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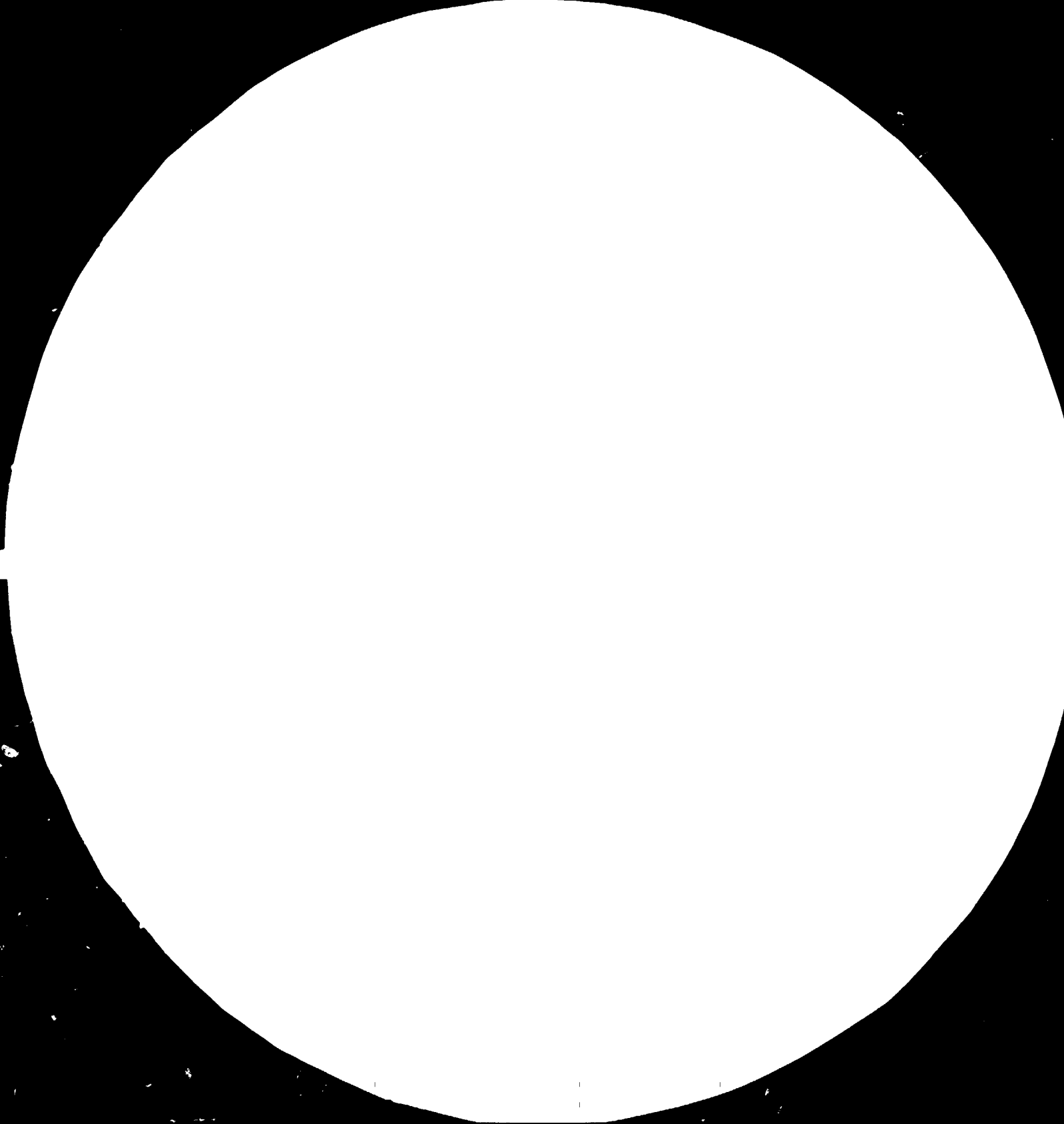

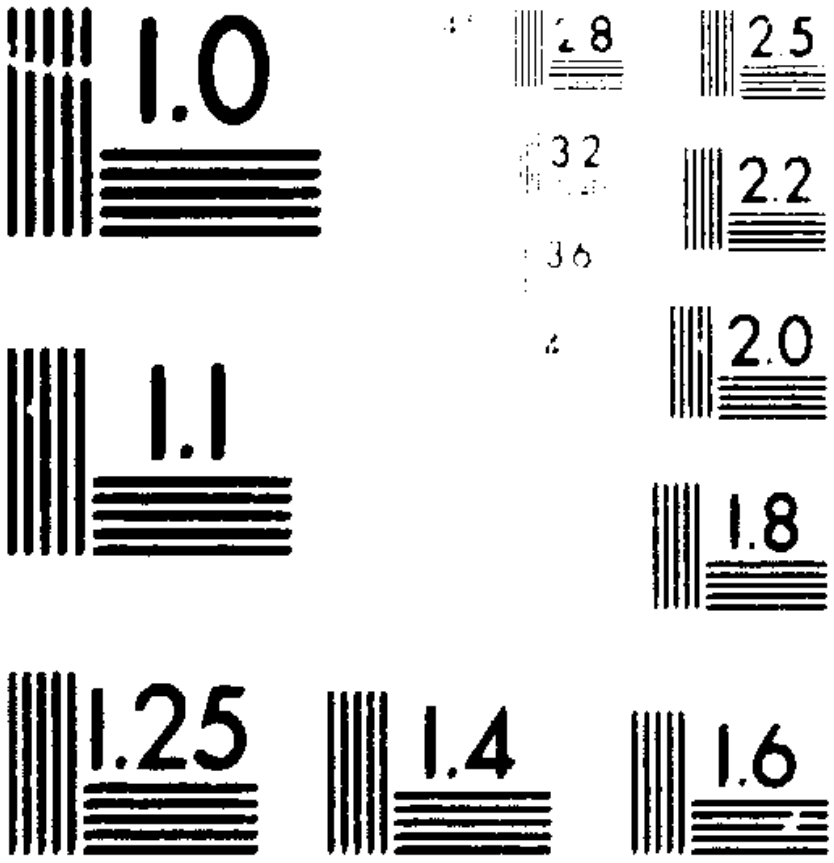

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GOVERNMENT

ASSISTANCE TO THE DEVELOPMENT OF SMALL INDUSTRY IN INDONESIA

(PROJECT DP/INS/78/078)

TERMINAL REPORT OF UNIDO
STANDARDIZATION AND QUALITY CONTROL

BY

DR. EL MORSY A. SELIET
(UNIDO CONSULTANT)

DEPARTEMEN PERINDUSTRIAN

DIREKTORAT JENDERAL INDUSTRI KECIL

Report No. 51
March 1984.

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Indonesia. Small industry.

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ASSISTANCE TO THE DEVELOPMENT OF SMALL INDUSTRY IN INDONESIA
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STANDARDIZATION AND QUALITY CONTROL

TERMINAL REPORT PREPARED FOR THE

GOVERNMENT OF INDONESIA

BY

DR EL MORSY A. JELIET

CONSULTANT IN STANDARDIZATION AND QUALITY CONTROL

OF

THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

ACTING AS EXCUTING AGENCY FOR

THE UNITED NATIONS DEVELOPMENT PROGRAMME

RESTRICTED
March 1984
English.

