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RESEARCH AND DEVELOPMENT ON VARIOUS METHODS  
OF SPINNING SHORT STAPLE COTTON

DP/VIE/86/014

VIET NAM

Technical report: Fifth mission of the chief technical adviser\*

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

Based on the work of Roy Nield, chief technical adviser

Backstopping officer: J. P. Moll,  
Agro-based Industries Branch

United Nations Industrial Development Organization  
Vienna

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ABBREVIATIONS

BSO	Back Stopping Officer (UNIDO)
CRC	Cotton Research Centre, Nhaho
CTA	Chief Technical Adviser
JD	Job Description
JE	Joint Evaluation (Government, UNDP & UNIDO)
MOLI	Ministry of Light Industries
NPD	National Project Director
Prodoc	Project Document
Req **	Requisition No. **
TEXTIMEX	Textile Import Export Company
TOR	Terms of Reference for Joint Evaluation
TPR	Tri-Partite Review
TRI	Textile Research Institute (Hanoi)
TRSI	Textile Research Sub-Institute (HCM City)
UCD	UNIDO Country Director
UTE	Union of Textile Enterprises

Rate of Exchange

During the Mission the official rate of exchange was

1 USD = 7,400 dVN

## I. EXECUTIVE SUMMARY

The mission took place during March/May 1991, coordinated with a mission to Project DF/VIE/86/015 in HCMC.

The project concept remains very relevant to the Government's Development Plan which emphasises the need to expand the production of consumer goods especially clothing by increased utilization of indigenous raw materials.

The Vice Director of MOLI stated that the Project had already made a significant contribution to the success of National Research Programme for the Textile Industry.

A progress report by the CTA is attached.

Output 1, cotton testing laboratory, has been fully produced.

Output 2, testing of yarn properties, will be fully produced after the final expert mission.

Output 3, pilot plant, has been produced as far as the Project is concerned. However further investment will be required before the pilot plant will fully meet the present needs of the textile industry.

Output 4, hand ginning and spinning technology, has been produced. The TRI made prototypes are being extensively tested in a village. This is very basic equipment but it has been very well received by the ethnic community.

The main objectives will be achieved within the expected life of the project (3 years from 8/8/88).

It is intended to continue implementation of the project according to the attached work plan.

The mandatory Joint Evaluation of the Project took place in April 1991, as part of a cluster evaluation together with Project DF/VIE/86015. The CTA and the NPDs were available throughout and assisted the JE as required. The report of the JE was favourable and further UN assistance was recommended.

The TTPRs for this project and 015 are planned for 12 Dec 1991.

However, in view of the success of the Project so far, the favourable comments made at the TPR and by the JE, together with the commitment of the Government to air-condition the spinning department, it is strongly recommended that the Project be extended to build on what has already been accomplished and further strengthen the capabilities of the TRI.

## II INTRODUCTION

The development objective of the project is to increase the availability of good quality textiles for domestic consumption in line with the Government's development plan which emphasizes the need to expand the production of consumer goods - especially clothing - by means of increased utilization of indigenous raw materials.

The immediate objective stated in the Project Document is to strengthen the capability of the Vietnam Textile Research Institute in evaluating cotton fibres and conducting spinning development work with particular emphasis on the use of short staple cotton. A further requirement, quality assurance testing and certification of yarns for export, was added later.

These objectives were elaborated upon in the first mission report of the CTA (DP/ID/SER.A/1152) dated 13 February 1989.

III RECOMMENDATIONS

1. Complete the civil engineering work. (Government/NFD)
2. Install automatically-controlled air conditioning in the main spinning laboratory as soon as possible. (Government)
3. Continue implementing the Project according to the Work Plan revised in May 1991. (UNIDO and NFD)
4. Implement the recommendations of the JE to the extent possible. (Government, UNDP and UNIDO)
5. Implement the recommendations of the Experts to the extent possible. (NFD and Government)
6. Prepare a comprehensive work programme for the TRI to ensure that the inputs provided will be fully utilized for the benefit of the Textile Industry. (NFD and Government)
7. In view of the success of the Project so far, the favourable comments at the TPR and the encouraging report of the JE mission, it is strongly recommended that the Project be extended on the lines suggested by the NFD. (Government, UNDP & UNIDO)
8. Field a specialist from USTER to check over the Evenness tester, the Tensorapid and the Digital Fibrograph as soon as possible. Co-ordinate with Project 015. (UNIDO)
9. Field the Textile Testing Expert as soon as possible after the visit of the USTER specialist. Coordinate with Project 015. (UNIDO)
10. Organize a study tour for 2/3 senior textile technologists of the TRI to the next International Textile Machinery Exhibition (ITMA) in September 1991. NB: This opportunity occurs only once in 4 years. (UNIDO/Government)
11. Field the CTA for 2 months in the field plus 5 days home-based work within the period 17 October 1991 through 10 January 1992. Mission shared with Project 015. (UNIDO)
12. In view of the increasing dependance of the TRI on electronic equipment, Tensorapid, Autocoro, etc., appoint a qualified electronics technician who will also be able to look after sophisticated electrical equipment. (NFD)
13. Provide training in safety procedures. (NFD)
14. Keep all technical manuals, etc in a safe place. (NFD)
15. Organize the Terminal TPR on 12 Dec 1991. (UNDP Hanoi)

