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STRENGTHENING THE HANDMADE PAPER INDUSTRY IN INDIA

DP/IND/90/037

**Report of the Evaluation Mission\***

Prepared by:

Quality Assurance and Evaluation Branch  
General Management

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\* This document has not been edited.

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## LIST OF ACRONYMS

BSO	-	Backstopping Officer
CFE	-	Country Cooperation Framework
CET	-	Consultant in European Papermaking Techniques
CJT	-	Consultant in Japanese Papermaking Techniques
CTA	-	Chief Technical Adviser
DPO	-	Deputy Project Officer
IME	-	International Marketing Expert
JDC	-	Joint Development Office
JPO	-	Junior Professional Officer
KHADI	-	A local term for good manufactured by hand
KNHPI	-	Kumarappa National Handmade Paper Institute
KVIC	-	Khadi and Village Industries Commission
MIS	-	Management Information System
MOI	-	Ministry of Industry
ME	-	Marketing Expert
NGO	-	Non-Government Organization
NPC	-	National Project Co-ordinator
NPD	-	National Project Director
PE	-	Papermaking Expert
PME	-	Papermaking and Marketing Expert
PPER	-	Project Performance Evaluation Report
SHD	-	Sustainable Human Development
SWOT	-	Strength, Weakness, Opportunity and Threat
TO	-	Technical Officer
TOR	-	Terms of Reference
TPR	-	Tripartite Review Meeting
UCD	-	UNIDO Country Director
UNDP	-	United Nations Development Programme
UNIDO	-	United Nations Industrial Development Organization

## I. INTRODUCTION

The project "Strengthening the Handmade Paper Industry in India", DP/IND/90/037, was approved in 1990. The project budget at the time of approval was US\$ 686,800 and the present budget (as of 31 March 1997) is US \$ 704,999. The project implementation commenced in September 1991. The project was designed to assist the handmade paper industry in India with the aim to produce high quality handmade paper and board through the establishment of a centre equipped with a testing laboratory and demonstration plant for handmade paper, experiment with new raw materials and new processes and technologies and in formulating a marketing strategy to enhance sales in both domestic and export markets.

The evaluation was requested by UNDP New Delhi under a TSS-2 arrangement approved in August 1996.

### 1. Purpose of Evaluation

The purpose of the in-depth evaluation was to ascertain the relevance of the programme, its efficiency, effectiveness and impact.

The evaluation was carried out within the framework of the terms of reference (TOR) (please see Annex I), and addressed the following issues:

- (i) Examine project relevance and efficiency of delivery of project inputs, quality of project management and monitoring system.
- (ii) Assess the current level of achievements of the project against its objectives and outputs.
- (iii) Determine the extent to which the Centre has conducted extension services in introducing and disseminating appropriate technologies and practices and training manpower of handmade paper industry.
- (iv) Examine to extent to which the project has contributed towards increasing the capabilities of the Centre in developing cost effective technologies, quality control methods, testing facilities, consultancy services and an information cell.
- (v) Provide for recommendations based on mission findings in determining future course of action to increase the impact of the project towards the development of the handmade paper industry in India.

### 2. Evaluation Methodology

The evaluation commenced from 3 to 21 February 1997. Evaluation activities included the following:

- Discussions at UNIDO Secretariat with Area Programme Officer and the Project Backstopping Officer. The evaluation reviewed documentation pertaining to the project;
- Upon arrival at UNDP New Delhi, the mission was briefed by UNDP and UNIDO staff (Annex IV);

- The field mission of the evaluation entailed a visit to the Centre established under the project in Jaipur. The mission also visited enterprises in Jaipur, Bombay, Pondicherry (Chennai) and in New Delhi involved in handmade paper manufacturing. The mission also held discussions with a number of traders in Jaipur and Bombay who were exporting handmade paper (Annex II);
- Participants trained by the Centre (presently entrepreneurs) interviewed (Annex III);
- Discussion and meeting with Government officials , "KHADI";
- De-briefing of evaluation main findings/conclusions and recommendations to UNDP Office in New Delhi;
- Briefing of evaluation mission findings/conclusions and recommendations at UNIDO Secretariat in Vienna; and
- Completion of the final report.

The evaluation mission received full support from the staff of UNIDO at the Secretariat and Field Office in New Delhi. The mission received excellent co-operation from the staff of UNDP in New Delhi. The mission also received full support and co-operation from the staff of the Centre in Jaipur, and from the individuals met during the mission's visit to various enterprises. The evaluation mission wishes to extend its sincere thanks to all those officials and individuals met for their valuable support and information provided which greatly facilitated the work of the mission.

### **3. The Evaluation Team**

The Evaluation mission team comprised of:

- Mr. Sambhu Singh (Government nominee)
- Mr. John Gerard (Consultant, UNDP nominee)
- Mr. Imran Farooque (UNIDO Evaluation Staff)

## II. EXECUTIVE SUMMARY

The project aimed to strengthen the handmade paper industry in India by establishing a centre with the capacity to develop and transfer technology and to provide services to the industry to increase productivity and improve quality and marketability of handmade paper products. The project takes its relevance from the national development plan of the Government of India. The project promotes the use of low technology and low investment. The manufacturing of paper by hand is labor intensive, converts waste by recycling, uses non-wood materials, is eco-friendly; the project seeks to promote the skills of local workers, generates employment and income, facilitates the participation of women in rural based industries and contributes to social development as encompassed in the SHD framework.

The project was co-ordinated by the Khadi and Village Industrial Commission (KVIC) under the Ministry of Industry with financial support from the UNDP. The implementation was cost effective although there were delays in the construction of the Centre. The original budget (1991) provided by UNDP was US \$ 686,800; the actual budget (1997) is US \$ 704,999, representing a marginal increase of 3%. The project was efficiently managed and implemented.

The outputs to establish a testing laboratory for pulp and paper, a papermaking demonstration plant with new technologies developed, a cell to provide consultancy services to the handmade paper industry, and training courses were satisfactorily met. The output regarding marketing strategies was less than satisfactory as a strategy is yet to be developed. The output to establish an information cell is also less than satisfactory due to lack of staffing and its weak capacity to disseminate information to the industry.

The testing laboratory is well equipped and contains all necessary instrumentation to quantify the properties of paper. Research has been conducted already on various alternative raw materials, on pulping methods, and on the analysis of papers.

The demonstration plant is operational and contains appropriate equipment for technical guidance in the manufacture of handmade papers.

Consultancy services have been provided to 550 persons in 56 units representing 15 states with respect to product development, quality, trouble shooting, market trends, providing units with data on raw materials.

Training courses were established in specific areas, eligibility requirements set and fees charged. For the period 1994-1996, 128 persons were trained.

The Centre as a whole has acquired the capability to serve the industry. Its staff is trained and has acquired the required expertise, though some improvements are required with regard to staffing and to strengthening the information cell.

The impact of the Centre has been positive. It has been able to establish a link with the industry and the end users, has contributed in promoting manufacturing units and traders to export, has contributed to creating an awareness on the potential demands of the

product, has contributed to enhance the growth of rural employment, social human development and poverty alleviation. It has effected the transfer of technology and developed alternate sources of raw materials for hand papermaking.

In the short term, the Centre is not sustainable without further financial assistance, both from the Government and external sources; however, in the long term it is probable that the Centre can survive financially as a separate independent unit.

General recommendations for the project include strengthening the Centre in its staffing, developing a market strategy by the Centre to provide guidance to the industry, strengthen the information cell to enable improvement of its services, and delivery of some equipment is recommended.

For the future, it is recommended that the Centre be strengthened as proposed to enable it to promote extension services, that the project be expanded to undertake a survey to collect data on manufacturing units, exports, value-added items, quality and direction of exports, and the domestic market conditions and that four extension wings of the Centre be established on the basis of the survey. The National Programme on Handmade Paper is ambitious and should be moderated. Concentration at the present should involve in the strengthening of the Centre through the creation of the extension wings.



### III. PROJECT CONCEPT AND DESIGN

The Government of India took up the initiative for the development of handmade paper industry from 1953 onwards as an important village industry to generate employment and income in the rural areas with low capital investment. The Khadi and Village Industry Commission (KVIC) set up under the Ministry of Industry was given the responsibility to provide support for the development of the handmade paper industry. The industrial policy of the Government of India and the state governments extended full support and provided incentives for the growth and development to this industry.

The development objective of the project was to enhance the performance of the handmade paper industry in India and the competitiveness of its products in the domestic and export markets by improved utilization of better and more versatile raw materials and by developing appropriate pulping and papermaking techniques.

The project objectives and outputs as reflected in the last updated version of the project document are as follows:

#### 1. Project Objectives:

- (i) To study the demand pattern of handmade paper and board in India and abroad with a view to determining the grades of paper and board in which the handmade paper industry should concentrate for its economic viability;
- (ii) to set up a testing laboratory for pulp and paper and a papermaking demonstration plant as part of the handmade paper units of KVIC and to give advice on how to produce quality products and greater variety of higher value paper/board to the domestic and export markets; and
- (iii) to enhance the capabilities of the handmade paper directorate/centre in the functional areas of training, consultancy and information services to serve the Indian handmade paper industry.