EXPLANATORY NOTES

The monetary unit of INDONESIA is the Rupiah (Rp.). During the period covered by this report, the value of the Rupiah in relation to the United States Dollar, was, middle rate $ US 1 = Rp. 993,-. The market exchange rates are subject to fluctuations.

The following abbreviations have been used in this report :

DJIK = Direktorat Jenderal Industri Kecil
DGSI = Directorate General Small Industry
MIE = Mini Industrial Estate
BIPIK = Bimbingan dan Pengembangan Industri Kecil (Small Industry Development Programme)
PPIK = Pusat Pengembangan Industri Kecil (Small Industry Development Centre)
UNIDO = United Nations Industrial Development Organisation
UNDP = United Nations Development Programme
CSF = Commen Service Facilities
UPT = Unit Pelayanan Teknis
SII = Standard Industry Indonesia
CSI = Cluster Small Industry (Sentra Industry Kecil).

S U M M A R Y

1- This mission forms a part of the project No. DP/INS/78/078 Assistance to the Development of Small Industry in Indonesia.

2- The Consultant was assigned 3 months, in Standardization and Quality Control.
The duty station was JAKARTA, with travel within the country.

3- The Consultant short term job for 3 months is to study the situation of Standardization and Quality Control in Small Scale and Cottage Industries and formulate recommendations.
For the purpose of studying, he paid visits to developing and research institutes clusters, Mini States and conducted ~~deep~~ in depth interviews with some entrepreneurs in West, Central and East Java.

4- The Consultant also collected some data about the general situation of standardization and quality.
His opinion from these visits is that there is no understanding for standardizations or quality between the majority of the sectors of small scale and cottages.

5- The Consultant recommendations in this respect can be summarised as follows :

Completing the elaboration of the existing technical guidline manuscripts for the small production and establish technical quality requirements for cottages production.

- Long term testing programme facilities for establishing chain of field testing stations in the U.S.S.R. and U.P.P. locations, and also mobile testing-stations to assist the far located units.
  An inventory of existing testing facilities to which the small industry has an access my be taken up by SG-II.
- Studies should be conducted to provide the small units by in-process quality control equipment.
- Establishment of pilot demonstration centers for training new workers to fill the gap in availability of skilled labour, provide up-to-date designs, assist to develop the attitudes towards Diversification and technical consulting gaining benefit cooperation with U.N.
- Quality Control of Industrial Raw Materials which are used by the small scale and cottages units must be done.
- Differentiation between products reserved for small scale and those of cottages sector, may be useful from the quality point of view.

- Since the level of quality is influenced by machinery, then providing this sector by new machines is a vital matter.
- The product reservation/Purchase Reservation and sub contract, schemes should, prima facie, be built on Standardization and Quality Control to make them successful schemes.
- Creating a system for conveying information concerning standardization and quality requirements to the small and cottages industries.
- Applying the integrated quality control scheme in a way which fits the small scale industries.
- Spreading awareness of the importance for in process quality control between small scale units.
- Training for standards and quality engineers using training manuals on quality control.
- Training the entrepreneurs in standardization and quality control.
- Formulating process quality control specifications.
- Standing Committee for running of the scheme can be established in the Directorate - General Small Scale Industry with the Director General himself as the chairman.
- Programming of excuting the scheme.
- Demonstrating the scheme before spreading out widely.

6- According to the invitation of the Ministry of Industry I shared in the fourth training programme from 15 February until 28 February 1984 by lecturing in standardization and quality control to trainees from all provinces. The same happened in Jerash Mini Estates and another places.

7- Demonstration of practical application of quality control and standardization principles in some small units had been taken place.

8- Suggestions for product groups for which standardization can be considered diserable had been prepared.

9- Discussions and acceptance for the proposed recommendations in a seminar by local authorities had taken place on 25 March 1984.

10- Admittedly I noticed fruitful soil for planting standardization and quality seeds in small scale units, which can lead to introduce their products for export.

C O N T E N T S

A P P E N D I X

I N T R O D U C T I O N

A. P r e f a c e

The Consultant after his arrival to JAKARTA, INDONESIA on 10 January 1984. Briefed by Mr. F.M. Iqbal (SIDFA) and Dr. Ram K. Vepa the Team Leader who gave him a full idea about the project and letting him has access to the files, reports and other records of the project. He introduced him to both National and UNIDO experts who are joining the project.

B. Project Background

It is estimated that more than 90% of 1.3 million manufacturing entrepreneurs (as evidenced by the last full scale census conducted in 1974/1975) are in cottage industry employing 4 million persons or 80% of all the labour in the manufacturing sector.
A major share of these activities involves wood products, food processing textiles, building materials, and leather. However, the share in the value added of the manufacturing sector is only 14%.

The following table brings it out clearly as also the very limited share of the metal based industries as well as the chemical industries.

Structure of Manufacturing sector in Cottage and Small Industry (1974).

Manufacturing Industry	Employment (% of total)		Value added (% of total)	
	CI	SI	CI	SI
1. Food, Beverages and Tobacco	35.9	44.0	45.2	48.4
2. Textiles, Apparel and Leather	11.2	16.1	8.6	11.8
3. Wood products	42.2	12.1	26.6	13.2
4. Chemicals & chemical products	0.2	3.6	1.4	6.3
5. Metal, Machinery equipment	1.4	6.4	3.6	7.3

The Small Industry units (defined as those with an investment in plant and machinery less than Rp. 70 million) represent only 3.7% of the industrial units (in number, less than 50,000) but employ 350.000 persons and account for 8.6% of the value added.
The medium and large industry units represent only 0.6% of the number of industrial units but account for 9.3% of the labour force and 62% of the value added in the manufacturing sector.

Recognizing that greater attention needs to be paid to the Cottage and Small Industry (CSI) Sector, Government have launched a major programme of assistance (BIPIK) to help the Small Indigenous entrepreneurs in all aspects - identification of product lines, design of operations, procurement of machinery, supply of raw materials, credit, marketing etc.

A programme of assistance to the CSI has been executed in the second Five Year Development plan (REPELITA II) at a Cost of Rp. 5 billion to provide consultancy services to existing entrepreneurs in production techniques and management procedures, to obtain suitable credit from the banking net work and to buy suitable equipment and tools. Further, a certain number of Industrial Extension Centres (PPIK) have been established and intensive training provided for field extension offices (TPL).

In REPELITA III, the programme is being further expended so as to establish Mini Industrial Estates (MIE) at suitable locations which will help to create new employment opportunities in the rural areas.

In addition, the following measures have been taken to develop the CSI as a complementary sector to the Medium and Large Industry (MLI) :

-- Conduct Intensive Campaigns amongst the economically weak groups so as to disseminate information and create awareness of the potentialities of the CSI sector.

-- Identification of product lines that can be undertaken by the economically weak groups and to strengthen their capabilities through product reservation and purchase reservation programmes.

-- Improving the performances capability of the Small Units through assistance in supply of equipment, improving productivity design and management.

-- Spread the Small Sector Industrial Development pattern through the establishment of Mini-Industrial Estates which will act as focal points of growth in a region.

The Directorate General, Small Industry (DG-SI) in the Ministry of Industry has been established in 1978 to be the focal point of the development programme for the SSI Sector. In cooperation with Bank Indonesia, the Central Bank, DG-SI has formulated a programme of making "Mini - Credit" available to the very small units through state owned Commercial Banks - Bank Rakyat Indonesia (BRI) and Bank Negara Indonesia (BNI, 1946), guaranteed by PT. Askrindo up to 75% of the loan. The world Bank has made funds available to the Bank Indonesia for disbursement of such loans.

