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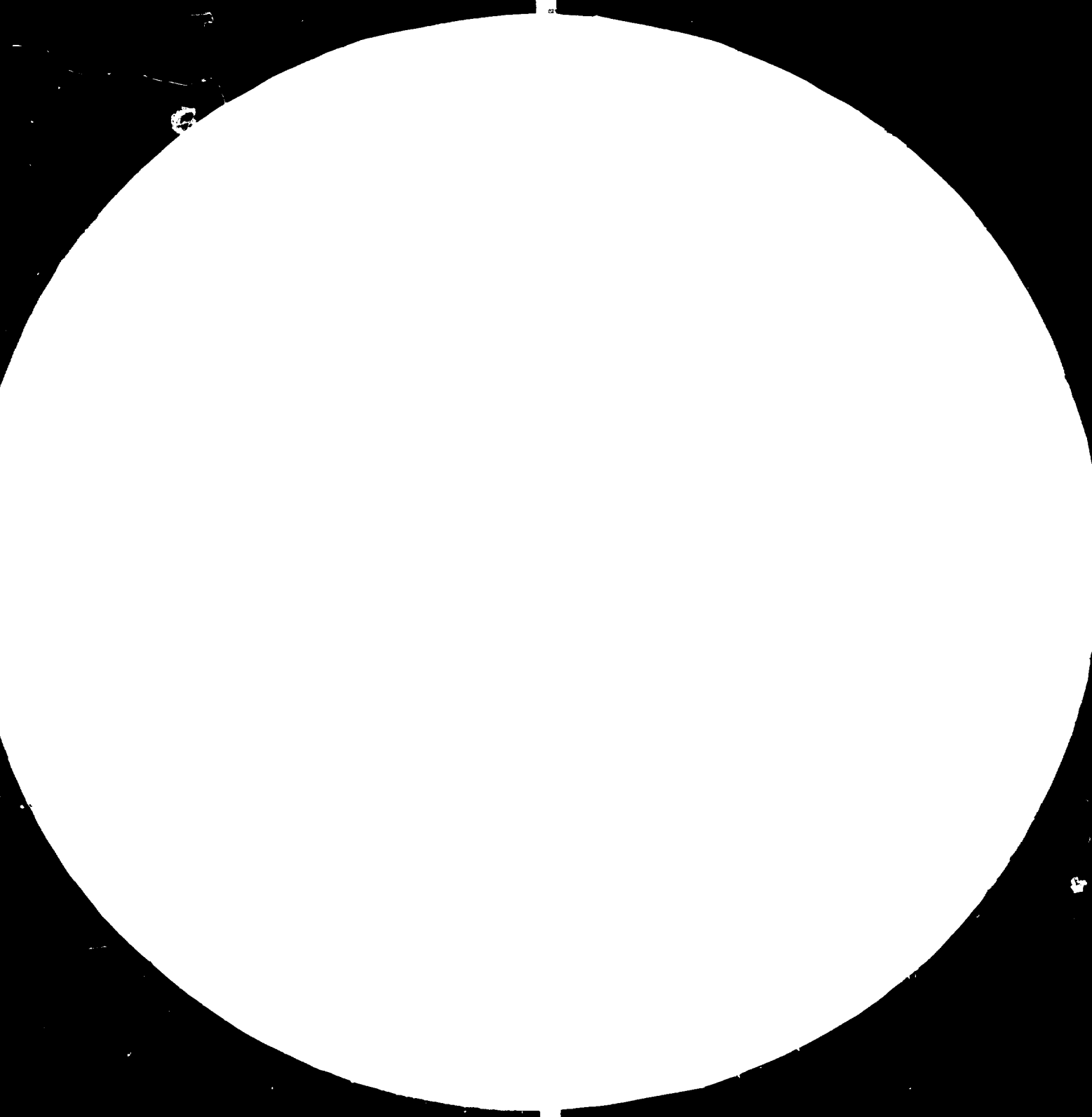
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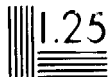


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Indonesia.

IMPROVEMENT OF EXTENSION SERVICES
AT THE LEATHER RESEARCH INSTITUTE

DP/INS/89/001

INDONESIA

Terminal report

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

Based on the work of Willy G. Holleweg dit Wegman,
chief technical adviser

United Nations Industrial Development Organization
Vienna

Abbreviations

Besides the common abbreviations, symbols and terms, the following have been used in this document:

ALT	Academy for Leather Technology in Yogyakarta
BPIK	Bimbingan dan Penyuluhan Industri Kecil
IRDLAI	Institute for Research and Development of the Leather and Allied Industries
NAFED	National Agency for Export Development
PPIK	Pusat Pengembangan Industri Kecil (Development centre for small-scale industries)

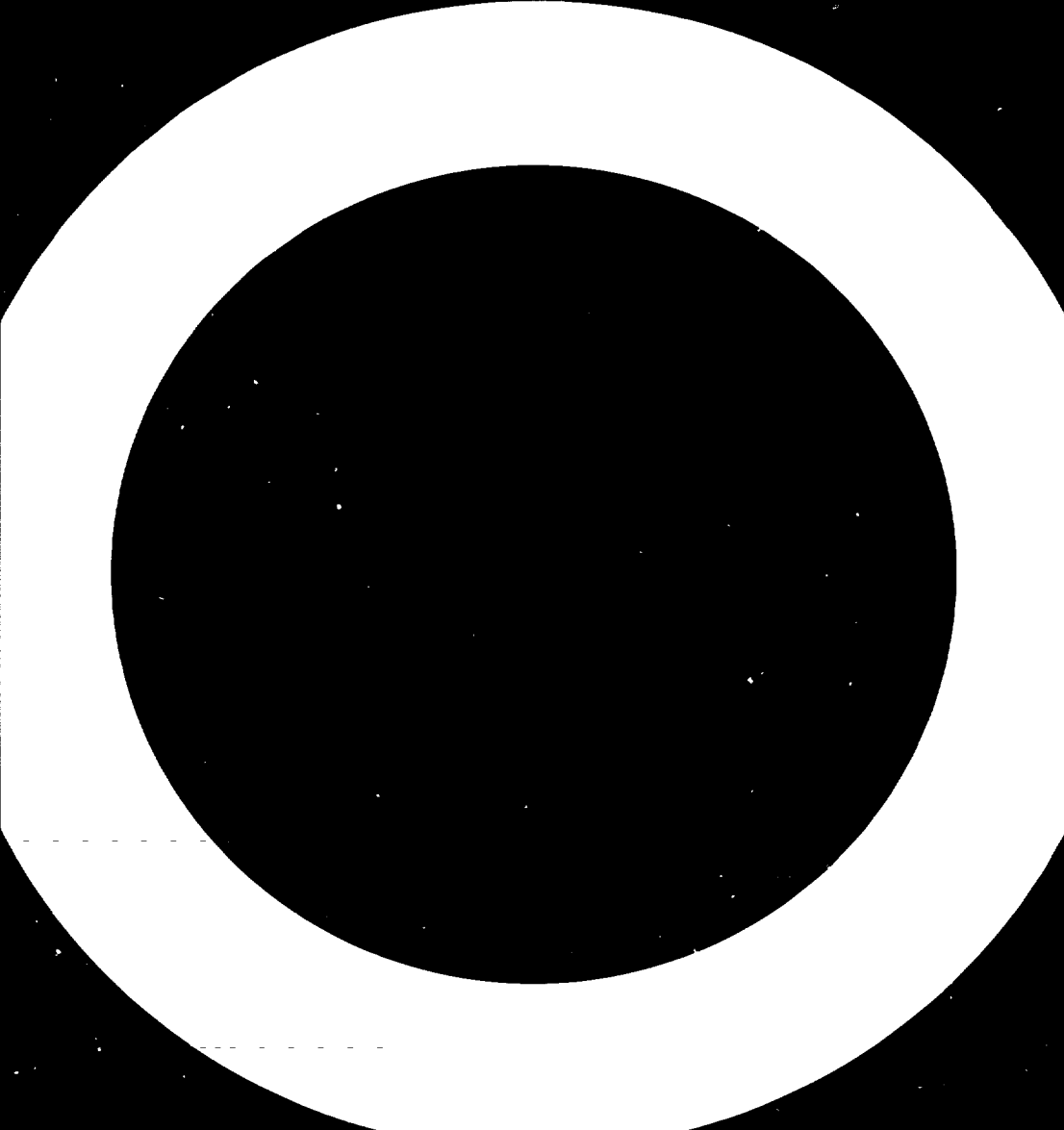
ABSTRACT

The project "Improvement of extension services at the Leather Research Institute" (DP/INS/78/001) began in September 1979 and was completed in December 1982, with the United Nations Industrial Organization (UNIDO) acting as executing agent on behalf of the United Nations Development Programme (UNDP).

