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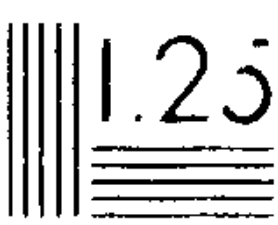
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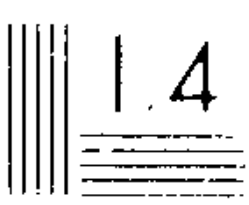
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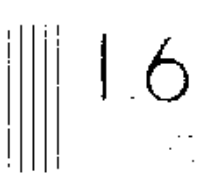
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SURVEY OF TECHNOLOGY TRANSFER FROM INDIA TO SMALL-SCALE INDUSTRIES IN NEPAL*

Report of a mission to Nepal
AR/RAS/80/006 - Technology Selection
Visit of Six Nepalese Entrepreneurs
31 March - 27 April 1982

by

Lars Lindblad**

* The views expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

** UNIDO Consultant

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I SUMMARY AND RECOMMENDATIONS

Before field visits to the factories the consultant took part of the travel report issued by the entrepreneurs participating in the technology selection visit to India. Based on previous knowledge available to UNIDO on foundry castings, mechanical workshops and engineering services in Nepal and the information gathered during the field visits and discussions with the various entrepreneurs and representatives from the Department of Industries, HMG/Nepal, the consultant has reached the following conclusions:

1) From the study tour to India the participants have learnt that there is a multitude of technologies available in India for small scale production from which Nepalese entrepreneurs can select for transfer to Nepal. None of the entrepreneurs could, however, during the mission identify a concrete project and negotiate terms and conditions for transfer of the technology to Nepal. Reason for this was that the Indian host organization has over-crowded the visit programme. It was therefore not possible to assist the entrepreneurs in preparing bankable proposals.

2) Before any technology transfer can profitable take place from India to the Nepalese entrepreneurs,some advisory services to two of the enterprises, Himal Iron & Steel and Lumbini Clay Crafts, as well as training of manpower for increased skill in actual operating fields is highly recommended.

Lack of skilled manpower from mechanics to middle managers has been one of the main constraints for expansion and increased efficiency of Nepalese industries. They can benefit from the excellent training institutions in India, like Prototype Training Centre, Delhi; Foreman Training Institute, Bangalore; Government Tool Room and Training Centre, Bangalore and Small Industries Service Institute Centres. As a result of the discussions with the entrepreneurs it is recommended to send 10 Nepalese trainees to the various training institutions in India for upgrading skill on technician level.

Also available training centres in Nepal should be considered and utilized by Nepalese entrepreneurs. There are three training centres for mechanics, two in Kathmandu called M.T.C. Mechanical Training Centre, Balaju Yantershala Project and Thapathali Technical & Engineering Institute and one at Butwal, called B.T.I. Butwal Technical Institute who give both practical and theoretical training for mechanics.

The Industrial Services Centre (ISC) Balaju, Kathmandu is giving courses and seminars in different management subjects to improve skills of middle level and supervisory levels of management. There is a conscious effort to tailor-make training courses to the requirements of private sector enterprises. It is recommended that the concerned entrepreneurs contact ISC for discussion of their needs of management training.

UNIDO, Training Branch, Vienna, has recently made a report on how the Nepalese training facilities can be strengthened by training the staff at suitable institutions abroad.

The UNIDO project NEP/79/001 - Pilot and Demonstration Foundry, will also contribute to training of manpower in the foundry industry in Nepal. The pilot plant in Patan will give in-plant training for 10 persons during one month. In addition two weeks seminars in cupola melting and core making will be organized. A UNIDO extension officer will visit the local foundries and verify the individual training needs.

3) Industrial investment in Nepal is encouraged by the provisions given in the new Industrial Policy 1981. For small scale industry in the private sector there are attractive and uncomplicated incentive and tax/duty concessions. Nepal can however still improve the procedures by learning from Indian policy and application on Cottage and Small Scale Industry.

4) It is recommended that in bilateral agreements between India and Nepal a line of credit will be available for Nepalese entrepreneurs to acquire Indian equipments and technology.

5) To develop industries in Nepal the Government offices and corporations of Nepal are recommended, as a policy, to use products made locally. This is bound to give a spurt to Nepalese industrial production.

II.1 Introduction

A team of six Nepalese entrepreneurs were selected by the Department of Industries, His Majesty's Government of Nepal and UNIDO for technology transfer and plant level co-operation with the Karnataka State of India 1981. Five of the Nepalese entrepreneurs were accompanied by an officer of the Department of Industries and undertook a study tour in Delhi and Bangalore, India, in December 1981. In all 31 factories and institutions were visited by the Nepalese team during two weeks. The objective of the study tour was to enable the six Nepalese entrepreneurs to undertake consultations with their prospective partners on the possibilities of utilizing technologies developed by Indian entrepreneurs in the field of galvanized metal wear, non ferrous metal casting, machine tools, small foundries, manufacturing of welding rods, small scale brick making, water turbines, etc.

Within the scope of the project the six Nepalese entrepreneurs should be assisted upon their return from India in submitting bankable proposals for obtaining loans from appropriate financing institutions in Nepal.

2 Objectives of the mission

In response to the request of His Majesty's Government of Nepal and in line with the UNIDO-project AR/RAS/80/006 Training and Advisory Services in ad hoc Technical Assistance Needs, it was deemed necessary to visit the six Nepalese

entrepreneurs to assist them upon their return from the technology selection visit in India, in submitting bankable proposals for obtaining loans from appropriate financing institutions in Nepal. Before the fields visits were undertaken the consultant has reviewed the travel report prepared by Nepalese entrepreneurs in conjunction to their visit to India.

The object of the mission was:

(i) to investigate the current state of technology being used by the entrepreneurs and make a diagnosis of the problems faced presently.

(ii) to explore the extent and mode of co-operation for technology transfer that could be used within the UN-system to assist the enterprises in implementing project ideas obtained from their visit to India.

(iii) to establish the production capacity and approximate investment costs of the machinery and production facilities in order to prepare bankable proposals.

(iv) to discuss with the concerned Government authorities (Department of Industries, Nepal Industrial Development Corporation, Industrial Services Centre) and with the UNDP Resident Representative in Nepal, Government inputs to the project, possible UNDP inputs and the approach to be followed in project follow up activities.

III SITUATION OF SMALL SCALE INDUSTRY IN NEPAL

Nepal is a largely agricultural country. Industry is only in its very first stage of development. There are few indigenous private industrial entrepreneurs of which the consultant visited six, who can be classified as medium to small scale enterprises.

Travelling to the industrial districts of the country one finds that the following problems have been noted:

Market

There is a practically open border with India. Indian products constitute the majority of industrial products available in the Nepalese market. There is little or no protection of infant industries. This means that Nepalese industries often cannot utilize full production capacity as large consumers seems to prefer importing the goods from India or elsewhere directly.

The Nepalese market is very small, due to the low purchasing power of the local population, even in urban areas. This market has grown somewhat following the rise in tourism, however, a large precentage of this "foreign" market cannot be fulfilled by the Nepalese industry at present because of various reasons e.g. price and quality level of domestic products in comparison with imported products. One reason is

also that there are not many entrepreneurs interested in producing the products for the "foreign" market.

The largest client for the metal working industry seems to be the Government when ordering suspended bridges, high tension transmission towers, material for water supply and sewerage etc. In some cases when the Government asks for tenders from Nepalese entrepreneurs, quality demands and delivery times cannot be met. In these cases the big orders go to foreign companies. It seems to the consultant that it would have been better if the Nepalese entrepreneurs would have a chance to expand with appropriate advisory services from the Government, when producing to Government orders.

Industria' infrastructure

Communications are inadequate, since Nepal is a land-locked country with a difficult geography. The telecommunications within the country are also inadequate and it is very difficult and time-consuming to order "trunkcalls" from one town to another.