#### 2. Project Outputs:

- Output 1: Survey conducted on the demand pattern for handmade paper and board in India and abroad, findings disseminated and marketing strategies evolved and implemented.
- Output 2: Testing Laboratory for pulp and paper established.
- Output 3: Papermaking demonstration plant established and new technologies developed and disseminated to industry.
- Output 4: Cell established to provide consultancy services to handmade paper industry.
- Output 5: Training courses developed for handmade paper industry.

Output 6: Information Cell established.

**3. Problem Areas Addressed by the Project:**

- Upgrading of technology with a view to:
  - to increase productivity
  - to improve the quality
- Identify alternative use of raw materials
- Training - (capacity building of national counterpart staff)
- Marketing - develop strategies to market the product

**4. Planned End-of-Project Status:**

- A demonstration plant at the Centre
- A test laboratory at the Centre
- An information cell at the Centre to facilitate
  - dissemination of technology and know-how
  - provide information on marketing trends and strategy
  - publication of brochures on the activities of the Centre
- Ability to provide training and consultancy services
- Improved capacity utilization in plant level operations

The project identified and formulated is in line with the overall national development plans of the Government of India. The Department of Small Scale Industries under the Ministry of Industry developed and outlined the framework to address the following issues:

- rural/village industries development
- increase employment in rural/village areas
- generate income in the rural population
- facilitate women participation and involvement in the growth of rural based industries
- promote social welfare and well being among the rural population
- to support industries based on local availability of raw materials, labor skills with traditional heritage and of artistic value.

Within the above mentioned broad aims of the Government of India, the Khadi and Village Industries Commission (KVIC) was established under the Ministry of Industry through an act of the Parliament in 1956 with its headquarters in Bombay. The basic aim of KVIC was to co-ordinate and function as an extended arm of the Ministry of Industry to plan, promote, organize and implement programmes for the development of khadi (a local term for good manufactured by hand) and other related village industries in line with the national development plans. Among the various rural based industries which KVIC is supporting and co-ordinating, the handmade paper industry is one of them:

**5. Project Relevance**

The project has been developed within the above mentioned background and takes its relevance from the following:

- low technology and low investment required
- labor intensive
- converts waste by recycling
- high value-added
- use of non-wood raw materials
- pollution free production process
- a popular eco-friendly product
- preserves heritage of traditional kagzi (hand papermakers) arts and crafts
- the product is of high strength and varied textures
- seeks to promote the development of technical skills of local artisans
- facilitates in the promotion of women participation in the manufacturing sector
- contributes in enabling more employment opportunities, generating income and promoting economic activities
- promotes the utilization of local based raw materials
- contribution to social development as encompassed in the SHD framework outlined in the Global UNDP framework and in line with the parameters established in the UNDP Advisory Note, 1997-2001 (Nov. 1996, UNDP, New Delhi)

In the original version of the project document, the three project objectives as indicated are similar to the outputs stipulated. In the present version the outputs are stipulated more clearly. In this regard, an improved formulation of project objective would read as follows:

"A Centre established with capability to develop and transfer technology, and to provide services to industry to increase productivity and improve quality and marketability of handmade paper and paper products."

The above objective then captures the problems to be addressed by the project. Consequently, the project outputs as indicated in the revised version would follow a logical framework, with the outputs indicating their contribution to the attainment of project objective.

The project document did not provide for any performance indicators either at project objective or output level. The project document also did not contain information with regard to how the Centre should be linked to industry; no such strategy was indicated.

The project activities pertaining to outputs 2 to 5 have an institution building function dealing with capacity building, however, the service module required for institution buildings outputs were not applied. It therefore was evident that activities required to operate, maintain and service the equipment delivered are not indicated in the project document.

An example of using a service module concept in the formulation of an institution building output would read as follows:

As an example: Let us take the output of the "information cell" - if formulated along the service module should indicate and inform upon :

- What services should be provided by the "information cell"?
- What kind/background of permanent national staff it should be composed of?
- What methodologies, procedures for operation of the cell be established to enable delivery of the services envisaged?
- Who will be the end users of the services of the output?
- What will be management structure of the output for its operations?
- Are premises/housing facilities adequate?
- What type of equipment is required to establish the cell?

A similar approach is required for outputs regarding the testing laboratory and the demonstration plant.

Given the original measures and timeframe, project objective were ambitious which subsequently required extension of the project both in terms of financial resources and extension of project duration.

#### IV. PROJECT IMPLEMENTATION

The project commenced its implementation in September 1991. At the time of approval, the project budget stood at US \$ 686,800 and at the time of evaluation it stood at US \$ 704,999.

The following table provides the breakdown of the project budget as at 31 March 1997:

BL	11-99	Intl. Experts	US\$	170,865
	15-99	Local Travel		16,178
	16-99	Staff Mission		2,704
	17-99	National Experts		16,451
	21-99	Sub-contracts		4,362
	31-99	Fellowships		74,198
	32-99	Study Tours		87,091
	49-99	Equipment		310,597
	59-99	Misc		22,553
	99-99	Project Total		704,999

The project has been implemented through the provision of expert services, training to national staff and delivery of equipment as envisaged in the budgetary allocation and workplan of the project document.

##### 1. Input Delivery

###### International Expertise

The project has been implemented with the assistance of several international experts in the field of hand papermaking and marketing. The international personnel has been:

1. CTA, Chief Technical Advisor, conducted six separate missions between September 1991 and June, 1994. He has accompanied the project from its initial stages (see also his report 'Rural Papermaking in India', 1985, UNIDO, SI/IND/84/801/11-01/32.1E). He has produced 6 reports which are technical in nature, and include schedules of work, recommendations on the site construction of the Centre, equipment purchases. These reports are a continued source of information and the staff could benefit from periodically re-reading these as to his recommendations, both technical, including safety, and philosophical (focus of attitude towards hand papermaking and the planned direction of the Centre).
2. PE, Papermaking Expert and ME, Marketing Expert, conducted initial technical skills improvement of the staff, development of fibres for papermaking, a tour of papermaking units within India and a schedule of planned work. The PME has written a sound technical report with excellent recommendations, especially in the area of product development. The PME

conducted one mission to India in 1991. She has also conducted a survey of the USA market in a separate study in 1992 and exhibited Indian handmade papers at US trade fairs, where she met with much success.

3. IME, International Marketing Expert, conducted in 1991-92 an international (European) market survey of handmade papers, its demand, market trends and provided recommendations for product development. This survey was conducted at the initial stage of the project, well before the Centre was constructed. It provided a basis for a cautious market strategy and recommendations of quality papers for export.
4. CET, Consultant in European Papermaking Techniques, who, due to the late delivery of equipment at the institute, was unable to train fully personnel in European sheet forming methods, however, as he is also an expert in Japanese papermaking, trained the staff in Japanese techniques and equipment construction. He advised staff on research and techniques and on equipment design. The technical report includes recommendations to market strategy and product development. He conducted a tour of papermaking units in India.
5. (CJT), Consultant in Japanese Techniques for Hand Papermaking, conducted her mission in 1995, training Centre staff and researching fibre preparation. Her report is technical in nature and makes several reasonable recommendations as to the future of the Centre and its programme.

Comments: The international experts contributed in providing appropriate and satisfactory technical advice in guiding the project and in establishing the Centre. The quality of reporting is good: they have provided relevant information which met the desired expectations and contributed towards the achievements of the project outputs.

#### National Expertise

The National Expert on Laboratory and Fibre Evaluation conducted research on the evaluation of four types of fibres for suitability of specialty grade handmade papers. Further, training was provided to the Centre staff in all aspects of laboratory testing methods and equipment and helped establish a working chemical laboratory. His report documents very careful scientific research and methodology with very promising results as to fibre usage.

The National Pulping Consultant assisted in establishing the chemical laboratory and initiated appropriate pulping methods for the manufacture of handmade papers. He further trained Centre staff in pulp making and fibre preparation; assisted in designing a effluent treatment plant; and advised staff on all aspects of future research. His work is thoughtful and of good quality.

The National Consultant in Marketing proposed the creation of an independent professionally managed marketing organization to support the handmade paper industry in India. This proposal is debatable and rather the strengthening of the Centre in this area

might be a better solution bearing in mind the good links already developed between the Centre and the local industry.

The National Consultant in Product Development recommended the purchase of some equipment for strengthening the product development cell at the Centre. Some equipment have also been ordered and some still have to be purchased. He visited various units and his report has a series of useful observations and recommendations on measures to improve product quality and design. The quality of his report is good.