#### IV. ACTIVITIES AND OUTPUTS

##### Purpose of the Mission

To review progress since the last mission and follow up the recommendations in previous reports.

To identify and promote the action necessary to improve the implementation of the Project.

To up-date the work plan.

To render technical and administrative assistance to the Experts and co-ordinate their activities.

To advise the NPD on the work to be carried out in the absence of the CTA.

To write a progress report containing sufficient information to facilitate appropriate decisions.

To help prepare for the Joint Evaluation (JE) mission.

In accordance with the RES Rep and UCD, to prepare a preliminary programme of meetings and visits for the JE.

To be available to answer questions as required and generally facilitate the work of the JE.

To prepare a mission report recording all decisions taken and recommending the actions necessary, and by whom, to expedite further implementation of the project.

##### Programme

The mission was combined with a mission to the TRSI in Ho Chi Minh City, which is receiving assistance through Project DF/VIE/86/015.

##### Counterparts

The NPD is Dr Mme Nguyen Thi Bau, Director of the TRI. Cooperation between the NPD and the CTA in implementing the Project has always been excellent.

##### Meetings, Seminars, etc.

Frequent meetings were held with the NPD and staff of the TRI. All outstanding matters were fully discussed and agreement was reached on all points.

The CTA received excellent cooperation from the expert in Textile Testing and the Blowroom installing engineers.



The status of the Project was discussed with the UNIDO Country Director, the UNIDO Field Officer and the Programme Officer.

A useful meeting was held with Mr Les Morris of Rieter.

#### Joint Evaluation Mission

Before the start of the evaluation exercise the CTA, in agreement with the Resident Representative and the UNIDO Country Director, drew up a preliminary programme including interviews with (a) the Res Rep and UCD; (b) officials of the Government coordinating and implementing agencies; (c) the National and International project staff and (d) some of the intended beneficiaries of the project outputs. Factory visits were also arranged. Programme details are given in Annex 8.

The findings and recommendations of the JE as they apply to the TRI are summarized in Annex 9.

#### Inputs

The project inputs are elaborated in Annex 1. All the equipment supplied was examined and found to be in good condition apart from a few minor faults that will soon be rectified.

#### Budget

Mandatory budget revisions were produced as required.

#### Documentary Outputs

Preliminary programme for the JE mission (Annex 8)

Progress report by the CTA (Annex 1).

Schedules detailing the present status of the project as regards equipment, training and experts (Annexes 2,3 & 4).

A detailed work plan for the remainder of the project (Annex 5)

Comments on the impact of the Project by the NPD (Annex 7).

Suggestions for Phase II of the Project by the NPD (Annex 10).

Fifth Mission Report of CTA.

#### Visits

The JE were accompanied to meetings with MOLI, Textimes, the Director of the National Cotton Company and the Director of the Cotton Research Centre.

The JE visited 8th of March Textile Mill and Hanoi Spinning.

## V CONCLUSIONS

Reasonable progress has been made during the Project's active life.

Production of the outputs has been controlled to a large extent by delivery of the 2 major items of equipment (OE spinning and Blowroom). It was known from the start that the delivery schedules would be up to 16 months.

The original equipment budget had to be increased in dollar terms due to steep rises in equipment prices and the decline in the value of the US Dollar against the German Mark and the Swiss Franc at a critical time..

Implementation of the Project should be continued as outlined in this report in which case it is expected that the objectives will be reached within the intended 3 year life of the project.

In view of the success of the Project so far, the favourable comments made at the TPR and by the JE, together with the commitment of the Government to air-condition the spinning department, it is strongly recommended that the Project should be extended to build on what has already been accomplished and further strengthen the services provided by the TRI.

