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REPORT
OF THE WORKSHOP ON LEATHER INDUSTRY DEVELOPMENT
IN
DEVELOPING COUNTRIES ^{1/}

Vienna
27 August - 1 September 1973

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INTRODUCTION

The Workshop on Leather Industry Development in Developing Countries was held in Vienna from 27 August to 1 September 1973, the week preceding the XIIIth International Congress of the International Union of Leather Chemists' Societies (IULCS) which was also convened in Vienna. The United Nations Industrial Development Organization (UNIDO) organized this regional project for Europe and the Middle East to discuss the techno-economic aspects of leather industry development in the region, including investment and management considerations. Discussion of the various aspects of the promotion of the leather industry and the presentation of country statements by the participants from developing countries in the region were complemented by a plant visit and a special joint session with the IULCS Committee for Technical and Educational Co-operation.

RECOMMENDATIONS

At its closing session on 31 August 1973, the Workshop carefully considered and unanimously approved the recommendations which had been formulated and variously amended by the participants.

It was recommended:

- (1) THAT developing countries rationally develop tanning industries in order to maximize the added value of their indigenous raw materials thus increasing export potential;
- (2) THAT in the rational development of the leather sector in developing countries, proper consideration be given to proceeding to the furthest stages of processing and production subject to economic, marketing and fashion factors;
- (3) THAT given a favourable techno-economic situation, developing countries consider the installation of integrated units or mergers capable of producing leather and manufacturing leather products;
- (4) THAT new tannery projects and extensions to existing plants be carefully planned to be suitable for local conditions and requirements;
- (5) THAT recognizing the competitive nature of the international leather industry, new developments in the tanning and allied sectors be based on realistic feasibility studies to ensure their economic viability so as to satisfy both local and export demand;
- (6) THAT developing countries be encouraged to avail themselves of the technological, marketing and other benefits offered by joint-venture arrangements for the development of their leather sectors, it being appreciated that sufficient safeguards for all parties to the contract be included therein and, if necessary, the advice and/or assistance of impartial international organizations requested;
- (7) THAT production plants in developing countries take steps to introduce suitable quality control of the final products as an effective means of maximizing value added through processing as well as of ensuring acceptance by quality-conscious markets;

- (8) THAT in view of the need for a more co-ordinated international approach to the leather industry, steps be taken to revitalize and co-ordinate the existing international techno-chemical and commercial associations in the field so as to ensure maximum recognition of the developing countries' legitimate interests;
- (9) THAT it be recognized that the competition offered to the leather industry by man-made materials should be of concern to the industry, but should not inhibit the development of the leather sector as both materials are necessary to satisfy the growing demand for foot-wear and other products with the simultaneous rise in living standards;
- (10) THAT developing countries avail themselves of every opportunity to acquire the most appropriate technologies and plant, and to this end, seek the necessary technical assistance of international organizations and other channels;
- (11) THAT, since the improvement of hides and skins is basic to the improvement of leather, it is essential that adequate attention be paid to upgrading the quality of raw stock to render it technically suitable for subsequent leather manufacture;
- (12) THAT developing countries, in order to ensure maximum utilization of raw hides and skins, intensify their activities for the improvement of hides and skins, concentrating on the establishment of modern abattoir facilities, where possible, and the maintenance of strict meat hygiene as these two factors would assist the production of better quality raw materials for the leather industry;
- (13) THAT steps be taken to improve economic and industrial intelligence services covering the needs of the developing countries and the growing potential in the hides and skins, leather and leather products sectors in those countries so that international organizations and industry can pursue the opportunities thus revealed;
- (14) THAT in view of the continued world-wide shortage of leathermaking raw materials, it is in the interests of the leather industry to maximize proper utilization of its valuable raw materials.

I. ORGANIZATION OF THE WORKSHOP

The Workshop was intended to bring together participants from developing and developed countries to discuss suitable processing technologies and other aspects of leather industry development. The lecturers invited were industrial experts of international renown, managers of leather-processing plants or persons closely associated with leather research and development work. Participants nominated by the Governments of developing countries were persons occupying managerial or policy-making positions in the leather industry in their own countries. Observers who met these qualifications also attended and actively participated in the Workshop.

The Director of the Industrial Technology Division, opened the Workshop on behalf of the Executive Director of UNIDO. He drew attention to the complex, but challenging situation facing the leather industry throughout the world. The Chief of the Light Industries Section briefly outlined the present situation in the leather industry in developing countries and the opportunities for development.