The roads are not maintained adequately and are difficult to use during the monsoon period. Raw materials inputs and machinery equipment are held up at the Indian border or in the congested Calcutta Harbour if they come from third countries. Export suffers from the same hindrances. All this results in high stockkeeping and/or low capacity utilization, causing lower profitability.

Electricity supply cannot always meet the power demand. Frequent loadshedding results either in low capacity utilization in industry, or costly investments to install private diesel generators, or losses because of delivery delays. Larger industrial projects, e.g. arch furnace installation at Himal Iron & Steel that would be economically feasible, has been postponed because of a lack of electricity. The situation is however improving as the hydroelectric power projects will come in operation. According to the Planning Division of the Department of Electricity, the Kulekhani dam with additional 60 MW will be in operation 1983 and will cover the power demand in most of the industrial districts. A Kulekhani step 2 of 33 MW will be in operation 1985/86 and together with the Marsyangdi dam of 70 MW will cover a 16 % demand groth rate.

Administrative procedures

Administrative procedures for registration, licencing, import of spare parts and raw materials are cumbersome and result in a lot of delays. There is a growing awareness among high officials in Government about this, however, the implementation administration is very weak.

Financing for small industry

The "Nepal Industrial Development Corporation" (NIDC) is the Government-owned financing institution for private industry. However, industrial financing by the NIDC has flattened in

recent years. More money has been invested in the tourism sector, which gives an easier and higher return on the investment. NIDC specializes in financing private sector industries only.

It may be noted here that NIDC's loan operation takes two forms. Firstly it assists the industries by guaranteeing the loans (generally short-term) raised by them from commercial banks. However, the magnitude of assistance provided under the scheme remains very small. The other type of loan is, of course, direct loan of medium and long-term nature provided by NIDC.

Procedures to get a loan from NIDC are very difficult for a small enterprise. A complete feasibility report has to be submitted to be "bankable". NIDC makes a thourough analysis of every submitted feasibility study. There is no simplified, standardized set of loan-application analysis. Requests are considered one by one. It sometimes takes two or three years before a loan is sanctioned, although NIDC has the ambition to give the entrepreneur an answer, negative or positive, within three months.

This is of course an important hindering factor for entrepreneurs with little financial backing. Also the inflation rate on equipment makes the requested amounts for loans soon too small. The consultant discussed this issue with responsible officers of NIDC. Please refer to page 7.

The short term loans are generally provided by commercial banks. There are two commercial banks in Nepal: Nepal Bank Ltd, and Rastriya Banijya Bank, which can provide certain funds for working capital purposes. Security requirements are however very strict, which restricts the number of enterprises to get loans.

Manpower

There is a great lack of skilled labour. Most of the industries, the consultant visited are situated in the southern Terai-belt, close to the Indian border. In some of these industries, Indians form the majority of the skilled labour force. It was apparent to the consultant that training of manpower was needed at all the visited enterprises, even those with skilled Indian workers, to improve quality of work. Although it is HMG's policy to replace Indian workers by skilled Nepalese, this is difficult given the shortage of good technical training facilities in the country.

In Kathmandu there are two training centres for mechanics, the Thapathali Technical and Engineering Institute and Mechanical Training Centre M.T C. Balaju Yantershala Project. The latter trains about 20 mechanics per year in a three years course There are also similar training facilities at Butwal Technical Institute, set up by the United Mission to Nepal. The mechanics and technicians from these training centres have a good preparation when they have finished their training, but the number of examined does not meet the requirements of the Nepalese industry.

Similarly there are a few skilled managers in the area of planning, marketing, accounting and material administration at the middle management level. There are inadequate training opportunities in form of short term courses for entrepreneurs active outside the Kathmandu Valley. The Industrial Services Centre, ISC, Kathmandu offers however some management training services, but few entrepreneurs can afford to send their managers to these courses. For further information about ISC please refer to page 8.

Technology for small industries

An important problem also resides in the choice of technology. In a lot of cases the kind of technology used is determined by the donor country or organization or just what technology is available in western markets. Such technology is seldom appropriate for the conditions prevailing in Nepal, with a small market and most equipment and raw materials being imported. Technology selection or adaptation should be done in a more conscious way, to reduce fixed investment costs and promote selfreliance. Of course sufficient attention should be paid to the quality of locally manufactured machinery. At present only the most simple machinery could be manufactured inside the country. With appropriate advisory services from experienced consultants it would be possible to manufacture more machinery in Nepal and adjust technology to Nepalese conditions, but the costs are often high and it is time-consuming for the investor who prefers a turn key plant of latest design.

IV VISITS AND DISCUSSIONS BY THE CONSULTANT

1 Visit to the Department of Industry

Meeting with

Mr J.L. Satyal, Director General
Mr Hiramani Bhandari, Deputy Director
Mr Kul Chandra Shrestha, Section Officer
International Relation Section

The Department of Industry is handling the registration of industrial enterprises, i.e. small industries, medium and large industries. Industrial enterprises in which investment in machinery, equipment and tools does not exceed Rs. 200,000 in value and in which fixed assets do not exceed Rs. 500,000 are called cottage industries. These industries has to register with the Department of Cottage and Village Industry.

For setting up a small, medium or large industrial enterprise a licence is required. When scrutinizing a licence application from an entrepreneur the Department has to consider the National Policy on Industry establishment. The objectives of the policy is a.o. to encourage private sector industrial investment as an element in the growth of gross national product and to attain self-reliance in the production and supply of essential consumer goods and most construction materials. According to the guidelines in the Industrial Policy 1981 the Department of Industry will have to take action to ensure that a licence can be issued to a small industrial enterprise within

30 days to a medium industrial enterprise within 60 days and to a large industrial enterprise within 90 days. The licence application must have a complete feasilility report attached which can enable the Department scruting on basis of market, financial, economic and technical viability. It takes sometimes more than three months for Department of Industry to issue the licence because of the difficulties to assess the viability of a new industry.

There are a few public enterprises in Nepal such as Tobacco Development Co., Janakpur Cigarette Factory, Bricks and Tiles and Himal Cement Co. They are taken care of by different ministries and departments. Great importance for the development of infrastructure is the availability of cement for construction purposes. The annual consumption of cement in Nepal has been growing 6-7 % per year and attains now 7 kg per capita. It is projected to be increased to 14 kg in five years. A problem is the supply of cement to the mountain area, where transport costs are extremely high.Prices up to Rs. 1,300 per bag has been noted. Therefore there is a great interest from the Department's side to look into the possibility of establishing mini cement plants near the hilly region so that transport costs could be cut down to reasonable levels. China has a lot of mini cement plants operating feasibly from 5 t/d to 240 t/d and there should be technology of direct interest for Nepal to transfer. As the regional project RAS/80/006 does not include China, it was agreed that a technology survey visit to Indian mini cement production units should be proposed to be included in the follow up actions of the technology selection visits of five Nepalese enterprises to India.

Mr Ram Krishna Kharel, who participated as government tour coordinator for the five entrepreneurs has been transferred to the Ministry of Finance. His job will be taken over by Mr Kul Chandra Shrestha. Reviewing the observations and conclusions of the participants in the visit to India from their travel report, it seems that the Indian counterpart organization has arranged a too crowded programme. During the two weeks, 31 different companies and institutes were visited. The group were kept together the whole tour. During the short time available for each enterprise no concrete project proposals were identified.

The findings and recommendations of the consultant were presented to the Department of Industry. The Director General, Mr J.L. Satyal agreed to send a request to the Ministry of Finance in order to approach UNDP/UNIDO for additional funds for implementing the projects. The project proposal for training and advisory service please refer to Annex I.

2 Visit to Nepal Industrial Development Corporation (NIDC), Kathmandu, Durbar Marga

NIDC will provide long term loans for the acquisition of assets, will participate in equity investment and made available to private sector industrial enterprises credit to finance working capital requirements.

Discussions were held with Mr Ramesh C. Pyakuryal, Division Chief, Project Analysis Division and Mr Rabindra Rimal,Chief, Project Promotion Department.