### Equipment

The following equipment was delivered under the project:

1. Rag chopper; cuts cloth to smaller bits prior to beating
2. Hydropulper; used to hydrate fibres before beating
3. Hollander beater; 150 kg. cap., beats or fibrillates fibres. The large sizes generates a sufficient amount of pulp for the cylinder mould machine and larger paper runs
4. Hollander beater; 5 kg. cap., beats or fibrillates fibres for the handmade paper vats
5. Cylinder mould machine; an automised machine to produce wet sheets of paper or board
6. Johnson vibrating screen; distributes fibres and separates knots from pulp prior to feeding the cylinder mould machine
7. European type vat; used for western sheet formation for the handmade paper making process
8. Japanese type vat; used for Japanese sheet formation in the hand papermaking process
9. Indian Traditional Vat (Autovat); used for the forming of papersheets in the traditional Indian manner
10. Hydraulic press; presses the post of newly formed sheets to remove excess water
11. Glazing press; imparts a smooth surface to dry paper
12. Paper machine cutter; cuts stacked papers to smaller formats
13. Die press; for envelope cutting

There are also additional finishing equipment for scoring, punching and spiral binding. The purchased equipment is appropriate for the desired output. The equipment is used in the production of handmade papers and cylinder mould-made and fulfills the purpose of demonstration and direct training as outputs of the project. The equipment is well maintained; there are safety reservations with specific mention of electrical wiring and splash covers for the large Hollander beater.

### Staff

Counterpart staff to the Centre and the training delivered:

The present staff of the Centre is well-trained and gives the immediate impression of a knowledgeable and professional body. Their explanations of their duties and working

methodologies were clear. The senior professional staff appears exceptionally dedicated to the Centre and their work.

The senior technical staff includes:

NPC, Mr. S.N. Singh

He is trained as a paper technologist and has been in the field for 39 years. His international reputation is established, he is the author of numerous articles on the subject of papermaking. Under the project he conducted a technical study tour in 1992 to Japan, Finland, Sweden, the Czech Republic, France, Italy and England.

DPO, Mr. Baldhari Singh

A trained technologist, in the field for 15 years, has been at the Centre since 1995. He received fellowship training under the project in the Philippines in 1995. He functions as assistant director.

T.O., Mr. Ramji Asthana

A trained technologist in the field for about 7 years. He is in charge of research and development and the laboratory. He has been employed since 1995 at the Centre.

T.O., Mr. M.R. Kulkarni

A trained technologist in the field for 12 years employed since 1992 at the Centre. He received fellowship training in 1994 in the Czech Republic. He is in charge of consultancy and training.

T.O., Mr. B. Prasad

A trained technologist in the field for 15 years, employed since 1992 at the Centre. He received fellowship training at Whatman Ltd., a paper manufacturer in England, in 1993. He is in charge of engineering.

T.O., Mr. D.K. Chawla

A trained technologist in the field for 15 years and employed since 1994 at the Centre. He received fellowship training in Japan in 1993. He is in charge of product development.

Research Assistant, Mr. V. Khandekar

A trained technologist employed since 1994 at the Centre. He works in the laboratory.

Other technical staff:



Skilled Operators:

Mr. Kamal Raj  
Mr. Pradeep Mal  
Mr. Ram Lal

The administrative staff includes:

T.O., Mr. G.P. Sharma (accountant)

Storekeeper: Mr. T.N. Tripathi  
Establishment Assistant: Mr. H.V. Sharma  
Steno: Mr. A.K. Singh  
Steno: Mr. N. Jetly  
Driver: Mr. N. Rangej  
Messenger: Mr. Ram Prasad

## 2. Project Co-ordination

The overall policy directive was expected to come from the national project director (NPD) based at KVIC in Mumbai supported by the national project co-ordinator (NPC) who was reporting to the NPD.

MOI (Ministry of Industry)	-	New Delhi	-	JDC
KVIC (Khadi and Village Industry Commission)	-	Mumbai	-	NPD
KNHPI (Kumarappa National Hand Made Paper Institute)	-	Sanganer (Jaipur)	-	NPC

The project site was selected to be located at Sanganer in Jaipur. The site was chosen based on the existing tradition and proximity of a large number of handmade paper units.

The project authorities annually prepared Project Performance Evaluation Report (PPER) and Tripartite Review Meetings (TPRs) were held involving all parties concerned in the implementation of the project. During the occasions the UNIDO Backstopping Officer was attending the TPRs it was not possible to visit the Centre in Jaipur since firstly the Centre construction was not completed and the time allocated to attend meetings did not facilitate visit to the project site in Jaipur.

Project backstopping and monitoring by UNIDO and UNDP have been satisfactory.

## 3. Findings

- Implementation of project activities, though delayed, was cost effective.
- Activities were in line with Government policies and the desired development objective of the project

- Commitment of Government and KVIC to the project was good.
- Involvement of the National Project Implementation Team (KVIC) was effective.
- International expertise provided under the project were effective and efficient.
- The sequencing of the fielding of the experts was not at the desired level.
- Equipment delivered was appropriate.
- Training provided was good and effective, knowledge acquired was good, application of the acquired knowledge was also good.
- Two staff trained are no longer associated with KNHPI.
- Quality of monitoring and backstopping were good.
- The role of the NPC was excellent.
- The role of the KVIC and the Ministry of Industry were at the desired level.
- Reports provided order the project were informative, relevant and technically sound.

The implementation of project activities was in line with Government policies and the national development objectives in meeting the growth of rural economy by promoting employment and generating income, bringing women folk in economic activities--all of which contributed towards the promotion of social being and welfare.

The level of commitment of Government and the Government counterpart in this case the KVIC and its designated National Project Co-ordinator have been found to be extremely high. The Government, i.e. the Ministry of Industry through the KVIC have strengthened the activities of the project, through policy level declarations and legislations including financial incentives to be made available to the end users of the project. The Ministry of Industry has been able to well understand the potentials of the handmade paper industry and has maintained its commitment to facilitate the growth of the Industry. The mission is of the opinion that the government support and commitment to this endeavour shall continue. Project activities were delayed in the early stages of project implementation - these are mainly attributed to the delayed completion of the construction of the Institute. The equipment for the demonstration Centre were also delayed and some equipment for laboratory testing purposes were also delayed. Consequently, the above factors contributed also to the delayed fielding of the CTA. This contributed to the extension of project duration.

Project funds were judiciously used. The mission did not trace any misuse of funds. Funds utilized for training and equipment purchased were very well organized, which enabled in strengthening the Institutes capability in having the know-how to increase productivity, use alternative sources of raw materials, improving quality and in the ability to conduct tests of various grades of paper with respect to its strength, texture, tear strength, brightness, weight, tensile strength, smoothness, dimensional stability, thickness and folding endurance. The use of international experts were also useful, as they contributed to the excellent design of the Centre. The experts assisted in planning a sound technical layout, upgraded knowledge on the understanding of global supply/demand situation of the product and on technical abilities through demonstration and on the job training.

The increase of project budget from US \$686,800 to US \$704,999 (a marginal increase of 3%) is within acceptable standards. The extension of project duration which

apparently seems high (two years) is mostly due to the delayed construction of the building of the Centre.

The involvement of national staff has been satisfactory and though administrative management has not been optimum, but given the local conditions and constraints, can be considered satisfactory. Among the staff trained under the project, 70% continue to serve the project.

The activities of the project under the able guidance of the NPC have been able to develop a positive linkage between the institute, the KVIC and the Ministry of Industry.

## V. PROJECT RESULTS

### 1. Production of Outputs

The project envisaged the production of six outputs which would contribute to the establishment of the Centre (KNHPI) with required capabilities to provide the essential services to enable the growth and development of the handmade paper industry.

The status of achievement of project outputs at the time of evaluation is discussed below.

#### **Output 1. Development of a marketing strategy**

Market survey of domestic and international market trends were undertaken as stipulated. The findings have been disseminated through four workshops and seminars during 1995-96. Additionally the findings have been published in the monthly journal of the Centre. The proceedings of the above are well documented and available at the Centre library. However, a concept paper on market strategy is yet to be developed. Further, the Report on the domestic market survey is yet to be received.

#### **Output 2. Testing Laboratory**

The testing laboratory has been established.

1. The laboratory has chemical and physical sections and is functional.
2. It can undertake the physical analysis of the properties of paper and fibre raw materials.
3. It generates the basis of research and development providing the necessary documentation support for alternative raw materials.
4. It is well equipped; the instrumentation is relevant to the project.
5. Procedures and guidelines exist to guide the physical and chemical tests.
6. Maintenance procedures are complied with.
7. Most of the Centre staff trained under the project is still with the Centre.

#### **Output 3. Demonstration Plant**

1. The demonstration Plant is operational
2. It has the capacity to demonstrate handmade paper manufacturing techniques of Europe, Japan and India.
3. It can provide technical guidance on the use of cylinder mould machines.

4. Equipment delivered was appropriate and compatible.
5. Four staff were trained under the project, of these, two remain with the project, one is no longer with the project and is an established entrepreneur; one has been retaken by KVIC.
6. Safety standards with regard to electrical wiring and appropriate machine protective covers have not been fully complied with.
7. New technologies have been developed, documented and disseminated to the industry.

#### **Output 4. Consultancy Services**

1. The Centre is well positioned both in terms of technical staff, equipment and testing facilities to enable it to provide the following consultancy services to the industry with regard to:
  - a. Product development
  - b. quality improvement
  - c. trouble shooting
  - d. basic market trends and opportunities
  - e. assisting in formulation of project proposals
  - f. appraising new investment proposals
  - g. providing units with physical and chemical data on raw materials and paper products
2. As of date, consultancy services have been provided by the Centre to 550 persons in 56 manufacturing units representing 15 States.
3. The Centre in coordination with KVIC has a programme to send Centre staff for consultancy services to various manufacturing units throughout the country.

