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UNITED NATIONS DEVELOPMENT PROGRAMME

 Project of the Government of
INDIA

PROJECT FORMULATION FRAMEWORK

Title: PROGRAMME FOR THE LEATHER AND LEATHER PRODUCTS INDUSTRIES
FOR IMPROVED ENVIRONMENT AND HUMAN RESOURCES DEVELOPMENT
(PREPARATORY STAGE)

Number: DP/IND/91/xxx *Estimated duration:* 3 years 6 months

Estimated UNDP contribution: US\$8,716,000 *Proposed source of funds:* IPF

Estimated Government cost sharing:

Estimated Government input:

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A. Development problems to be addressed by the proposed project

1. Development problems at sub-sectoral (macro) level

<u>Problems</u>	<u>Causes</u>	<u>Evidence</u>
Lack of a comprehensive development strategy for the leather and leather products industry in India.	Many aspects of the leather scene are not known and fully understood by parties involved in the sector.	Observations by Government officials and the team of UNIDO consultants who visited India for the purpose of designing this programme. Development of the sector takes place in a scattered manner and proposals made for projects are not coordinated.
Objectives of the 8th Five Year Plan of India regarding employment generation, exports and productivity in the leather sector are very demanding and difficult to achieve.	The support required by the leather and leather goods industry to meet the expectations is not available to the full extent needed.	Dissatisfaction expressed by Government and industry regarding existing institutional support.
The leather sector (tanning operation) is a major source of pollution.	Pollution control is not practiced in the majority of tanneries.	Water around the tanneries is often very polluted.

The following gives more detailed background information on the problems and their causes.

The Leather and Leather Products Industry of India occupies a pre-eminent position in the economy, characterized as it is by its massive potential for employment, growth and exports.

The sub-sector provides employment for around 1.4 million persons, of which nearly 600,000 are employed in flaying and recovery of hides and skins. Over 700,000 persons are employed in the *cottage and small scale industries*, which are engaged in the tanning and finishing of leather and in the production of leather footwear and other leather products. Less than 100,000 persons are employed in the medium- and large-scale sector, mostly in footwear units. It is estimated that during the 7th Plan period, modern factory employment has increased by at least 50,000 persons, especially in the export sector. This labour - both skilled and unskilled - is comparatively inexpensive. However, labour productivity is generally low.

The growth of the leather and leather products industry has been sustained by the country's large livestock population. India claims first position among livestock holding in the world, having 57% of the buffalo, 16% of the cattle, 20% of the goat and 4% of the sheep population in the world. However, in view of the fact that the livestock population is increasing only at a rate of 1.2% per annum, the availability of indigenous hides and skins has been almost stagnant. Added to this, 9 million bovine hides and 9 million bovine skins are lost because the carcasses are not flayed. Thus, availability of raw material is going to be one of the major constraints, if not taken care of, for the growth of the leather sector.

From an industry, which caters mainly to the domestic market, with its production based mostly in the cottage sector and its work force mainly from the weaker section of society, the industry has been in the process of moving over to modern factory production. However, the production remains largely in the small-scale, private sector. It traditionally employs women, about 70% of the work force in leather productions manufacture, having often whole families making shoes or leather goods at home.

The leather and leather products industry can be characterized as being a set of industries, each having its own technology and types of products. The industry can be broadly divided into three stages of manufacture:

- a) processing of raw hides and skins into semi-finished leather;
- b) processing semi-finished leather to finished leather; and
- c) manufacturing leather footwear and other leather products from finished leather.

The first and last stages of manufacture are still mainly in the hands of the small-scale, less mechanized sector. In the first stage of manufacture (a), the product output is a large variety of types of semi-finished leather. From the second stage (b), the output is types of finished leather, and from the third stage (c), the output is leather products such as footwear, leather garments, leather gloves, leather goods, leather sporting goods, etc.