There has been complaints from the entrepreneurs in the past about the very long delay in the decision about loans from NIDC. The reasons for delay is often caused by the applicant himself if he cannot submit a feasibility report with all relevant information to NIDC. Before appraisal of the feasibility report, however, the company must be registred and have a licence. This takes some time and in the meantime the feasibility study will not be up to date.

The appraisal or up-dating of the submitted feasibility report and loan application is done by the Project Analysis Division. The following information is collected and appraised:

Project description
Project Cost
Source of Financing the Project

Breakdown of the Foreign Currency involvement:

Projected Financial Position of Company
Current assets and liabilities
Projected income statement
Projected cash flow statement
Projected funds for operation, loans etc.
Internal Financial Rate of Return on NIDC Investment

Economic Indicators of the Project:

Value added in manufacturing
Additional Employment
Job cost per employee
Economic Rate of Return

Final decisions will then be made and notified to the applicant within 30 days in the case of small industry, 60 days in the case of medium industry and 120 days in case of large industry.

NIDC will extend loans of up to 90 % of the value of fixed assets to industries established in the backward regions.

3 Visit to Industrial Services Centre (ISC), Balaju, Kathmandu

The consultant was received by Mr B.R. Dhungana, Executive Director, and Mr K.P. Sharma, Head of Management Training Branch, Industrial Extension Services Division.

According to the Industrial Policy, ISC will identify, develop and promote projects and will provide feasibility studies and consultancy services in management, marketing, finance, engineering and training. This centre will play an active role in planning for and preparing feasible projects, providing industry profiles and preparing pre-investment proposals, which will be made available to entrepreneurs.

The Centre is basically a research and consultancy organization rather than a financing or implementation organization. During the past seven years the centre has conducted industrial feasibility studies of 160 industrial projects including a few sub-sectoral and pre-feasibility studies. Out of 160 studies, 115 projects have been found feasible and 21 projects have started production.

The basic objective of ISC is to provide a package of non-banking services necessary for industrial promotion. To achieve this objective the centre carries out a wide range of activities-management training being one of them. Training programmes are now a regular feature in the centre's annual activities. Examples of titles of the programme for the fiscal year 1981/82 are:

- Training on Basic Accounting for Account Assistants
- Training on Techniques of Production Management
- Training on Entrepreneurship Development
- Training for Trainers
- Training on Marketing Management

UNIDO Training Branch, Mr James Dee, has recently made a comprehensive report on ISC's training potentials and requirements.

4 Visit to Lumbini Clay Crafts (Pvt.) Ltd, Brick and Tile Industry, Manigram, Bhairawa

Lumbini Clay Crafts was founded in 1973 by the owner Mr Saroj Mani Dixit.

This industry was the first of its kind established in the private sector in the Terai region in Nepal. It was established in Rupandehi District. In the region there is an overwhelming demand of building bricks as well as roofing tiles, which the local indigenous brick manufacturers are not being able to meet. There are now two other mechanized brick and tile industries established in Nepal, namely one in eastern Nepal (Adhanik Brick Industry, Biratnagar) and one in central Terai region at Chitwan (Prajapati Brick Industry). All of them has been economic failures.

Lumbini Clay Crafts was based on Indian technology developed at the General Building Research Institute, Roorke, but the factory is now closed down due to high production costs and defects or short-comings of the supply of the Indian technology.

Production

The production programme of Lumbini will be building bricks of greater strength and polished surfaces, which can be supplied only by a mechanical production with a considerable powerful extrusion pressure.

Manpower

The workers of Lumbini Clay Crafts in Manigram are now working under a young local entrepreneur, who employs 200 operators and has set up his plant just in the vicinity of Lumbini Clay Craft's installation.

Most of the 200 workers are unskilled. The capacity of the brick works is 5,000,000 bricks per 15 days. The quality of the bricks was poor and it was aimed for the local private market. The bricks were sorted in three quality ratings. There is a great need of upgrading the skill in order to improve quality of bricks and efficiency of the brick works.

Market

The plant is located in the western development region, where the selling prices of bricks are higher than Kathmandu prices, though the prices of fuel are much more than those of Kathmandu. The mechanized plant cannot be competitive with the traditional brick works if one consider the pricing aspect alone without taking into consideration the following possibilities:

- High quality of bricks
- Higher strength
- Accurate sizes
- Low water absorption
- Perforated bricks up to 15-20 % is possible
- Heat insulation property is better
- The manufacturing costs will decrease according to percentage of perforation, which can be used for lowering the sales price.

It seems that the brick factories in the region are operating seasonally from mid November till mid April. The market imposes a limitation and one rarely finds these brick factories in operation for the entire period. Tile is a new product and its production has started only recently in Surkhet Vally. The major complaints of Lumbini Clay Crafts and other mechanized brick manufacturers are that they depend heavily on the construction initiated and financed by the Government. The sales to the private sector is minimal due to the higher prices of the high quality bricks.

Comments

The main problems of Lumbini Clay Crafts seem to be:

a) Lack of skilled manpower for operating a mechanized brick factory.

b) Marketing high quality bricks at the right prices in competition with manually operated traditional brick works.

c) Keeping production costs down by operating the equipment at rated output.

d) Working capital.

e) Fuel economy (quality, price, consumption).

Based on the above the consultant recommends the following actions to be taken by UNDP/UNIDO in close consultation with the Department of Industries and the Industrial Services Centre (ISC):

a) Review of previous rehabilitation programme for Brick Industries in Nepal made by ISC and sponsored by the German Government 1980. A preliminary survey is done by Mr Walrad Müller. Based on this, terms of reference for a consulting advisory service to Lumbini Clay Crafts could be drafted.

b) Assign a consultant from India to streamline the production of bricks and tiles in Manigram during one man month in coperation with the usual technical consultant and partner, Mr Sigdyal.

c) Send two trainees from Lumbini Clay Crafts for training at appropriate Indian institutes or brick factories, e.g. Central Building Research Institute, Rookee and/or Hari Siddhi Brick Tile Factory. The training programme should be at least three months covering both theoretical and practical procedures of mechanized production of bricks and tiles, including raw materials testing, extrusion, cutting, burning and quality control of burnt bricks. The theoretical part should also cover economy of fuel and planning of the operations. For recruitement of suitable trainees, partnership is suggested with the neighbour entrepreneur of brick-making in Manigram, who seems to be a dynamic and industrious person.

Visit to Nepal Organo Rubbers (P.) Ltd and Nepal - Agro - Industrial Enterprises, Narayanghat

Nepal Organo Rubbers is a newly licenced company for manufacturing of rice rubber rolls to modern rice mills. Discussions were held with the owner, Mr Dwarika Shrestha, who also is a director of the Modern Rice Mill in Narayanghat.

Mr Shrestha also participated in the technology selection visit to India, but no company in line with his present interest was visited.

Production

Mr Shrestha is particularly interested in production of rubber-coated cylinders for rice dehuskers. The rubber compound in the dehusker should have a certain composition, so that it lasts at least for 1,500 bags of paddy (=120 tons). The capacity of a normal-sized dehusker is about 1 ton/hour, so it means 120 hours. The presently used cells are imported from Thailand or Japan and has to be machined in a lathe before they are fitted into the dehusker. The quality of these rubber rolls now imported has not been good enough to last for more than 100 hours.

The production capacity for the rubber industry is proposed to be 15,000 pieces of rice rubber rolls in the beginning, based on the feasibility study, carried out by ISC on request of the entrepreneur.

Manpower

There is no permanent labour employed yet by the entrepreneur. The project is under construction at Balaju Industrial District in Kathmandu. The financing is however not yet solved since NIDC is still studying the loan application from the entrepreneur. Once the equipment is installed the enterprise will employ about 10 persons, who mostly has to be trained by the equipment supplier.

Buildings and equipment

A shed in Balaju Industrial District is bought, as there are about 3-4 shareholders in the company, who are contributing to the company's own funds for the investment.