#### **Output 5. Training Courses**

1. Six training courses have been developed by the Centre:
  - a. Orientation course: to impart basic knowledge and familiarize with various aspects of handmade paper industry and handmade papermaking (15 days)
  - b. Specialized operators course: to enhance technical capability with specialization in specific area (3 months)
  - c. Training for practical consultants: to generate a pool of low cost practical consultants for taking up installation of machinery and equipment and trouble shooting jobs (one month)
  - d. Training in marketing and product development: to impart knowledge of modern marketing techniques relevant to the marketing of handmade paper and products for both domestic and export markets

- (15 days)
- e. Entrepreneurship development: to develop entrepreneurship in handmade paper industry (one week)
  - f. Advanced course: specialized intensive training on handmade paper techniques and technology (one year)
2. To this effect, the Centre has developed training modules and eligibility requirements. It has also determined training fees to be charged for each of the programmes highlighted above.
  3. However, between the period of 1994-96 training has been conducted for only the above three courses.
  4. For
    - a. 97 were trained
    - b. 25 were trained
    - c. 6 were trained

The Centre commenced functioning in 1994 and is maturing which will enable it to undertake the remaining training courses developed as further demand of its services is called upon by the industry. It is envisaged that from mid-1997 it will undertake all the training courses developed.

5. The Centre has received financial assistance from KVIC to construct a hostel for trainees.

#### **Output 6. Information Cell**

As a component of the information cell the Centre has established a small library which maintains:

- books, journals, magazines and films relating to handmade paper and paper products;
- the technical reports produced under the project;
- reports of the study tours undertaken by staff from the Centre, KVIC personnel and as well as staff from Ministry of Industry.

Additionally the Centre publishes a monthly magazine 'Hath Kagaz' which is subscribed by about 250 manufacturers and traders of the industry at an annual fee of Rs. 100,--.

The Centre staff, particularly the NPC, have published articles in various journals.

The information cell is, however, not adequately staffed. No staff is presently available with knowledge on library operation. It is weak in its capacity to disseminate relevant information to the industry on its activities and services it is able to offer.

The project design did not provide adequate information clearly identifying the services expected to be delivered and fees to be charged. There was also no clear indication on how the Centre should disseminate information with regard to various

services it may be positioned to offer to the industry.

## **2. Description of the Physical Plant Layout in the Centre as Positioned**

### **1. Testing Laboratory - Equipment**

The Centre has conducted extensive research in the evaluation of new raw materials for the handmade paper industry. Further studies have been conducted on pulp and pulping methods.

The testing laboratory has provided the necessary quantitative physical data to support these findings. It has been furnished with the necessary equipment; further, the laboratory is an environmentally controlled atmosphere with constant humidity and constant temperature. These conditions assure accurate and repeatable scientific results. The equipment includes:

- a. 100 cm Rotary Cutter; establishes a standard size sheet for testing.
- b. Scale (0,0001g); measures the weight of paper
- c. Burst Tester; measures the bursting strength of a paper sample
- d. Tear Tester; measures the tearing strength of paper
- e. Tensile Tester; measures the tensile strength of paper
- f. Smoothness Tester; measures the surface of paper
- g. Porosity Tester; measures the density of paper
- h. Dimensional Stability Tester; measures the dimensional stability of paper
- i. Brightness Tester; measures the ability of a paper to reflect light
- j. Quadrant scale; measures the weight of paper
- k. Cobb Tester; measures the sizing or the ability to absorb moisture
- l. Folding Endurance Tester; measures the folding ability of paper
- m. Thickness Tester; measures the thickness of paper
- n. Projection Microscope; enlarges fibre samples too small for the naked eye and provides mechanism for photography.

The laboratory equipment is for the most part appropriate, and provides all necessary proofing instruments to quantify paper. Some equipment is of high precision and may be too sophisticated in light of the scope of this project. The quality of the laboratory is excellent; it is highly relevant to the desired expectations of the project and fulfills the required output.

### **2. Chemical and Wet Laboratory Equipment**

The chemical and wet laboratory enables conduct fibre treatment and preparation work. It is equipped with the appropriate chemicals, additives and several testing instruments and machines. These includes among others:

- a. Valley Beater; beats a limited quantity of fibre to pulp
- b. Freeness Tester; measures the freeness of wet pulp
- c. Hollander Beater; beats a limited quantity of fibre to pulp
- d. British Sheet Former; used to form a sheet without a vat

- e. Digester; used to cook fibres by removing hem-and non-cellulose parts of fibres
- f. Drying oven; produces residual ash of paper
- g. Sheet press; to remove residual water after forming a sheet

Pulp preparation work can be accomplished well and measurements obtained quickly. All necessary instruments are present. Reservations have been stated to the laboratory officer regarding less than satisfactory safety covers for the hollander beater and hazardous electrical wiring. As the Centre also serves as a demonstration plant, it must serve as role-model in all aspects of the manufacturing process; reflecting the importance of safety measures. In this regard, it should be considered whether the open shelf storage of chemicals, acids, etc. is appropriate in the chemical laboratory or whether Indian law otherwise requires. Further, whether a fumehood is required for chemical experiments should be investigated.

The quality of the wet and chemical laboratory is satisfactory: it is highly relevant to establishing the required output.

### 3. Demonstration Plant Equipment

The demonstration plant and paper making facility is a series of successive rooms, determined by the manufacturing process. This includes 1) a room for the storage of raw materials, 2) a room for the preparation of raw materials, including rag chopping, 3) a room for hydropulping and cooking of fibres, 4) the fabrication room, which includes pulp preparation, cylinder mould sheeting formation, and three types of vat sheet formation, pressing, 5) a drying room and 6) a finishing room.

### **3. The Centre Staffing**

The Centre is headed by the National Project Co-ordinator - supported by an assistant director who is in charge of the information cell and training.

The Centre has technical officers in charge of each area of the Centre; namely:

- Test laboratory
- Consultancy and training unit
- Engineering unit
- Product development unit

and one Research assistant supporting the physical laboratory. Additionally, the Centre has 3 skilled operators, i.e. 1 physical lab operator and 2 hand papermakers. Administrative support is provided by:

- an accountant
- storekeeper (2)
- secretarial staff (2)
- one driver
- one messenger



The Centre staff needs to be strengthened with one information technologist and one marketing expert, an additional paper scientist, one librarian/archivist, and two technicians (a trained chemist and physical lab operator and a training manager)

#### **4. The Centre Operations**

The Centre operations is in line and is compatible with the manufacturing process of handmade paper. A sequential flow of its operations is as follows:

- I. Research and Development
  - a. Testing Laboratory
  - b. Chemical Laboratory
  - c. Pulp Processing Laboratory
- II. Raw Material Storage
- III. Fibre Preparation (rag chopping, cooking)
- IV. Pulp Preparation (beating)
- V. Sheet Formation (vat work, pressing)
- VI. Drying (air drying)
- VII. Sheet Finishing (sizing, glazing, flattening)
- VIII. Conversion

The Centre has carried out research and development with respect to use of raw materials. These raw materials have been tested and verified. The results have been documented. It is expected that as the industry matures and clientele sophistication grows so that the industry will see more use of the alternative raw materials. The following raw materials have been tested: Ramie, Daphne, Hemp, Sunn Hemp, Banana stem, Jute, Sisal.

The Centre has effectively contributed in diversifying the product range of handmade paper products and brought about a qualitative change in terms of design, smoothness, and texture to meet the growing demands of a competitive market. These developments were in the range of converted items comprising of marbled papers, algae mottled papers, fancy and decorative papers, carrying bags and cards.

The research already undertaken by the Centre on alternative fibres, pulping processes, vegetable dyes and alkaline sizing is relevant and important. The work has been carried under defined laboratory conditions and standards. The work has been documented and published. Some of the alternative fibres tested include Banana stem, Hemp, Sunn Hemp, Sisal, Jute, Ramie, Daphne. Various pulping processes of fibres especially using low-technology, have been developed. The production of an acid-free tissue for conservation purposes from the banana fibre has drawn much attention and interest from several units. The physical strength properties of papers have been measured and pH neutral sizing for handmade paper has been investigated. The Centre's quality of the work has been good. The work is extremely relevant and fulfills the objective of the project with regard to the development of alternative raw materials, paper analysis and its dissemination to industry. However, the Centre is weak with respect to information collection and its dissemination and with regard to market trends. The Centre is yet to develop a marketing strategy.

## **5. Impact**

While the growth of the handmade paper and paper products industry in India has been phenomenal in recent years, both in terms of domestic and export markets and of an increased number of manufacturing units, the mission tried to assess as to what degree this could be attributed to the results achieved under the project.

It should be first mentioned that the Government of India with the aim of developing rural based industries, has established several financial and fiscal incentives to individuals/ entrepreneurs interested in investment in this subsector. The KVIC established under the Ministry of Industry was envisaged to meet the national aspirations in the development of the handmade paper and paper products industry. KVIC, through the Centre established under the project with financial assistance from UNDP, was chosen to play the lead role in promoting and in developing the industry.