VI ACKNOWLEDGEMENTS

The author wishes to thank all those whose co-operation and advice were so important to the successful outcome of this mission, and in particular:

Mr Pham Gia Khien	Head of Science and Education Dept. State Commission for Planning.
Mr Do Van Vinh	Deputy Head of Industry Department, State Commission for Science.
Mr Tran Quang Sung	Vice-Minister of MOLI.
Mr Dinh Si Bang	Head of Science & Technology, MOLI.
Mr Nguyen Hieu	Head of Industrial Cooperation, MOLI.
Other Government Officials who participated in the meetings.	
Dr Mme Nguyen Thi Bau	NFD and Director of the TRI.
Dr Tho Nguyen	Director, National Cotton Company
Dr Binh Nguyen Huu	Director, Cotton Research Centre
Resident Representative UNDP	
UNIDO Country Director	
UNIDO Field Officer	
UNDP Programme Officer	
UNIDO Headquarters Staff	
Mr J T Mitchell	UNIDO Expert in Textile Testing/QC.
Mr Dieter Rudolf	Chief Inspector, Truetzschler
Mr Arwin Kung Chun Fai	Truetzschler engineer
Mr J P F Massat	JE Mission
Mr L J Gibson	JE Mission
Prof Tran Nhat Chuong	JE Mission

RESEARCH AND DEVELOPMENT ON VARIOUS METHODS OF SPINNING SHORT  
STAPLE COTTON

DF/VIE/86/014  
VIETNAM

PROGRESS REPORT DATED MAY 1991  
By Dr Roy Nield, CTA

1. Introduction

- 1.1 The Project Document was signed on 8/8/88; the expected duration was 3 years.
- 1.2 The development objective is to increase the availability of cotton textiles for domestic consumption by means of increased utilisation of indigenous raw materials.
- 1.3 The immediate objectives are to strengthen the capability of the TRI in evaluating cotton fibres and conducting spinning development work with particular emphasis on the use of short staple cotton and carrying out quality assurance testing and certification of yarns for export.

2. Progress

Implementation has continued in accordance with the decisions taken at the TPR in December 90. Progress has been satisfactory. The project should be completed in 1991. The present situation is as follows:-

- 2.1 A summary of the UNDP inputs is attached.
- 2.2 Output 1, an operational cotton testing laboratory, has been produced. The equipment for rapid testing of cotton samples has been installed, the staff have received fellowship training and 2 Expert missions have been completed. The TRI is now capable of carrying out fibre tests according to International standards and of calibrating its results relative to the best cotton testing laboratories in the world.  
  
A new laboratory has been prepared for the UNIDO equipment so that tests can be made under standard atmospheric conditions. The old laboratory is being retained for clients who still use that system.
- 2.3 Output 2, an operational yarn testing laboratory, has been produced. The Uster Evenness and strength testers have been installed. The staff have received fellowship training and 2 expert missions have been completed. A visit by a specialist from USTER is planned to be followed by one further mission from the Expert in Textile Testing.

- 2.4 Output 3, a pilot spinning plant, has been produced as far as the Project is concerned in that the blowroom and open-end spinner have been installed and the staff have been trained through fellowships and on-the-job training.

Separate rooms have been created for the OE and the Blowroom and the spinning department has been improved by tiling the floor, putting in a suspended ceiling and better lighting. Several very old machines have been taken away.

The Government has decided to provide an air-conditioning plant for the spinning room at a cost of 645 million dVN (approx 87,000 USD). Hopefully this will be installed by the end of 1991. The TRI will then have the capability of carrying out spinning trials on short-staple cottons.

However, further investment will be required before the pilot plant will fully meet the present requirements of industry.

The Government plans to produce medium and long staple cottons on a large scale in the near future. Preliminary trials have shown the quality of the fibre to be good but so far production levels are small. The TRI will be expected to assist with the introduction of such cottons in the mills.

The Government have supplied, from their own resources, 2 drawframes, a lap former and a comber. These machines are not the latest models but they are in reasonable condition and will be useful when the room is climatized.

The other machines - cards, roving frame, ringframe and doubler - are very old and outdated and should be replaced as soon as possible, so that the TRI will be able to produce quality yarns by both the OE and ring spinning routes.

- 2.5 Output 4, the development of a range of machines for hand ginning and hand spinning of short staple cottons under village conditions, has been produced.