Balaju Industrial District (B.I.D.) is the first project of its kind established in Nepal. The district is located at the foot of Nagarjoon Hill, only 3,5 km from the heart of Kathmandu. The Kathmandu ring-road passes through the southern part of the district. The district owns at present 35.41 ha of land, the development of which is being done in a scientific way to house small and medium scale industries therein. Presently, 40 industries are in operation of which prominent industries are furniture, biscuit and confectionary, dairy, textiles, polythene pipe, metallic structures and workshops etc.

Although the B.I.D. is supplied with electric power, Nepal Organo Rubbers has to install their own transformer of 150 kW Ht 1,800 V/380 V to supply the power to the machinery.

The equipment planned for the plant is composed of the following:

- Mixing mill
- Extruder
- Vulcanizer
- Presses
- Boiler for steam generation to vulcanizer
- Dies of different dimensions to the extruder
- Bale cutter
- Lathe

Total estimated investment cost Rs 3,000,000 including electrification, buildings, machinery but not working capital. The equipment will be partly Chinese and Indian. Some specifications and quotations has been obtained from India, Japanese and Chinese suppliers. Only the Indian manufacturers have offered to assist in the commissioning of the equipment.

Market

The feasibility report was finalized in 1980. All modern sheller type of rice mills use rice rubber rolls. The consumption of these is estimated to be 80-90 pairs per mill and year, and there should be over 100 such mills in Nepal operating at different capacity. This means that there is a market in Nepal for 16,000-18,000 units per year, i.e. more than the

capacity of the proposed plant. The season for dehusking paddy is however limited, and there will probably be a period for production to stock or for manufacturing other similar rubber products. Such rubber products has to be developed in a second phase of the plant.

Comments

It seems to take too much time to get the funds for the investment, which is a great problem for the entrepreneur.

The entrepreneur has not yet decided which equipment to order. Before decision-making he will consider the alternative technologies available and the potential for further application to produce other rubber articles required for the Nepalese market.

The entrepreneur said he was interested in technology transfer from South East Asia in the field of rubber processing rather than from India, because India is not exporting the rubber raw material.

As the most favourable offer of the equipment and training has come from India it is most likely that the entrepreneur will purchase the technology from India once the loan from NIDC is granted.

At present state there seems not to be any need for assistance from UNIDO to this entrepreneur.

Visit to Rama Iron Industries, Reshamkoti, Birgunj

Rama Iron Industries is a small enterprise in the informal sector, working with ferrous and non-ferrous metal casting, workshoop machinery works and fabrication to order. Discussions were held with the owner, In Birgunj Mr Jagannath Tibrewal and the managing director, Mr Oemnath N Tibrewal in Kathmandu.

The company was founded in 1974-75 and has an investment of Rs. 3 lakhs in machinery employing 10 permanent workers. Turnover about Rs. 4-5 lakhs per year.

Production

Actually the production consists of weights, measuring cars, man hade covers and cast spareparts. The company uses two types of technology for casting, melting pit and cupola melting. The lowest technology is the one in which the crucible is melted in a pit in the ground, and which is fueled with ordinary coke. The cupola oven is mostly unused because of small casting series or production of single spareparts. Although the pit melting is very primitive Rama Iron Industries is making pistons and other spare parts for trucks and motorcycles, the quality of which was quite good. The rejection rate is however quite high.

Expansion plans

Rama Iron Industries has land in Birgunj for a new factory. The following new products are considered:

Water taps
Cast iron pipes
Handpumps for tubular wells
Water turbines

The enterprise is in search for technology of

- core making for hollow castings and
- centrifugal casting.

Rama Iron Industries faces a lot of problems for their expansion, plans particularly for raw material supply and availability of skilled manpower not to mention financial assistance and external (loans).

Raw material

Since Nepal does not produce any pig iron itself, it has to procure the required amounts from India. Rama Iron Industries are purchasing directly from India. For this, however, they have to get approval from the Nepalese Authorities, which allocate a certain quota to them, as well as from the Indian authorities. Procedures are lengthy and sometimes they don't obtain enough quantities for their requirements. Because of the lengthy process and for the delays in supply they have to purchase the raw material 3-6 months ahead which is costly.

The problems faced here are of a similar nature as that for pig iron. Coke has to be imported from India, permission is needed from authorities in both countries, under the quota system. Here too, there is an irregular supply.

Problems are likely to become worse, given India's own shortage of hard coke.

Manpower

Most important problem is that of training the operators in casting technology. In general the trainiing of the foundrymen is low. Workers with some experiences in the foundry field are recruited from India, where this sector is relatively well established. They mostly operate at the furnace, or as moulders. Unskilled workers are Nepalese.

There will be a demonstration foundry just behind Patan Industrial Estate in Lagankhel in the Kathmandu Valley. This is a UNIDO-project NEP/79/001 which will have a training unit for ferrous and non-ferrous foundry. The pilot and demonstration foundry will be in operation in December 1982 according to the project manager Mr Schultze. One of the objectives of the pilot foundry is to organize regular training of foundry operators from local entrepreneurs, but it remains to be seen what training capacity it will have. Mr Jibrewal proposed the following way for transfer of foundry technology from India which possibly could be carried out within the frame of Technical cooperation between developing countries.

a) A trained person from Delhi, Okhala or from Bangalore should be sent to Nepal for a certain period, e.g. one year for working at a Nepalese foundry and simultaneously training Nepalese workers in ferrous and non-ferrous casting. Rama Iron Industries are prepared to pay the salary the trained person will receive in India as if he was working there.

b) Nepal should fully utilize the two training posts available at the Prototype Training Centre in Okhala, Delhi for the private foundries. The training period of semi-skilled workers is 6-9 months. Rama Iron Industries can however not afford to send their own workers to India for training, unless Nepalese financial bodies assist them.

For implementing the above-mentioned proposals Mr Tibrewal would require the support of the Department of Industries and UNIDO to approach the concerned authorities in India on this particular subject.

Comments

Rama Iron Industries has a long way to go before they can do high quality engineering castings in accordance with their expansion plans. A useful fast step would however be to invest in training of manpower before any major investments in foundry are planned. The consultant recommends Rama Iron Industries to send two trainees to the Prototype Training Centre in Delhi, one for three months' training in moulding and one for six months in pattern-making. Other operations of the foundry could be assisted by the extension service from the UNIDO Pilot and Demonstration Foundry at Patha.

7 Visit to Himal Iron & Steel (P) Ltd., Parwanipur, Birgunj, Narayani Zone

The mission was received by Mr Gopal Bahadur Shrestha, plant manager and one of the shareholders of the company.

Himal Iron & Steel (HISL) are producing reinforcement bars for the construction industry and have a complete foundry with coke fired cupola furnace for ferrous casting. A wire drawing plant has recently been installed, with the objective to manufacture nails and rock-nets used in road construction.

HISL was registered as a private company in 1961 with an authorized capital of Rs. 2.9 million which was subsequently raised to Rs. 9.1 million in 1976.

This private company was founded by Mr Mani Harsha Joyoti, one of the leading industrialists of Nepal. Mr Padma Joyoti, the elder son of Mr M H Joyti, is the executive director of HISL. He is a young dynamic engineer. Discussions with him were held in Kathmandu regarding expansion plans and technical assistance needs.

The directors of HISL have share holdings in other industrial and trading companies. These are M/s Bhaju Ratna Engineering and sales (P) Ltd. for agricultural, industrial and transport machinery and equipment sales M/s Himal Oxygen (P) Ltd. for manufacturing oxygen gas and M/s Syakar (P) Ltd. for export and import.

The following expansion program is under serious consideration.

1) Arch Furnace

HISL have now to import the billets to the re rolling mill from India. The cost of this raw material is high and therefore the value added after the rolling process is rather low.

They want therefore to make their own billets from scrap iron and/or sponge iron. There is more than enough scrap iron available in Nepal, but the scrap collectors are mostly Indians, who supply on a regular basis to Indian foundries.

A feasibility study was done some years ago by an Indian consultant M/s M N Dastur & Co (P) Ltd., Calcutta. The project cost was then estimated to Rs. 20 million a few years ago and it requires a lot of electric power about 1,0 MW. If there has been enough power available in the area, the project had been feasible, but now - it is postponed until the hydro-electric power plants in Kulekhani dam and Devighet dam will be in operation. They will therefore up-date the feasibility study.