The principal objective of the project was to strengthen the capacity of the Institute for Research and Development of the Leather and Allied Industries (IRDLAI) and to extend assistance especially to the small-scale leather and leather products industries sector. The activities of IRDLAI (formerly the Leather Research Institute) are, however, not restricted to the small-scale sector only and any international assistance in the future should be extended to all branches of the leather and leather products industry irrespective of whether they belong to the small- or large-scale sectors.

Assistance rendered to IRDLAI by an internationally recruited team of experts included upgrading the skills of its training staff and training new trainers; establishing the Institute's Fashion and Design Centre and other elements as a going concern; helping to gain recognition for it as the national training centre for leather and leather products; and assisting it to develop its policies and orientation for the future.

While IRDLAI was undoubtedly strengthened through the project - the terms of which covered, in addition to expert assistance, the supply of a considerable amount of equipment and machinery - this project was, in the opinion of the experts involved, only the end of the first phase of a great deal of assistance needed to put the national leather industry on its feet. An annex to the report contains the senior expert's proposals for a second phase of assistance.



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INTRODUCTION

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Though it is considered that the project achieved what it set out to achieve, the results need to be consolidated. The time allotted to the attainment of what are long-range objectives, the experts considered, was simply too short. IRDLAI has moved in the right direction, but it is feared that the follow-up to the far-reaching changes induced by the project may be insufficient. Some 40 counterparts were trained or otherwise assisted in the course of the project, and many of them have acquired real expertise. The development task that remains, however, is so overwhelming that the international team is of the conviction that the job has really only started. IRDLAI, it is considered, has the potential to become a moving force in the development of the Indonesian leather industry, and particularly the small-scale sector, and for that reason a second phase of assistance is proposed (annex I).

FINDINGS AND RECOMMENDATIONS

Rather than duplicating recommendations emanating from work done prior to the project, and which may have influenced the Government in establishing national policies for the stimulation and protection of the leather and leather products industry, the following pages contain only those recommendations expected to prevail upon completion of the project. They should be studied, however, in conjunction with those contained in the reports of the National Agency for Export Development (NAFED) and of earlier technical co-operation projects (e.g. INS/78/001).

Leather industry - general

(a) The leather industry starts with the flaying of the slaughtered animal. This truth must be recognized and over-all strategies adopted or developed accordingly. Charges and benefits need to be reviewed in order that imbalances in the pricing and costing of products at all stages do not jeopardise the sale of the end product;

(b) Trade protection barriers should be removed from the leather and leather products industry and imports of raw materials admitted duty free or at a maximum charge of 5 per cent;

(c) The minimum added value for leather products is around 400 per cent, and the leather products manufacturing branch is highly labour-intensive. If key industrial parameters such as these are reviewed in the wider context of the entire industry, the total output of Indonesia's leather industry may well be found to be greater than hitherto assumed;

(d) Export promotion should be more selective. The national market is important, but badly structured and hence not easily accessible to large-scale producers. Primarily, it should be the target of the small-scale sector;

(e) The national leather federations and subsectoral associations must play a more decisive role in planning and controlling the industry. Only countries that comply with this achieve lofty industrial output targets. Such planning implies also co-operation with national bodies (e.g. NAFED and the Bimbingan dan Penyuluhan Industri Kecil (BIPIK), a guidance and counselling service for small-scale industries) and intergovernmental agencies active in the field;

(f) The sub-sectors of the leather industry need to be reorganized, restructured and finally linked together again. Scale of output (small-medium-large) is not the correct yardstick to use in classifying and organizing owing to the peculiarities of the leather industry which stem from the infinite variability, diversity and even unpredictability of the raw material used - the animal hides and skins. Moreover, as the end product is dictated by fashion trends, the industrial classification must follow the desires of the consumers;

(g) Further development of the industry will be impeded by the lack of infrastructural, extension and institutional services. Rectification of this situation is of pressing importance. The first step to be taken is to launch a wide-ranging fact-finding survey. This is an area that calls for serious co-operation between IRDLAI and other organizations active in the field;

IRDLAI

(h) If it is to cope effectively with the growing number of tasks confronting it, IRDLAI must first evaluate its own existing or potential capacity to meet the requirements of industry. To this end:

A quantitative survey should be made of all leather and leather products industries with a view, first, to pinpointing their practical and physical problems and servicing requirements and, second, to analysing these and, on the basis of the analysis, formulating an "Extension services requirements report". From this it will be seen what IRDLAI needs by way of equipment and staff in order to provide the assistance needed, be it at its headquarters, in the field, through the dissemination of technical and trade bulletins and publications, or through representations to such bodies as the International Council of Tanners, the International Union of Leather Trades' Chemists, the international footwear associations and institutions, the international trade press and trade fairs. In addition, an internal, in-depth and realistic evaluation should be made of IRDLAI's capacity and competence to meet whatever responsibilities and demands the survey brings to light.

(i) IRDLAI should continue to develop the training centres established under the project and concerned especially with fashion and design, last-making, footwear manufacture, tanning, and sewing machine maintenance and operation. To locate these centres in various sub-institutes would, it is felt, be a wrong approach as it would lessen the impact of the global approach to instruction and development;

(j) While maintaining its strong links with the large-scale sector, the Institute should become more oriented towards assisting product development in the medium- and small-scale industries. The product development initiated under the project should be conducted with the participation of leading international suppliers of chemicals;

(k) The extension service teams operating from within the training centres should be active not only within the framework of the BIPIK/PPIK scheme but lend their assistance also to the medium- and large-scale industries. This would provide valuable links between all levels of the industry;

(l) IRDLAI should institute without delay the commercial, export-oriented action suggested in various experts' reports;

(m) The leather industry, through the National Federation, should play an active part in development and extension programming and planning. A small participation fee, based on sectoral economic key factors, should be levied on the industry to enhance its involvement with IRDLAI's activities and to help the latter to cope with budgetary constraints;

(n) IRDLAI is still suffering from isolation insofar as the world leather scene is concerned. As the largest institute of its kind in South-East Asia, it should begin to participate with NAFED in international leather industry fairs, especially those held in Paris, Milan, Düsseldorf and Pirmasens. The institute also lacks a dynamic public relations service;

(o) There is a need for higher-level scientific training at IRDLAI. Doctors' and Masters' programmes should be introduced without delay in the fields of chemical engineering; applied physics; mechanical engineering; water treatment; and business and international business administration;

(p) Technical, managerial and scientific information from without Indonesia should be disseminated to IRDLAI's officials. At present, such literature is not available. The Institute's library also needs urgent up-dating;

The small-scale sector

(q) Co-operation between IRDLAI and the Directorate General of the small-scale sector should be broadened. This could be achieved through:

- (i) Extension activities at sites such as Medan, Semarang, Tegal, and Irian Jaya;
- (ii) Technical support;
- (iii) Specific and applied research at IRDLAI on a case-by-case basis (on, for example, the use of low-grade raw hides, or engineering for small-scale industries);
- (iv) Industrial training of extension officers at IRDLAI;
- (v) More extended use of the Fashion and Design Centre as well as the maintenance facilities (including emergency maintenance and repair);

(r) IRDLAI should become self-reliant in the above activities and act as a supplier of services and information for small-scale clusters, "mini" estates, common service facility centres etc;

(s) The "mini" experience has proven successful at Magetan, and the common service in clusters such as Manding and Karet Kuningan. The following improvements should be made:

- (i) The "mini" estate boards should provide stronger managerial structure and assistance;
- (ii) The establishment of estates, common service facilities etc. should be based not on theoretical feasibility studies but on awareness of the business opportunities available;
- (iii) Lease or rent arrangements for industrial sites and facilities should be envisaged in order to avoid placing too high a financial burden on entrepreneurs;
- (iv) The facilities offered by service centres should be rationalized and standardized nation-wide;

(t) Wider use of the IRDLAI maintenance facility should be encouraged. A serious threat to the entire industry is posed by the lack of maintenance and repair facilities;

Training

(u) Training at the Academy for Leather Technology of Yogyakarta (ALT) and IRDLAI should be synchronized and adjusted to the needs of a rapidly growing industry. The level of ALT education being too low to serve middle- and high-level management, a serious effort should be made to improve it;

(v) The provision of industrial training at IRDLAI is essential, especially for the middle-management or foreman levels;

(w) The training programmes mentioned above should cover basic knowledge of chemistry; engineering; mechanics; and arts and design;

(x) The general scientific and intellectual level of the training staff should be up-graded. This might be accomplished through contact with the national universities, e.g. in exchanging information and conducting common research programmes;

(y) Training abroad is necessary only to a limited extent as all the facilities are available locally. The need to improve them, however, is tremendous. The translation of standard textbooks and reference works, initiated under the project, should be continued. Where necessary, the authorization of the authors or publishers should be sought;

(z) The training programme for IRDLAI extension officers, started during the project, should be continued and placed on a permanent footing. It should also be made available to skilled workers who operate sewing machines and other machinery specific to the footwear and leather goods industries.

I. THE LEATHER INDUSTRY IN INDONESIA

The leather and leather-related industries account for as little as about 1 per cent of the industrial output of Indonesia. Not all of those concerned with the development of the sector, however, are fully aware of this. Further, they are not always familiar with the infinite variety, diversity and unpredictability of the raw material from which leather is made. As no other major international commodity suffers from such a lack of information concerning production and trade statistics, it defies the application of normal economic key-factor research. It is hardly surprising, therefore, that there is a lack in Indonesia of precise information concerning the position of leather in national and international markets.

Many policies have been adopted aimed at developing the leather and leather products industries in developing countries. But, "whatever development policies are followed, and always dominantly complicated and made difficult by the unique combination of adverse operational conditions leather producers have to face, the task of assimilation, knowledge acquisition and development of industrial scales is formidable". ¹/_{*} This sentence sums up the difficulties with which a present-day leather research institute must contend.

Concerned as it is with the small-scale sector, comprising at least 5,000 units, IRDLAI deals with what is probably the most important economic stratum of the country's leather industry. The small-scale sector is the major source of supply for the domestic market and for the indirect export trade, through the country's growing tourist industry.

It is the aim of IRDLAI, therefore, to be regarded as the logical body to play the role of a national leather and leather products development training research centre, with the staffing and equipment needed to provide essential technical, production and management training and comprehensive back-up services to the entire industry.

IRDLAI was founded in 1935 by the Government for the purpose its name implies. The full scope of industry to be served by IRDLAI, could not, at the time of inception, be known beyond whatever significantly sized production units were then in being. The then existing and dominant raw hide and skin trade had little or no use for research; the great number of workshop and cottage-type units serving the footwear needs of the community had no appreciation of the benefits from and need for research - and could not afford or use such research if they had. Few could have envisaged the possibilities that would arise when leather and leather products manufacture emerged as an important factor in the national economic scheme of things, especially when the as yet unawakened consumer demand began to stir.

The general consequential effects of economic, industrial and sociological development are becoming increasingly felt in the tanning and leather industries, and especially in the operations of IRDLAI. The responsibility the Institute now has to bear, and the importance of the contribution it can make, underscores the urgency of improving and extending its operations.

* For the notes, see p. 26 below.

The responsibilities and duties of a present-day leather research institute cover all aspects of industrial and commercial operations, from continuous applied research to end-product manufacture, distribution and marketing. They encompass all levels of trading and all types of product - including raw material, finished leather and leather goods - for export as well as domestic markets.

This, then, is the background against which the subject of the present project has evolved. The framework and expectations of the project were clearly established in the project document. But, whereas output magnitude and target measurements could be verified, and their quality quantified, there was one significant drawback: the lack of precise statistical data and information on the output of the Indonesian leather and leather products industry. Figures varied from 1 to x at various levels and scales, according to the sources used.

This lack of precision, it is feared, may lead the Government to delay action in important matters such as granting import or export licences, providing export incentives, or guaranteeing internal and structural protection. In the case of the project, efforts were made to overcome the situation, but no really satisfying results could be recorded. The present report begins with an attempt to quantify the Indonesian leather industry, as far as possible. It should be borne in mind, however, that basic assumptions have been adopted, many of them on the basis of daily observation; thus:

- (a) The population of Indonesia amounts to 145 million;
- (b) The annual consumption per capita of all kinds of footwear is approximately 0.6 pair. ^{2/} The annual consumption per capita of leather footwear amounts to approximately 0.2 pair;
- (c) Approximately sixty-five per cent of the footwear used consists of plastic slippers and canvas shoes;
- (d) An average of 1.75 ft² of raw material is used in the making of each pair of leather shoes;
- (e) One kg of traditionally cured dry Japanese bovine hide yields 4.5 ft² of finished leather or 1.1 kg of sole leather. (An average dry hide weighs 6.6 kg).

These assumptions are highly subject to variation or error. They provide, however, a basis for calculation that proved satisfactory in estimating the number of small-scale leather industries active in Indonesia.

II. PROJECT OBJECTIVES AND PHILOSOPHY

Objectives

The objectives of the project derived from development objectives established by the Ministry of Industry of Indonesia. The long-term objective was to bring the activities of IRLAI into line with the increasing and rapidly changing requirements of the leather and allied industries. In this way the Institute would assist in the development and growth of the sector in general and of the small-scale leather and allied industries in particular, thereby contributing to increased overall economic growth.

The immediate objectives were to strengthen extension services to small- and medium-scale leather and allied industries in order to make them growth-oriented and to improve their capacity for problem solving. This would be done through:

(a) Assessing the need for improving the quality of finished products with a view to expanding their marketability, both nationally and internationally;

(b) Developing long- and short-term technical plans for achieving required quality standards;

(c) Reorganizing and strengthening the Institute's technological and industrial development departments in order to enhance their capacity for providing operational consultancies to enterprises and suggesting practical activities to complement or support backward and forward linkages with the industry;

(d) Instituting a systematic product/process diversification programme.

Philosophy

The philosophy of the project was conceived on the basis of certain considerations which were found to lead directly to a more generalized conceptual framework of assistance to the small-scale sector featuring co-operation among various UNDP-sponsored, UNIDO-executed projects. The programme called for a global approach to specifically defined sectoral needs. A global approach towards small-scale development, it was considered, would result not only in better output, but in a firm step being taken towards integrated United Nations assistance.