The Workshop was attended by 17 participants from the following developing countries: Afghanistan, Bulgaria, Cyprus, Gambia, Greece, Iceland, Israel, Mongolia, Pakistan, Sudan and Turkey. Furthermore, 46 observers came from the following countries: Austria, Argentina, Belgium, Chile, Federal Republic of Germany, Finland, France, German Democratic Republic, Hungary, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, United States of America and Yugoslavia.

The 10 lecturers came from Czechoslovakia, Federal Republic of Germany, Spain, Switzerland, United Kingdom of Great Britain and Northern Ireland, United States of America and Yugoslavia. Representatives of the Food and Agriculture Organization of the United Nations (FAO) and the International Labour Organisation (ILO) also attended and presented papers to the Workshop.

The following persons acted as Chairmen of the technical sessions:

E. Pirich	(Austria)
T.C. Thorstensen	(United States of America)
A. Colomer	(Spain)
R.G.H. Elliot	(United Kingdom of Great Britain and Northern Ireland)
P. Hellemaa	(Finland)

D. Winters (United Kingdom of Great Britain and Northern Ireland) acted as Rapporteur. M. Nestvold (UNIDO) served as Technical Secretary to the meeting, assisted by J.W. Parkinson (UNIDO).

UNIDO commissioned 11 documents dealing with topics related to the agenda items and three documents were prepared by the UNIDO secretariat. These documents were distributed to the participants (see the annex), in addition to which seven country statements were presented and six distributed during the Workshop.

II. LEATHER INDUSTRY DEVELOPMENT

The Workshop took note of a paper entitled "Prospects for the development of the leather industry in developing countries" prepared by the UNIDO Secretariat, in which the main factors conducive to the development of the leather and leather goods industries were described. It was stressed that in the developing countries which were imposing restrictions upon the export of wet-blue and semi-finished leather, the leather industries should make full use of the export potential offered by local foot-wear and leather-products industries as a first step towards the ultimate aim of competing in the world finished-leather market.

It was suggested that national leather boards be established in countries where large external revenue was earned through the export of hides and skins, semi-finished and finished leather, as well as leather products, the members of such boards being drawn from governmental, industrial, trade and commercial circles.

In the ensuing discussion, several participants queried the need for such boards since, in their opinion, they tended to increase bureaucratic procedures and were usually unable to maintain close contact with industry. This notwithstanding, it was pointed out that trade associations were necessary and could well fulfil some of the functions of the boards suggested.

Whereas it was agreed that all countries should concentrate their attentions on the increase of value added through further processing, some participants, particularly observers from developed countries, questioned the effect of large-scale finished-leather production in developing countries as the latter did not always dispose of the facilities needed to ensure top-quality production in keeping with the current luxury image of leather.

Other participants drew attention to the benefit to be derived from the establishment of integrated units (tanning and shoe production).

The Workshop took note of seven country statements presented by participants from Bulgaria, Cyprus, Greece, Iceland, Israel, Mongolia and Turkey.

The Workshop then discussed at length the paper entitled "The present situation of raw hides and skins on the world market" presented by R.D. Higham. The author outlined the major reasons for fluctuations in the availability and price of various types of hides and skins from the most significant production areas in the world. He also drew attention to the large pig population in the world and the limited amount of pigskins actually processed into leather. If this raw material source were to be utilized to a larger degree than at present in the production of suitable types of leather, this would provide an alternative to leather made from goat and sheep skins.

In the ensuing discussion, the Workshop's attention centred upon the major industrial openings offered by the full utilization of pigskins using newly developed skin-removal techniques. However, it was duly recognized that this supply of raw material was governed to some extent by the demand for animal protein.

The Workshop also discussed the possible reduction of hide weights using more advanced techniques, thereby achieving savings in terms of freightage.

The participants recognized the recent emergence of synthetic substitutes for leather which had conveniently filled the gap in the lower quality sector left by the unprecedented demand for leather of all grades.

The Workshop discussed the paper entitled "Prospects for increasing exports of semi-processed and finished leather from developing countries and the related marketing problems" presented by K. Trcka, in which the author outlined his views on the means by which developing countries could advance in this field. As means of illustration, pertinent data were also given with respect to countries which were major importers and exporters of leather in various forms.

It was felt that many economic problems had yet to be overcome before developing countries could fully exploit the potential offered by the processing of natural raw materials into leather of various types, and

ultimately into finished leather products. Further to maintaining strict quality control standards, the developing countries, it was agreed, should primarily develop close relationships with their customers with a view to long-term business and the establishment of mutual confidence and trust.