Between 1973 and 77, UNIDO provided assistance for the Development of Small Industry in the shape of mission and advisers. In 1973, a light industry advisor was provided; in 1974, a/joint UNDP/ILO/UNIDO mission took place to formulate a long term technical assistance programme for the Small Scale Sector. In 1975, two UNIDO Consultants were made available to assist government to introduce a suitable institutional framework to assist the Small Industry. A field extension service expert was fielded to assist the Ministry of Industry to implement the BIPIK Programme.

A UNIDO evaluation mission took place in December 1979 to assess the result of the project, and to formulate recommendations for future technical assistance. As a result, two teams of experts were made available located at Yogyakarta and Surabaya. These were able to provide consultancy services to improve production techniques, design and quality control, conduct training programmes and assist entrepreneurs to obtain loans from the banks.

Based on the experience garned through these two te: the present project has been devised an a more ambitious scale to provide 11 experts - 5 of whom will be located in Jakarta, and the remaining 6 in the provincial offices in the islands of Java, Bali and North Sumatera. The Jakarta team consits of a Team Leader and Experts in Industrial Engineering, Marketing, Training and Documentation. The field personnel will be Industrial Engineers with specialised experience relevant to the region in which they are located.

The Expert Team will be assisted by a team of short term Consultants, Counterparts, National Experts and Contracting agencies to provide comprehensive support to the Development Programme being implemented by the DG-SI.

A Common criticism against the product of the Small Sector are that they are of poor quality and that they are not standardized, while this is partially true, it is because of the inability of the Small Units to afford expensive in-house testing facilities or due to limited access to such facilities. It is therefore necessary for development agencies to establish at suitable locations, Test Centres that would enable clusters of small units to test their products against specifications laid down by national organizations or bulk customers.

Even where such standards are laid down, it is seen that they are unduly restructive or rigid and are therefore not amenable to implementation, it is necessary to dis-tinguish between standards which are to be enforced strictly in the interests of public health and safety and those which are merely recommendatory.

The net work of Test Centres will have to be linked up with test organizations at the regional and national levels. Further such institutional devices need to be backed by administrative measures which help to create amongst small manufacturers a greater awareness of the need to maintain adequately quality. It needs to be recognized that the marketability of a product depends, to a considerable degree, on the favourable price-quality trade off the small unit is able to achieve in comparison with that made by the large units.

The Consultant will be expected to prepare a final report setting out the findings of this mission and his recommendations to the Government on the action which might be taken in collecting and compiling data on the performance of the CSI sector.

A sector of such growing importance should be safeguarded and protected by providing it with the necessary means for its healthy development. In this respect, the important role played by standardization and quality control cannot be overlooked. The wide adoption of standardization and quality control, would be an important factor towards reaping all the benefits that occure from :

- The elemination of waste
- The better and efficient use of local raw materials
- The increase of productivity of manpower and equipment
- The reduction of production and distribution costs
- The raising of the quality of goods and services
- The building up of public confidence in local production
- The protection of consumers

- The fairness in commercial transations
- The development of import substitution industries
- The promotion of exports
- And hence the improvement of the national economy

The importance of standardization and quality control in small scale & cottage industries was not overlooked by the concerned authorities in Indonesia, which asked the assistance of UNIDO to study and make recommendation for the application of these two aspects in the production of small scale and cottage industries.

C. Official Arrangements

The UNIDO Project INS/78/078 for Development of Small Industry in Indonesia was approved on 16th December 1980 by the Government of Indonesia, UNDP and UNIDO. Its primary objective is to provide direct support to the development programmes for assisting Small Industry, already being undertaken by the Government of Indonesia; in that process, it would also strengthen the Institutional frame-work set up for the purpose.

The Project which is to run for 37 months, envisages and expenditure of (US) $ 2.4 million by UNDP/UNIDO and a Government input (in kind) of Rp. 1.67 billion (US $ 2.47 million at the time of signing the documents).

The UNDP/UNIDO provision is largely in the shape of 11 International Experts (5 in Jakarta, and 6 out-posted in Java and North Sumatera, Short Term Consultants (15 man months). One of these Consultants is the Consultant in Standardization and Quality Control, who arrived the duty station Jakarta on 10 January 1984, and will leave at the end of the 3 months.

D. This Mission

This assignment was undertaken for 3 months as Consultant in Standardization and Quality Control to study the applicable of standardization and quality control in small scale and cottage industries and stipulate recommendations.

The duty station is Jakarta with travel within the country.
The job-description is attached as Appendix I.

The Consultant - after three weeks of his arrival - wrote his preliminary report to UNIDO Vienna. Appendix II. After finishing his visits to West, Central and East Java, the Consultant wrote down the schedule of his visits which was proceeded to UNIDO Vienna too.

I- FINDINGS

A -Industrial Standardization

Suitable standards need to be laid down for many of the products to be made in the small sector.
Since there is as yet no national standards organization established in Indonesia, this is being done by Ministries concerned. The formulation of suitable standards should not become a mere 'duplication' of similar standards in more advanced countries; they should reflect the needs of the country as well as the skills available to meet them. While some operations like exports do require standards which can stand international competition, there is no need to be unduly stringent for domestic consumption - except where public health and individual safety are involved. In some cases, developing countries set artificially high standards in a mistaken belief that this would enhance their prestage; in practice, if standards are too far above what is possible, they will be rarely enforced.

In any case, quality and price need to be balanced as most customers look for reasonably good quality at the price they are willing to pay.
There need be no hesitation, to have two sets of standards, one for medium an large factories, and another for the interest of small industrial units.

At present there is a Ministerial Decree of the Ministry of Industry No. 172/M/SK/5/1975 concerning Industrial Standardization and Quality Control of Industrial goods and products within the jurisdification of Ministry of Industry (Appendix No. III).

Area of interest standardization of Industrial products such as textiles, building materials, leather, ceramics, sports goods, and other consumer products, including oils, batik designs and labelling.

Participating Institutes Appendix X

The coordinating authority is vested in the Research and Development Centre for Metals and Machinery.
Till the end of 1983, 1000 standards (SII) had been formulated covering many sectors of Industrial products.

List of some of these standards is Appendix IV.

The preparation to set up the National Standardization Council has entered the final stage and has been discussed at Cabinet sessions.

Technical Guidlines Manuscripts.

The Directorate General, Small Industry (DG-SI) in the Ministry of Industry, has formulated 61 technical guidlines manuscripts till the end of 1984 based on the concerned SII, but more simpler to meet with the technical requirements of the small scale industry. (The list of these 61 guidlines is Appendix V).

But the Directorate now uses these guidlines only for the small units who want certification for their products.

B - Suggestions of product groups for which standardization is considered desirable :

1 - After concrete studies for the standards which had been issued by the Ministry of Industry, the Consultant could categories the production of the small scale with the concerned standards (SII).
They are about 300 item (Appendix VI). Therefore completing the series of the technical guidline manuscripts can take place for the rest.

2 - Products reserved for the small scale and cottage sectors :

An important frature of the development programme for small industry in Indonesia is the Scheme of Product Reservation that is being implemented since November 1980. The relevant decree of the Minister of Industry dated 20th November 1980 (517/M/SK/11/1980 forms Appendix No. VII

The broad idea the Product Reservation Scheme is to ensure that small Industry units making certain items do not suffer unduly from the competition of the large industry making similar products and are therefore able to market their goods on a more equal basis.