Each industrial sector has its own particular considerations and requirements, and some of those related to Indonesia's leather and leather products industry are set out below:

(a) Most small-scale enterprises in Indonesia are family units which employ women in the production process. Through the project, the further integration of this particular group in the development process was advanced. Moreover, as the enterprises dealt with were also rural and village-based, any expansion or growth induced by the project will be of direct benefit to the rural poor;

(b) A survey based on a systematic research of the Indonesian leather industry was carried out under two other UNIDO projects (IS/INS/74/030 and INS 78/001) at an early stage of the project. The survey showed that a remarkable difference existed between small-scale industry on the one hand and medium- and large-scale industry on the other. Originally, the export market could be envisaged only by large tanneries possessing adequate equipment and technology. Now, however, owing to the growing difficulties in the export market, the medium- and large-scale tanneries of Indonesia are playing an increasingly active role in the domestic market, and will continue to do so in the future. Further, in this respect the development of the small-scale sector can not be considered out of the framework of a general policy embracing the entire industry;

(c) The expansion capacity of Indonesia's entire leather industry is considerable, but statistics now available probably underestimate the capacity of the small-scale sector by 25 per cent, and there is an over-capacity registered in the large-scale sector estimated at 50 per cent. This latter factor could lead to errors since most of the over-capacity is of lower grade and does not comply with international standards. In considering global figures, this should be taken into account. Again, it strengthens the case for "all sizes" assistance capability by the IRDLAI;

(d) The biggest problem facing the industry seems to be an insufficiency of trained workers. Once the industry moves to the higher development stage, skills are a prerequisite. The role that IRDLAI can play as a permanent industrial training centre cannot therefore be over-emphasized; but the necessary facilities must be made available;

(e) In view of the impact of fashion on this industry, it would be inadvisable to develop different approaches for the small-, medium- and large-scale sectors. Hitherto, this has been the bottleneck afflicting the entire leather-products industry in Indonesia; only those enterprises having links with the international leather community could emerge. There exists a potential, well defined and established market of 220 million ^{3/} inhabitants. Yet not a single branch of the leather and leather products industry seems to be ready to meet a demand for 220 million pairs of footwear a year. (The growing standard of life in the Indonesian community will, it is estimated, bring the annual per capita footwear consumption to 1.0 pair by the end of this century.);

(f) The assistance provided through the BIPIK network has produced a shift from small- to medium-scale enterprises. The huge local market has the potential to support leather enterprises of all sizes. The interdependence of all sectors, however, calls for a global approach, strong links being established between the sectors. By helping the IRDLAI to organize and assist all kinds of leather products industries, the project helps to prevent the small-scale sector remaining "back-yard" and primitive;

(g) Machinery maintenance and the provision of after-sales service are major problems faced by the leather industry, especially when the supplier is not represented in the country of the buyer. In such cases, high travel costs, related expenses and wages mean high repair costs. Even the swiftest help can take days in which production may be held up or stopped completely

through the breakdown of a machine. This often results in orders not being met. For the small-scale industry which cannot obtain vital, extensive after-sales service since its equipment is limited, penalties resulting from machinery breakdown can be ruinous. To protect the leather industry from total dependence on suppliers, IRDLAI has set up a training and maintenance centre;

(h) With the steady growth of the leather industry, especially in the small- and medium-scale sectors, and the growing demand of customers for quality products, mechanization of production will occur. The importance of job creation and the maintenance of a high employment rate must, however, continue to be borne in mind. Already there is a tremendous lack of skilled workers in the leather products industry. One of the principal objectives of the assistance programme, therefore, was to enhance training possibilities at all levels for the entire industry. Only IRDLAI, which boasts a fully equipped leather and leather products training centre, can provide the well planned industrial training required.

The training component of the project, once started at the IRDLAI, had to be extended to the field. A flexible approach had to be adopted to bring the project's goals in line with Government policy. In the end, this flexibility of approach yielded results that were unexpected either in quantity or in quality.

The overall activities of the project allowed scope for institution building and direct support. They had to be so balanced, however, that upon the project's completion activities would continue without any interruption in the quality of assistance extended. For this reason, primary responsibility for implementing each activity rested with the national staff concerned.

The "advise and assist" function of the international experts had to be brought closer in line with the practical execution of the project activities. Thus, a permanent training programme (in-plant training and theoretical) was established which necessitated enlargement of IRDLAI's training and fashion and design centres. A national co-ordination group was established answering directly to a National Director (the Director of IRDLAI).

The author of the present report, who assisted and advised the National Director, had a professional officer from the co-ordination staff as counterpart on a full-time basis. The other experts involved had a senior IRDLAI officer as co-ordinating counterpart and several junior officers as technical counterparts. The National Director assigned co-ordination staff to keep in close contact with the author, who was responsible for guiding and co-ordinating the work of the international staff.

Task force meetings were held regularly to discuss the programme, accomplishments, and all other matters concerning the project. These meetings were chaired by the National Director or, in his absence, jointly by the author and the project officer. Every member of the joint team had to report on his own area of activity and on the activities of his teams in the field.

A system of management by objective was adopted. All members of the joint team had an opportunity to forward ideas or proposals. After a common decision had been reached, however, everyone was expected to abide by it. It

was considered of great importance that the senior staff attend the meetings to discuss all issues concerning the implementation of the project. Junior staff were called upon to provide additional information, when required. Although all decisions reached were in accordance with national policies and priorities, the international personnel involved were able to participate actively through the provision of advice and direct assistance.

Where extension activities were concerned, the national counterpart was the transmitter of any technical know-how or advice needed. In many cases the international team members' expertise was required, but this was rendered by means of advising the national counterpart. On-the-spot advice (often the most effective) was given by all team members; after subsequent discussion, it was again provided, in writing, by the national counterpart, in the name of the team.

III. PROJECT ACTIVITIES AND RESULTS

Project activities fell into three main categories:

- (a) Institution building and organization of the leather products training centre at IRDLAI;
- (b) Providing extension activities in the field, through the BIPIK network;
- (c) Training counterparts to assist local entrepreneurs.

The results largely surpassed those expected when the project document was drawn up.

One goal was only partially realized however: strengthening of liaison with other institutions. Although the Director of IRDLAI assigned a senior local expert to carry out a study tour, accompanied by the author of the present report, few contacts could be made with similar institutions abroad. Guidelines have since been provided to the Director which should serve to improve those contacts. A basis for broader co-operation was, however, established with national institutes and universities - a first and valuable step.

Field work carried out at Magetan, Manding, Karet-kuningan and Denpasar contributed to:

- The establishment at Magetan of one "mini" industrial estate;
- The establishment at Manding of a common service facility centre;
- More streamlined operation of the Karet-kuningan common service facility centre, which has more than 30 trained civil servants;
- Improvement in raw hide production at Denpasar: almost 90 per cent of the local production was brought up to a more acceptable standard.

Institution building at IRDLAI

The Fashion and Design Centre at IRDLAI is now fully operational, both for footwear and leather goods. The UNIDO expert involved, upon completion of a 9-month assignment, made his final report available to the Government. The last-making plant has been completely reorganized and provided with new equipment under project funding. The Footwear Training Centre is now a going concern, with selected models being produced in various kinds of leather. Another training and maintenance centre has been installed, and an expert from a well-known firm in the Federal Republic of Germany is to provide a three-months training course. The installation of new machinery, under project funding, has also been completed. In addition, old machinery that has been standing idle at IRDLAI for many years is being reconditioned for further use in the field of research and development. It is expected that this machinery will be fully operational again by the end of 1982.