A range of prototype machines has been designed and built at the TRI and installed by the staff of the TRI in a village in So'n La Province, about 300 km from Hanoi. This has created a great deal of interest and good reports have been received.

The expert in Appropriate Spinning Technology has made various recommendations for future development of this equipment.

### 3. Budgets

The UNDP budget (Revision 'L') is summarised as follows:

	USD
Experts	143,394
Training	190,144
Equipment	827,219
Sundries	3,917
<b>Total</b>	<b>\$ 1,164,674</b>

The Government budget is attached.

### 4. Operational Issues

The following items need further attention:

- 4.1 Completion of the civil works at the pilot plant (Buildings and surrounding area).
- 4.2 Air conditioning of the spinning room.
- 4.3 Maximum utilisation of the project inputs.

The facilities that have been created can be exploited in different ways. At present the TRI is mainly responding to requests from textile mills, Textimex, etc for tests to be carried out. This is an important service and is being carried out very efficiently.

However, in future, the TRI should have its own research programme and, in this connection, a comprehensive work plan should be drawn up and agreed by all interested parties.

#### 4.4 Project extension.

Favourable comments have been made by MOLI and the JE mission on what has already been accomplished. The Government is willing to invest in an air-conditioning plant for the spinning department. There is an obvious need to up-grade some of the oldest machines in the pilot plant to complement the equipment that has already been supplied (Blowroom and OE) and thus meet the present day requirements of industry. Further training of the staff of the TRI is necessary if they are to match the skill and experience of some of the better technicians in the textile mills. For these reasons careful consideration should be given to extending the Project.

## 5. Work Plan

The work plan for project implementation is attached (Annex 5).

## 6. Decisions/Recommendations

- 6.1 Continue to implement the project according to the Work Plan.
- 6.2 Complete the civil works and install the air-conditioning plant as soon as possible.
- 6.3 Prepare a detailed work plan for the TRI to ensure that the facilities created through the project are fully utilised for the benefit of the textile industry of Vietnam.
- 6.4 Study the future needs of the TRI as identified by the NPD, the JE Mission and the CTA and prepare detailed proposals for Phase II of the Project.

## 7. Evaluation

The mandatory Joint Evaluation of the Project by UNDP, UNIDO, and the Government of Vietnam took place as planned in April 91.

The draft report of the JE was discussed at a Tri-partite meeting on 3 May 1991. The summarised Findings and Recommendations of the JE are attached (Annex 9).

DF/VIE/86/014 - Short Staple Cotton

SUMMARY OF UNDP INPUTS

EQUIPMENT

Fibre Testing Laboratory

Digital Fibrograph for testing fibre length parameters  
Fineness/Maturity tester  
Fibre opener for preparing samples  
Pressley tester for measuring fibre bundle strength  
Micronaire for rapid check on fibre fineness  
Laboratory roller gin  
Laboratory air conditioner

Yarn Testing Laboratory

Evenness tester for measuring regularity of slivers, rovings and yarns, analysing wavelengths and identifying periodic variations. Also for counting faults (thick and thin places and neps in yarns).

Tensorapid tester for measuring the strength and elastic properties of yarns.

Pilot Plant

Blowroom line

Open-End (OE) spinning machine, particularly suitable for processing short-staple cotton

Laboratory air-conditioner

Other items of equipment

Project vehicle (Landcruiser)  
Photocopying machine  
Textile books and periodicals

TRAINING

2 Study tours (9 persons) and 15 fellowship groups (15 persons)

EXPERTS

CTA (Split missions)  
Expert in Appropriate Spinning Technology  
Expert in Textile Testing/Quality Control  
OE Spinning technician  
2 Blowroom technicians  
USTER specialist.



DF/VIE/86/014  
Research and Development on Spinning Short Staple Cotton

EQUIPMENT - Revised May 1991

\* = Installed

Req No	Item	Supplier	Cost(£)	Remarks
88/1	Landcruiser + Spare parts	Toyota	16,704	* *
88/2/1	Digital fibrograph	SDL)		*
/5	Fineness/maturity	SDL)	57,926	*
/2	Fibre opener	SDL	6,022	*
/3	Pressley Tester	Baer)		*
/4	Micronaire	Baer)	6,154	*
/6	Lab roller gin	Platt/SL	6,491	*
88/3	2xAir conditioner	BB/York	19,391	*
88/4/2	Blowroom line	Truetzschler	378,496	*
88/5/1	OE spinner	Schlafhorst	148,700	*
88/7	PP copier	Kwan	1,538	*
88/8/1	Evenness tester	Uster	84,561	*
/2	Strength tester	Uster	92,508	*
88/10	Books/periodicals	Munksgaard	2,395	*