It is not intended, however, that the units are shielded from trying for a market share. Nor it is intended that the public should suffer through products of low quality, in the ultimate analysis, public interest must take priority over those of any sector.

To over-come such most valid criticism which is that a scheme such as that of product reservation needs to be carefully monitored to prevent any distortion in quality of the production that might lead to public dissatisfaction.

For this crucial situation we suggest that the reserved products should be put under a system of quality control based on defined specifications.

Directorate General of Small Scale Industry (DG-SI) had already chosen to develop, 70 commodities from the 127 of the product reservation Ministerial decree, (Appendix No. VIII).

3 - <u>Suggested addition to the list of reserved products which is to be put in the plane of issueing technical guidline manuscripts</u> :

The present list, included in the decree can be expanded so as to include a number of items that can be produced viably in the small sector.
Purely as illustration in Appendix IX 4 lists of about 100 items with likely cost of investment and employment.

This list also consists a group which is to be put in the plane of issueing technical guidline manuscripts.

4 - <u>Purchase Reservation Commodities</u> :

A start has been made in the Purchase Reservation policy by designating 14 terms as being reserved for the small sector by purchase by the government Department. Items selected for purchase reservation must be such where the capability of the small units to produce goods of adequate quality it may also be useful if a "competency certificates" were issued by the DG-SI based on the technical principals in the guidline manuscripts and on periodical inspections and visits made by the officers of the DG-SI.

In this connection, it is desirable for provincial governments to review, in their own province, the requirements of government departments that can be met by small units located in their state.
Items like chairs and tables for the schools, beds for the hospitals, note-books for the children, etc can be readily reserved for the small units providing them with avenues of marketing and generating a feeling of pride in using a locally produced item. In fact, in a country as geographically scattered as Indonesia, it seems most logical that some of the simple items required in Government offices and institutions are obtained from small units located within the province.

There is a tendency, often exhibited by the purchasing agencies, to set specifications far above what is really necessary which, in effect, helps the large medium Industries and excludes the small units even, if their products are adequate for the purpose.

Hence, there is a need to scrutinise the product specifications issued in purchase tenders so that they are not weighted, from the outset, against the small units. This is one of the roles of DG-SI.

5 - <u>Sub - Contracting</u>

A Scheme that has been initiated for encouraging Sub - contracting is the "Bapak Angkat" (foster-father) scheme through which large enterprises both in the government and private sector are encouraged to cater to a number of small units in the same field for providing raw material inputs, technical guidance and assistance in marketing.

Twenty two or even more of such arrangements have so far been organised in the fields of leather, and footwear, textiles, steel products etc. In leather, a Surabaya firm, PT HAKA, has taken the responsibility to provide raw materials to the small units on the Nagetan Industrial Estate making footwear and other products, firm is also expected to provide help in marketing the product.

In respect of steel, the biggest steel making unit, Krakatau Steel, is to supply the raw material to small producers; similarly for textiles. PT Sandang, a government-owned enterprise, is to supply yarn to handloom weavers.

Ultimately, the success of sub-contracting will depend, Prima facie, on the quality of the products and the developing of standardization consciousness among the sub-contractor.

For the contractor, it means a steady supply of parts of realized standards and quality which will give trouble free final product. For the sub-contractor it means quality assurance which revenues reasonable profit margin, as a result of very low refusal of his products.

C - Field Studies

Field visits to West, Middle and East Java had been taken place for about 15 days, by the Consultant to developing and research institutes, clusters, Ministates, CSF & UPT to study the production situation from the quality point of view and the test facilities to propose, which are easily accessible to small units. In depth interviews had been done with some entrepreneurs to discuss standardization and principals of quality control.
Lectures in standardization and quality control had be given by the Consultant in every visited part of Java, and fruitful discussions during these lectures had taken place.

The programme schedules of these visits and the names of the lectured Engineers consist Appendix No. X.

Reflections on the operational effectiveness of the pertinent agencies and institutions had been based primarily on first hand knowledge gained from meetings, interviews on site visits. These have proved to be indespensable to obtain a nearly accurate reading and evaluation of the state of affairs.

What the Consultant can say, that the absence of standardization and quality control aspects is found between the majority of the small scale units, in spite of that these two aspects are the most important foundation for any policy in this sector.

Nevertheless, admittedly, the Consultant noticed fruitful soil for planting standardization and quality seeds in small scale units.
This can be done - in the Consultant viewpoint-by active irrigation for fulfilment the recommendations.

D - Testing Facilities

The core of any development programme for the growth of Small Industry is Technical Assistance usually represented in testing facilities.
This is designed to ensure that the technology levels of small industrial units are constantly upgraded to enable them to compete on more equal terms with the larger units. While government assistance programme can help to over come, partially, the disadvantage of size, they cannot substitute entirely the efforts of the small units themselves to make a product that is sound in quality.

In fact, one of the most frequent criticism of the small Industry is that it does not pay adequate attention to quality. It is true, that small units cannot afford expensive R and D departments as in large industry which can constantly seeknew processes and innovation for adoption. Much of industrial R-D is conducted by the large industry who are understandably reluctant to part with them except for exhortant fees.
Nor is such process development always suitable for the small industry (except after considerable modification) which again requires trained personnel to do it. Large scale technology is geared to a large volume demand and is not always amenable to small lot production.

It is for this reason that many developing countries have set up national R-D centres to act as technology generating centres in specific fields. But nearly all of them suffer from the fact that the research conducted in these centres is not of much interest to small industry, even where it is, it needs to be "engineered" for industrial utilisation.

Such a process takes time and money and hence the impact of such R-D institutions on the growth of Small-Industry falls far below expectations.
Small Industry suffers also from lack of adequate testing equipment - which are increasingly becoming expensive - and limited access to testing facilities.

There is also a problem due to lack of standardization or where they exist, sometimes such standards are pegged to unduly high levels of performance. As a result of all these factors, small industry entrepreneurs are forced to operate at low technology levels and their products suffer from poor quality due to lack of quality control and standardization methods.

Any laying down of standards would have meaning only if there is easy access to testing laboratories who are empowered to issue certificates that a particular product chosen on proper sampling technique does satisfy the specifications laid down for it. Such laboratories would need expensive equipment and would be few; in most cities small industrial units which are widely scattered with not have ready access to them. Nor will they be able to afford to keep inhouse test equipment most of which is not used continually. Promotional agencies will need to come forward to set up test centres or stations for making the preliminary tests for the quality of the product. Such centres or stations can be set up, in first instance on the Mini-Industrial Estates as part of the facilities of the common facility centre. But the difficulties of doing so is that the units on such an Estate are varied in character, and facilities for a diverse group of products are far more difficult than for a single product group.

Hence, it may be necessary to select clusters of product groups where the same product is lately to be made by a sizeable number of units, if an R-D laboratory is located near by, it could take on the job of acting as a testing centre for the small and medium units. But what about cottages, and from the Consultant field visits to such R-D laboratory they are fully engaged in their own responsibilities.

For this, a separate testing laboratory may have to be established. It is suggested that DG-SI may take up this exercise (in cooperation with the Badan for R-D institute and LIPI) to make an inventory of existing testing facilities available to the small industrial units and to consider how best the deficiencies can be made up through establishing new test facilities.