The use of project outputs has led to:

- product development
- quality improvement
- skill upgradation through training
- provision of consultancy services/ trouble shooting
- information and dissemination
- awareness on marketing trends
- alternative sources and use of raw materials

## **6. Findings from Visit to the Centre**

- The Centre has played a key role in re-generating some sick manufacturing units - on account of which today they are healthy enterprises;
- The manufacturing units are more quality conscious and in delivering the products on time;
- Improvements and investments have been made on quality control;
- The manufacturing units have now moved from only paper sheets to converted items;
- Units are better aware of marketing trends, supply/demand situation;
- Units are better skilled and trained because of the Centre;
- Both manufacturing units and exporters call on the Centre for provision of consultancy services;
- Units subscribe to Centre's monthly publications;
- Units and Exporters better understand the values of attending/participating in trade fairs and exhibitions;
- Number of units from other zones have solicited support in the form of training and consulting services from the Centre;
- The Centre is in a position to certify quality of the product;
- The Centre has facilitated in the growth of manufacturing units, employment generation and increased income. Prior to the establishment of the Centre, there were 4 traditional Kagzi units in Sanganer, Jaipur; there are now 12 manufacturers and 10 traders in the area;
- The Centre has received applications for training from centres from abroad,

- The Centre has received applications from abroad for developing business,
- The Centre has been able to disseminate the test results of alternative use of raw materials to the industry and the industry has responded positively, hence seeking consultation from the Centre to develop and transfer this technology to the units concerned;
- The Centre contributed in raising awareness in identifying the role of women in this sub-sector;
- The Centre has promoted the return of Kagzis (hand papermakers) to their traditional profession;
- Of the 56 units which have consulted with the Centre between 1993 and 1996, four have received additional financing through state financial institutions.

## **7. Sustainability**

Like any research and development centre, the long term sustainability of such an institution is debatable, especially in the short term. Presently the total expenditure of the Centre is Rs 12 lakhs; the Centre generates an income of approx. Rs 5 lakhs. The financial deficit of Rs 7 lakhs is borne by KVIC which receives funds from the Ministry of Industry.

The Centre's income is generated from fees charged for training, subscription fees obtained from its publications, sales of specialty handmade papers which are made there and fees on an ad-hoc basis from consultancy services. Since the industry is still in its early stages of growth, it would be unlikely to increase payments for the services received. Yet again, the industry is also aware of the fact that the Centre's services must not be a supply driven approach but must be based on the demand and needs of the industry for which the industry must be willing to pay - as a normal consequence as the industry grows.

The Centre in the meantime is producing special high grade tissue papers used for conservation purposes in libraries and museums and selling these and generating income for itself. The Centre is of the opinion that paper of such quality and grade cannot be manufactured by any local manufacturer as yet. An entrepreneur ("Silent Light") who specializes in making paper products for lamp shades and light screens for both domestic and export markets shall not purchase the paper from any local units but only from the Centre, as the local units are not capable of producing it. It is expected that the Centre, as a transitional measure and until such technology transfer has been effected, shall produce and sell these products.

The Ministry of Industry and KVIC feels that according to their 9th Five-Year Plan, its financial assistance to the Centre will phase out in 7 years time - by which time, the Centre will be able to generate its own income from services extended to the industry and become self-sustainable.

The mission feels that with the existing potential, a phenomenal growth of the industry will take place under the guidance of the Centre by tapping new raw materials available. In view of the growing demand for the product because of its eco-friendly nature and artistic value. In this case, the industry can only grow and contribute towards the sustainability of the Centre. However, to sustain the industry growth the Centre should

continue and maintain its linkage to the industry, be well equipped in staff and technical abilities to enable it to meet the new demands and challenges of a growing sector.

Data and information obtained from KVIC, Mumbai and KVIC Chennai indicate that a number of units from other zones have solicited support in the form of training and consulting services from the Centre. The Centre is in a position to certify quality of the product, which many exporters are requesting before they purchase from the manufacturing units.

With the above in view, it may be concluded that the Centre has been able to create an effective linkage with the industry. The Centre has facilitated in the growth of manufacturing units, employment generation and increased income by contributing to increased economic activity and social welfare. The Centre has received applications for training from countries from abroad. One woman from Ireland was already receiving training during the time of the mission. The Centre has received applications for developing business from companies in Germany, Austria and Italy, which the Centre is pursuing. There is correspondence on this at the Centre.

The mission is of the opinion that, through the provision of these services, the Centre is in a potential position to generate income and contribute towards sustainability in the longterm.

## VI CONCLUSIONS

### 1. Conclusions

On the basis of the positive findings of the Centre as indicated in the previous chapters in terms of its ability to provide necessary guidance; technically, managerially and operationally to the industry and given the recent positive developments with respect to increased market penetration of the industry in both domestic and export markets, a strategy needs to be developed on how further steps need to be initiated to strengthen the industry's position. Additionally, the sector has positively contributed to sustainable human development (SHD) issues as indicated by UNDP and also falls within the Country Cooperation Framework I (CCF-I) (1997-2001), Thematic Area I. The project has contributed to productivity enhancement of the industry, has contributed to export promotion, has contributed in generating employment and income, has contributed in the development of a new breed of entrepreneurs, has advanced the development of women, poverty alleviation and social development.

The project Centre is still in its infant stage (now two years into operation) and needs to mature. The positive results achieved need to be strengthened to enable it to expand its services throughout the country.

It is therefore important that given the increased demand pattern of the industry, scope remains to further augment the growth of the industry through assistance and policy level advice by the central authority.

### 2. The National Programme - Future Outlook

On all accounts, from various documentation received and assessed, from data and information collected through visits and interviews with manufacturing units and exporters/traders, it is evident that this industry is undergoing a fundamental change with respect to increased production, product development, employment generation, increased income based on locally available raw materials, eco-friendliness, advancing women participation and contribution to poverty alleviation.

A past five-year (1992-1996) sector analysis reflects the industry trend as follows:

Production has increased	75%
Employment has increased	33% of which 35% constitute women
Paper making units increased	35%

The relative earnings have increased 12.75% in this same period. Women participation have also increased from 12% to 25% of total workforce.

Many manufacturing units have become 100% export-oriented. Export market has increased 1200% primarily in developed economies. Both the export market and the

domestic market are expected to grow in the future. Though some foreign market studies have been undertaken, however, detailed data on future market trends and demand for various converted items is not clearly identified - though it is most likely that exports to developed countries are expected to rise sharply, primarily because of environmental friendly technology and innovation coupled with artistic/aesthetic value the product represents.

The strength, weakness, opportunity and threat (SWOT) analysis as reflected in the report of the seminar held on 9 December 1995 in New Delhi is appropriate, but it does not include under 'threats' competition from other developing countries which could come from Sri Lanka, The Philippines, etc.

The value added (converted items) products and its clientele is well identified by KVIC.

The distribution of the industry and employment as indicated in the KVIC annual report reflects the following:

	<u>Units</u>		<u>Employment</u>
Uttar Pradesh	21 %	Uttar Pradesh	20 %
Maharashtra	11 %	Kerala	13 %
Tamil Nadu	11 %	Tamil Nadu	20 %
Haryana	10 %	Haryana	7 %
Rajasthan	8 %	Rajasthan	7 %

In view that data and information collected indicates a substantial growth of the industry, it is imperative that Government lead policy advice and incentives be forthcoming to allow its growth and maintain its competitive edge. Strategies should therefore be initiated to ensure the foothold and the penetration this industry has made in the world market to enable product development, timely delivery, alternative use of raw materials, marketing skills, packaging technology along the lines of the national development plans to generate employment and income, promote transfer of environment friendly technology, facilitate advancement of women and contribute to poverty elimination.

Given the above impression on the prospective growth of the industry, the Government of India is considering the launching of a national programme to establish 460 new papermaking units within three years. The programme should raise the present level of production from 15,000 tonnes to 56,000 tonnes per year and generate additional employment to 26,000 persons of which 10,000 will be women. Indirect employment created will be another 10,000. The strategy for the programme is to provide technical and marketing support to existing and new units. It is proposed to set up 20 service centres and 4 extension wings of the KNHPI and a professionally run marketing organization.

The mission is of the opinion that the handmade paper industry shows growth potential and is positively linked to sustainable human developmental issues. However, the mission can not substantiate the extent of growth in the absence of a detailed market analysis. The mission feels that the National Programme is ambitious and should be moderated. Concentration should be placed on extension wings of the Centre, which would provide technical support, training and marketing support. The ripple effect that further units be established would come gradually as the market demands. This positive pattern has already been established in the Sanganer, Jaipur area from the Centre. Forcing unit growth with the addition of 460 new units would create a mushroom effect and a possible future collapse of the industry. The creation of the extension wings would be more advisable. These could be linked directly with the Centre; these would be staffed with the Centre's technical and marketing personnel to provide for training, marketing and product development support, technical expertise and trouble shooting. They would house a small technical laboratory, a classroom and a demonstration workspace for training. Any extensive laboratory analysis would be conducted at the Sanganer centre. The locations of these extension wings has been suggested by the NPC.