Other aspects of project implementation included:

- (a) The provision of practical and objective industrial training at IRDLAI;
- (b) The provision - for managers, extension officers and other officials connected with BIPIK assistance programmes for small-scale production units - of familiarization instruction and training in commercial and business methods related to leather and leather products manufacture;
- (c) The regular supervision of the shoemaker-entrepreneur combine at Magetan, which is now functioning as a viable unit, providing an example and motivation for other entrepreneurial groups. Expansion of the scheme and its introduction into other areas is envisaged;
- (d) The provision (in the field) of instruction on and aids to better flaying and curing of raw hides and skins;
- (e) The investigation of collection problems and the suggestions of remedial measures and guidance;
- (f) The provision (in the field) of basic tanning technology instruction to small tanners with a view to improving quality and uniformity of production in regional locations and promoting local self-sufficiency in supplying leather to neighbour leather-users. This vital service will have the benefit of the sound foundation already laid through the project at Magetan where small-scale production has been rationalized - one group of tanners concentrating on sole leathers and another on uppers - and quality significantly improved;
- (g) The extension of working liaison services and other assistance to the national leather federation and allied associations, including BIPIK and NAFED, with a view to promoting their influence and growth, helping them to set up data banks, monitoring their extension service to industry, and providing general aid aimed at improving industrial production, both organizationally and technically;
- (h) The initiation of a rational footwear design and design development service for small-scale industry at IRDLAI's Fashion and Design Centre. This service could be propagated through BIPIK and "mini" industrial estate channels;
- (i) The expansion of the UNIDO/IRDLAI project and the IRDLAI extension services to cover leather goods;
- (j) The provision of technical and organizational aid and guidance in the field, in connection with the service centres.

Extension services in the field

The "mini" industrial estate at Magetan was opened by the Minister of Industry on 6 June 1981. This estate was one of the major assistance tasks of the international team of experts, which spent many months helping to instal and run it.

The leather goods cluster at Manding also derived full assistance from the project, under the monitoring of the marketing team. Trial order models have been produced both at Manding and at the Fashion and Design Centre at IRDLAI. The common facility centre at Manding, 11 kilometres from Yogyakarta, is functioning. Export trials have been successful, and orders are now in preparation. Marketing training and assistance have also been provided. The move of the footwear expert to Jakarta (Karet Kuningan) was a positive step towards assisting the footwear cluster (up to September 1982). The programme nevertheless remains under the close monitoring and direction of UNIDO/IRDLAI. The common service facility centre has already been brought into operation and a training course for operators initiated. Two IRDLAI counterparts were made available for the purpose.

As requested in the project document, a number of manuals for small-scale entrepreneurs have been produced, covering tanning; footwear production; marketing; general leather technology; and the organization of "mini" industrial estates (annex III). Finally, technical, organizational and marketing aid was provided to the reptile-skin tanners in the Jakarta area and further co-operation is planned between IRDLAI and this important, specialized cluster.

Training

General overview

There is a great and urgent need for a comprehensive national training programme in Indonesia, realistically oriented towards the broad needs of what at this stage of its development can be only loosely described as a leather and leather products industry - an industry greatly fragmented at the small-scale producer end and not yet industrially organized at the other.

This need for a national approach to training is manifest in high labour turnover and slow recruitment in the factories. Small units urgently need training in mechanization, business and management methods and product marketing in order to improve their profitability and market servicing. Larger units need skills related to product and process improvement as well as middle-level management.

IRDLAI, since it has become the national leather and leather product training centre, is now poised to fill much of that need. The tannery training facility has been re-housed and is ready to provide courses, and the Footwear Training Centre, now modernly equipped and professionally laid out, is already functioning.

The Fashion and Design Centre, as mentioned before, is active: catalogues of shoe and leather goods designs are being issued, and pattern-making and cutting services have been provided on a commercial basis to the Magetan entrepreneurial combine. The latter service will soon be available to industry on an increasingly wide scale. Through the project, IRDLAI has received assistance in making promising trade contacts in the international leather goods field. Physically, therefore, the Institute may be said to be at the point where it is capable of offering factories across the country the comprehensive range of training courses necessary for the creation of an efficient, well motivated middle management and technical work-force.

A vital component of any training programme is the training on upgrading of trainers. At IRDLAI, in the course of the project, instructor training courses were given by international experts aimed at evaluating, upgrading or retraining the present staff of instructors. The quality of instruction provided was high and commercially oriented. It was recommended that the hiring of additional training staff be considered.

With a force of good instructors at its disposal, in addition to the practical training facilities mentioned above, IRDLAI subsequently set up a training programme and propagated its services to the industry on a national scale. The programme includes courses held at IRDLAI and - using a specially trained mobile force of instructors - on-site training and trouble-shooting field visits.

Assistance in the field covers engineering and maintenance instruction as well as familiarization with new methods, techniques, plant and machinery. This service is offered to units of all types and scales of production. (The logical channel for propagating the national training service would be the National Leather Federation and its constituent associations.) IRDLAI also caters direct to the training needs of small-scale units by operating through the "mini" industrial estate development scheme and the BIPIK network.

Implementation of a national-scale training scheme, particularly one offering an opportunity to factory-experienced management to learn more sophisticated methods, might best be achieved by combining the present training functions of IRDLAI and ALT. In this manner, a fully comprehensive programme, tailored to the needs of the entire industry, could be offered.

Specialized support training

Centralizing and combining the shoemaking skills of small-volume entrepreneurs in compact, complementary manufacturing units - eventually to be "mini" industrial estates providing their own services - is an onerous task for the industrial estate officers concerned, particularly BIPIK's managers and the extension officers attached to the leather and leather-using sections. The practical contribution of BIFIK's field programmes to small-scale industry was fully appreciated by the project team which urged that all possible support be given to this endeavour.

In their work in connection with the Magetan combine scheme, the project officers came into contact with leather industry officials who had scant knowledge of the technical, production or commercial aspects of the trade. Prompt recognition of this potential weakness in the operation of the scheme led to special instruction being given to the parties concerned in product familiarization, marketing and sales, stock and order control, and many other aspects of the business. (In a rather similar situation, it was found that the Karet Kuningan footwear combine had been given a common service facility centre for which neither instructors nor machine operators were available.) The skills of the extension officers were also brought to an impressive level, and these officers can now provide assistance to entrepreneurs, emphasizing the need to renew and upgrade equipment and production lay-out and to have a clear concept of the marketability of products.

It is envisaged that as the "mini" industrial estate develops, specially tailored leather and shoe combine management courses will be conducted. This support training will aim at assisting management not only to control and monitor but to act as commercial mentors for entrepreneurs, especially at the critical time of settling in and setting up for production.

IV. ACHIEVEMENT OF IMMEDIATE OBJECTIVES

An immediate objective of the project was to widen the scope of IRDLAI and strengthen its extension services to small- and medium-scale industries. As a first step in this direction, a fact-finding and familiarization survey had to be made of the current and projected programmes and work capacity of the Institute, for comparison and compatibility with the project team's evaluation of the present and future needs of the industry. The project programmes and priorities were established on the basis of that comparison.

It is generally recognized that Indonesia's leather industry needs the assistance and leadership of a representative and imaginatively led trade organization. The industry must, however, streamline and consolidate its activities. This would: facilitate the development of domestic and export trade; ensure better control over material and equipment procurement; facilitate access to information and statistics on trade and technical matters, materials supply, market and competitive trends; expedite labour recruitment and training; provide a means of airing the industry's views on domestic and international matters; and provide a channel for trade promotion and arbitration when required.

In order to develop long- and short-term technical plans for the achievement of the desired quality standards, the current standards had first to be determined. This was accomplished (a) by making IRDLAI aware of the meaning of real quality, through training and special manuals prepared by the international experts, and (b) by IRDLAI's undertaking a long-term nation-wide project to standardize leather raw materials and finished products. In addition, finished products that could serve as a yard-stick for quality production were conceived and programmed in the Fashion and Design Centre, executed in the Training Centre, and, following quality control, disseminated to the various leather products manufacturing clusters where they were of no little help in enhancing the marketability of local wares.

In 1981, the technological and industrial development departments of IRDLAI were restructured to augment their capacity for providing operational consultancy services to enterprises. The activities of these departments have induced the taking of complementary and supportive action in relation to backward linkages with the industry. IRDLAI also became involved in training activities aimed at improving animal slaughter and flaying - normally spheres of activity of the animal husbandry section of the Agriculture Department. Development of the leather-based industries has spawned a number of by-product industries all of which have been assisted by IRDLAI at some stage of their development. The most promising sector, the industrial engineering and design sector, is being actively developed at the Institute.