Each of these industries are served by a large number of auxiliary industries producing:

- a) semi-finished and finished *leather auxiliaries*:
 - mineral and synthetic tanning agents, vegetable tanning extracts, fat liquor, casein and resin binders, pigment dispersion, lacquer and lacquer emulsion and finishing auxiliaries, drum dyes, dye solutions;
- b) *footwear auxiliaries*:
 - textile and synthetic upper and lining materials,
 - leather, PVC, rubber, PUR, EVA, etc. soles, heels,
 - leather, cellulose, leather board, non-vowen, etc. insoles,
 - toe puffs, shanks, stiffeners/counters and other components,
 - auxiliaries (e.g. threads, nails, reinforcing tapes, laces, buckles, decorations, zip-fasteners),
 - adhesives, polishes, finishing chemicals,

- shoe lasts, moulds, cutting dies, hand and machine tools,
- packaging materials and accessories;

c) *leather goods auxiliaries:*

- locks, buckles, frames, fasteners, rivets, etc.

d) *production equipment:*

- tannery machinery (e.g. wooden drums, fleshing and splitting machines, drying units, shaving and finishing equipment),
- equipment for leather products manufacturing (clicking presses, sewing machines, equipment for lasting, making and finishing),
- transporters and conveyers.

The fact that many of these auxiliary industries, the general market and fashion information, design and other consultancy services are still in their infancies in India is one of the major impediments in the value added generation in the modern, segmented, quick-response market environment.

Of major items of leather and leather products imported in the world, India's share is abysmally low, whereas in imports of finished leather and shoe uppers India is well-represented. India, however, has the potential to become an important nation in the production of leather and leather products. The industry has realized the importance of switching over to the production of value-added products. Favorable Government support has assisted in this by export production.

The *economic importance* of leather and leather products is demonstrated by the fact that it is one of the top five foreign exchange earners in the country. Improving this industry could increase exports, create added value and generate employment.

However, today the technological know-how, both traditional and modern, is unevenly distributed, resulting in low productivity, waste and in constraints on export, employment and the utilization entrepreneurship opportunities.

It has been estimated that a total of 160,000 jobs will be generated during the 8th Plan, for which training needs will have to be catered to. Out of these, 43,000 persons have to be trained in different institutions. In addition to these figures, there is a vast need for refresher training courses. Unfortunately, most of the training institutions are out of tune with industrial requirements.

The leather industry is one of the oldest and most traditional industries in India. Although it is one of the top five foreign exchange earners as well as an important contributor to the country's economy, its image is often tarnished because of the ensuing environmental pollution. Any new or innovative approach to the development of the leather industry must overcome the existing drawbacks in the environmental area and steer its further growth methodically.

There are approximately 2,000 tanneries in India, mostly in the small- and medium-scale sectors, concentrated predominantly in three regions. The Tamil Nadu State leads with 60 per cent of the installed

capacity, followed by Calcutta with 20 per cent and Kanpur and the North Eastern region with 15 per cent, while the rest is scattered throughout the country.

In order to easily draw the large quantity of water required, most tanneries are located near river banks; for example, the Ganga river system in Uttar Pradesh, Bihar and West Bengal and the Palar river system in Tamil Nadu. Approximately 75 per cent of the tanneries fall into the small-scale sector category and they are usually in clusters located at the outskirts of populated areas. It is estimated that there are about 50 clusters in the country, of which 16 are located in the State of Tamil Nadu. Labour, as a rule, is drawn from the weakest strata of society. Most of the small-scale tanneries do not practice any effluent treatment methods.

2. Problem addressed by the project

Within the last two decades considerable knowledge and some experiences have been accumulated by business leaders in the country. However, this knowledge and skill - both traditional and modern - are neither evenly nor widely disseminated. Furthermore, certain technologies which are well-established and widely used in other countries (mainly industrialized), have not yet reached the Indian leather and leather products industries. The development potential of this sub-sector is enormous, but the problems to be solved are substantial, and the geographical conditions are also very complex. Such complicated situations also need special measures to assist the technical development.

The number and the range of development project ideas introduced by various Government agencies at both federal and state levels reveal the lack of a well established and integrated (technical) development policy in India. Such policy is badly needed and should cover the entire leather processing and leather product manufacturing industry in the country. It has to place special emphasis on the full utilization of the available (raw) material base, marketing, environmental protection and training. Some aspects of the leather scene have not been studied sufficiently, thus relevant data for profound planning are still missing in this field.

Tanneries and leather product manufacturing plants operating in India have extremely limited source of trained personnel. The existing training facilities mainly teach obsolete technology. At the same time, there are not enough skilled specialists released. Market and fashion information (guidelines, trends and statistics, etc.) and related services available to Indian manufacturers are neither reliable nor adequate. The institutional background of the leather based industry which is accessible is scattered and has very little practical impact. All these facts verify the need - in terms of quantity and quality - for an human resources development programme, to be implemented as rapidly as possible.