In order to creat a sense of "quality" consciousness amongst small industrial units and to encourage them to avail themselves of the facilities set up, it may be desirable to offer such testing services at nominal fees or even gratuitous.

As the units begin to see the advantage of such testing, particularly when procurement agencies begin to insist on standard specification as a pre-requisite for purchase, the fees may be levied on a more realistic basis; in any case such services should not be regarded as 'profit earning' but on a no-profit, no loss basis to inculcate in the small units an awareness of the importance of quality control so as to ensure an acceptable quality of the product made by the unit.

Technical assistance to the small industrial units becomes increasingly important as the technology requirements of the sector begin to progressively go up. Small Entrepreneurs must be encouraged to pay special attention to the quality of their products which alone will make them competitive in long run. Cutting down costs at the expense of quality is counter-productive and needs to be discouraged. The health of the small sector would ultimately depend on the impact of the R-D net work in looking for unconventional areas of growth and in maintaining a level of quality that is commensurate with the price.

The Consultant gives an example of essential testing equipment for tanned leather laboratory and also the equipment which can be provided for in-process quality control in a tannery (Appendix No. XII).

E - Training Programmes

1 - According to the invitation of the Ministry of Industry, the Consultant shared in the fourth training programme (Pendidikan dan Latihan Standardisasi, ke IV 1984), from 15 February until 28 February 1984 by lecturing in standardization and quality control to trainess from all provinces. (Lectures in Bahasa Indonesia Language Appendix No. XIII).

2 - The same took place, and responding to another request from the Industrial Mini-Estate authorities at Jakarta the Consultant lectured on 12 March 1984, to engineers and entrepreneurs on standardization and quality control and practical demonstrations were used.

3 - The lectures of the Consultant in Standardization and Quality Control were considered a part of the training programme which will be held from 28th April 1984 till 19th May 1984 in Bandung. This training programme will be run by the UNIDO Field Expert there.

4 - The Consultant submitted copies of his lectures in Standardization and Quality Control to either the UNIDO Field Experts or their Counterparts in West, Middle and East Java, to be used as material in their training courses.

F - Practical Application of Standardization and Quality Control Principles in Some Small Scale Units.

INTRODUCTION

Formulating or publishing a standard is merely a means to approach the goal. They must be widely implemented in every field of practical activities of production and consumption.

The important aspect to consider in any actual manufacture, is the elimenation of the causes of defects as manufacturing is continuous. The routine inspection procedures attempt to sort out items produced as good or bad. This approach must be replaced by a new one of taking corrective action as and when manufacturing is continuing. Also this approach is given by SQC techniques by evaluating the quality on the basis of samples (or a few items from the production) so that action could be taken to set right the process before damage is done.
In the application of SQC techniques, the first step is the collection of reliable and adequate data in a planned and systematid manner. The analysis and interpretation of the data thus collected lead to the evaluation of the quality standards in various stages of manufacture, as well as on the out going product.

The deviations in the quality standards noted are traced to the technical and operating conditions of the process, so that corrective action is taken as and when necessary.

The emphasis is on the prevention of trouble, rather than on correcting after it has happened.

Summarising the quality control approach the following ideas to be noted are :

1- The idea of building quality into the product rather than inspecting it.
2- The use of data in studying cause-effect relationships which lead to taking action on the process.
3- Importance of planned collection and effective use of data.

Practical Application of Standardization and Quality Control Techniques in Some Small Scale Units :

The practical application had been taken place in some units, but due to the limited time tha fruits cannot be directly observed. The application and the output of Q.C. techniques fundamentaly need adequate time for establishing and giving results.

I- P.T. BARKAH PERINTIS (JAKARTA)

Production : Military shoes, upper : Box leather, Sole; rubber. Using Iron shank.

Steps 1- Some visits had been taken place during which the concerned SII were discussed.

2- The Consultant commented that there must be one size more for the shanks to cover adqately the whole sizes of the shoes.

3- Pareto Analysis system was implemented.

4- Process quality control locations were discussed and appointed.

5- This unit is very good and provided by some process quality control equipment.

II- MINI INDUSTRIAL ESTATE "PULOGADUNG" JAKARTA

The Consultant had payed visits to Mini Industrial Estate of JAKARTA.

He explained to some entrepreneurs in a 4 hours meeting standardization and quality control, and he went to 7 units for practical applications.

General idea about JAKARTA Mini-Estate :

This Mini Industrial Estate "Pulogadung" or Sarana Usaha Industri Kecil (SUIK), was established on August 1979, in JAKARTA, especially for small scale units.

Its whole area is 2.7 Hectar. It comprises 59 units beside the management building. The size of every unit (room) is about 8.4 M^2.

There are some common facilities like asphaltic roads, water supply, electricity, parking area and Mosque.

This Mini Estate is under the supervision of the Department of Industry of the Province JAKARTA, BIPIK Project.

The Entrepreneurs :

The Mini Industrial Estate "Pulogadung" comprises 59 Entrepreneurs. 60% of the Entrepreneurs finished the university. 40% of the Entrepreneurs finished the high school.
Every enterprise has ± 10 workers.

Training Courses :

21 Entrepreneurs had finished management training course.
10 Entrepreneurs had finished cooperative training course.
and 3 Entrepreneurs had finished plants visits in Middle Java.
List of Entrepreneurs and their activities in JAKARTA Mini Estate is Appendix No. IIII.

The Units in which practical applications had taken place :

1- GAVIO : For ground aviation services and general worksnop
2- YAMAHA : Interiors (BATIK)

3- CARONA : For Ladies handbags

4- TIP TOP INDONESIA : For tyre press

5- ELEMEN : For Cabins of fire Hydrates and electrical Cabins.

6- YUSITON : For components of cars bodies, Sub contractor with Mitsubishi motor for every 3 months.

7- MINATEX : Knitting and garments unit ; capacity of knitting cloth is one ton every month.

G - Presentation and Discussions for the proposed Recommendations

The Team Leader had sent a letter Appendix XIV, dated 2nd March 1984 to the Ministry of Industry (DG-SI) asking for a date between 19th - 23rd March for presentation of the Consultant's recommendations on Standardization and Quality Control in Small Scale Industry.

The Ministry of Industry (DG-SI) appointed Saturday 25th March for this purpose.

The recommendations had been throughly discussed with the Consultant in a full day session. Some additions had been formulated, and they were taken into consideration during final drafting.

The recommendations were accepted.

II. RECOMMENDATIONS

1- Standardization of the Small Scale and Cottage Production

Standardization of Small Scale Products particularly those included in the product reservation and purchase reservation programmes may be taken up, but such standards will need to be realistic and geared to the stage of development of small scale industry. Consequently we recommend, that the technical guidline manuscripts which have been issued by DG-SI (their number is now 61) - and which are taken from the SII to accommodate the small scale products and which are used for certification, can be completed to cover the whole range small scale products. Besides, some SII may comprise grades which fir small scale products. On the other hand a simpler technical quality requirements can be bid down for the cottages production quality.

2- Testing Facilities

With a view to keeping pace with the present day requirements, the small scale and cottage units are required to produce a quality of products which meets the requirements of the consumers and the end users. Considering the difficulties of small scale and cottage industries in equipping themselves with the need-based testing facilities due to high cost of testing equipment and non-availability of trained

personel for operating the testing equipment.
We propse a long term testing facilities programme for the second phase for establishing chain of field testing stations in CSF (Common Service Facilities) and in UPT in the clusters backed by larger laboratories at the provincial capitals.
An inventory of existing testing facilities (to which the small industry has an access) may be taken-up by the DG-SI to determine the areas uncovered at present.