Mr Joyoti would not require any assistance from UNIDO for this project as long as his consultant is working on a fresh feasibility study.

2) Wire Products (welding electrodes, screws, nuts etc)

HISL will soon set up a galvanizing and fine wire drawing unit within the premises at Parwanipur with an annual production capacity of 2,100 tons of galvanized wire and 300 tons of fine wire. The loans are under consideration at NIDC and will be granted.

Mr Joyoti now plans to integrate the wire drawing unit with production of welding electrodes and also screws and fasteners.

During the study tour to India he saw a manufacturer of welding rods, producing about 1,800 tons per year. The process comprises a special chemical flux coating and the curing in an oven. The wire for the electrodes is of a special alloy steel to be imported in coils. The most common dimensions of welding rods for electrical welding in Nepal is 4.00, 3.15 and 2.5 mm. The consumption of these in Nepal is about 100 tons per year.

A feasibility study which HISL themself will connison is to be done first before discussions on thechnology transfer from India will be taken up. It is planned that production for such a factory would only comer the domestic market.

HISL intends to connissison a consultant (M N Daslar (P) Ltd) for a feasibility study. Pending the final results of the study will be the basis for future discussions of technology transfer from India.

3) Extension of existing foundry

At present HISL is producing simple castings as kitchen utensiles, iron pipes and simple spare parts for the local market consumption without doing any machining. This operation contains no engineering and has proved to be not profitable.

To alleviate the present situation they are planning to expand the operation of the foundry to manufacture high value products like centrifugal water pumps, hard pumps, machine parts etc. They have however not the necessary know-how within the plant so external assistance is required.

For this purpose it seems appropriate that UNDP/UNIDO should provide assistance in form of an expert or consultant services of two man months to identify the needs of process improvement and equipment and streamline the production in the foundry.

Comments

It is the considered opinion of the consultant that before any expansion of the foundry is made the existing operation should be thoroughly reviewed by a foundry expert and appropriate upgrading of the methods and training in the different foundry operations should be carried out.

The quality of the cast iron products at HISL did not seem to be very high and the rate of rejecting was a problem due to blew holes, air bubbles etc. The lack of skilled technicians was evident to the consultant.

Along with consultancy advisory services it is therefore recommended to send a technician or engineer from HISL to the National Institute of Foundry and Forge Technology at Ranchi in India for a three month's training period. The trainee will be familiar with modern foundry methods especially for casting of high quality engineering parts.

HISL is a medium scale industry with many workers engaged in the production process. Although the demand from the market was higher than the production capacity in most units, the utilization of the capacity was low, due to inadequate planning, organization and management especially at the floorshop master level. To allocate this problem it is recommended to train one workshop supervisor for two months at the Foreman Training Institute, Bangalore in management, planning and cast control with special reference to mechanical workshops.

8 Visit to Nepa Engineering Works (P) Ltd., Nepalgunj Industrial Estate, Nepalgunj

The mission was received by the works manager Mr Pramod Raj Chimirewho conducted them through the workshop located in one of the sheds at the Nepalgunj Industrial Estate (NIE). Further discussions were held in Kathmandu with the managing director Mr K C Sharma.

Nepa Engineering Works is classified as a small scale industry and was established in 1974 promoted by the Industrial Services Centre who now also has the management over the industrial estate. There are 15 other industries within the estate among which textile, furniture, bakery, hosiery, dairy, aluminium utensils, agricultural tools are prominent. The estate is located 6 km north from Rupaidaya, the India border railhead and to the north is linked with the highway to Surkhet, the headquarter of Far Western Development Region.

Equipment

The value of the machines purchased is Rs. 80,000 and the working capital Rs. 60,000. Financing through the commercial bank Rastriya Banijya Bank. No loans from NIDC.

The workshop in Nepalgunj has the following equipment:

- Electrical welding machines
- Cutting machine
- Rending machine
- Lathe
- Drilling machines
- Rolling machine (sheet rolling)
- Ginders

Manpower

The company employs five permanent workers. They try to be an engineering industry rather than a mechanical workshop. They make sketches and drawings when necessary and advise on any type of mechanical problem.

Production

The workshop carry out service jobs and confection to order. The company has no products of their own. Orders are received not only from Nepalgunj but also hillside and from Kathmandu. At the occasion of visit the workshop was manufacturing cable cars of aluminium and suspended bridges of steel profiles.

The company has also a motor repair workshop within the industrial estate, but it is now yet fully equipped.

Nepa Engineering Works is facing the same set of problems as many industrialists in Nepal to e.g. lack of skilled manpower. It is very expensive to train an unskilled worker, because of damages caused during the training period. Once the worker has got some skill, he will be attractive for other enterprises and he leaves his employer for a higher wage at another.

Market

a) Production of centrifugal water pumps and small water turbines by casting. Mr Sharma has participated in a two weeks training course in foundry casting in Bangkok, arranged by TECHNONET, Asia. During the technology selection visit to India, he requested the Indian counterparts to see that kind of foundry industry, but it was not possible in Bangalore; one have to go to Madras to see it.

No Nepalese foundry is today qualified or equipped to produce quality engineering castings. One of the objectives of the UNIDO-project WEP/79/001 Establishment of Pilot and Demonstrat on Foundry is just to demonstrate by modern casting methods the production of turbine housings, dieselengine blocks, centrifugal pumps and highly nickelalloyed quality bolts for the cement industry. The demonstration foundry will be in operation at the end of 1982 near Patan Industrial District, Kathmandu.

b) Manufacturing of bulldog grips and thimbals by forging. These fittings are mainly used for suspension bridges for pedestrians in the hilly regions. To day bulldog grips and thimbals are imported in large quantities from India. The fittings has to be galvanized.

The market for bulldog grips and thimbals can be estimated from the construction plans for suspended bridges. There are 45 districts in the hilly region. The Department of Roads and Bridges can provide figures of the estimated requirements of suspended bridges.

A feasibility study has to be done.

c) Construction of irrigation structures, gates, pennstock pipes and electrical transmission towers. This could be done in the existing plant in Nepalgunj by adding a galvanizing unit.

Comments

To be able to carry out the ambitious production programme, the entrepreneur seeks external assistance. This could be in the following forms:

- Technology transfer from plants in other countries manufacturing the desired products, including technical drawings, designs and specifications to execate jobs and manufacture the products.

- Training of manpower in the relevant fields.

- Financing the production equipment and working capital in form of soft term loans.

Mr Sherma seems not to be aware of the new Industrial Policy 1981 which gives many incentives to promote industrial production within the private sector. ISC and NIDC can assist the entrepreneur in identifying viable projects.

The problems of raw material and power supply was discussed for measures to be taken on the national level. The idea of a raw materials bank to serve mechanical workshops and foundries has both advantages and disadvantages. Buying raw materials in bulk through a purchasing and distribution company, whether in the public or the private sector, would be an advantage for small enterprises like Nepa Engineering. The costs for co-ordination among mechanical workshops and foundries to assess overall raw material requirements and keep large quantities in stock and distribute small lots to various customers could however be higher than direct import from India.

Regarding power supply it seems apparent to the consultant that the enterprise has suffered from insufficient power supply which has in turn curtailed their production output. The hydro power projects at Kulekhani[2] and Marsayangdi will improve the situation when they are in operation 1986.

The consultant noted that planning, cost control and marketing is a problem for the works manager Mr Chimire who has insufficient knowledge in these areas to run the workshop effectively. The new motor repair unit also requires certain training of manpower.

Summary

Based on the above the consultant recommends the following actions to be taken by UNDP/UNIDO in close consultation with the Department of Industry.

a) Feasibility studies to be carried out by ISC on the products suggested by the entrepreneur.

b) Training of two technicians at Indian Training Centres; one at the Foreman Training Institute, Bangalore, for two months in management, planning and cost control of a mechanical workshop at the floorshop master level and one at the Government Tool Room and Training Centre, Bangalore, for four months in tool making, tool maintenance, machining and quality central with special reference to machine workshops and engine overhand workshops.

c) Local training in Nepel that could be carried out by ISC. Costs could be shared between the local entrepreneur and the Department of Industries.