In accordance with the world-wide trend, India is placing increasing importance on ecological considerations in industrial development, but up-to-date effluent treatment technology has not been introduced in the country. In some parts of the country, tanneries are concentrated in one place and they might be willing to join in the establishment of effluent treatment plants. In other regions, the tanning industry is more scattered, and an entirely different approach is required on this matter.

B. Concerned parties and target beneficiaries

1. Problem identification

The WORKING GROUP ON LEATHER AND LEATHER GOODS INDUSTRIES FOR THE EIGHTH FIVE YEAR PLAN (1990-1995) and Federal and State Governments have identified nearly 20 projects and accordingly applied for some kind (e.g. technology transfer, expertise, financial support) of international assistance. Upon a specific request from UNDP, New Delhi, UNIDO fielded a team - made up of a senior international consultant and two national experts - to formulate an integrated development programme. On the basis of their findings and recommendations set out in the team's Technical Report entitled *Programme Formulation Mission for Preparing Umbrella Project*, it was decided to launch the preparatory phase of a large scale leather industry development programme. This would cater to the most urgent needs of the sub-sector in a co-ordinated manner, and at the same time generate the follow-up stage by providing the elements for a coherent leather based industry development policy for India.

2. Target beneficiaries

The target beneficiaries are the processing industry, i.e. manufacturing units of various sizes.

C. Pre-project and end of project status

1. The pre-project situation

Today 35 schools, colleges, institutes run vocational and certificate courses in India, which last anywhere from 4 months to 2 year. It is estimated that they educate a total of 1,800 trainees/year. Eight institutes graduate 180 students annually with a diploma in leather, footwear and leather goods technology, upon completion of 2.0-3.5 years training. Five institutions provide higher level (diploma, 4 years) training in leather and leather products technology with a total intake of 65 students/year. Short term (1-6 months) courses are offered by 5 institutions, which train about 530 operators, maintenance technicians, leather and leather products technologists annually. The linkage among these training facilities is very weak or non-existent; their training programmes are not co-ordinated. In view of the estimated 160,000 new jobs to be created during the next five years, and the identified need for 43,000 persons to be trained for designing, supervision, maintenance, quality control, etc. in the same period, the above mentioned training capacity can barely cover one quarter of the requirement. The knowledge transferred through this training is generally out-dated, the level of instruction is far behind the up-to-date technology, the discipline and knowledge required for passing examinations are also not strong enough.

The number of institutes/centres providing services in research and development, range building and product design, pattern engineering, consultancy in process technology and plant management, quality control, effluent treatment, investment analysis, marketing for tanneries and leather products manufacturers is very small (probably 4-6). The largest such organization is the CENTRAL LEATHER RESEARCH INSTITUTE (CLRI) in Madras,

which concentrates more on theoretical R&D and has rather limited contacts with industrialists. Other institutions are mainly training oriented. There are no sources of information on fashion trends and marketing of leather and leather products in India. Extension services from institutes and/or centres available for small-scale manufacturers are practically negligible to date.

An overwhelming majority of tanneries in India do not treat their effluents at all. In some regions, small tanneries are located in the same district, where common primary or complex treatment plants could solve the problems. An alternative might be the combination of common, primary tannery effluent treatment with municipality treatment schemes. At the same time scattered, small-scale tanneries should introduce special pollution control processes.

2. End-of-project status

By implementing the proposed technical assistance programme, the Government of India will have a series of studies highlighting the human and material resources, the main reasons for large losses and inefficiency of the local professional training system, exact (quantitative and qualitative) needs in training, extension and R&D services, domestic and international marketing, environmental protection. Based on this information, the Government will be able to prepare a comprehensive, and at the same time consistent *leather based industry development policy*, taking into consideration the specialty of local conditions and providing alternatives for decision makers for starting development schemes. The studies will identify further and specified development objectives, justify them and propose project ideas to be included in the follow-up stage of the present development programme.

The *institutional background* will be improved by strengthening the industry-oriented activities at CLRI in Madras and by starting up the FOOTWEAR DESIGN AND DEVELOPMENT INSTITUTE (FDDI) in New Delhi. CLRI will provide direct assistance in mould design and manufacture, quality control and would also extend its services toward leather goods and leather garment manufacturers. FDDI will serve as a fashion and marketing information centre and will render practice-oriented services in design, pattern engineering and product development. The training capabilities of both institutes will also be reinforced - especially in the field of retraining senior staff of the sub-sector. FDDI will have a model structure for multi-location training, having its regional offices and training facilities in Madras, Calcutta and Bombay. Close co-operation will be established among the existing institutions catering to the leather based sub-sector.