DF/VIE/86/014

Research and Development on Spinning Short Staple CottonTRAINING - Revised May 1991

Number	Name	Duration	Remarks
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FELLOWSHIPSUster testing

31-01	Hung Nguyen Manh	1	Implemented 1989
31-02	Minh Nguyen Quang	1	Zellweger Uster

Textile testing

31-03	Dung Tran Thu	3	Implemented 1990
31-04	Hai Pham Bich	2	Bolton
31-16	Thu Ha Hoang	3	

OE Spinning

31-08	Than Nguyen Kim	2	Implemented 1990
31-09	Duc Nguyen Minh	2	Schlafhorst

Blowroom

31-05	Ding Giap Le	1	Implemented 1989
31-07	Quang Nghiem Huynh	1	Truetzschler, FRG
31-17	Mich Tran Van	1	

Appropriate spinning technology

31-06	Minh Nga Tran	3	Implemented 1989
31-10	Chiem Tran Trong	3	India
31-11	Phong Pham Dinh	3	Extended to 3 m/m at
31-13	Dung Vo Thanh	3	request of UNDP
31-14	Chuyen Bui Thi (015)	3	

STUDY TOURSResearch and Development (No 29)

32-01	France, UK & FRG	4x1	Implemented 1987
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Appropriate spinning technology (No 52)

32-02	India & Australia	5x1	Implemented 1989
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IN-PLANT TRAINING

Textile Testing	Mr Mitchell	(UNIDO)
Blowroom	Mr Rudolf	(Truetzschler)
OE Spinning	Mr Sit	(Schlafhorst)
Uster Testers		

DF/VIE/86/014

Research and Development on Spinning Short Staple Cotton

EXPERTS - 1990 and Future - Revised May 1991

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Post no	Title	m/m	Remarks
11-01	CTA	4	* Dr R. Nield fielded Oct 90 & Mar 91. Next mission Oct 91.
11-02	QC/Testing	1+1	* Mr J. Mitchell fielded Nov 90 & Apr 91. Final mission after visit of Uster specialist.
11-05	Appropriate Spinning Technology	1.25	Mr Sharma fielded August 1990. Extended 1 week.

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OE Spinning

Installed by Mr Sit Duen Tai of Schlafhorst in Aug 90. Training completed.

Blowroom

Installed in Apr 91 by Mr Dieter Rudolf and Mr Arwin Kung Chun Fai of Truetzschler. Training completed.

Return mission of Mr Rudolf expected to install lap weighing balance which was short shipped.

Uster Testers

Installed by staff of the TRI Mar 91. Visit of Uster specialist requested to check over the machines. Co-ordinate with and charge to BL 11-05 of Project 015.

The staff of the TRI participated fully in the installation and commissioning of the OE spinner and the Blowroom.

\* Co-ordinate with and share cost with Project DP/VIE/86/015.

DF/VIE/86/014

Research and Development on Spinning Short Staple CottonWORK PLAN - PROJECT INPUTS AND ACTIVITIES - Revised May 91

	1989	1990	1991
<u>Personnel</u>			
11-01 Chief Technical Advisor	—	—	—
11-02 QC/Testing		—	—
11-05 App/Spinning Technology		—	
Blowroom Technician			—
Open End Spinning Expert		—	
Uster Specialist			—
<u>Fellowships</u>			
Fibre testing. Bolton		3x3m/m	
Blowroom. Truetzschler		3x1m/m	
OE Spinning. Schlafhorst		2x2m/m	
Uster Equipment. Uster		2x1m/m	
App/Spinning Technology		5x3m/m	
<u>Study Tours</u>			
Research & Development (29)	4x1m/m	—	—
App/Spinning Technology (52)	5x1m/m	—	—
<u>Equipment</u>			
Fibre Testing			
Yarn testing			
OE Spinner			—
Blowroom			—
Yarn Evenness tester			—
Tensorapid tester			—
<u>Activities</u>			
Fibre testing			
OE Spinning			
Short Fibre Spinning R & D			
Design of A/T machines			
Manufacture of A/T prototypes			
Field testing of prototypes			
<u>Joint Evaluation of Project</u>			
			—

DF/VIE/86/014

Research and Development on Spinning Short Staple CottonGOVERNMENT BUDGET - Revised May 1991

Units: 1,000,000 dVN

Item	Original Budget (Prodoc)	Already Spent	Further Estimated Expenditure
1. National staff	1.44	30	15
2. Value existing equipment	11.00	600	-
3. Additional new equipment	1.26	864	300
4. Receipt & Installation	-	50	3
5. Locally made equipment	-	13	-
6. Existing buildings	-	388	-
Building improvements	0.55	90	60
7. Materials, power	1.00	17	30
8. Miscellaneous	0.80	10	5
<b>TOTAL</b>	<b>16.05</b>	<b>2,062</b>	<b>413</b>

The air-conditioning plant for the spinning department is expected to cost a further 645 million dVN.