9 Visit to Inter Tech (Pvt) Ltd., Butwal Industrial District, Butwal

The mission was received by Mr Rajendra Singh Gurung, technical director, who was in charge of the workshop temporarily established at Rajmarg Chouraha Khasanli. Later discussions were held with the managing director, Mr Ratan Lal Agarwal.

Inter Tech has a site at Butwal Industrial District and are there constructing a building for production. The building will be finished within 6 months. The Butwal Industrial District is located about 2.3 km east from the starting point of Butwal - Narayanghat Highway. The district is expected to accomodate the cottage, village and small scale industries and is under the management of ISC.

Inter Tech was founded in 1978-79 by three engineers, of which one is sleeping partner. The fixed investment is Rs 290,570 in machinery and working capital about Rs 150,000. The company has got small financial assistance from NIDC Rs. 200,000 of which 50 % is for building and 50 % for additional machinery, special machines for water turbines and casting cupolas and accessories for casting the wheels.

The rest of the required funds has to be borrowed from commercial banks.

The company employs 13 persons permanently in Butwal. The annual turnover was Rs. 955,000 in 1981 with existing facilities.

Production Lines

When we visited the enterprise they were working on fabrication job to order, namely oil tanks and suspension bridges. Normally no service jobs to other industries are being executed by inter Tech. The company is totally involved in the production of their own items, for which they have their own design. The following items are on their production programme:

1) Small Water Turbines, Cross Flow Turbines

Up to the size of 100 KW for electricity generation and mechanical power for agricultural application.

When a request to install a water-turbine comes, a team is sent out to investigate the possibility and to choose the most appropriate place. The turbine is installed later, and there is also a system of servicing after installation. The buyer of the turbine can get soft loans by Agricultural Development Bank, Nepal. The turbine is manufactured by welding and also forging by manuell hammering at Inter Tech's workshop, except for the bearings, which come from Japan. There are no casted parts. Several items can be attached to the turbine; oil expeller (mustard oil), flour mill, dehusker - polisher. Other machineries for attachment are planned: hot air generator (for drying), rice mill. Direct transmission is used, since this is more efficient. The basic cost of the turbine is Rs. 10,000 but together with all the attached machinery the price can go up to Rs. 60,000. Obviously this is only possible for rich farmers or communities. The design is such that the unit can be carried by porters to remote areas.

For the survey on the field and for the civil engineering Inter Tech has contracted one civil engineer.

2) Water wheels manufactured for milling and grinding purposes. There is a lot of losses in a water wheel. Often it is more economical to install a water turbine.

3) Paddy driers. Designed for the rice mill before the milling operation. The hot air which is circulated over the paddy is obtained from solar collectors or by burning rice husk.

4) Solar driers for vegetables and fruits. Inter Tech has designed and tested the drier by drying spice ginger. The dried fruits were sent to TPI London for quality control. The results were very promising.

Manpower

Most of workforce in Batwal consists of welders, fitters and helpers trained in sheet metal fabrication. There are also machine workshop operators but few precision jobs are carried out. At present there is no foundry section at the factory but the company plans to set up a casting unit for sanitary fitting items. For operating the foundry special training will be required.

Remarks

The enterprise is seeking assistance to improve the design and manufacturing process of cross flew and Pelton type of water turbines up to 100 KW. The entrepreneur Mr Agarwel is also considering other production lines than metal working e.g. production of lead pencils and washing powder. As ISC has carried out the feasibiliby studies with NIDC's support it is recommended that the entrepreneur explores the possibilities of setting up these production units with promotion by NIDC.

It seems to the consultant that the present operations in Batwal could be much improved by proper training of manpower. Based on the observations at the plant unit and the discussions with the entrepreneur, the consultant recommends the following actions to be taken by UNDP/UNIDO in close consultation with the Department of Industry, the Government Tool Room and Training Centre. Training of one technician from Inter Tech at Bangalore (India) to improve skill in toolmaking, tool maintenance machinery and quality control etc during one month.

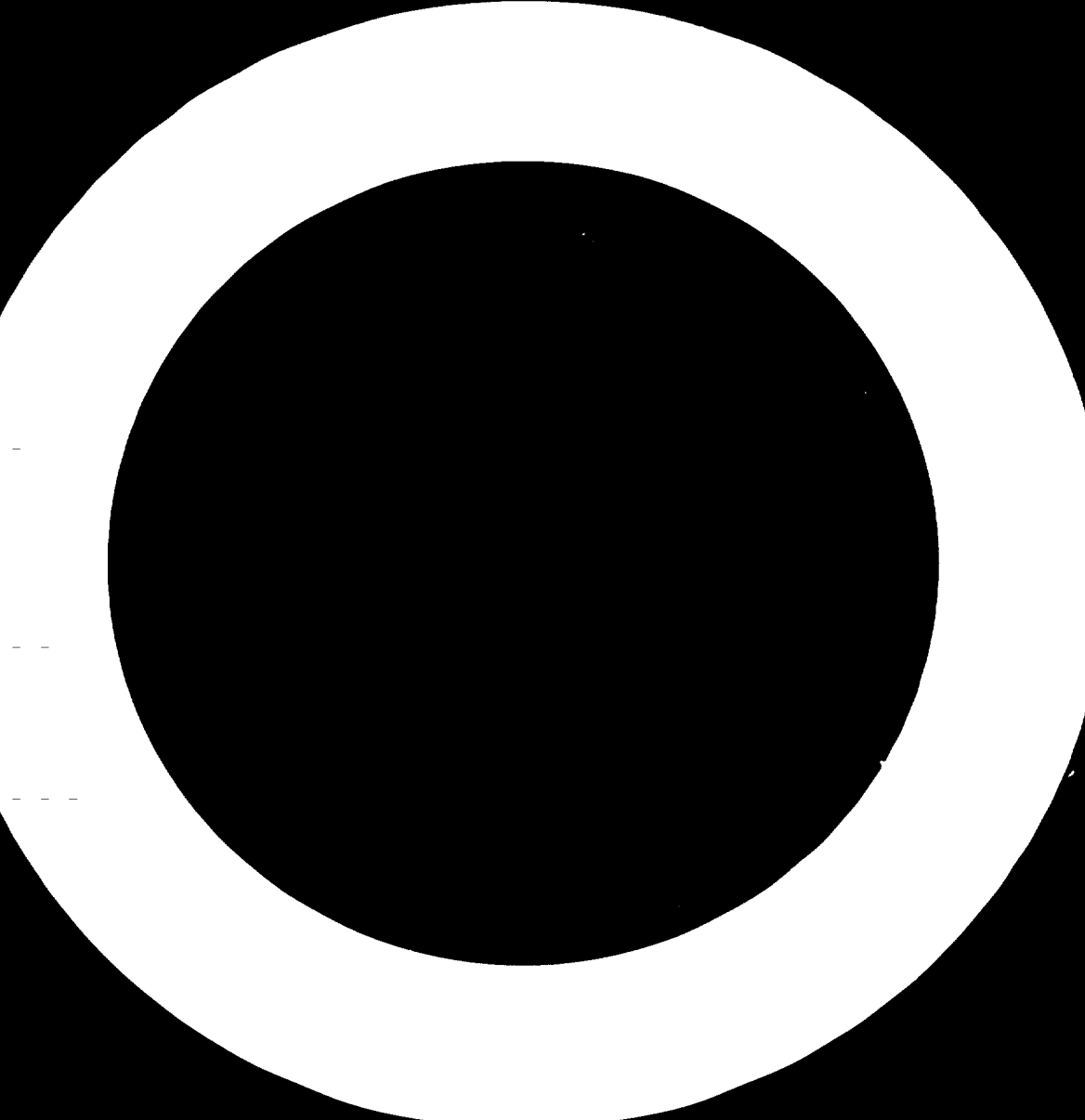
Training at the National Institute of Foundry and Forge Technology, Ranchi (India) of one technician or engineer for three months in modern foundry technology with orientation to the different functional areas of foundry such as pattern making, melting, moulding, core making, casting, fitting and heat treatment.