Pollution in a selected cluster of tanneries will be brought under control and the quality of treated effluent is expected to meet the pollution control standards without undue economic burden and to reinforce the local technical capabilities in the area of environmental technology in order to apply the knowledge and experience elsewhere in the country. Environmentally cleaner technologies, including chrome recovery and recycling, are also expected to be transferred to some of the tanneries in the selected cluster.

D. Special considerations

1. Special considerations

The leather and leather products sub-sector offers a large value added improvement opportunity and it is very labour intensive. It should be noted that about 70 per cent of the direct workers are women. Most of the enterprises that will benefit from the project are small- and medium-scale private units, the majority of them are located in rural areas. The foreseen development will also give many so called disadvantaged people an opportunity to gain a better social status and living. The artistic talents developed in the country due to traditional practices will be channelled and the standard of living of the artisans enhanced.

Socio-economic benefits are likely to accrue for the weaker sections of Indian society, which will get cleaner water for irrigation. A cleaner working environment will be available in Indian tanneries. The project may also lead to technical co-operation among India and other developing countries through training programmes tailored to the needs of common effluent treatment plants.

2. Potential negative effects

None

E. Related technical assistance activities

International organizations (mainly UNDP, FAO, ILO, UNIDO and ITC), as well as bilateral development programmes have implemented a number of assistance projects in the leather and leather products industries of India, but they remain isolated. As a consequence, the know-how transferred to various institutions, enterprises or trade clusters is not utilized elsewhere in the country.

The project **DU/IND/80/80A** "Training in modern manufacturing methods" is being implemented in co-operation with the INTERNATIONAL TRADE CENTRE (ITC) (the Government implementing agency) is the COUNCIL FOR LEATHER EXPORT -- CLE) in 1988-1989 and it has been extended to 1991. Its main objective is to advise on the development of export quality footwear and to assist the industry in converting from the manufacture and export of shoe components (mainly uppers) to complete footwear. The project is an ITC project with UNIDO association (which is providing the shoe technical components). The project has been instrumental in identifying the needs for the present project.

The project **DP/IND/84/009** "Process-cum-product development centre for sport goods", implemented by UNIDO, addresses very special sub-sectoral needs in Meerut, Uttar Pradesh. Its second phase may start in 1991.

The UNIDO project **DP/IND/82/025** "Strengthening of facilities at the College of Leather Technology, Calcutta" was designed to provide the leather, footwear and leather products industry with trained manpower both at the operator and at the technician level, as well as at higher technical levels. The project will be terminated at the end of 1990.

No major UNIDO assisted project is being implemented in India in the area of controlling environmental pollution emanating from the tanning industry. The knowledge and experience being gained by the Indian scientists both from the on-going *Indo-Dutch Environmental* and the *Sanitary Engineering Project* for the Jajmau area tanneries in Kanpur under the Ganga Action Plan and from individual treatment plants set up by large-scale tanneries will be taken into account in the proposed UNIDO assisted project.

F. Development objective

The programme will contribute towards the preparation of a comprehensive policy for the development of India's leather and leather products industry. It will assist in the development of the human resources required for attaining the objectives of India's 8th Five Year Plan with regard to employment generation, particularly in the small-scale sector and in rural areas, exports and productivity. The programme will further assist in protecting the environment from pollution caused by the industry.

G. Major elements

Immediate objective 1

To generate information for the preparation of an integrated and coherent *development policy* for the Indian leather and leather products industry, which consequently should be used as a constant basis for all development actions taken by international agencies and the local Government(s).

Output 1.1

Preparatory study on professional training provided for the local leather and leather products industries with special references to technical level, diploma and certificate system, training programmes and skills or knowledge developed.

Activity 1.1.1

Collection of statistical data and training programmes of institutions dealing with professional education for the leather and leather products industry in India.

Activity 1.1.2

Comparative analysis of training programmes, syllabi and hand-outs, evaluation of their contents and form of presentation against the up-to-date technology and modern training methods used in industrialized countries.