Discussion also centred upon the availability of governmental assistance to the leather industry in its export endeavours and the best means by which publicly or privately owned industry could liaise with the authorities when seeking such assistance.

The Workshop took note of the paper entitled "Investment and management considerations in establishing new plants or expanding existing tanneries including equipment and machinery considerations" presented by

J. Müller in which he presented, with the aid of slides, theoretical guidelines relating to the initiation of tannery projects and those factors which deserved particular attention when embarking upon such projects.

In answer to a query, the author stressed that the design of tanneries had to permit full flexibility of production so as to cater for changes in demand and fashion. More specifically, he indicated various design and production parameters based on his own experience in tannery design and erection.

In this connexion, several participants spoke in favour of introducing the most modern techno-chemical processes without embarking upon undue automation in countries with abundant labour resources, yet limited financial means. Questions were also raised in respect of working space, use of water and power, and production rates. It was further indicated that the establishment of new tanneries had to be adapted to local conditions in the developing country concerned.

The Workshop then discussed the paper presented by D. Winters entitled "Some economic aspects concerning the establishment of tanneries in developing countries". The author presented a case study for a hide upper-leather tannery from which he drew the economic data relating to total capital investment (foreign and local) required for the various stages of processing, viz. wet-blue leather, crust leather and finished leather, comparing these to the added value accruing at the various stages.

The author assumed that the ultimate objective of all developing countries was to convert all, or as much as possible, of their raw hides and skins to fully finished leather articles, regardless of whether they were shoes or other leather products. As an interim measure, however, most countries accepted that a good foundation could be established by initially developing the tanning sector. In his study the author thus dealt solely with the production of upper leather. The manufacture of leather products, which was obviously more lucrative than leather production, was considered a later development beyond the scope of this paper.

In answer to specific queries, minimum production parameters were given and stress was laid on benefits to be derived from single-storey light-weight structures in terms of production flow and capital requirements.

A paper prepared by the UNIDO secretariat was entitled: "UNIDO's activities concerning the development of the leather industry in developing countries". In it, specific examples were given of UNIDO technical assistance to the leather sector in various countries.

The role of the Industrial Policies and Programming Division was described in a paper entitled "UNIDO's programmes dealing with international subcontracting, product adaptation and investment promotion". Full details were given of the three major forms of assistance and of the means by which developed and developing countries alike could avail themselves of these services.

The subsequent discussion centred on the questions of project funding, and the demarcation between the various United Nations agencies and organizations with specific reference to marketing.

The Workshop discussed the paper entitled "The future of the leather industry in competition with synthetic substitutes" which had been prepared by M. May. The author described the current production of synthetic substitutes for leather and their market potential. He also indicated the means by which leather could overcome this competitive threat to its traditional markets.

In the ensuing discussion, it was widely recognized that with increased living standards and the rise in purchasing power, there was a need for the production of both synthetic materials and natural leather. However, it was pointed out that purely economic considerations would regulate the usage of these materials in their various forms.

In this connexion the Workshop expressed disapproval of the use of the terms "leather substitute" and "artificial leather" as it was felt that the materials under discussion were either leather or a man-made material which could be identified exactly as PVC, PU-coated fabric, poromerics etc.

It was also felt that given the maintenance of quality standards and the image of leather as a luxury article, the leather industry should not be too apprehensive in respect of the encroachment of synthetics, as the demand for leather far outstripped the supply of hides and skins.

A further advantage of leather when compared with man-made materials was the former's in-built bio-degradability which would ensure its continued popularity in view of the ever-increasing international concern with environmental conservation.

The Workshop expressed doubts about the advisability of setting up a new international body for leather promotion as suggested by the author, as it was felt that with a certain degree of adaptation, existing bodies could easily fulfil these functions.

Although the Workshop appreciated the logic behind the regional pilot plants suggested in the paper, some participants opined that their establishment was a somewhat unrealistic proposition and would encounter an inordinate degree of bureaucracy and give rise to complicated negotiations between the countries concerned.

It was agreed that the current shortfall in hides and skins could be overcome to a certain degree by the rational utilization of such materials as pigskin and various exotic skins, which had been underutilized hitherto.

A statement entitled "ILO's activities in the field of leather (tanning and leather goods making)", describing ILO's operations in these fields was presented by M. van Haver, who also summarized the ongoing projects of ILO.