10 Meeting with Mr J Melford, UNDP, Resident Representative Kathmandu

After providing brief background information on the project proposal and on the discussions held with the Department of Industries and the entrepreneurs on the subjects, the mission explained the proposed follow up action on training and advisory services as the most important step before any specific technology transfer can take place from Indian to Nepalese entrepreneurs. Mr Melford was asked about the possibility of UNDP providing the US$ 41,400 necessary for financing the proposed training of 10 Nepalese technicians from the five enterprises and three man months consulting services to two of the enterprises. In response, Mr Melford explained that funds are tight both within the IPF Country Programme for Nepal and on regional funds such as the RAS/80/106 but it has to be decided by OPE (Office of Project Execution), New York, if the extension of funds would be possible. The amount to be allocated is only US$ 36,400 since there is a reliquet of US$ 5,000 available for the project account. Provided that an official government request is received by UNDP, Kathmandu, with the project proposal worked out by the consultant, he will support the proposal and cable UNDP, New York, requesting the additional funds. He further said that he counted on a positive response from UNDP, New York, the amount being reasonable small and the project could be well justified in the project documentation and by the Department of Industries.

11 Meeting with Mr I.R. Makaan, UNDP, Programme Officer, New Delhi

In this regional project the UNDP office in New Delhi has been very little involved. If the requested additional funds will be sanctioned by OPE, New York, the UNDP office in Delhi is prepared to assist UNIDO in every way possible to identify mini cement plants, Indian consultants and appropriate Training Institutes in India. The project proposal on follow up activities on the technology selection visit to India last year was handed over to Mr Makaan for information. Action will be taken by UNDP on written request from UNIDO, Vienna. The responsible officer for TCDC projects in India was however not available at the meeting.



PROJECT PROPOSAL

Training and advisory services to Nepalese enterprises

AR/RAS/80/006
Strengthening of National technological capabilities in the sector of amall-scale industry, with particular reference to metal working, brick making and small cement factories.

Background and justification

On the occasion of the Third General Conference of UNIDO held in New Delhi, 21 January - 9 February 1980, in co-operation with the Karnataka State Small Industries Development Corporation, organized the programme entitled "Plant Level Co-operation for the Transfer of Technology to Small-scale Industry in the Least Developed Countries" which took place in Bangalore from 1 - 3 February 1980. The objectives of the programme were to establish an effecient mechanism amont developing countries on the transfer of technology for small-scale industry, as well as to demonstrate at the plant level the experience of one developing country, namely, in this case, India, in the field of small-scale industry. Among the participating least developed countries was the delegation from Nepal.

As a result of the meeting five Nepalese entrepreneurs went on a two week technology selection mission to Delhi and Bangalore in December 1981. Upon their return to Nepal a UNIDO consultant, Mr L Lindblad, visited the participating entrepreneurs to review the result of the mission to India and investigate the requirements and possibilities to transfer technology from India to Nepalese enterprises. In view of the findings of the consultant, the Department of Industries, HMG Nepal, request as a follow up action on the UNIDO project, training of Nepalese manpower for improved skill, in various relevant fields represented by the entrepreneurs, provision of consultancy assistance to two of the enterprises and funding of a high level technology survey visit on small scale cement production in India.

2 Special Considerations

In addition to the objectives stated under para. 3 below, theproject could also be valued as a supporting element for stimulating co-operation among developing countries themselves in the field of technology transfer.

3 Objectives. Development objectives

The long-term objective for this particular project is to strengthen the technological capacity of the small-scale industry in Nepal with particular reference to metal working, brick manufacturing and small-scale cement industry.

Immediate objectives

a) To upgrade skills of 10 Nepalese technicians in the field of modern mechanical workshop methods, and shop floor management technology of moulding and core making, techniques in pattern making ferrous and non-ferrous casting, machine tools and maintenance as well as modern brick and tile manufacturing.

b) Advisory service to streamline the production of existing small-scale enterprises and in the field of production of bricks and tiles in the production of castings and subsequent finishing processes.

c) To assess technology performance of mini cement manufacturing units and appropriateness of utulizing such technology by the small-scale industry sextor in Nepal.

4 Project outputs

a) 10 Nepalese technicians trained in India in the areas of:

- mechanical workshops
- quality control and metal testing
- technology of ferrous and non-ferrous casting
- technology of moulding and core making
- techniques in modern pattern making
- toolmaking of machine tools and maintenance
- modern methods of brick and tile manufacturing

b) Advisory service to the management of the Himal Iron & Steel as well as Lumbini Claycrafts in the field of rerolling, wire drawing, galvanizing and foundry as well as brick and tile manufacturing respectively.

c) A technology survey visit of three high ranking Nepalese officials to India to examine the feasibility of Indian mini cement plants operating on the basis of local lime resources.

5 Project Activities

Manpower training

a) Design and preparation of tailormade training courses for Nepalese technicians.

b) Timing and programming the courses at Indian Training Centres.

c) Selection and sending Nepalese trainees to India.

Consultancy Services

a) Elaboration of terms of reference.

b) Selection of consultants or recruitment of experts.

c) Implementation of the consultancy assistance to two Nepalese enterpriser.

d) Follow up and evaluation of the services.

Technology survey visit

a) Definition of scope and objectives.

b) Identification of Indian mini cement factories to visit.

c) Selection of the Nepalese team to go to India.

6 Project Inputs

a) Travel and per diem of 10 Nepalese trainees in India during three months in average. It is anticipated that the Indian Government would accept trainees from Nepal without requesting payment of tuition fees.

b) One consultant to design the training courses in co-operation with the Indian Training Centres to the needs and at the appropriate level for the Nepalese trainees for a total of 2 m/w including travel to India and Nepal.

c) Two consultants for advisory service to Nepalese enterprises including travel and per diem for a total of 3 m/m. The consultants will be one specialist in foundry and re-rolling operations and and another specialist in brick and tile manufacturing.

d) Travel and per diem of three Nepalese officials for India for two weeks.

7 Project Evaluation

The project will be evaluated according to general procedures for technical assistance projects.

8 Envisaged Follow-up

Based on the recommendations of the consultants, UNDP's local office, in consultation with the Government and UNIDO, will take appropriate action for the allocation of the necessary funds for long-term advisory assistance to small-scale industry in Nepal.

Annex 1 a

PROJECT BUDGET

Contribution to be provided by UNIDO in convertible currency.

		US Dollars
1	Survey visit to 4 - 5 Indian cement factories for three Nepalese high level officials	2,100
2	Ten trainees to be trained in India for three months a US $ 630 per month plus travel to India	22,900
3	One consultant for design and preparation of training courses ½ m/m including international travel and per diem in Nepal and India	4,500
4	Two consultants for advisory service for a total of 3 m/m including travel and per diem in Nepal	11,400
5	Miscellaneous, including reproduction of reports	500
	TOTAL	41,400

TRAINING PROGRAMME

At the Prototype Training Centre, Delhi (India)

Two trainees from Rama Iron Industries, one for three months' training in moulding and one for six months in pattern-making for ferrous casting.

At the Foreman Training Institute, Bangalore (India)

Two trainees, one from Himal Iron & Steel and one from Nepa Engineering Works for two months each in management, planning and cost control of amechanical workshop especially at the floorshop master level.

At the Government Tool Room and Training Centre, Banyalore (India)

Two trainees, one from Inter Tech during one month and one from Nepal Engineering Works during four months for training in tool making, tool maintenance, machining and quality control with special reference to machine workshops and engine overhaul workshops.

At the National Institute of Foundry and Forge Technology, Ranchi (India)

Two trainees at technician or engineering level, one from Inter Tech and one from Himal Iron and Steel for training in modernization of foundry industries with orientation to the different functional areas of foundry, such as pattern making, melting, moulding, core making, casting, fettling and heat treatment; use of new materials and technology for enhanced productivity. The training period will be three months for each trainee. The trainees will during the course be familiar with modern foundry methods especially for casting of high quality engineering parts such as water turbine wheels, centrifugal pumps, casings etc.