Activity 1.1.3

Preparation of recommendations on a country-wide training system to be adopted gradually in India - including proposals on training of trainers, co-ordination of releasing training materials and certificate/diplomas, as

well as assistance in the introduction of up-to-date teaching and processing technology.

Output 1.2

A comprehensive study on genuine leather availability (resources) in India, highlighting the stages of transformation of that material base into marketable products, reasons for losses in handling and processing and ways of improving the utilized ratio.

Activity 1.2.1

Collection of statistical data on animal population, sources of raw hides and skins, production of semi-finished and finished leather, shoe components and leather products, local buying power and international trade of materials and products.

Activity 1.2.2

Analysis of the material flow through processing and manufacturing phases, production capacities, human and financial resources for improving handling and production patterns, techno-economic analysis of the expected impact on the national economy.

Activity 1.2.3

Preparation of recommendations on immediate actions to be taken, as well as technical, financial and training programmes/projects to be launched in order to eliminate losses of genuine materials.

Output 1.3

A study on institutional background required for overall development of the leather and leather products industry in India.

Activity 1.3.1

Collection of data on existing R&D and service institutions dealing with the leather based sub-sector, paying special attention to their links with the manufacturing industry (plants), financing their activities and outputs produced during the past decade.

Activity 1.3.2

Analysis of availability of international reputed training institutions for assisting in starting courses and grant the equality of their certificates and/or diplomas.

Activity 1.3.3

Preparation of recommendations on defining profiles for the existing institutes, establishing new facilities - with special references to practical orientation, co-operation among these institutions and introduction of sub-centres for rendering extension services to small-scale manufacturers.

Output 1.4

A study on marketing of leather products manufactured in India.

Activity 1.4.1

Collection of data on import, export, tariffs, domestic sales and buying power, prices, etc. with respect to raw and auxiliary materials, semi-finished and finished leather, various leather products.

Activity 1.4.2

Preparation of recommendations on market segmentation, pricing policy, incentives, establishing brand identities, sale patterns, enhancing public relations and advertisement activities, co-operation with foreign manufacturers/traders, extension of component and auxiliary material production in India.

Output 1.5

An industrial development strategy (policy outline) based on the above recommendations to be used as a basis for planning on both federal and individual State levels, as well as proposal for project(s) to be implemented through international technical assistance, taking into account the capabilities of UN Organizations such as FAO, ILO, ITC, UNESCO, UNIDO.

Activity 1.5.1

Preparation of a proposed development policy for the Indian leather based sub-sector, co-ordinating national and international actions to be taken.

Activity 1.5.2

Formulation of projects to be requested through international and bilateral technical assistance projects.

Activity 1.5.3

Preparation of a Project Formulation Framework and the corresponding Project Document for the second phase (or follow-up) UNIDO assistance.

Immediate objective 2

Improved and more practical *institutional framework for human resources development*, i.e. for training, technical development and extension services to be provided for local leather and leather products manufacturers - especially in the field of design, product development, production management, quality control and marketing.

Output 2.1

Established and operational **FOOTWEAR DESIGN AND DEVELOPMENT INSTITUTE (FDDI)** in New Delhi comprising a (CAD oriented) design studio, sample manufacturing and training pilot plant, quality control laboratory, media agency and

information centre for dissemination of fashion trends, marketing advisory department. The following personnel will be trained:

- one (technical) director of the institute,
- two chief designers,
- four assistant designers and pattern engineers,
- two computer (CAD) operators,
- one shoe last designer/sample maker,
- one shoe last manufacturing technologist,
- two senior and four junior footwear technologists,
- seven instructors in cutting, closing, component prefabrication, lasting, chemical processes and finishing,
- one senior and two junior laboratory experts,
- one chief information officer,
- one librarian,
- one publication specialist,
- one documentation specialist
- three lecturers in design, technology, quality control, equipment maintenance and plant management,
- four assistant lecturers/teachers,
- one machinery engineer,
- one maintenance specialist.

Activity 2.1.1

Sub-contracting a reputed training institution in Europe for transferring training programme, provision of moderators and granting diplomas and/or certificates to students passing examinations at FDDI.

Activity 2.1.2

Selection/redeployment of staff for running FDDI, (re)training of technologists, designers, CAD operators, laboratory specialists and trainers abroad.

Activity 2.1.3

Installation of equipment, designing and training aids, on the job training of junior staff, operators and technicians.