THE IMPACT OF PROJECT DP/VIE/86/014Background information

The TFI was created in 1968 in Hanoi. In 1971 it moved into premises in Nam Dinh Province - about 20 km from Hanoi. It consisted of a testing laboratory with old-fashioned equipment and a pilot plant with many old machines.

In 1978 new premises were constructed on the grounds of the March Tread Mill in Nam Dinh Road, Hanoi. The main offices and laboratories were transferred.

The chemical laboratory was modernized to a large extent by ODA Geigy around 1980.

Another vacant site between the 1st March Mill and Hanoi Tread Mill was acquired for the pilot plant. Two buildings were erected for spinning and weaving and the machinery was transferred from Nam Dinh in 1988.

Year by year the Government has, through its own resources, improved the premises, by constructing new buildings for:

- a mechanical workshop
- a cotton store/laboratory (probably for knitting).
- a gate house/small laboratory/meeting room.
- a power station (previously supplied from a mill).

Project DP/VIE/86/014 was designed mainly to up-grade the existing fibre and yarn testing facilities and the pilot plant.

The Government helped by preparing a special laboratory for the new testing equipment, and separate rooms for the blowroom and the open end spinner. The floor of the spinning department was tiled and a suspended ceiling was installed to help with insulation and cleanliness. Work has started on the design of an air-conditioning plant to climatise the whole of the spinning department. It is hoped that it will be installed by the end of 1991.

UNEP/UNIDO provided high speed, high volume testing instruments for cotton fibres and yarns and a modern blowroom and open-end spinning machine.

All the old machinery in the pilot plant has been discarded except for 2 cards, 1 roving frame, 1 ring frame, 1 doubler and 2 twistors.

The Government has installed 2 new drawframes, a sliver lap former and a comb. These are not the latest models but they will serve a useful purpose until new, modern machines can be provided.

### Impact of UNDP/UNIDO-014 (continued)

#### 2.1. Impact on the TSI testing laboratory

Before the start of the Project the equipment for fibre and yarn testing was very old and outdated. Mostly it originated from the USSR or China. It was housed in a large factory by day without air conditioning. Only the following tests could be carried out - very slowly and not very accurately:

##### Fibre Testing:

- Moisture content (Frying oven)
- Preparation of samples (by hand)
- Fibre length characteristics (by sledge sorter - a method which requires great skill by the operator)
- Fibre fineness (by cutting and weighing fibres)
- Fibre diameter (by microscope)
- Fibre maturity (by microscope)
- Fibre bundle strength (Russian instrument)
- Trash content (by removing particles of trash by hand)

##### Yarn Testing:

- Yarn count (Measuring wheel and balance)
- Yarn twist (motorised twist tester)
- Yarn appearance - uniformity, impurities and neps (by visual inspection of blackboards)
- Single thread strength (by manually operated machine)
- Skein strength (wrap reel and skein tester)

#### 2.2. Present Situation - Fibre and Yarn Testing

The above tests are still available whenever they are required.

In addition, the latest "state of the art" equipment has been supplied by UNDP/UNIDO and housed in a new air-conditioned laboratory prepared by the Government. The following tests can now be carried out on modern, high-speed equipment in accordance with International Standard procedures:

- Fibre length parameters (Spinlab)
- Fibre preparation (by Fibre Sampler or Shirley blender)
- Fibre fineness (Micronaire)
- Fibre Fineness/Maturity (MIC/Shirley)
- Fibre bundle strength (Prevsley)
- Evenness of slivers and yarns (Uster III)
- Yarn strength and extensibility (Uster Tensorapid)

Impact of DF/VIE/46/014 (continued)

Impact of the project on the testing facilities therefore has been considerable. For example where formerly it took 4 technicians a full day to test one cotton sample, now 2 technicians can test 20 samples a day. The evenness tester not only gives a measure of irregularity in the yarn but can also detect periodic variations and give a good indication where to look for the source of such the faults.