The mission recommends that a detailed market survey is essential in laying the foundation and framework for any future national development plans for the handmade paper industry. Issues to be considered are to determine the extent of competition from other developing countries, the contribution of India to the world market, local and foreign capabilities to absorb the new production, and environmental impact of the increased production, especially if raw materials other than rags are to be used and to identify alternative sources and uses of local raw materials. In this connection, a survey of waste paper utilization may need to be undertaken. Additionally, it also needs to be looked upon as to where the thrust of the national programme be; whether:

- to emphasize on capacity utilization of existing units;
- to emphasize on increasing the number of manufacturing units;
- to emphasize on identifying alternative sources of raw materials; and
- to emphasize on providing expertise for value-added (converted) items.

The mission opines that any national programme should have a composite mix of all of the above based on detailed marketing strategy. The proposed study should also be able to identify the contribution of such a national programme to sustainable human development.

The mission is convinced that the handmade paper industry is a 'Sunrise' industry with potential to stand on an equal footing with the textile/leather industry in the days to come - simply on the ground of its qualitative aspects - eco-friendly and artistic value and its contribution to social human development.

## VII. RECOMMENDATIONS

- A more specific marketing strategy of services needs to be developed and followed up on a continuous basis. This will enable the Centre to provide relevant information to manufacturers and exporters on market trends.
- The research and development should continue with special emphasis on alternative raw materials and acid free papers. Attention should be given to fibre preparation with respect to ecology.
- The equipment purchases of knotter, vibrating screen (Johnson type), computer with internet access, pump, drier and photocopier as requested in the workplan is recommended to complete and enhance laboratory information work.
- The Centre staff should be strengthened. Additional staff required are:
  - one paper scientist (research and development)
  - one Management Information System (MIS) Expert
  - one trained marketing officer
  - one librarian/archivist
  - two technicians (1. extension wing chemist and physical laboratory operator and 2. training manager with background in pulp and paper)
- More specific training courses need to be developed with stress on any particular area in marketing, testing and processing with smaller duration. In the training course for exporters, specific emphasis should be placed on appropriate and standard business practices with developed countries.
- The information cell should contain a proper MIS system. Further, it should contain an extended archive of paper units and their actual products. The information cell should contain an export section to promote marketing. The Centre should be in a position to define threats such as increased competition from abroad. It should make aware on quality commitment and timely shipment and packaging.
- The information cell should be equipped with computer facilities, with internet connection and personnel with computer literacy to enable dissemination of information by the Centre.
- The Centre should offer certification service for handmade papers to assure customers and manufacturers of quality. This is of particular importance for acid-free and conservation papers. In this connection, the Centre should consult the Indian Bureau of Standards.
- The Centre should document each paper unit in the country to include location, number of employees, yearly volume, type of products, etc. and



paper samples, which would be available for review by prospective customers, entrepreneurs, etc. In this regard, it would be appropriate to have a small museum or open archives for the visitors.

- The Centre should publish guidelines on the standardization of handmade papers, with specific clarity in the terminology of handmade and cylinder-mould made papers. This may be considered for adoption by KVIC.
- A long term strategy should be initiated to categorize the role of the Centre, its functions and services along with determining the future head of the Centre.
- A plan needs to be initiated on the basis of which the Centre should operate - under KVIC or MOI or as an autonomous body. The ownership of the Centre needs to be determined with responsibilities and accountabilities indicated.
- An Export Consortium in the sector should be formed to assure the standards and quality of handmade papers, improving marketing and image of papers from India. The Centre should be adequately linked to the functional services between the two.
- A directory should be made identifying units capable of producing papers for export.
- For more effective utilization of the Centre, linkages are required with other intermediary bodies:
  - Export consortium
  - NGOs
  - Indian Bureau of Standards
  - Hand Papermakers' Association
- A hand papermaking manufacturers' association with links to the Centre should be established.
- Further expansion programme should ensure that the results achieved under the project be further strengthened along the lines mentioned above.

The following sequence of options could be considered as proposed actions for the future development of the industry:

- Option I: Strengthen the Centre's capabilities as proposed above.
- Option II: Creation of extension wings at four locations to cover the needs of all manufacturing units in the entire country.
- Option III: Undertake a detailed survey (situational analysis) of the industry to provide the necessary guidelines for the national programme.

### **VIII. Lessons learned**

- (i) The important role of NPC - (dedication/commitment) to success of development projects is demonstrated; and
- (ii) The importance of linkages between a centre and industry it is supposed to serve to enable its viability and sustainability is validated.

Annex I

**UNITED NATIONS DEVELOPMENT PROGRAMME**

**MID-TERM EVALUATION**

IND/90/037-Strengthening the Handmade Paper Industry in India

**TERMS OF REFERENCE**

**1. BACKGROUND**

The handmade paper industry was introduced into India during the 16th century, and efforts were made to revive this ancient craft in 1935 and again at the initiative of Mahatma Gandhi with a view to protect the interests of traditional craftsmen. The Government took up the development of handmade paper industry from 1953 onwards as an important village industry to generate employment in rural areas with low capital investment through the Kadhi & Village Industry Commission (KVIC). The Industrial Policy of the Government of India as well as the different state governments provide both incentive and protection to this sector.

There are presently about 438 handmade paper units in the country, producing 12,356 tons of paper and board annually valued at Rs.15 crores, besides making converted items. In addition to meeting the domestic demand, the industry exports handmade paper and products worth over Rs. 7 crores annually and provides direct employment to 6,800 persons.

The ongoing project approved in 1990 with a modest input of US\$ 686,800 for a 3 year duration actually commenced in Sept 1991 and is designed to assist the handmade paper industry in India to produce high quality handmade paper and board through the establishment of a testing laboratory and demonstration plant for handmade paper, experiment with new raw material and new processes and technologies and also help in formulating a marketing strategy to enhance sales in both domestic and export markets.

The development objective of the project is to enhance the performance of the handmade paper industry in India and the competitiveness of its products in the domestic and export markets by using better and more versatile raw materials and by developing appropriate pulping and paper making techniques.

The immediate objectives are (i) to study the demand pattern of handmade paper and board in India and abroad with a view to determining the grades of paper and board on which the handmade paper industry should concentrate for its economic viability, (ii) to set up a testing

laboratory for pulp and paper and a paper making demonstration plant as part of the handmade paper units of KVIC and to give advice on how to produce quality products and greater variety of higher value paper/board for the domestic and export markets. (iii) to enhance the capabilities of the handmade paper directorate/centre in the functional areas of training, consultancy and information services to serve the Indian handmade paper industry.

## II. PROJECT OUTPUTS

The following outputs are envisaged under the project -

- Output 1 Survey conducted on the demand pattern for handmade paper and board in India and abroad, findings disseminated and marketing strategies evolved and implemented.
- Output 2 Testing Laboratory for pulp and paper established.
- Output 3 Paper making demonstration plant established and new technologies developed and disseminated to industry.
- Output 4 Cell established to provide consultancy services to handmade paper industry.
- Output 5 Training Courses developed for Handmade Paper Industry.
- Output 6 Information Cell established.

Output based Work Plans have been formulated annually on the above mentioned basis.

## III. PURPOSE AND SCOPE

The objective of the Mid Term Evaluation of the project is to -

- (i) Assess the current level of achievements of the project against its objectives and outputs.
- (ii) Examine the project workplan and propose any changes that may be required to complete the project successfully.
- (iii) Determine the extent to which the Centre has conducted extension services in introducing and disseminating appropriate technologies and practices and training manpower in solving the problems of handmade paper industry.
- (iv) Examine the extent to which the project has contributed towards increasing the capabilities of the Centre in developing cost effective technologies, quality control methods, testing facilities, consultancy services and an information cell.

- (vi) Examine the efficiency of project management including the delivery of inputs in terms of quality and quantity and the monitoring system.
- (vii) Examine the contribution of the project towards Sustainable Human Development (SHD) concerns, namely -
  - people centered development
  - poverty elimination
  - advancement of women and child development
  - productive employment
  - protection and regeneration of the environment
  - sustainable economic growth
  - transfer of environmentally sound technology

Recommend ways by which the full SHD potential of the project could be harnessed.

- (viii) Assess the effectiveness and sustainability of the project activities and the role played by the Centre in contributing towards the development of small scale entrepreneurs.
- (ix) Recommend further steps to increase the impact of the project as well as contribute towards the development of the handmade paper industry in India.
- (x) Based on its findings, recommend future directions of the project, including validation of the findings of the ongoing project, which indicate that the Indian handmade paper industry can become a major player in the world, provided both quality and productivity is improved. By broadening the scope of the project as appropriate into a programme outline for GOI Technical Cooperation with UNDP, Industry and other donors, affirm the fact that the Handmade Paper Industry has a vast and as yet untapped potential with the present production capacity of tones being doubled within a period of three years.

This would ultimately form a component of the Industrial Systems Programme for the development of Small Scale Sectors through the Cluster approach.

- (xi) In the light of the Global Environment Facility operational strategy, review and suggest opportunities for energy efficiency and use of renewable energy.

#### IV. COMPOSITION OF THE MISSION

- 1 GOI nominee
- 1 UNDP/UNIDO nominee (international expert)
- 1 technical expert (national expert)

## V. TIMETABLE AND ITINERARY

3 weeks from September 96. Detailed itinerary to be finalised in consultation with Project Authorities.