Activity 2.1.4

Conducting study tours to design centres, training and research institutes in selected industrialized countries, as well as visiting similar institutions in other developing countries.

Activity 2.1.5

Purchasing and collecting basic literature, subscription of the most important fashion and technical periodicals, establishing a technical library on footwear technology and marketing.

Activity 2.1.6

Installation of computers and software for library management, market and information database processing and desktop publishing.

Activity 2.1.7

Begin publishing fashion, marketing and technical information.

Activity 2.1.8

Collection of design aids and standards for shoe lasts, installation of manufacturing, testing and measuring equipment.

Activity 2.1.9

Preparation and adaptation of standards/guidelines on co-ordination of lasts, moulds and components.

Activity 2.1.10

Development of new ranges of shoe lasts and footwear styles for various consumer groups and markets according to the actual fashion trends.

Activity 2.1.11

Preparation of patterns, pull-overs and sample shoes, lasts, heels and unit soles together with product documentation.

Activity 2.1.12

Organization of fashion shows, co-ordination with component manufacturers, distribution of pilot information on fashion trends.

Activity 2.1.13

Evaluation of the reception of fashion trends by the local industry, comparison study with other international trends, analysis of results.

Activity 2.1.14

Starting extension services in range building, last and heel design, pattern making and advising on shoe construction.

Activity 2.1.15

Preparation and adaptation of standards and guidelines on material and product properties, testing methods.

Activity 2.1.16

Preparation of laboratory exercises for students attending special courses of quality control, as well as courses of footwear technology.

Activity 2.1.17

Start rendering services in laboratory testing and quality assurance.

Activity 2.1.18

Preparation of training programmes for courses at different levels, its co-ordination with the Government education system.

Activity 2.1.19

Preparation of syllabi and textbooks where necessary for subjects to be taught in FDDI.

Activity 2.1.20

Start (re)training courses for various durations.

Activity 2.1.21

Establishment of the sub-centre, determination of its functions, requirement in premises and equipment, preparation of the management structure.

Activity 2.1.22

Recruitment and training of staff for the sub-centre.

Activity 2.1.23

Start operation of the sub-centre.

Output 2.2

Improved and extended operation of CLRI through establishing or reinforcing its activities in the field of product and technology development, foot measurement programmes and shoe last design, laboratory testing of materials and products, tannery effluent treatment, extension services to small-scale manufacturers. The following personnel will be trained:

- two shoe last designers/model makers,
- two shoe designers,
- three CAD specialists/operators,
- two cutting die/tool maker,
- one leather goods designer,
- one leather garment designer,
- three leather products technologists,
- eight instructors for operator training,
- one chief material technologist,
- one material and component utilization technologist,
- two laboratory testing specialists,
- two laboratory assistants.
- five footwear industry extension officer (tanning, footwear and leather products manufacture, shoe last and component making
- two environmental engineers.

Activity 2.2.1

Formation of an advisory/steering council at CLRI.

Activity 2.2.2

Completion of building and installation of equipment in the new laboratory.

Activity 2.2.3

Selection/redeployment of staff for the new laboratory, leather products unit and shoe last making plant.

Activity 2.2.4

Training (80 man-months) and study tours (90 man-days) abroad.

Activity 2.2.5

On-the-job training of local counterparts.

Activity 2.2.6

Design and preparation of technical documentation of leather products, range building.

Activity 2.2.7

Seminar on modern product development methods, exhibition of the collection.

Activity 2.2.8

Foot measurement survey: anthropometric research.

Activity 2.2.9

Computerized mathematical-statistical analysis of anthropometric data.

Activity 2.2.10

Preparation of a national standard of footwear sizing, shoe lasts and components.

Activity 2.2.11

Production of sample lasts according to the newly elaborated sizing standard, fitting trials of footwear made on these lasts.

Activity 2.2.12

Survey of the actual state-of-the-art of automation in the footwear and leather products industries and evaluation of the Indian industry needs in process automation.

Activity 2.2.13

Preparation of recommendations on industrial and investment policy to be followed in India.

Activity 2.2.14

Seminar on the study dealing with automation.

Activity 2.2.15

Purchase and installation of equipment for the laboratories and the leather products (garment, leather goods, gloves) pilot plant.

Activity 2.2.16

Training of counterpart personnel in proper use and maintenance of equipment.

