

Hindustan Paper Corporation Limited (U.N.D.P. Project)

"EXPLORATION & IDENTIFICATION OF ALTERNATIVE RAW MATERIALS FOR PAPER & NEWSPRINT MANUFACTURE"

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Introduction

Govt. of India and United Nations Development Programme had jointly embarked upon the country programme project "Exploration and Identification of Alternative Raw Materials for Paper and Newsprint Manufacture" from 1.1.1975. Govt. of India has entrusted the execution of the project to the Hindustan Paper Corporation Ltd., as their representative and United Nations Development Programme to Food and Agriculture Organisation.

The initial contribution under the project was to the order of US \$ 1.80 million i.e. about Rs. 1.4 crores and the Govt. of India contributed about Rs. 2.0 crores.

Objective of the Project

The project aims at the long term objective of improving technology and providing data on forest raw materials and their utilisation for setting up new paper and newsprint mills and increasing the capacity of existing mills. The three main objectives of the project are:-

1. To identify surplus pulpable forest raw material over the entire country;
2. To upgrade research facilities and thereby develop improved technology; and
3. To upgrade the training

facilities in the field of Pulp and Paper Technology.

1. Identification of Surplus Pulpable Forest Raw Material

The National Pre-Investment Survey and the State Forest Departments are carrying on the work of survey of forest wealth in India, & the surplus pulpable raw material. The suitability of the surplus raw materials will be determined by extensive research and technological studies to be conducted by the project. The result of work alongwith the other relevant information will be listed catchment wise so as to identify new paper mill projects. A detailed research programme has already been drawn for these research activities.

2. Upgradation of Research Facilities to Develop Improved Technology

Efficient applied industrial research requires sophisticated laboratory equipments. This is especially important in applied pulp and paper technology research, because of the complex chemical and physical composition of the fibrous raw materials available to us, number of chemical processes involved in pulp and paper manufacture and a variety of physical and strength properties of the diversified products in the form of newsprint, paper and paper boards.

In view of above, a critical study was conducted and besides normal facilities the following sophisticated laboratory equipments have been provided by the projects:-

- a. Laboratory chipper
- b. Laboratory pulping equipment (Series Digester)
- c. 12" laboratory Sprout Waldron Single Disc refiner.
- d. P.F.I. mill.
- e. Sheetmaking Apparatus
- f. Freeness tester
- g. Recording Wet Web Strength tester
- h. Alwetron Universal Electronic strength tester
- i. Concora Medium fluter
- j. Crush tester
- k. I.G.T. Printability tester
- l. Elrepho Photoelectric Reflection Photometer
- m. Parker print surf
- n. Macbeth Print Densitometer
- o. Perkin-Elmer Model 402 UV and VIS Spectrophotometer.
- p. Perkin-Elmer Model 735 IR Spectrophotometer
- q. Perkin-Elmer Model 3920 Gas Chromatograph
- r. Lange Flame Photometer
- s. Brookfield Model RVT

Synchro-Lectric Viscometer
Besides laboratory facilities pilot plant research facilities are also being provided. The pilot plant facilities to be provided are :-

- (i) 11 M³ S S Tumbling digester

- (ii) High yield pulping complex suitable for Thermo-mechanical & Chemo-mechanical pulping supplied by M/s Defibrator AB, Sweden.
- (iii) 20" R O Single disc refiner supplied by M/s Defibrator AB Sweden.
- (iv) Screening and cleaning equipments
- (v) Lignin removing and lignin preserving bleaching equipments.
- (vi) Double Disc Jones refiner for stock preparation.

To house the above laboratory and pilot plant equipments, the Forest Research Institute has provided the space at the Cellulose and Paper Branch. On pilot plant the existing facilities of pilot plant at Cellulose and Paper Branch mill also be used by the project. The civil construction work at the pilot plant has already been started. The pilot plant erection work will be done in a way that it does not hamper the normal work of the Cellulose and Paper Branch pilot plant.

The work on laboratory scale has already been started. At present work on the following projects is being undertaken:

1. Evaluation of Etareeds for Bleached Kraft Pulp as a Chemical Component for Kerala Newsprint mill

- (a) Convention kraft pulping of etoreed to produce pulp of kappa number 25.
- (b) Bleaching of kraft pulp by CEH sequence to brightness level of 70%.
- (c) Beating evaluation of bleached pulp for maximum tearing resistance.
- (d) Effect of locality, age and species variation on pulp-

ing, bleaching and strength characteristics.

- (e) Effect of stacking conditions on pulping, bleaching and strength properties.

2. Pulping and Bleaching of Dome area Individual and mixed Hardwoods

- (a) Optimisation of kraft pulping conditions to produce pulp of kappa number 25-30
- (b) Comparative study of the sequences (i) CEHH (ii) CE (H) HH (iii) HCEH (iv) CHHH
- (c) For bamboo and mixed hardwoods pulps separately and in mixture.

3. Extractives (Polyphenols) of Eucalyptus Tereticornis and Grandis from Kerala

- (a) Standardisation of simple and quick method for estimation of polyphenols.
- (b) Optimisation of conditions for maximum extraction of polyphenols.
- (c) Studies on destruction of polyphenols in caustic extracted liquor.
- (d) Effect of caustic soda treatment on changes in brightness of cold soda pulp.

4. Evaluation of Commercial Pulps Separate and mixed Beating

- (a) Effect of degree of beating on strength and structural properties of paper.
- (b) Characterisation of pulps according to end use.

3. Upgradation of Training Facilities

A versalite pulp pilot plant is being installed at the Institute of Paper Technology, Saharanpur. This plant will fill the gap of present training in the Institute and provide skilled operators and supervisor to man the

industry. The plant will be equipped for chemical pulping, Semi-chemical pulping and refiner groundwood pulping processes. In addition suitable screening and cleaning equipments and bleach plant is being provided.

Scope of the Project

The Project Provides for :-

A. FOR EXISTING PULP AND PAPER MILLS :

- (i) Optimisation of process parameters to bring about increased utilisation in paper making furnishes of available less used raw materials like hardwood etc., and thus attain increased production economically.
- (ii) Improvement of training facilities for pulp and paper mill personnel.
- (iii) Training of staff for applied research, both in India and abroad.
- (iv) Improved research alertness and assistance to pulp and paper mills in solving their problems by research both on a laboratory and a pilot plant scale in a variety of processes.

B. FOR PRESENT AND FUTURE PULP AND PAPER PROJECTS:

- (i) Assessment of availability of pulping and paper-making raw materials in different regions for various plant capacities.
- (ii) Grounds for selection of suitable regions for establishment of new pulp and paper mills.
- (iii) Guidance into proper selection of processes and products to be produced with regard to the available raw material.