4. Impact of the Project on the TRI Pilot Plant

Before the project, the processing equipment at the TRI was so poor that most processing trials were carried out in mills, where conditions were not conducive to research work whilst considerable inconvenience was caused to the mills.

Two major items of equipment have been provided through the project - a Blowroom Line and an Open-End Spinning Machine. Both are of top quality and are ideal for processing short staple cottons and even waste. They can also be used for longer staple cottons and blends.

Of course, it will not be possible to utilize the blowroom at anything like full capacity. Most of the time will be spent in adjusting the settings, testing the products and then re-adjusting, and so on. One test may take about a week to complete.

In general, the blowrooms in Vietnamese mills are not in good condition so, whenever the blowroom is not required for research purposes, there would be no harm in running the machinery to make laps for some of the spinning mills so as to boost their production. This would be good for the mills, good for the machinery and good for the staff of the TRI.

The Government has decided to install an air conditioning plant to control temperature and relative humidity in the spinning room. This is very important, especially if it is intended to renew any of the old equipment such as the cards.

One ethnic community in the far North of Vietnam is already benefitting from Output 4, mini-spinning equipment made in the TRI.



Impact of DP-VIR/26-014 (continued)5. Impact of the Project on the Textile Industry

Originally, the immediate objective was to strengthen the capability of the Textile Research Institute in conducting cotton fibre evaluation and spinning development work with particular emphasis on the use of short staple cotton, so as to enable the Institute to advise the spinning mills on optimum processing conditions when using such cottons and to develop an improved hand-spinning technology for use in remote rural areas. Later, the TRI was given the responsibility of making quality control tests and issuing quality acceptance certificates for export yarns.

The impact of the Project on the textile industry, therefore, will be through the enhanced activities of the Textile Research Institute.

One ethnic community in the far north of Vietnam is already benefitting from the mini-spinning equipment made in the TRI but, in general, it is too early to quantify the impact of the Project as a whole on the textile industry.

However, the following end-users are expected to benefit

- The National Cotton Centre, Nhaho
- The Union of Textile Enterprises
- Textimex
- Textile mills in the North of Vietnam.

JOINT EVALUATION MISSION DP/VIE/86/014 AND DP/VIE/86/015PROGRAMME

- 13.4.91 Arrival of Mr L J Gibson (UK), UNIDO, Consultant
- 15.4.91 Arrival of Mr J J P Massat (France), UNDP, Team Leader
- Joining of Prof Tran Nhat Chuong, Government of Vietnam

- Itinerary:
- 15.4.91 Hanoi
  - 21.4.91 Travel to Ho Chi Minh City
  - 27.4.91 Return to Hanoi
  - 4.4.91 Departure of Mr Massat
  - 8.5.91 Departure of Mr Gibson.

HANOI (Project DP/VIE/86/014)

- 15.4.91 Meeting with Resident Representative and UCD.  
Discussions with CTA
- 16.4.91 Meeting with the NPD (014)  
Visit to the Testing Laboratory  
Visit to the Pilot Plant  
Meeting with the Director of the Vietnamese Cotton Company  
Meeting with the Director of the Cotton Research Centre NhaHo
- 17.4.91 Visit to Hanoi Spinning Mill  
Visit to 8th March Textile Mill  
Discussions with Expert in Textile Testing
- 18.4.91 Visit to Textimex
- 19.4.91 Meeting with Government officials at MOLI (Chairman the Vice Director)
- 20.4.91 Textile Research Institute - Meeting with NPD.

21.4.91 - Travel to HO CHI MINH CITY (Project DP/VIE/86/015)

- 22.4.91 Meeting with NPD (015)  
Visit to Physical and Chemical Laboratories  
Visit to Product Development sections
- 23.4.91 Visits to Thanh Cong and Thang Loi factories
- 24.4.91 Visit to Oratex (Private sector hand embroidery factory)  
Visit to No 6 Mill (Silk trials)  
Meeting with CTA  
Meeting with NPD
- 26.4.91 Final meeting with NPD to discuss findings.

27.4.91 - Return to HANOI

- 3.5.91 Tri-Partite Meeting to present draft report of JE

FINDINGS AND RECOMMENDATIONS OF THE JE - DP/VIE/86/014

Summary from Page 4 of the Report of the JE Mission, May 1991)

Inputs, in accordance with the project document and subsequent revisions have been delivered and the envisaged outputs have been produced.