Activity 2.2.17

Development of quantitative characteristics and corresponding quality guidelines for various properties of leather (e.g. softness, tightness, smoothness).

Activity 2.2.18

Development of new (fast, non-destructive) test methods for leather, preparation of recommendation for material testing and quality control.

Activity 2.2.19

Preparations for extension services (pricing, conditions of use etc.).

Activity 2.2.20

Start extension services for the local leather and leather products industry.

Activity 2.2.21

Study tour and training abroad of CLRI and other counterpart agencies' environmental engineers and scientists to gain knowledge on the development of various treatment technologies.

Activity 2.2.22

Procurement of additional laboratory equipment needed at CLRI.

Activity 2.2.23

Organization of technical seminars and workshops for tanners, consulting companies and environmental protection agencies from the whole country.

Output 2.3

Retrained footwear designers with upgraded knowledge required for producing new styles for export, as well as prototypes (samples) to be exhibited in Europe for sales (export) promotion. Altogether, 60 designers will be retained.

Activity 2.3.1

Through the COUNCIL OF LEATHER EXPORT (CLE) select course participants with appropriate basic knowledge and skill for fashion shoe design.

Activity 2.3.2

Conducting 3 week retraining courses in New Delhi, Madras and Bombay.

Activity 2.3.3

Displaying samples in industrialized countries and starting commercial negotiations on export.

Immediate objective 3

Containment of environmental degradation emanating from a cluster of tanneries in a selected region of India, introduction of cleaner and environmentally friendly technologies and a significant reduction in the amount of pollutant generated in the process of leather manufacture.

Output 3.1

Fully operational COMMON EFFLUENT TREATMENT PLANT for the selected cluster of tanneries, with staff trained to operate and to maintain the plant independently.

Activity 3.1.1

Scrutiny of the existing plant design and selection of appropriate technology for providing a common effluent treatment system in the selected cluster.

Activity 3.1.2

Elaborate equipment specifications and initiate requisition, guidance to the contractor executing the necessary civil works.

Activity 3.1.3

Installation of the common effluent treatment plant.

Activity 3.1.4

Trial run and commissioning of the plant.

Activity 3.1.5

Monitoring of the common effluent treatment system.

Output 3.2

Fully operational, low-cost type model effluent treatment plant for a small to medium-scale isolated tannery.

Activities

More or less identical to those described under Output 3.1.

Output 3.3

A set of specific recommendations on leather processing technology resulting in a significantly lower pollution load; recommendations actually adopted by most tanneries in the cluster.

Activity 3.3.1

Appraisal of the processing methods followed by tanners in the cluster, monitoring of the amount of pollutants generated.

Activity 3.3.2

Evaluation of the available cleaner technologies with a view to their applicability under certain given conditions for various types of produced leather.

Activity 3.3.3

Trial batches on the basis of a modified, cleaner technology; tests and analyses of the leather produced and wastes discharged as required.

Activity 3.3.4

Finalization of recommendations with their gradual introduction in all tanneries of the cluster.

Output 3.4

A fully operational chrome recovery unit, installed in the selected cluster, with the cost effectiveness of the process being suitable for local conditions.

Activity 3.4.1

Study of the presently prevailing chrome tannage, the quantity of spent floats and analyses of the chrome content.

Activity 3.4.2

Design of the chrome tanning floats collection system and a pilot scale unit for chrome recovery, calculation of its viability. The possibility of simultaneously demonstrating chrome bath recycling to be considered.

Activity 3.4.3

Installation, commissioning of the pilot plant, analysis of the rate of recovery and verification of the savings achieved.

Output 3.5

Study on the scope of reducing/removing the total dissolved solids and chloride.

Activity 3.5.1

Review of the information of the problem of saline waters in the selected region.

Activity 3.5.2

Appraisal of the technical methods available for reducing the chloride content of effluents.

Activity 3.5.3

Preparation of specific recommendations to the authorities concerned.

H. Project strategy**1. Direct recipients**

The direct recipient of the project are Government agencies dealing with the development of the leather based sub-sector and pollution control (both Federal and State), FDDI in New Delhi, CLRI in Madras, selected tanneries.

2. Target beneficiaries

The footwear and leather products manufacturers will benefit from the project mainly by getting well-trained technical personnel, as well as by ordering or participating in special courses. FDDI and CLRI will also provide direct services to the footwear industry and trade (including sales organizations and private entrepreneurs) in fashion and market orientation, quality assurance and solving technological problems.