The Workshop took note of the paper prepared by S.K. Farat, FAO, entitled "The profitable utilization of by-products from the leather and allied industries" in which the author gave detailed information on by-product utilization with emphasis on those materials which were currently underutilized. He laid particular stress on the protein content of certain materials as well as the possible economic benefits to be derived from the processing of minor organs which could yield valuable non-protein materials.

In the ensuing discussion, various views were expressed on the paradoxical situation whereby developing countries were failing to take full advantage of slaughterhouse by-products despite their urgent need for protein. It was noted that many developing countries were using their limited foreign exchange reserves to import products which could have been produced locally, had more attention been paid to the rational utilization of slaughterhouse by-products. The developed countries in general were observed to have made better use of by-products. Some participants pointed out that the whole issue was an economic matter: know-how was available, yet the major international carcass processors had refrained from fully developing this branch, possibly owing to limited return on capital required. In this connexion, the author suggested that an economic level for full carcass utilization would entail the processing of at least 30,000-40,000 head of cattle yearly with the maximum economies of scale being reached at approximately 100,000 head per annum.

During the discussion, new uses for collagenous fibres were described and attention was also drawn to the relative economic value of certain by-products as compared with their protein value for human or animal consumption.

The Workshop took note of the paper prepared by T.C. Thorstensen entitled "Prospects for the development of the fur industry in developing countries" in which the author described the current global situation in the fine-fur industry, giving specific details of mink and karakul farming and processing, and illustrating his talk with instructive slides.

The possibility of extending mink-farming to developing countries was discussed. Attention was drawn to the risks involved in terms of high capital requirement, possible losses due to poor farming techniques

and insufficient veterinary control. The Workshop was also reminded of instances where fur-bearing animals had escaped from captivity to become uncontrollable rodents with disastrous effects on local agriculture, e.g. the rabbit in Australia.

The author outlined the various technologies involved in the processing of fur skins, and stressed the fact that the dyeing of fur was still considered a secret by most fur dressers.

The Workshop discussed a paper prepared by J.H. Atkinson, entitled "A rapid, ultra-economic process for producing sole leather in developing countries, in order to aid the subsequent production and export of leather shoes", in which he described a new rapid process recently developed with an indication of the capital costs involved when establishing new units. The author also endeavoured to show the economic benefits accruing through the introduction and export of the 100 per cent leather shoe.

In answer to technical queries raised, the author agreed that for the second stage of his tanning process, alternative extracts could be used. Drum speeds, he pointed out, depended on ambient temperatures, and variable speed gearboxes were preferable. Furthermore, the end-products could be altered by means of changing the finishing techniques.

Theoretical questions relating to the mechanics of the process and the reason for selecting sodium sulphate were discussed. The author suggested that the process mechanism could be attributable to dehydration, salting out of the tannins or other unknown factors as the matter was still under investigation. Sodium sulphate had been found the most effective and economical conditioner after many years' research.

Discussion also centred on effluent and water consumption in the process described, as the author claimed that his process consumed the least amount of water compared with any other process. Furthermore, the sulphate was mostly precipitated or flocculated when mixed with beamhouse effluents and would thus not enter the sewers or other outlets. Some doubts were raised in this last respect as other participants had encountered difficulties in connexion with sulphate. Differing views were also expressed on the amount of water to be used in such processes.

Following an interesting visit to a leather finishing plant in Vienna specialized in the finishing of upper leather, using imported crust materials, the Workshop discussed the paper presented by

J.H. Sharphouse entitled "Approach to a national quality control for the leather producing industry". The author outlined a practical approach to quality control suitable for application in the developing countries. Using statistics on wet-blue leather, he also demonstrated the problems encountered in sampling which had to be overcome, were quality control to be effective.

In the ensuing discussion, some participants inquired about the methods of measuring used at production source and the compatibility of such measurements with those achieved in testing stations in importing countries. The author replied that in general, the "mahmoud" system of measurement gave results that were reasonably compatible with those of the planometer.

Various participants drew attention to the lack of chemico-physical standards in many developed countries, feeling that this was duly compensated for by the standard business practice of supplying their customers with leathers manufactured to individual requirements.

It was felt that developing countries needed some leather quality standard, be they chemical or physical, which should be kept to a minimum and directed towards ensuring that the leather was suited to the end-uses for which it was intended. In some cases, it was suggested, this could be achieved by closer liaison between importer and exporter.

The view was also expressed that standard specifications for shoes had reached higher levels than those for leather as the shoe industry liaised directly with the customer.

The Workshop discussed the interrelationship between, and responsibility for, shoe and leather failures as well as shoe returns, it being felt that in many cases the wrong party was blamed.