This will help very much in spreading the message of quality control and in establishing quality consciousness between small scale and cottage units.

The equipment in such stations will be the essential ones which realize the testing methods mentioned either in SII or the guidline manuscripts or even the technical requirements which will be issued to meet the quality of the cottage products.
Studies for these stations which depend on the variety of the production should be carried out.

These stations will be prouided with the essential references books, standards and other printed information and facilities.
Internal and external training for the staff of these testing stations, Prima facie is very essential.

Mobile Testing Stations

A kind of mobile testing stations for serving the units which are located in far places can be considered.

The duties of such testing stations can be as follows :

- to take samples or to receive samples
- to prepare samples so that they can be sent without being spoiled
- to pack samples and send them by pouch or other rapid way to the central laboratories or institutes
- to perform simple tests of urgent nature such as production control or tests on perishable products that can not easily be preserved without changing their properties.
- to perform specialized tests locally needed.

W o r k s h o p s

All these chain of testing stations and the mobile ones, can be assisted by some workshops to :

1- help in the installation of new equipment
2- safeguarding of equipment
3- make spare parts that are not readily available
4- make jigs and fixtures for the mounting of test pieces

5- make alternations and modifications of equipment

6- build specialised testing equipment

7- some of these workshops can be mobile also

Objectives of chain field testing stations

The objectives of chain field testing stations can be summarized as follows :

1- to bring out total quality control concept in small scale industries by guiding and educating the entrepreneurs to adopt suitable measures for quality control conforming to the requirement of standards and other approved specifications.

2- to assist ancillary units in the supply of components and parts of tested quality and standards to parent units and consumers

3- to assist the small scale units in capturing better image of their products in the export market

4- to provide testing facilities :

- to enable the small scale industries to produce goods conforming to standards
- to accordance with the requirements of purchasing agencies and costumers
- required under quality marking scheme
- for the products reserved for development in small scale & cottage industries
- dissemination of quality consciousness

5- to provide consultancy service for setting up testing and inspection facilities in one's own factory

6- to provide design and development of tests rigs to meet individual product needs

7- to provide training facilities for testing

8- to cooperate with approved inspection agencies in matters realting to testing and standardization of products.

3- Testing equipment for process quality control

The important aspect to consider in any actual manufacture, is the elimenation of the causes of defects as manufacturing is continuous. The routine inspection procedures attempt to sort out the items produced as good or bad. This approach must be replaced by a new one of taking corrective action as, and when manufacturing is continuing. So that action could be taken to set right the process before damage is done. This is facilitating by providing the units by most important equipment for manifesting process quality control.

4- Establishment of Pilot Demonstration Centers

This proposal aims to raise the quality, apply the technical requirement, designs and to be as a training center especially for the new workers who enter the industry.

In other words the activities will fall into five categories, worksite training to produce skilled small scale and cottage workers, enhanced supply of materials, up-graded technology suitable for small scale and cottage production, technical consulting gaining benefits from cooperation with TPLS can be appreciated and providing the up-to-date designs as the first step to export, and also assist to develop the attitudes towards diversification.

These centers can provide the units by some semi-finished products for example, ready made uppers in different sizes in case of shoes.

The purpose of these centers would be to fill the gap in availability of skilled labour to allow small scale and cottage producers to attain their full output potential with the desired quality. The aim here is to augment the supply of skilled labour and not to provide a cheap alternative. Ultimately the increase in the supply of skilled labour accomplished by the centers training programme will have the effect of moderating the labour costs of production and increasing the quality of the final product.

It is anticipated that the opportunity to receive training at the proposed centers will be more appealing to young-sters than the present very long, drawn out traditional method of apprenticeship to a skilled worker.

At present, the trainee must spend years at very low pay doing a great many things that serve the skilled worker, but which impart little skill.
It is proposed that the training at the centers starts from the beginning with substantive work that contributes directly to the building of worker skills, this is not to say that the trainees should be releived of the menial tasks that need to be done, but that menial work be only a part of the total training. This will build self-respect dignity and a sense of progress and accomplish along with the other supposed virtues of common labour.

The technology employed at these centers is envisaged to be on a good level.
In order to take advantage of opportunities for sub-contracting small scale units will need to improve the consistency and quality of their production. They must also be prepared to adapt both their designs and their production practices to the changing demands of markets which they cannot deal with on a personalized basis, the center can help.

These centers would not be a pioneering venture. Much innovation along these lines has already taken place in other developing countries and this experience is available from various sources of technological information.

5- Quality Control of Industrial Raw Materials

Concrete quality control system should be carried out in the units which produce industrial raw materials for small scale and cottage production, as these materials has on important influence on the quality of the final product.

6- Differentiation between products reserved for small scale and those of cottage sector.

In fact it may be useful from the quality point of view to spell out specifically, those which are proposed to be reserved in the cottage sector and those for the small scale industry sector. Such a listing would make it possible for a clear view to be taken on the growth pattern of both sectors and in applying the technical requirements for achieving the desired quality.

In practice, the activities under the cottage industry category, would not be taken-up by the large units (although some small units may) and hence, the reservation policy must spell out the decree of protection that is proposed to be given to the cottage against the small units. In drawing up a valid list of items for reservation for the small industry, care needs to be taken to ensure that what is proposed to be reserved-whether for cottage or small is technically feasible by applying the methods of quality control for their products, as well as economically viable.

7- Machinery

Since in small industry the nature of machinery employed determines to a large extent the level of the quality of the products, then provide this sector with new machines is a vital matter in the sense of achieving the desired quality for the final production; special hire-purchase schemes may be formulated for supply of machinery, whether domestic or foreign.

8- Control the Quality of the Reserved units

Translating the reserved units in the sense of employment, it goes up to 300,000 persons out of a total of 837055 engaged in the small sector and a production of Rp. 209 billion out of a total of Rp. 600 billion for the entire small sector in the country. Thus the reserved items constitute an appreciable percentage (more than a third of the total in the small sector in the country).

And thus controlling these products from the quality point of view is very essential, for making the scheme successful. This will help very much in giving confidence for this scheme of reservation in the eyes of the consumers.

In our belief, the clue point for the successful of the product reservation system is to work hard for achieving the desired quality of these products.

9- Control the Quality of Purchase Reserved Commodities

It is here that standardization plays an essential role in guaranteeing the quality of the purchase reserved commodities. That means, towards desired quality through standards. But such standards will need to be realistic and geared to the small scale products.

So on the same idea, the technical guidline manuscripts, either based on the concerned SII, and/or independantly if the latter is not found, are very important. In case that of cottages technical quality requirements can be put down.

10- Control the Quality of Sub-Contracting Products

Ultimately, the success of sub-contracting will depend in the first base on the quality of the products and the developing of standardization consciusness among the sub-contractor.

For the large unit, it means a steady supply of parts of realized standards and quality which will give trouble free final product.

For sub-contractor it means quality assurance which revenues reasonable profit margin as a result of very low refusal of his products and also a feeling of satisfaction that an important part of acceptable quality is being produced by his firm.

If quality aspect for the products is realized, this can help very much in growing and promoting a healthy relationship between the large and small sector sub- ontractors.

Not only this, but the possibility of establishing an International sub-contracting exchange may also be explored.