Small and medium-scale tanneries will benefit from this project since they can be in a position to continue their production activities smoothly without encountering any major pollution control problems. The proposed common effluent treatment project will provide a model plant to the leather industry in India. Through a strong and well organized *Environmental Engineering Design and Training Centre* of CLRI, periodical training programmes, seminars and technical workshops will be organized for the benefit of tanners, environmental protection agencies in India and South East Asia.

3. Implementation arrangements

The implementation of the project will be the responsibility of the UNIDO, IO/T/AGRO - LEATHER UNIT.

At the Headquarters level, the three objectives of the project will each be handled by a specific backstopping officer who has the technical qualifications in the particular area. An *Associate Expert* and a *Project Secretary* will be engaged to look after the day-to-day administration of the programme.

The field activities will be handled by an international programme co-ordinator in co-operation with the *National Project Director*. Their

task is to co-ordinate the field activities of the various sub-projects. Each sub-project will have its own international and national experts and support staff, as required.

4. Alternatives

During the five-week mission undertaken to prepare the programme, much attention was given by the three consultants to possible strategies. It is felt that the strategy proposed covers a whole range of approaches and further alternatives could not be identified.

I. Host country commitment

1. Government commitment

In view of the economic importance, leather and leather products have been identified to be one of the areas for further development by the Government of India. The CENTRAL GOVERNMENT has announced a number of promotional measures for the production of leather products to enable the augmentation of the export of such items. It has been planned that the earnings from the export of footwear needs to be enhanced by a factor of five from the current levels by 1990.

The Government contribution will be materialized mainly through the FDDI, CLRI, CLE and tannery inputs. These include the provision of the new infrastructure in form of land, buildings, furniture and some equipment. Most of the consumable items such as basic materials and power, water and other utilities will be provided by the direct recipients. The offices and secretarial services and other necessary support services such as transport, domestic duty travel of the international experts, etc. will be included in the direct recipients' budget.

2. Legal arrangements

None

J. Risks

1. Major risks

The only, but morally rather dangerous negative effect of the programme, could be if the technical assistance would remain within the recipient institution or pilot plant.

The reluctance on the part of the tanneries to implement the common effluent treatment concept and constraints in the timely mobilization of the entire funds for the construction work and other related activities are the two main anticipated risks in this project. An unexpected crisis in the tanning industry is one of the rare risks. Frequent disruptions in the power supply may also seriously affect the installation, commissioning and especially the optimization of the treatment process. Unseasonal heavy rains may cause a temporary slowdown of the activities.

The objectives of the programme will not be attained if the institutions and pilot facilities established will not interact with industry.

2. Risks to be monitored

The risks of the project are relatively small and mainly in the area of the industry linkage of the project. There is no doubt that the services to be provided by the project as well as the established capabilities of the FDDI and CLRI are badly needed by the industry. Previous experience with this type of institution building projects show, however, that the main risk lies in the lack of industry co-operation and that the institute may, therefore, be working in a vacuum. Careful monitoring of this aspect during the project's life will minimize this risk.

K. Inputs

1. Skeleton budget:

The project budget is given below according to the three major elements of the project, namely:

- A - Preparation of an integrated development policy for the Indian leather based industries.
- B1 - Human resources development through establishing FDDI in New Delhi.
- B2 - Assistance in upgrading the capabilities of CLRI in Madras.
- C - Assistance in treatment of tannery effluents.

	<u>National Inputs</u> (US\$ 1 =)	<u>External Inputs</u> (US dollars)
Personnel	A	255,000
	B1	1,430,000
	B2	188,000
	C	236,000 = 2,109,000
Sub-contracts	A	40,000
	B1	130,000
	B2	30,000
	C	= 200,000
Training	A	
	B1	660,000
	B2	189,000
	C	80,000 = 929,000
Equipment	A	
	B1	2,220,000
	B2	2,143,000
	C	1,030,000 = 5,393,000
Miscellaneous	A	12,000
	B1	35,000
	B2	18,000
	C	20,000 = 65,000
<i>Totals</i>	A	307,000
	B1	4,475,000
	B2	2,568,000
	C	1,366,000
 GRAND TOTAL		 <u>8,716,000</u>

2. Comments

None

Person primarily responsible
for this formulation framework: _____

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