The Workshop took note of W. Rieger's paper entitled "Modern production methods and their supervision in a tannery" in which the author described the minimum quality control and supervision checks which he felt were indispensable in any tannery in a developing country.

A number of technical questions were raised covering a wide range of topics, the foremost of which were the relationship between the size of the quality-control laboratory and the tanning unit, the minimum requirements for a testing laboratory, and the effect of different qualities of water upon processing.

The author replied that laboratory size stood in direct proportion to throughput and capital availability, whereby in a small production unit pH paper might prove sufficient and in a large production full chemical and physical analytical facilities could well be justified. He also pointed out that any type of water could be used provided it was either pre-treated or the process adjusted to suit the water, the main aim being to ensure product reproducibility.

One participant asked whether chrome leather produced by means of the 24-hour cycle mentioned in the paper was equal or superior to traditional chrome leather. The author replied that provided good technology was used, quality should not differ from traditional chrome leather. It was also stressed that such a process was suitable only for processing prefleshed hides which were not yet available in developing countries.

In answer to a query about the degree of punch-card utilization in automatic systems appropriate to developing countries, the author replied that the equipment manufacturers only suggested automated control of water volumes, temperatures, and drum-running times, the cost of such equipment being \$US 8,000-10,000 per drum. However, the author emphasized that more conservative methods should be adopted in the early stages, leaving sophistication until a firm degree of organization and quality control had been established.

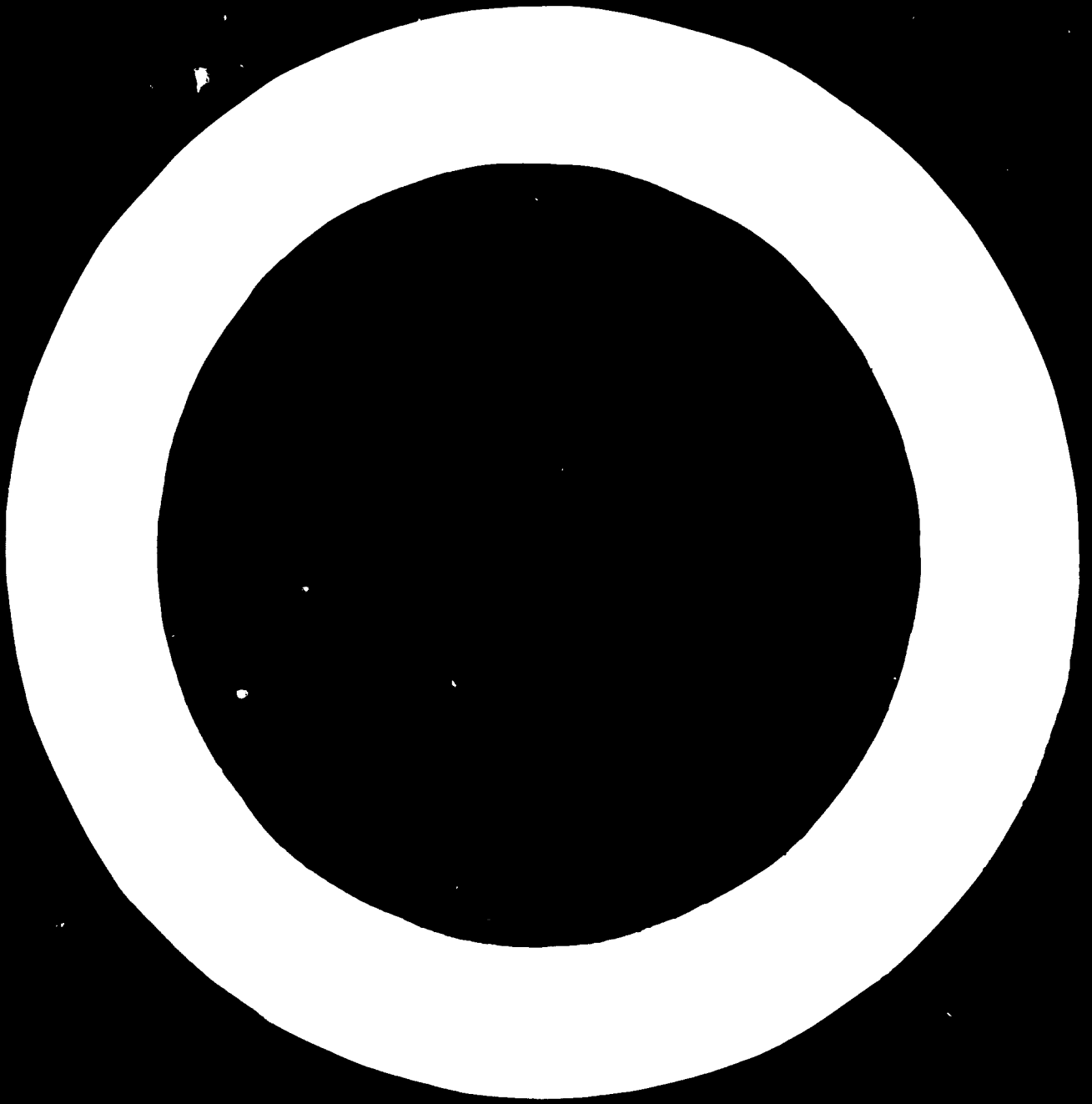
The Workshop took note of a paper presented by M. Paniker entitled "The role of trade associations and practical co-operation between the leather industry and its allied industries", in which the authoress emphasized the need for a new approach to the whole industry and its associations. On the basis of a survey of the industry past and present with special reference to Spanish advancement, the paper advocated the setting up of a new international organization to co-ordinate hide and skin exporting activities.