11- <u>Creating a System for Conveying Information Concerning Standardization and Quality Requirements</u>

This can take place either by strengthing the cooperative system, or by providing the small scale and clusters by the PPIK's who are responsible for such tasks by training.

Also it is necessary to produce attractive brochers, conduct exhibitions and sponsor good advertisements explaining the scheme of standardization and quality control and circulate them widely amongst interested bodies.

12- Applying the Integrated (Total) Quality Control Scheme in a way which fits the Small Scale Industries

Many people still think that the quality of industrial products is merely the result of certain operations during the manufacturing process.
As the quality of the product is the degree to which the properties of this product are adapted to the needs of the consumer.

Then, quality originates in all the phases in which the needs of the consumer are recognized, the properties of the product are formulated and realized, and the appropriate steps are taken to make the product reach the consumer for whom it is intented.

In more clear words quality originates from the market and then go to the decisions, programming, design, manufacture, distribution and after sale services (if it is necessary for the concerned product).

From the above mentioned views we recommend formulating comprehensive studies for the market for every kind of production of small scale for the sake of the quality of the products.
As a beginning stage these studies can be made for the reserved products.
These studies can be sponsored by DG-SI.

13- Spreading Awareness of the importance for in process Quality Control between Small Scale Units :

The simplest or seemingly simplest method to ensure that the products which are delivered posses the prescribed properties, is to check at the end of the process whether the products posses the required properties and to pass or release only such goods for delivery as satisfy these requirements.

Such a form of inspection can be compared to a screen at the end of the production process which stops the bad products and allows only the good one to pass. Generally speaking, screening inspection is the first form of control which is introduced in a production process, when it is found necessary to take measures in order to mountain the quality of the manufactured goods. One of the properties of this screening inspection is that it lags behind the facts, it comes too late to prevent the occurance of mistakes.

In contrast to this there exists an active form of inspection in which emphasis is laid on the provisions directed at obtaining high quality products.

This is the objective of active quality inspection which therefore, deserves the name of quality control.

Such quality control as is actually being applied in practically all production processes includes elements of both screening inspection and of active quality inspection or in process quality control (preventing the occurrence of defective products).

The importance of the inprocess quality control between small scale units will lead to :

- Elimination of waste
- Better and more efficient use of indigenous raw material
- Increased productivity of manpower and equipment
- Reduction of production cost
- Improvement of quality of end goods
- Protection of consumers
- Minimizing the costs of final inspection.

This can be achieved by issueing and widly distributing quality control manual to help in the basic implementation of the aspect, and tne adaption of the most appropriate quality control methods and techniques in the process.

14- Training for Standards and Quality Engineers

Engineers who are responsible for standards and Quality in DG-SI, must be trained in technicalities which are connected with standardization and Quality Control. It should be emphasized that this training is essential, not only to give them the necessary skill to properly perform their duties, but also to enable them to guide, direct, supervise and at later stage, train the staff of small scale enterprises.

It is recommended not to miss any opportunity offered by bodies outside the country to train the staff in standardization, quality control and Metrology.

In addition useful training manuals on quality control can be obtained from :

- The National Productivity Council, India
- The Swedish Society for Quality Control
- Iowa University, USA
- Westing house corporation, USA.

Also the consultant recommends the following visual aids :

- Successful standardization stories a set of 57 coloured slides obtained from the National Association of Purchasing Management U.S.A.

- An introduction to Quality Control, a set of 55 coloured slides obtained from the Asian Productivity Organization, Tokyo, Japan.
- Samplex Random Sampling Box : a training package obtained from Technical Prototypes (sales) Ltd, United Kingdom
- Right First Time : a Film on Quality Control published by ILO.

15- Training for the Entrepreneurs in Standardization and Quality Control :

Training the Entrepreneurs of Small Scale in Standardization and Quality Control is of great importance and this can taken place by the followings :

a- held meetings with them to explain the two aspects
b- practical training on the job in the site
c- the trained engineers in standardization and quality control can carry the message to the entrepreneurs.

16- Formulating Process Quality Control Specifications

Studies may take place in every unit to determine the location and specify the technical requirements for process quality control.

17- Standing Committee for Running of the Scheme can be Established

To keep a close watch on the working of the Scheme, a Standing Committee may set-up in the Directorate General Small Industry with the Director General himself as the Chairman, and the Director of Production, Programmes, Raw Materials and Equipment and Standardization as members. It would be useful to invite representatives of the Multifarious Industry and the Agency for Research and Development (BPPI), to participate in the meeting.

Such a Committee can meet once in two months to :

- review the progress of the scheme
- provide clarification on the terminology used in the scheme
- suggest modification in the scheme
- take steps to meet complaints about quality and applicability of standardization.

The Committee may also review proposals for addition or deletion to the scheme and make suitable recommendation to the Ministry for a decision.
It may be useful to form a Committee at KANWIL level with the Head of the KANWIL Office as the Chairman. The Committee will perform similar functions as the National Committee at the Centre and will make

suitable recommendations to the Committee at the National level.

18- Programming of Excuting the Scheme

For each province, the standing committee could select a few of the products which are seen to have a growth potential and determine the number of new units that can be encouraged to come-up. Such a forecast is admittedly tentative and rough but it does enable the scheme to result in a growth of small units whose products have a reasonally assured quality.

19- Demonstrating the Scheme

The Scheme can be demonstrated in one or two Mini Industrial Estates, and then after evaluation the system can be widely spread in other places.

APPENDIX I

JOB DESCRIPTION FOR SHORT TERM CONSULTANTS

PROJECT IN THE REPUBLIC OF INDONESIA

JOB DESCRIPTION

DP/INS/78/078/11-51/313.L

Post Title : Consultant in Standardization and Quality Control

Duration : Three months

Date required : As soon as possible

Duty Station : Jakarta, with travel within the country.

Purpose of Project : To assist the Government in the planning and implementation of various programmes for the development of Small Industry, particularly the establishment of Mini-Industrial Estates, and the formulation of policies and incentives for the promotion of Small Scale Industries.

Duties : Under the supervision of the Team Leader, the expert will be specifically expected to :

a). Evaluate the existing programmes of standardization of industrial products, with special reference to the Small Sector.

b). Suggest product groups for which standardization is considered desirable.

c). Recommend steps to be taken - both policy measures and institutional for effecting better standardization, with the framework of the National Standardization activities.

d). Consider the applicability of SQC techniques to select product groups within the small sector.

e). Prepare a scheme of establishing test facilities which are easily accessible to small units for ensuring better quality control and standardization.

Qualifications : A degree in science or Engineering; extensive experience of working in a organization dealing with formulation and implementation of national standards; experience in a Testing Laboratory, primarity meant for the Small Industrial Units would be an added qualification.

Language : English

Background Information : It is estimated that more than 90% of 1.3 million manufacturing entrepreneurs (as evidenced by the last full scale census conducted in 1974/1975) are in Cottage Industry employing 4 million persons or 80% of all the labour in the manufacturing sector.

A major share of these activities involves wood products, food processing textiles, building materials, and leather.
However, the share in the value added of the manufacturing sector is only 14%.

The Small Industry units (defined as those with an investment in plant and machinery less than Rp. 70 million) represent only 3.7% of the industrial units (in number, less than 50,000) but employ 350,000 persons and account for 8.6% of the value added.
The medium and large industry units represent only 0.6% of the number of industrial units but account for 9.3% of the labour force and 62% of the value added in the manufacturing sector.