A scheme for systematic product/process improvement has been established as part of a permanent development programme. This is being implemented in the various training centres, using equipment purchased under project funding. The following areas have been the subject of particular attention:

Raw material. Improved raw hide preservation has increased substantially the area yield of leather. The equipment supplied under project funding included a mini-laboratory and a system for cooling and dehumidifying the store room.

Tannery. Improvement has been registered in vegetable-tanning methods and wet-blue and crust production. A new (enzymatic) chemical for soaking and liming has been tested. Finishing has been improved. Equipment supplied under project funding included a laboratory hide processor, a testing laboratory component, and a supply of chemicals.

Footwear. Improvement has been registered in closing-room operations; cementing; the introduction of new technology; pattern-making, cutting and grading (under the direction of the footwear expert assisted by the design expert); last-making methods; and primary standardization. Equipment supplied under project funding included an upper roughing machine; a heat setter; a cement activator; electrical motors; a fully equipped pattern-cutting and pattern-grading workshop; and last-making equipment.

Quality testing. Equipment supplied under project funding for overall testing of the quality of materials and finished products included a physical testing laboratory. Know-how was also provided in testing procedures and standards.

Engineering. New enterprises operating in the footwear and tannery fields have received layout and engineering assistance. Know-how and technology were provided by the project experts for the construction and installation of a buffing machine; installation of a finishing machine; a staking wheel for skins; a drying table; and a dust extractor.

Application of results

Both at IRDLAI and in the field (Magetan and Karet Kuningan) training and instruction were provided in the use of the equipment and facilities provided. The Director of IRDLAI has prepared the infrastructure necessary to the achievement of the tasks that lie ahead, namely:

- (a) To further develop and strengthen the capacity of IRDLAI to provide assistance to the leather industry;
- (b) To widen co-operation between the Institute and BIPIK with a view to providing enhanced assistance in particular to the small-scale entrepreneurs active in the various industrial clusters and "mini" estates;
- (c) To follow up on the recommendations resulting from the project activities.

IRDLAI, in the expanded role it now plays within the leather industry, has assumed considerable importance. It has an important production and quality control agreement with the Armed Forces, in the field of leather products, and an agreement signed with the Project Provincial Management Unit of Central Java represents the first step in securing closer co-operation with the National Financial Institution. The agreement with the East-Java BIPIK Directorate, which is now being extended to other regions, such as Yogyakarta-Central-Java, West-Java and North-Sumatra, is also an important commercial development which should help bring the Institute to the international level.

Nevertheless, the vast responsibilities facing IRDLAI may prove a difficult challenge to the Institute in the years to come. There will be a need for close follow-up of all activities undertaken, and certain institutions - such as the Footwear Training Centre, the Maintenance and Training Centre and the Last-making Plant - will need further assistance. (The Sewing Machine Training Centre will also need further training assistance, but the expertise for this is not yet available at IRDLAI.)

Outline of a master plan to develop the leather industry

Cattle breeding and slaughtering

The general question of cattle breeding and slaughtering in Indonesia was given extensive study and recommendations were made thereon in the course of an earlier UNIDO project (INS 74/030). The tendencies forecast at that time, with respect to animal stock decrease and the negative effect of inefficient slaughter and flaying, were largely confirmed through observation during the project the subject of this report. The modern abattoir at Surabaya is idle most of the time, though it is capable of producing 300 mechanically flayed hides daily in wet-salted condition, which would increase the overall yield of hides by 20 per cent. Again, this abattoir alone could supply 20 per cent of the existing small-scale tanneries with the high-quality raw material that is so badly needed. Any long-term policy for the leather industry should therefore be based on a dramatic change of the raw hides supply situation. In this connection, attention is drawn to the report of the project mentioned earlier and summarized in the author's first survey report, 1979-1980.

Large- and medium-scale industry

In view of the fact that in Indonesia the large- and medium-scale tanning industry is operating at only 50 per cent of its installed capacity, careful thought should be given to whether there is real scope for expansion of the leather industry. The installed capacity of the tanning industry has a low technological level. There is little reason, however, to inject the additional capital \$US 500,000 per tannery (for 28 tanneries) needed to raise this level - rather, it would be advisable (a) to maintain the large- and medium-scale tanneries at their present levels, improving their productive capacity by "cannibalizing" the machinery and equipment of idle tanneries, and (b) to improve the quality of the output of the small-scale units. The latter group's annual requirement of raw material has been estimated at 15,000 tons (10 hides at 6.6 kg per day for 300 days at 750 tanneries) - a quantity that is available locally, as noted earlier.

Eliminating import taxes on raw hides would allow the large- and medium-scale industries to obtain good quality raw materials from the world market. This would also give the small-scale tanning sector an opportunity to develop and justify the Government's high investment in projects such as the "mini" industrial estates and the common service facility centres.

The situation in the footwear industry is quite different. As the Gross National Product increases, so will the demand for footwear. By the year 2000, annual per capita consumption of footwear should be around one pair, which means that 220 million pairs of all kinds will have to be produced - an increase of well above 300 per cent. As the small-scale sector will not be able to cope with this increase, there is scope for the rapid development of the larger units. Development of the labour-intensive leather goods and

leather garments branches should also be regarded as a principal aim of the industry in Indonesia. Finally, it is vital to the entire industry that the Government allow the free import of raw hides and finished leather. The large-scale sector could easily compensate for the hard currency spent on imports, through its export earnings, and the small-scale sector could develop more rapidly on the huge and growing home market.

Small-scale industry

While the planning and structure of the small-scale sector was not the main concern of the project, some general observations may be made.

(a) When the "mini" industrial estates and common service facility centres were being started up, it was found that the entrepreneurs were unable to put up the capital required. To charge them full rent or leasing costs, covering all the capital expenses, therefore, is also unrealistic. If work in the "mini" estates and facility centres is to continue, the Government must cover some of the capital costs involved, in the form of a subsidy.

(b) Equipment and supplies should be standardized and centralized in order to alleviate the financial burden imposed upon the small-scale entrepreneurs by wholesalers and dealers.

(c) Financial and production management, which lies beyond the capabilities of small-scale entrepreneurs, should be regrouped on a local basis.