In the following discussion, the necessity for such a new body was disputed on several grounds. Instead it was felt that revitalization of the existing two major organizations, the International Council of Tanners and the International Union of Leather Chemists' Societies, could achieve the same effect.

Participants drew attention to various market openings in the sector. Though it might be easier to enter the mass market for standard products, it was felt that much was to be gained by catering for the more lucrative fashion market, paying proper attention to the various problems that involved. To enable industrial manufacturers in the developing countries to overcome certain pitfalls, it was suggested that due consideration be given to the possibility of entering into joint ventures with partners in developed countries.

Fashion, its source and rationale were also the subject of discussion and divergent views were voiced.

Views were also expressed on the long-term development of the leather industry, it being suggested that for environmental reasons it would be logical in the future for all countries to tan their own hides in tanneries integrated with slaughterhouses. This stage, however, was contingent upon commensurate technological and economic advance.



Annex

LIST OF PAPERS SUBMITTED TO THE WORKSHOP ^{a/}

- ID/WG.157/1/Rev.1 Agenda and programme of work
- ID/WG.157/2 Rev.1 List of participants
- ID/WG.157/3 Approach to a national quality control for the leather producing industry
- ID/WG.157/3 Add.1 Approach to a national quality control for the leather producing industry - Addendum statistical Appendix
- ID/WG.157/4 Investment and management considerations in establishing new plants or expanding existing tanneries, including equipment and machinery considerations
- ID/WG.157/5 Prospects for increasing exports of semi-processed and finished leather and the related marketing problems
- ID/WG.157/6 and Corr.1 Prospects for the development of the fur industry in developing countries
- ID/WG.157/6 Add.1 Prospects for the development of the fur industry in developing countries - Addendum
- ID/WG.157/7 The future of the leather industry in competition with synthetic substitutes
- ID/WG.157/8 The present situation of raw hides and skins on the world market
- ID/WG.157/9 A rapid, ultra economic process for producing sole leather in developing countries, in order to aid the subsequent production and export of leather shoes
- ID/WG.157/10 Prospects for the development of the leather industry in developing countries
- ID/WG.157/11 Some economic aspects concerning the establishment of tanneries in developing countries
- ID/WG.157/12 Modern production methods and their supervision in a tannery
- ID/WG.157/13 UNIDO's activities concerning the development of the leather industry in developing countries
- ID/WG.157/14 The role of trade associations and practical co-operation between the leather industry and its allied industries

^{a/} A limited number of copies of the documents are available from UNIDO upon request.

Title

- ID/WG.157/15 Statement on the situation of the leather industry in Bulgaria
- ID/WG.157/16 Statement on the situation of the leather industry in Cyprus
- ID/WG.157/17 Statement on the situation of the leather industry in Greece
- ID/WG.157/18 Statement on the situation of the leather industry in Israel
- ID/WG.157/19 Statement on the situation of the leather industry in Turkey
- ID/WG.157/20 Statement on the situation of the leather industry in Iceland
- ID/WG.157/21 ILO's activities in the field of leather (tanning and leathergoods making)
- ID/WG.157/22 The profitable utilization of by-products from the leather and allied industries
- ID/WG.157/23 UNIDO's programmes dealing with international subcontracting, product adaptation and investment promotion
- ID/WG.157/24 Statement on the situation of the leather industry in Mongolia





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