## VI. CONSULTATIONS IN THE FIELD

The mission will maintain close liaison with the UNDP Resident Representative in India, with the concerned agencies of the Government and the counterpart staff assigned to the project. Although the mission should feel free to discuss with the authorities in India anything relevant to the assignment under the terms of reference, they are not authorised to make any commitments on behalf of UNDP, UNIDO or the Government of India.

## VII. REPORTING

The mission will prepare a report on its findings and recommendations in draft in the field. The report should be presented to Government in draft form so that there is an opportunity to discuss it. The report should be submitted in final form to UNDP. UNDP will be responsible for formal submission of the report to the Government and the Executing Agency.

**Annex II(a)**

**Visit to the Khadi and Village Industries Commission (KVIC)**

**I. Meeting with KVIC officials, Mumbai, 7 February 1997**

Dr. T.R. Lakshminarayanan, Dy. Chief Executive Officer, made a presentation to the mission on the role of KVIC in the project. The history of the project was elaborated and the reasons for the support of the Centre, and the general philosophy behind the KVIC programmes for employment, economic growth and self-reliance. The role of the centre was to assist in technological inputs and training of participants. This concept began about ten years ago; there was at that time a decline in technology and in production. There was however an interest in waste recycling, the preservation of natural resources, the need for a higher level of quality of handmade papers, the need for the transfer of technology and managerial training and assessing new technology. KVIC has supported the Centre both financially and technically; found land and constructed buildings, provided funds for a hostel, assisted in marketing strategies and programme planning. KVIC supports the Centre and hopes for future self-sustainment. It requests the assistance from UNDP in the form of extensions wings of the Centre, formation of clusters of handmade paper units, replication of technologies and training modules, cost sharing of the infrastructure and training, increased staff for the Centre. KVIC views, that by the end of the 9th 5-Year Plan, the Centre will be the main centre for handmade paper in South East Asia.

**II. Meeting with State Director, KVIC, Tamil Nadu, Mr. K. Mohanraju 10 February 1997**

The State Director explained that the workers of Tamil Nadu are hard working and honest and that they have a desire to manufacture new products. KVIC assistance for the project has been in the form of technical guidance for units, tie-ups to markets, production management marketing and technology transfer. There are 21 KVIC State papermaking units in Tamil Nadu and 2 units of KVIC. As the distance to Jaipur is great, there is a need for a service centre in the area to assist with technology and trouble shooting. There continue to be problems with funding, job seeking support, training, technical support, motivation of entrepreneurs to start units. KVIC has determined that projects it supports are in turn better supported by the local banks.

**Annex II(b)**

**Visits to Manufacturing Units**

**I. Salim's Paper, Sanganer, Jaipur, 5 February 1997**

This unit claims to be the largest handpapermaking manufacturer in India and is considered by the Centre's staff to set a star example of the successful collaboration between Centre and manufacturer. The unit is run by an old papermaking family, Salim Kagzi and his six sons. It is a private company. An elder son, Nizamuddin Kagzi, was employed as a technical officer at the Centre; he received a UNIDO sponsored training fellowship to Japan in 1993. Salim Kagzi accompanied the UNIDO Technical Study Tour in May/June 1992 to Europe and Japan. Aminnudin Kagzi, another son, accompanied the UNIDO sponsored participation in the 7th International Trade Fair in Nuremberg, Germany 1996 at his own cost.

The plant has expanded greatly within the past few years, and now has three hollander beaters (approx. 150 kg dry weight capacity) with 30 vats producing an astounding 10-12,000 sheets per day. They employ about 250 people. Their raw material is cotton waste cuttings. The unit has separate sections for storage, finishing, conversion, printing and a showroom. Benefits of the Institute have been great: technical support, marketing assistance, linkage to markets. Their products are generally of good design, many of which are customer specified, and of a consistent high quality. They produce and convert sheets to bags, stationery, boxes, writing pads, envelopes, gift items, wrapping paper, picture frames. The unit reports a growth of 500% within four years from a volume of Rs 35 lakhs (1991) to Rs 4 crores (1996). The unit is now 100% export oriented.

Mr. Kagzi felt that the handmade paper industry can eventually support the institute financially. He feels that marketing is a continuous process and that there should be a stronger bond between the industry and the Institute. He would be interested in establishing a directory of hand papermakers and forming an association.

**II. Kalpana Handmade Paper Industries, Sanganer, Jaipur, 5 February 1997**

This unit is run by Ram Prasad Saini with members of his family. A total of 35 men and 6 women work there. The unit comprises seven vats and pulp is generated by on 150 kg hollander beater. The sheets are produced by two lifters per mould; the output is approx. 800 sheets per vat/day bringing the entire unit daily production to approx 5600 sheets. Sheets are made using the Indian technique of poring a set quantity of pulp into the vat, distributing the fibers by hand, and lifting the mould; the mould has no deckle. The sheets are typically made to 25" x 35" and then cut down to the standard format of 22" x 30" (56cm x 76cm). The unit is well laid out: there are separate areas for storage, conversion, production, and drying. The mission noted several safety problems such as machine guards; one worker had already lost an arm.

The unit is now 100% export oriented: papers are marketed through exporters to Holland, France and England.



The unit began with a 10 lakh investment, based on financial planning and technical assistance from the Centre. Mr. Saini felt that he would be seeking the advice from the Centre regarding the certification of papers in the future. The payment structure for the workers is staggered; the workmen at the vat receive about Rs100 per day; the sorters and driers receive between Rs 40 and Rs50 per day; the women receive less than the men.

The unit does only a little conversion, mostly shopping bags; decorative sheets with flower petals, grasses and "moon-rock" papers are made.

### **III. Sri Aurobindo Hand Made Paper, Pondicherry, 11 February 1997**

The Aurobindo Unit is probably the most famous hand papermaking unit of India on an international scale; this has certainly to do with the philosophy of the ashram but also that the unit exports directly papers of a consistent high quality. The unit was founded in 1960 with the assistance of KVIC and with government loans; these have since been paid back.

The unit is well organized and staffed. There are separate buildings for the preparation of raw materials, the cooking of the fibres, pulp preparation and sheet production, drying, sorting and inspection, finishing and conversion. There is a small showroom and museum. There are two large hollander beaters( approx kgs) for pulping to supply the twelve working autovats at the unit; these are worked in general in two separate shifts; the first from 8 am-5 pm and on the second shift only three vats from 5pm-8pm. The production is 10 to 12 Tonnes per month. The mill employs 215 workers; of these 35 are women. Typically, the women work separately from the men. There is a great deal of concern for the social well being of the workers; all workers in the vatroom were wearing boots and aprons. After a vatworker reaches the age of 32, he is generally moved to a table job, such as paper conversion, for health reasons. The ashram is hesitant to retire workers as they are able to retain their self esteem within their own families by working. Several workers have been employed over thirty years in the ashram; these older workers have a very good effect on the younger ones and provide for stability and the transfer of techniques and knowledge within the unit. The mission also observed that handicapped persons were employed there, these having no possibly of employment elsewhere and who were also extremely loyal and grateful to the unit. The technical staff is small: one head, 2 superintendents and 2 supervisors who received training in Pune. As the technical staff is aging, they will be looking for new people in the professional area. The unit also trains their own support staff as machinists and chemists.

They are now in a position to expand and are now seeking the technical advice of the Centre on water treatment and water recycling and on the manufacture of an acid-free tissue for conservation purposes. They have been in written contact with the Centre, receive the Centre's publication "Hath Kagaz". The management expressed interest in the services of the centre, especially in the technical evaluation of papers. They expressed doubts however as to whether they would send anyone so far away for training, as this would represent a hardship for the unit to be without a staff member for so long. An extension wing in a nearby place such as Chennai would be more acceptable. There is also the language problem.

The unit manufactures papers of high quality, decorative papers as well as white papers. These are converted into many items such as stationery, note pads, books, envelopes, bags. The Aurobindo unit is also very famous for its marbled papers.

Annex II(c)

**Visit to Traders (Exporters/Importers)**

**I. Asia Pacific Resources (APR) Exporters, Importers, Manufacturers, Hiten Mehta, Mukesh Gandhi, 8 February 1997**

APR began in 1993 as exporters of paper products; as they have stressed the quality of handmade papers, their business has grown from an initial volume of Rs 6 lakhs (1993) to Rs 6.5 million. They cater to the export market only, purchasing papers directly from about 6 or 7 manufacturing units and then converting these sheets into value added products. The units are dispersed throughout the country: Haryana, Delhi, Jaipur, Pune, Hyderabad, Lucknow. APR stocks about 70-75 different kinds of paper, and produces 20-25 different items, including bags, notebooks, pads, stationery. APR began purchasing papers in 1993 from the KVIC Sales Centre and later from Pune; they stopped purchasing from the Sales Centre when they learned that no difference was made between the handmade and cylindermould made papers. They purchase now from the KVIC Sales Centre only in emergency situations. APR learned of the KNHPI three years ago; they sought advice as to quality control, product development and marketing information, unit production. From the knowledge gained they have been able to focus on quality for the export market and have stressed this to the manufacturing units. Their success is attributed to quality and knowledge of the product, participation in trade fairs. They would like to use the services of the Centre in the future for development of acid free papers, coloration, and lower gramage papers and paper certification. The weakness of the Centre is placed in the general lack of knowledge by the public of its services. They view the direction of the handmade paper industry as increasing with stable prices and quality improvement and on the fact that the industry has marketed itself as eco-friendly. As to the sustainability of the Centre, they feel that this is possible only through a collective group effort, paying either fees for services or some kind of association dues. APR maintains a warehouse and separate offices and employs 6 persons directly.