#### IV. RECOMMENDATIONS

The Textile Research Institute should draw up a programme of systematic investigations, trials and experiments to utilize its enhanced capabilities for testing and evaluation for the good of whole sectors of industry. For example an industry-wide survey of the quality of spun yarns.

Similarly the Institute should instigate a programme of investigations which will utilize to advantage the open end spinning line which is now no longer needed for short staple processing. For example an investigation of the spinning of various types of process wastes (alone or in blends) by the open-end method.

The fibre testing laboratory should be further strengthened by adding instruments for the measurement of trash content, moisture content, stickiness and colour of cottons, plus a "classimat" machine for yarn evaluation.

The fibre testing laboratory is too small, particularly after the intrusion of the air conditioner (originally requested for outside rather than inside the allocated building area). Extra space is also required for pre-test conditioning and storage of samples. For the pilot plant, the evaluation mission recognize that the equipment particularly for carding, roving and ring spinning is in poor condition. There is the possibility that these machines could be renovated or renewed and an air-conditioning plant installed in the work room.

An alternative approach would be to acquire two new lap-fed high production cards (one for cotton and one for synthetic fibres) which would be installed in a nearby mill which would provide, under contract the other spinning facilities and machine maintenance under mill conditions.

The evaluators believe that this second option would be the best and most economic way in which the Institute can participate in the evaluation of new cottons coming into the industry, in a realistic way on an industrially significant scale. The cooperation of the Hanoi spinning company, a well equipped and well managed nearby mill, which represents the acme of cotton spinning in Vietnam, would be an essential pre-requisite for this scheme.

It is recommended that a delegation from the Textile Research Institute, and the Textile Research Sub Institute, (say two delegates from each), should visit the International Textile Machinery Exhibition in Hanover in September 1991. Ideally this delegation should be accompanied by a UNIDO adviser who will guide the delegates to those exhibits which are of greatest relevance to the projects and to the future development of the Institutes.

## PROPOSED EXTENSION OF THE PROJECT VIE/86/014

## ( PHASE II )

A. BACKGROUND AND JUSTIFICATION

1 Over past years, Cotton Research Development in Vietnam has achieved good results. The Cotton Company has been successful in applying the long and medium staple cotton such as MCU9, M45610, C6002 to production. On this basis, the Government have a plan to develop the cotton growing with the target of 30.000 ha under cultivation and 10.000 tons of lint cotton in 1991 and 150.000 ha and 30.000 tons in 2000. However, several problems will face the textile industry :

- Vietnamese cotton will be mainly grown in small plots by farmers. Therefore, cotton to be collected would be greatly different especially in terms of cotton finness and maturity. It would cause problems to spinning and dyeing process.

- Vietnamese cotton characteristics would be different from Russian cotton which has been familiar to Textile Industry for long, especially oil, and sugar content. That demand another way of processing compared with the present technology for Russian cotton. Cotton should, therefore, be studied in advance to fine out optimum processing condition. The research results will be transferred to textile mills.

2 In phase I, TRI's research capability of assessing cotton and spinning ability has been strengthened. The cotton testing laboratory has been upgraded with the most modern equipment. The first and last stages of the processing line in the pilot plant has been supplied with updated machines ( Blowroom and OE spinning machines ). However, some testing equipment in the laboratory has not been upgraded. In the pilot plant, the machines in the middle of processing line are old and outdated. To make full use of the scientific and technological potentialities achieved in the phase I, phase II would be necessary to complete the testing laboratory and pilot plant. So that the TRI will be able to undertake cotton research works and to study and develop various products. Research results will be transferred to textile mill for developing cotton and bringing

employment to population belonging to various economic sectors.

B PROJECT INPUTS

1 Government inputs

Air conditioning for pilot plant 645.000.000<sup>a</sup>  
(being done)

2 UNDP inputs

a Experts - CTA : 2 men/month 25.000 USD  
- Expert in carding  
machine 12.000 "  
- Short - term  
mission 13.000 "  

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50.000 USD

b Training Study tour  
Spinning technology  
3 men/month 30.000 USD  
Training :  
Carding machine and  
technology 4men/month 20.000 "  
Combing technology  
4 men/month 20.000 "  

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70.000 USD

c Equipment  
1 Stelometer 3.000 USD  
1 Digital balance 3.000 "  
1 Trash analyzer 6.000 "  
1 Carding machine  
for cotton 100.000 "  
1 Carding machine  
for synthetic  
fibre 100.000 "  

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212.000 USD

Total 332.000 USD