Training in brick and tile manufacturing procedures at a suitable institute or brick factory in Delhi (India)

Two trainees from Lumbini Claycrafts during three months in both theoretical and practical procedures of producint bricks and tiles, including raw materials testing, moulding, burning and quality control of burnt bricks. The theoretical part should also cover economy of fuel and planning of the operations.

Annex II

LIST OF ENTREPRENEURS

1. Mr. Gemnath A. Pibrewal, Managing Director
Rama Iron Industries
Reshamkothi, Birgunj, (Nepal).
Kathmandu Office:
9/469, Chebahiti Tole
Kathmandu. Tel. 14094, 14095

2. Mr. Saroj Mani Dixit, Managing Director
Lumbini Clay Crafts (Pvt.) Ltd.
Brick Tile Industry
Manigram
Bhairawa (Nepal).
Kathmandu Office:
1/113, Pogundol
Kathmandu. Tel. 21885

3. Mr. Dwarika Shrestha, Director
Nepal-Agro Industrial Enterprises (P.) Ltd.
Modern Rice Mill
Narayanghat (Nepal).
Kathmandu Office: Managing Director
Nepal Organo Rubbers (P.) Ltd.
Chhetrapati, P.O. Box 1281
Kathmandu. Tel. 13828, 16183.

4. Mr. Padma Jyoti, Director
Himal Iron & Steel (P.) Ltd.
Parwanipur
Birgunj (Nepal).
Kathmandu Office:
Jyoti Bhawan, Kantipath
Kathmandu. Tel. 11490, 11902.

5. Kedar Chandra Sharma Pokhrel, Managing Director
Nepal Engineering Works (P.) Ltd.
Nepalgunj Industrial Estate, Bhavan No. 3
Nepalgunj (Nepal). Tel 423, 425
Kathmandu Office:
Post Box 948
Kathmandu. Tel. 21713

6. Mr. Ratan L. Agrawal, Managing Director
Inter-Tech (P.) Ltd., Development Engineers
Butwal (Nepal). Tel. 147
Kathmandu Office:
P.O. Box 1304
Kathmandu. Tel. 13782.

Annex III

PROGRAMME FOR LARS LINDBLAD'S MISSION IN

NEPAL 1982 - 03 - 31 - 1982 - 04 - 27 RE RAS/80/006

820331 Arrival Kathmandu by RA 206 transfer and installation at Hotel Yellow Pagoda, Kantipath.

820401 Meeting with Dr. R.S. Mahat, Senior Programme Officer, Substantive Officer for the project at UNDP. Preliminary planning of visits.

Talk with Mr. Joe de Boeck, Associate Expert ex-in-charge of RAS/80/006. Information on the six entrepreneurs, banks and industrial development corporation (NIDC), visa and travel authorization formalities. Itinerary for car travel.

820402 Ticket reconfirmation, hotel bookings, contracting car with driver, further planning, Yeti Travels.

820403 Saturday, background reading.

820404 Visit to Department of Industries, International Relations Section, meeting with Mr. Ram Krishna Kharel, Officer, (tour co-ordinator) Mr. Stalin Man Pradhan, Mechanical Engineer, co-ordinator counterpart side, Bagh Bazar (near Rastriya Banijya Bank Office). Mr. Madhusudan Acharya (assistant to Mr. Kharel).

820405 Visit to Mr. Padma Jyoti, Director, Himal Iron & Steel (P) Ltd., Kathmandu, Visit to Nepal Industrial Development Corporation, NIDC, Durbar Marga, meeting with Mr. Ramesh C. Pyakuryal, Division Chief, Project Analysis Division.

820406 Car travel 09.00 Kathmandu - Mugling - Narayanghat - Butwal arrival 17.00 sleep over Indian Guest House.

820407 Visit to Inter-Tech (Pvt.) Ltd, Butwal.
Mr. Rajendra Singh Gurung, Technical Director
Mr. Ratna Lal Agrawal, Managing Director.
Temporary installation of Rajmarg Chourata Khasarili.
Car transport Butwal - Bhairawa. Stay over at Hotel Lumbini Siddharthanagar (Bhairawa).

820408 Car transport Bhairawa - Narayangarh. Visit to Nepal-Agro Industrial Enterprises (P) Ltd., modern rice mill. Stay over at Hotel Elephant Camp, Sauraha (Royal Chitwan National Park).

820409 Visit to Lumbini Clay Crafts (Pvt.) Ltd. in Maningrah, brick tile industry, and Himal Iron & Steel in Parwanipur (Birgunj). Afternoon visit to Rama Iron Industries, Ferrous and non ferrous metal casting. Overnight stay at Samjhana Hotel, Birgunj.

820410 Car transport Birgunj - Hetauda - Muglin - Kathmandu, 6 hours.

820411 Visit to Mr. P. Jyoti, Himal Iron & Steel and Mr. O. Tibrewal, Rama Iron, Kathmandu.

820412 Air transport Kathmandu - Nepalgunj. Dept. 11.00 Arrival 13.40
Visit to Nepa Engineering Works (P) Ltd.
Meeting with Mr. Pramod Raj Ghimire, Plant Manager
Overnight at Govt. Guesthouse, Nepalgunj.

820413 Meeting with Mr. Rameshwori Khanal, Government Cooperative District Office, Nepalgunj.
Return to Kathmandu 15.50 Arrival 17.45.

820414 National Holiday (New Years Day).

820415 Meeting 08.30 with Mr. Sigdyal, Lumbini Clay Crafts
Meeting 13.30 with Mr. Pokhrel, Nepa Engineering.

820416 Drafting project proposal for Lumbini Clay Crafts.
Meeting 10.30 with Mr. Dhungana, Managing Director, Industrial Services Centre, Balaju, Tel. 11522.

820417 Drafting project proposal for Nepal Organo Rubbers.

820418 Sunday Free.

820419 Drafting project proposal for Himal Iron & Steel and Nepal Engineering Works.

820420 Drafting project proposal for Inter-Tech.

820421 Arrival Mr. W. Kamel 09.40 from UNIDO Vienna
Reviewing project proposals.

820422 Finalizing project proposals with Mr. Kamel and Dr. Mahat. Meeting with Mr. Moonsup. So, Deputy Res. Rep.

820423 Meeting with Mr. John Melford, Res. Rep. UNDP 10.30 and at Department of Industry 12.00 with Mr. J.L. Satyal Director General, Discussion of findings and conclusions.

820424 Saturday
Departure of Mr. W. Kamel from Kathmandu.

820425 Meeting with Mr J.L. Satyal, Director General, Department of Industry regarding the request of assistance from UNDI/UNIDO.

820426 Meeting with Mr Joe de Boek and Mrs Yvonne LeFort, UNDI Elaboration of missinn report.

820427 Elaboration of Mission Report
Departure for Delhi. Meeting with Mr. T.R. Meaken, Programme Officer, UNDP, Delhi

820428 Departure for Stockholm, Sweden
820429 Stop-over in Bharain.

820430 Arrival in Stockholm, end of Mission.

Annex IV

REFERENCES

1. NEP/81R/JPO/81/1 - Field visits in Nepal and some proposals for UNIDO-assistance by Mr. J. de Boeck.

2. NEP/79/001 - Establishment of Pilot and Demonstration Foundry, UNIDO project data sheet.

3. UF/NEP/78/108 - Draft final report Assessment of Existing Mechanical Workshop Capacity and Projections for it's Expansion, April 1979, W.D. Scott & Co.

4. Nepal Industrial Development Corporation - Project Analysis Report on M/s. Himal Iron and Steel Pvt. Ltd., Parwanipur, Narayani Zone, Nepal, February 1981.

5. Industrial Services Centre, Balaju, Kathmandu, Nepal. Feasibility Studies Undertaken (Marg 2031 - Magh 2038).