**II. Visit to Chimanlals Pvt Ltd., Mumbai, 8 February 1997**

The mission was received by the managing director, Mrs. Bharati Dalal. Chimanlals promotes the culture of paper. The showroom is elegant, well staffed and displays excellent design and taste in the products they sell. The managing director does much of the designing herself and draws on a vocabulary of traditional designs. The shop displays all kinds of stationery, boxes, bags, and paper products; sheets of paper are also displayed; the products are both machine made and hand made. Mrs. Dalal has toured personally the papermaking units beginning almost thirty years ago and knows clearly the problems of quality and product development. She insists on quality workmanship from her suppliers. She expressed interest in the services of the Centre as well as one of the new sample papers (banana fibre) the Centre has developed. She felt that the Centre would have a great impact if concentration was placed on quality control and on changing the Indian attitude that "anything goes".

**Annex II(d)**

**Visits to Sales Centres**

**I. Visit to the KVIC Handmade Paper Sales Centre, Mumbai, 7 February 1997**

The mission team toured the Handmade Paper Sales Centre of KVIC and were able to see the warehouse and showroom. Normally the warehouse is not open to the public. The Sales Centre usually supplies the local market: some sales are for export. Papers are ordered centrally by the KVIC from the papermaking units across the country. Papers are packaged and shipped from the units by road transport. Once papers are received by the centre, they are inspected, counted, stored and recorded; an account is made and payment is authorized. The price has been predetermined for the period of one year to the unit. Papers are stacked in rows in the warehouse; these are also made to set standard sizes: 22 x 30 in, 17 x 27 in, 18 x 23 in, 20 x 30 in. The turnaround of paper is between one to two years. There are about 50 kinds of papers at the warehouse, however only about five types are truly handmade, the rest being cylinder mouldmade. The handmade types are silk papers, tissue papers, petal papers, moonrock papers and drying papers. To the public the KVIC Sales Centre does not differentiate between the handmade or vatmade papers and the cylinder mouldmade papers although the staff is clearly aware of the technical difference. If paper is marked for export, the staff assured the team that the difference is clearly made; papers are then repacked and labeled accordingly.

During the 10 month business year of 1995-96, the sales were Rs 83 lakhs; the prices achieved were 5% price margin above purchase shipping costs and taxes. The handmade papers brought in roughly the same monies as the mouldmade in terms of price/volume. The Sales Centre is in no way a bright, cheery and welcoming showroom, rather a functional desk with well-worn sample books. The staff however is extremely competent and helpful.

**II. Visit to the KVIC Handicrafts Emporium, Mumbai, 8 February 1997**

The main Handicrafts Emporium, representing all crafts in in KVIC programme, had one section for paper products. There were no handmade papers available other than a small shelf displaying several kinds of printed cards. There was a section for papiermache painted boxes.

**III. Visit to the KVIC Handicrafts Emporium, Chennai, 10 February 1997**

The main handicraft emporium of Chennai does not stock items of handmade paper.

**Annex III**

**List of Participants Trained by the Centre (Presently Entrepreneurs) Interviewed**

The following were available for discussion:

- I) **Mr. Gautam Gattani of Waste Management Technologies**, Jaipur, who participated in the one month training course in January 1996. The benefits of this course were information on the concept of eco-friendly, the uses of handmade paper, its conversion to value-added products, the sources of raw materials, and future data regarding production units. The weaknesses were that more information was required on setting up a unit and on how to trade products (marketing).

He had started a business in April 1996, producing notebooks, folders, shopping bags for the domestic market. He employs a small work force. His products show the attempts of diversification, and his concept of quality echoes that of the local market. He heard of the institute via friends not aware of any campaign of the institute to disseminate information on itself. The institute was very beneficial to his objectives. He hopes the future role of the Centre will be to assist marketing products and provide technical information as well as laboratory testing.

- II) **Mr. Manoj Gajawat of Aviette Overseas**, Jaipur received the 15 day initial orientation course in August 1996. The benefits were information on the expanse of the handmade paper industry, general information on manufacturing and marketing, supply and demand and on exporting products. Weaknesses included lack of information on the types of products he could produce and on product design.

He is currently buying papers from units and converts these into his products: these include books, folders, greeting cards, carrying bags. He is selling these still to the local market in Bombay and Delhi and to export houses. Several products showed quality control problems. He has printed a promotional brochure on his products. He was coincidentally at the Centre that day doing marketing research in the Centre's library, reporting that he comes back often for information on new products and quality inputs. He hopes for additional assistance on finding a good location to set up his own plant and on future technical testing. He learned of the Centre through a newspaper article in Jaipur, but feels publicity information should be distributed on a national basis. He felt that his participation in the course will be a key to his success.

- III) **Mr. Rakesh Jain of NCPRR Paper**, Jaipur, participated in a three month training course, beginning in May 1996. The benefits were knowledge on paper, learning about the technical differences between mill and handmade papers, recycled papers and the eco-friendly nature of handmade paper, chemicals used, the utilization of paper in various products, marketing, the

use and operation of machinery, guidelines on which products sell where; the book, "Green and Gramin, The Ecofriendly Handmade Paper Industry", (Dr. Kamal Taori, New Delhi, 1996) published on the project, outlining the history of handmade paper and pertaining information on contact addresses was also of great benefit. The weaknesses were the long duration of the course, feeling that two months would have been sufficient. The training was, however, cost effective. He is currently converting papers for gift items (boxes) and bags at local units and wishes to expand. His products demonstrated several clever designs. He learned of the institute through a relative, saying that there was no system by the Centre to inform the public of the services there. There should be some publication on the centre in newspapers. The Centre is useful to him for information on machines and on papers in general. He feels the Centre will continue to be useful to him for marketing, especially on opportunities for entrepreneurs.

- IV) **Mr. Abdul Hakim of Koh-i-Noor Paper Industries**, Jaipur, participated in the 3 month training-operator course beginning in May 1996. He benefitted from information especially on paper in general, its manufacture and important technical details such as sizing. The marketing aspects of the course were its weakness. He also felt the training fee was somewhat expensive and the course too long in duration; 2 months would have been sufficient. He is currently making handmade paper such as card sheets, "moonrock" paper and other decorative papers intended mainly for the domestic market.

He learned of the Centre through relatives as there was no system of public information by the Centre. He expects continued contact with the Centre for marketing information and quality improvements.

- V) **Mr. Sanjay Sarraf of Aanchal Hand Paper Industry**, Jaipur, as well as at least five other former trainees of the Centre from 1996 spoke in a general discussion on the positive nature of the Centre; its benefits in terms of knowledge of handmade papers, its eco-friendly nature, and quality control. In particular, quality and its definition were discussed, yet the disparity was evident in desired output and the actual products, several products were shown to verify this point. Most felt in the discussion that they would continue to seek Centre's advice for technical and marketing information.

- VI) **Mr. Atul Johri of 'Silent Light'** a designer made a small presentation of his lantern and lamps. Although not a trainee of the institute, he has become a customer for specialty papers made there and has sought direct advice on papers and their quality. He learned of the Centre by visiting a paper exhibition in December 1995 and the Centre two weeks later. He obtained samples of the newly developed banana fibre sheets at that time. Johri designs paper lights/shades and partition screens of a superior quality and has exhibited these in Bombay in May 1996 and in Delhi, January 1997. This participation drew considerable attention to his products and allowed access to the market. A company in the U.S.A. and in Italy have expressed interest. These are custom made products; he felt that there is an enormous demand

created by the fixtures and fittings branch of the industry for households and offices.

Johri will continue to purchase these specialty fibre papers developed by the Centre as he can be assured of consistent high quality. He would not consider manufacturing paper on his own nor buying paper from another unit due to quality. The paper purchased from the Centre is cost effective.

**Annex IV**

**List of People Met at UNDP/UNIDO, New Delhi and UNIDO Secretariat, Vienna**

**UNDP/UNIDO New Delhi**

Resident Representative	:	Mr. H.C. von Sponeck
Senior Deputy Resident Representative	:	Mr. Bayani S. Aguirre
UNIDO Country Director	:	Mr. W. Nanayakkara
Junior Professional Officer (UNIDO)	:	Mr. U. Zollinger
Chief of Section	:	Mr. S. Oberoi
Programme Officer	:	Mr. V. Gupta
National Project Co-ordinator	:	Mr. S.N. Singh
Government Nominee to the Evaluation	:	Mr. Shambhu Singh

**UNIDO Secretariat (Vienna)**

Backstopping Officer	:	Ms. R. Viegas-Assumção
Area Programme Officer	:	Ms. A. Melajarvi