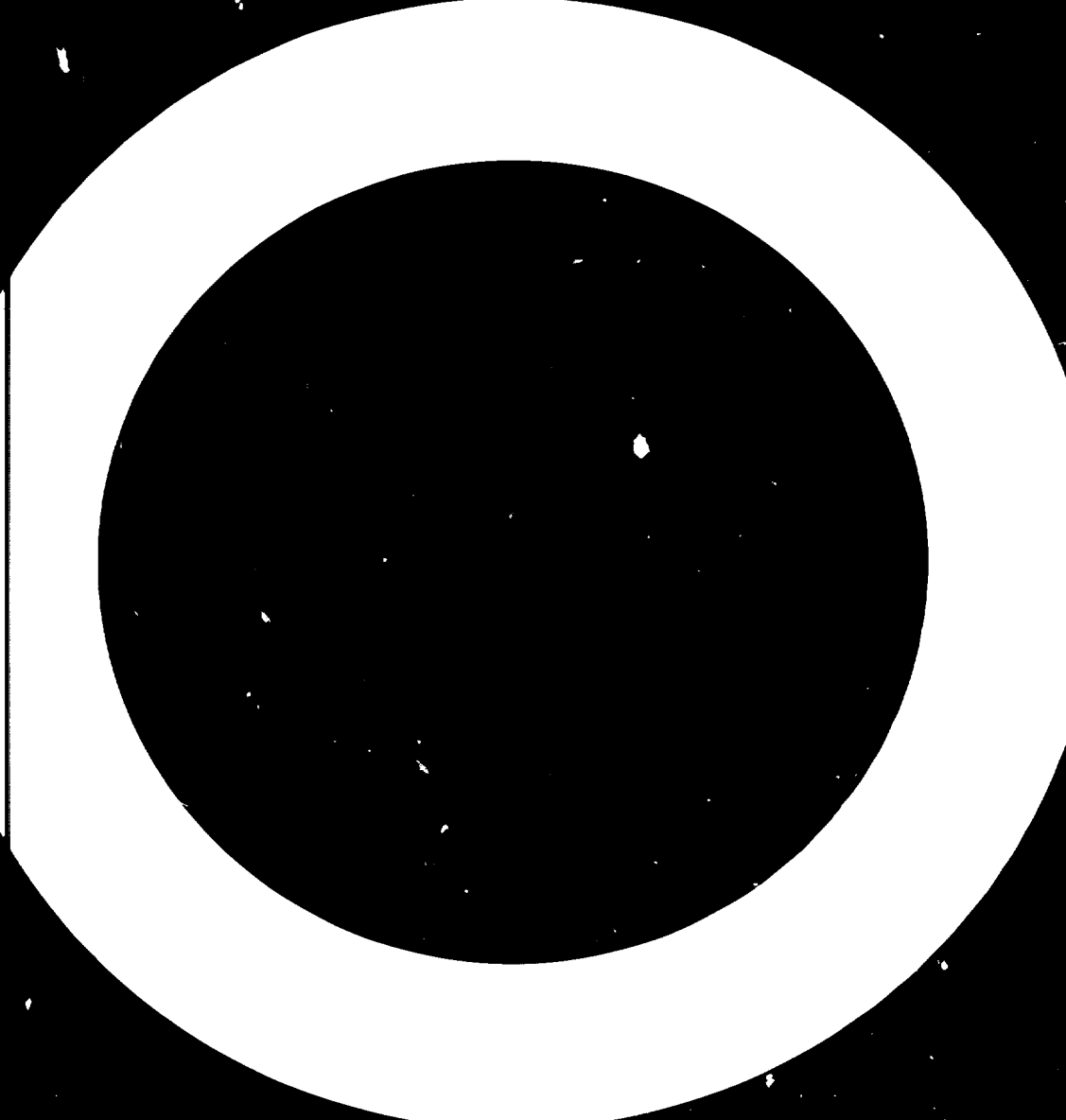
(d) Greater access to managerial and technical training is essential, and this situation needs the serious attention of IRDLAI.

Notes

1/ R. Higham, Acceptable Quality Standards in Leather.

2/ Bata survey.

3/ Projected figure for the year 2000 - World Bank Report, 1981.



Annex I

OUTLINE FOR A SECOND PHASE OF ASSISTANCE TO IRDLAI

Immediate objectives

The immediate objective of a second phase of assistance would be to strengthen IRDLAI in its different fields of activity, with emphasis on training and other measures in favour of the small-scale sector.

Extension services to the small-scale sector, aimed at making it more growth-oriented and improving its capacity for problem solving, could be strengthened through:

- (a) Expanding the scope of the assistance model already established to cover other centres, in close co-operation with the BIPIK Directorate.
- (b) Assisting the BIPIK to reorganize and regroup the small-scale entrepreneurs in the "mini" industrial estate;
- (c) Assisting the common service facility centres to provide practical assistance and training in the fields of technology, management and marketing;
- (d) Producing, in the Fashion and Design Centre, a range of products geared to the needs of the national and international markets;
- (e) Developing at IRDLAI simple, locally made, machinery and tools, with appropriate facilities for their maintenance;
- (f) Providing, through the Maintenance and Training Centre, comprehensive training in maintenance and emergency maintenance.
- (g) Organizing industrial training courses for all levels of management.

The medium- and large-scale sector could be provided with assistance in:

- (a) Adopting more suitable raw-material conservation and treatment practices;
- (b) Building a wider range of marketable products;
- (c) Securing information services and training for all levels of management.
- (d) Establishing maintenance courses for the tanning and leather products industries.

Other objectives would include assisting the National Leather Federation and allied associations in formulating appropriate policies for submission to the Government; introducing, systematically, product and process improvement and diversification in the field of non-leather (including rubber) products for use in the leather products industry; conducting applied research programmes in such fields as use of waste leather and leather by-products and the treatment of waste water; and assisting IRDLAI to organize itself on an industry-wide basis.

Output

A second phase of the project would be expected to result in the following:

- (a) Repetition in selected areas such as Medan, Banjarmasin and Irian Jaya, of the assistance provided to small-scale industry during project INS/78/001;
- (b) The products of the Fashion and Design Centre being brought up to accepted international standards;
- (c) The publication of a fashion magazine with international distribution;
- (d) The operation of an information centre, a "know-how bank", and an up-to-date library;
- (e) Training facilities being available nation-wide and designed for use by enterprises of all sizes and in all fields of the leather industry;
- (f) The publication of textbooks and manuals;
- (g) The establishment of a pilot plant for tannery effluent treatment.
- (h) The establishment of a workshop for the local production and maintenance of machinery and tools for tanneries and the footwear and leather goods industries;
- (i) The recognition of IRDLAI as a regional bench-mark of excellence in all matters concerning the leather and allied industries, as a local point for organizing annual seminars on leather industry development and co-operation in the region.

Inputs

The Government contribution to a second-phase project would include an appropriate number of staff; the maintaining of existing machinery in fully operational condition; and a budget covering the deployment and travel of teams at IRDLAI and in Medan, Banjarmasin and Irian Jaya.

The UNDP contribution would include the services of the following experts for the periods specified (in man-months): Chief technical adviser (leather industry expert with organizational and managerial skills) (36); Footwear expert (specialist in the latest footwear technology and the maintenance and repair of machinery) (24); Tannery expert (specialist in tanning, with emphasis on finishing) (30); Leather goods and garments expert (with emphasis on experience in design) (24); Maintenance and engineering expert (with emphasis on tanning machinery experience) (12).

The UNDP would also provide 12 man-months of consultants' services in the fields of training, documentation and tannery effluent treatment.

Associate experts would be available in the fields of tanning (24); footwear manufacture (24); and mechanical engineering (24). National experts would cover such fields as marketing (36); and documentation (36).

Under the training component, the UNDP would be expected to arrange fellowships in tanning technology (24); footwear technology (24); and leather goods technology (24), as well as providing for a doctoral programme.

With respect to equipment, the Organization should provide scientific equipment and training aids; a library; production equipment (for a tannery); a tannery effluent treatment pilot plant; and vehicles for the project.

Annex II

LEATHER INDUSTRY PRODUCTION IN INDONESIA

	Large-scale			Medium-scale			Small-scale			Total production
	Total entrepreneurs	Total workers	Production	Total entrepreneurs	Total workers	Production	Total entrepreneurs	Total workers	Production	
Collecting	N.A.	N.A.	Cow Buff. Goat Sheep	426	1,072	Cow } Buff. } 698,623 Goat } Sheep } 1,004,665	552	1,230	Cow } Buff. } 523,957 Goat } Sheep } 72,900	Cow } Buff. } 1,222,620 Goat } Sheep } 1,077,565
Tanning	10	1,005	Cow } Buff. } 120,000 Goat } Sheep } 1,015,000	16	1,093	Cow } Buff. } 83,300 Goat } Sheep } 315,000	405	3,615	Cow } Buff. } 854,378 Goat } Sheep } 72,900	Cow } Buff. } 1,057,678 Goat } Sheep } 1,402,900
Footwear manufacturing	38	3,803	11,018,000	795	5,046	3,283,614	1,938	12,105	Shoes } Sandals } 12,594,075 Slippers }	26,895,689
Leather goods manufacturing	N.A.	N.A.	N.A.	279	1,804	2,464,782	616	6,789	Luggage } Bags } Belts } Foot- } balls } 5,876,692 Purses } Puppets } Saddles } Shuttle- } cocks }	8,341,474
Total	48	4,808		1,516	9,015		3,511	24,042		

Note: N.A. = figures not available. Production of plastic slippers, sandals and canvas shoes, which is not recorded here, amounts to 50-60 million pairs a year.

