FOXPRO
- GEOWORKS Ensemble
- GRAMATIK IV for Windows
- MICROSOFT Office for Windows
- Windows Productivity Pack
- C Compiler 6.0 with Objective C
- Quick C with Assembler
- TYPING TUTOR IV Plus
- WEAVE CAD (Academic Software)
- WordPerfect 5.1 (preferably Portuguese version)
  and also LetterPerfect - " -
- ZORTECH c++ Developers Edition
- educational SW for high-school
  - chemistry,
  - mathematics,
  - physics etc.

- textile design, or any other textile-specific SW

EQUIPMENT TOTAL: US$ 125.400

Substantive officer's comments

The technical assistance rendered through IPF sources commenced very modestly in 1987 with a contribution of US$ 29.000 and grew over five years until 1991 to a total contribution of US$ 354.772. Owing to its growing success and confidence, attributable to UNIDO's Chief Technical Adviser and the UNIDO consultant team, it was possible to convince the national project authorities to go a new road of technical assistance projects, by sharing the costs with UNDP/UNIDO. The cost-sharing part from the national counterpart organization commenced also modestly with US$ 61.000 and continued up to the level of US$ 354.772.

Based on this new experience which was favourably received by all parties concerned, namely the counterpart, UNIDO and UNDP the milestone was set by our CTA in 1991 for a 100% self-financed project. A Trust-Fund agreement was signed by SENAI/CETIQT and UNIDO in 1992 for US$ 2.3 million and the project is in full operation since 1992, with the same CTA, and a quick exchange of experts, needed by the project.

The project has been a success in technical terms, and SENAI/CETIQT is becoming a Centre of Excellence, world-wide recognized by now in terms of training, direct technical assistance to the private industry in the field of CAD/CAM in weaving, printing and apparel, dyehouse automation and other computer applications in textiles and apparel.