Annex III

VARIOUS REPORTS AND DOCUMENTS PREPARED UNDER THE PROJECT

Willy Holleweg	Project progress reports (March 1980; October 1980; March 1981; October 1981)
Willy Holleweg, W.M.A. Soysa and R.G. Bowey	Report on field activity and improvement of the Leather Research Institute
Willy Holleweg	System and management procedures for leather and leather products - mini industrial estate and small-scale entrepreneurs
W.M.A. Soysa	Report on physical testing equipment Report on the reorganization of the footwear manufacturing department Final mission report
A. Lesuisse	Report (23 January - 28 June 1981) Final mission report
R.G. Bowey	Final mission report of marketing expert
D. Russell	Mission report
T.J. Johnson	Flaying and preparation of hides and skins in Indonesia
D. Lyon	Footwear design, pattern cutting and production by the small-scale shoe manufacturer Indonesia
Willy Holleweg	First survey report on small-scale leather industry Second survey report (December 1980) Mission report
W. Holleweg dit Wegman	Teknik menyamak kulit sol nabati Directory of small-scale leather industry
W.M.A. Soysa	Pedoman membuat sepatu no. 1 Pedoman membuat sepatu no. 2 Manual on footwear manufacturing no. 3 closing room and its work Manual on footwear manufacturing no. 4 (in progress)
A. Lesuisse	Manual for wet-blue production Manual for crust production
D. Russell	Disain sepatu tahun 1980, vol.1, no. 2 and vol.1, no. 3 Disain sepatu tahun 1981, vol.1, no. 4 and vol.1, no. 5 Disain barang kulit tahun 1981, vol.1, no. 1
D. Lyon	European Retail scheme Junior, women and men's styling Footwear fashion 1980 style catalogue

Annex IV

PROJECT ACTIVITIES AND OUTPUT

Activity	Role of national staff	Role of international staff	Output
<u>Study</u>	Provid. to the Chief Technical Adviser all information needed to clarify the situation	Bring the complex picture of the leather industry in Indonesia into focus to determine the direction of the project's activities should take	A detailed work plan for the year 1979-1982.
<u>Survey</u>	Prepare plan for a survey on the basis of their knowledge of the situation with respect to the small-scale industries.	The team leader will provide guidance in: planning the survey; deciding what should be included in the questionnaire; briefing teams; determining the relevance of answers to the questionnaire; and determining the highlights of the report.	A basic statistical directory of the small-scale sector, covering overall production skills; the raw material situation; and the marketing approach; the elaboration of a frame-work for future assistance to the small-scale industries; a report on the general situation.
<u>The plan</u>	Draft survey questionnaire; organize survey and briefing teams; carry out the survey according to plan; make a sound and clear report.		
<u>Evaluation</u>	Evaluate the report with a view to determining the estimated technical assistance needed; the personnel (task teams) and material inputs needed; which authorities to report to; and how to reach the goals established	The team leader will assist in formulating recommendations for: issues to be discussed with local authorities; a joint-venture attempt with BIPK; and the selecting of tools and technology.	A report prepared for the authorities involved; the basic information and background needed for a discussion with BIPK; the basis for a broad information campaign aimed at increasing co-operation in the entire leather industry; organization of a seminar.

1
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1

Seminar

Present papers to the entire industry describing the current situation and prospects for the future.

Assist at seminar lectures by presenting issue papers.

Fashion and Design Centre

Reorganize and restructure the Centre; provide all technical information and tools necessary; develop a policy-making capacity.

The team leader will: provide introductory training on the subject; assist in finding an appropriate location and personnel; order the basic equipment; assist in determining future activities.

A Centre ready to go into production (first collection by summer 1980); a basic analysis of market and consumer parameters, useful for useful permanent research work.

IRDLAI

Review (senior staff) all aspects and activities of IRDLAI in the light of current demands and future prospects. The review should concentrate on: the deployment of manpower; the use of tools at IRDLAI and in the small-scale sector; and the improvement of IRDLAI's role. Follow an accelerated English course at IRDLAI. Try to set up a national collection point for all leather products. Organize seminars not only on common technical matters but also to show the availability of international literature and other news on the leather business.

After close consultation with local authorities, adapt international experience to local needs and circumstances, bearing in mind that the institute has a sub-regional vocation and that the principle objective should be the development of the small-scale sector in terms of quality and quantity, without, however, forgetting the essential linkage with the rest of the industry. Conduct courses when necessary aimed at determining what is appropriate in the light of local needs and circumstances, and demonstrating how to conduct courses.

An improved institution with more equipment and facilities and a greater role to play in industry with emphasis on providing training for small-scale industry. Direct assistance for the Fashion and Design Centre. Information sheets on equipment and technology. Trimestrial seminars on basic subjects. Active participation in international events. Lecture charts on various subjects. A functioning multiple-purpose training centre specializing in raw hide preparation; training; footwear and leather goods manufacture; training on and maintenance of sewing machines; and engineering.

BIPIF/IRDLAI

Create (IRDLAI staff) a background for effective co-operation. Gather information on the entire leather industry and the small-scale sector in particular. Provide training to help face the difficult situation in the small-scale sector. Work out with BIPIK a carefully studied joint venture agreement to increase assistance to the small-scale sector,

Gather information on earlier, related projects carried out by such bodies as the United Nations Conference on Trade and Development (UNCTAD), the UNCTAD/GATT (General Agreement on Tariffs and Trade) International Trade Centre (ITC), The United Nations Food and Agriculture Organization (FAO)

In a number of village industries, an improved organizational structure with up-to-date production and marketing methods. Use of these industry villages as pilot or test places, specifically for the region Magetan-Karet Kuningan-Manding. The possibility of establishing regional extension supply points in line with the TPL network. Practical language courses for the entire industry.

using the PPIK network. Follow a tightly designed plan of work to realize the objectives. Assist the small-scale sector in all fields, including raw hides supply, tanning, leather and allied products marketing and, especially, in dealing with environmental problems. Provide training courses for small-scale industry in all fields, including management. Organize in-plant training programmes, on-the-job courses and seminars, as well as specialized courses at IRDLAI. Publish leather industry information sheets.

and the International Labour Organisation (ILO) - as well as UNIDO - in order to benefit from the experience of these projects (the information gathered to be co-ordinated by the Chief Technical Adviser). Assist and guide the national teams set up under the BPIK/IRDLAI agreement. Train nationals, adapting the team's international experience to local conditions. Give guidance on how on-the-job training can be integrated with theoretical training and also with the production process. Outpost experts, as of 1980, to Karet Kuningan and Magetan. In courses for small-scale industry - given only by nationals - assist by demonstrating the relevance of suggested improvements.

Exchange of information sheets from time to time. A sound, but careful approach to environmental care.

General

Develop the Fashion and Design Centre as a source of information for the entire industry on: information itself; backward and forward market linkages; trades statistics; the exchange of professional skill and knowledge; international events in the field; the organization of fairs, and other means of establishing links between all parts of the leather industry.

Advise and assist, adapting international experience to local and regional conditions, bearing in mind that the gap between large- and small-scale industry must be filled both technologically and managerially. Continue to draw attention to the growing environmental problem and suggest appropriate solutions.

A nationally and internationally recognized institute with a fashion and design centre. Increased impact of ALT on training activities. Periodic organization of or participation in fairs.

Annex V
 ORGANIZATION STRUCTURE OF THE PROJECT