Recognizing that greater attention needs to be paid to the Cottage and Small Industry (CSI) Sector, Government have launched a major programme of assistance (BIPIK) to help the Small Indigenous entrepreneurs in all aspects - identification of product lines, design of operations, procurement of machinery, supply of raw materials, credit, marketing etc.

A programme of assistance to the CSI has been executed in the second Five Year development plan (REPELITA II) at a Cost of Rp. 5 billion to provide consultancy services to existing entrepreneurs in production techniques and management procedures, to obtain suitable credit from the banking net work and to buy suitable equipment and tools. Further, a certain number of Industrial Extension Centres (PPIK) have been established and intensive training provided for field extension offices (TPL).
In REPELITA III, the programme is being further expended so as to establish Mini Industrial Estates (MIE) at suitable locations which will help to create new employment opportunities in the rural areas.

In addition, the following measures have been taken to develop the CSI as a complementary sector to the Medium and Large Industry (MLI) :

-- Conduct Intensive Campaigns amongst the economically weak groups so as to disseminate information and create awareness of the potentialities of the CSI sector.
-- Identification of product lines that can be undertaken by the economically weak groups and to strengthen their capabilities through product reservation and Purchase Reservation Programmes.

-- Improving the performancescapability of the Small Units through assistance in supply of equipment, improving productivity design and management.
-- Spread the Small Sector Industrial development pattern through the establishment of Mini-Industrial Estates which will act as focal points of growth in a region.

The Directorate General, Small Industry (DG - SI) in the Ministry of Industry has been established in 1978 to be the focal point of the development programme for the SSI Sector. In cooperation with Bank Indonesia, the Central Bank, DG - SI has formulated a programme of making 'Mini - Credit' available to the very small units through state owned Commercial Banks - Bank Rakyat Indonesia (BRI) and Bank Negara Indonesia (BNI, 1946), guaranteed by PT. Askrindo up to 75% of the loan. The World Bank has made funds available to the Bank Indonesia for disbursement of such loans.

Between 1973 and 77, UNIDO provided assistance for the development of Small Industry in the shape of mission and advisers. In 1973, a light industry advisor was provided; in 1974, a/joint UNDP/ILO/UNIDO mission took place to formulate a long term technical assistance programme for the Small Scale Sector. In 1975, two UNIDO Consultants were made available to assist government to introduce a suitable institutional framework to assist the Small Industry. A field extension service expert was fielded to assist the Ministry of Industry to implement the BIPIK Programme.

A UNIDO evaluation mission took place in December 1979 to assess the result of the project, and to formulate recommendations for future technical assistance.

As a result, two teams of experts were made available located at Yogyakarta and Surabaya. These were able to provide consultancy Services to improve production techniques, design and Quality Control, conduct training programmes and assist entrepreneurs to obtain loans from the banks.

Based on the experience garned through these two teams, the present project has been devised an a more ambitious scale to provide 11 experts - 5 of whom will be located in Jakarta, and the remaining 6 in the provincial offices in the islands of Java, Bali and North Sumatera. The Jakarta team consists of a Team Leader and experts in Industrial Engineering, Marketing, Training and Documentation. The field personnel will be Industrial Engineers with specialised experience relevant to the region in which they are located.

The Expert Team will be assisted by 'a team of short term Consultants, Counterparts, National Experts and Contracting agencies to provide comprehensive support to the development programme being implemented by the DGSI.

A Common criticism against the product of the Small Sector are that they are of poor quality and that they are not standardized, while this is partially true, it is because of the inability of the Small Units to afford expensive in-house testing facilities or due to limited access to such facilities. It is therefore necessary for development agencies to establish at suitable locations, Test Centres that would enable clusters of small units to test their products against specifications laid down by national organizations or bulk customers.

Even where such standards are laid down, it is seen that they are unduly restructive or rigid and are therefore not amenable to implementation, it is neccesary to dis-tinguish between standards which are to be enforced strictly in the interests of public health and safety and those which are merely recommendatory.

The net work of Test Centres will have to be linked up with test organizations at the regional and national levels. Further such institutional devices need to be backed by administrative measures which help to create amongst small manufacturers a greater awareness of the need to maintain adequately quality. It needs to be recognized that the marketability of a product depends, to a considerable degree, on the favourable price-quality trade off the small unit is able to achieve in comparison with that made by the large units.

The Consultant will be expected to prepare a final report setting out the findings of this mission and his recommendations to the Government on the action which might be taken in collecting and compiling data on the performance of the CSI sector.

APPENDIX II

PRELIMINARY REPORT

BY

EL MORSY ABDOU SELIET

CONSULTANT IN STANDARDIZATION AND
QUALITY CONTROL
(SHORT TERM)

Project No : DP/INS/78/078/11-51/313.L

Jakarta,
January 31, 1984

A. Introduction :

I arrived at Vienna on December 27, 1983, from Cairo and reported to UNIDO Headquarters on January 28 for briefing.

After attending to administrative details, a copy of the job description of the post 'Consultant in Standardization and Quality Control was given to me. I left Vienna on December 30.

I reached Jakarta on January 10.

UNIDO representative met me in the airport with a greeting letter from Messers SIDFA.

Next morning Mr. F.M. Iqbal, the Senior Industrial Development Field Adviser briefed me.

In the same day I met Dr. Vepa, the Team Leader in the new address of the Project which is :

c/o Dit Jen for Small Industry
Jalan Kebon Binatang III/15
Jakarta - Pusat.

Dr. Vepa briefed me, giving a full idea about the project and letting me have access to the files, reports and other records of the project. He introduced me to both national and UNIDO Experts who are joining the project.

Afterwards the Team Leader introduced me to Mr. Ohello, the National Coordinator for the project.

To Mr. Ir. SOEBARDI SOERIA ATMADJA, Dept of Industry, who is responsible for standardization in the Directorate General, Small Scale Industry (DG - SI), in the Ministry of Industry.

To Mr. GANDY, who is the responsible man for the system of formulating the Indonesian Standards (SII).

To Mr. Ir. A. SYORFAI, who is the Chief National Expert in the Project.

To Drs. LUMBAN TOBING, Head of the Regional Office of Department of Industry for Jakarta Capital City. He helped me in organizing my field visits in Jakarta.

I payed a visit to a shoe factory in Jakarta and I held preliminary discussions with the owners about applying Quality Control in their factory.

B. Work Plan :

Based on my discussions the following work plan has been worked :

- From 10th January (the date of my arrival to Jakarta).
  31st January Discussions Meetings with the concerned people in the Directorate General, Small Industry (DG - SI) in the Ministry of Industry try to have an idea about the existing programmes of standardization of industrial products .

This idea will be the base for :

a. Evaluation of these programmes with reference the Small Sector
b. Suggestion of product groups for which standardization is considered desirable
c. Recommending steps to be taken for better standardization.

- From first February - 16 February :

  Field visits to clusters, Ministates and laboratories in Bandung, Yogayakrta and Surabaya, with the aim of studying the production situation and the test facilities to propose which are easily accessible to small units.

- From 17th February - 29th February :

  Sharing in the National Training course which is held by the Ministry of Industry (this is done from my side according to the suggestion of the responsible authorities of the Ministry of Industry.
  I shall intend at that time to work with one or two units to prepare to demonstrative practice for the application of quality control principles in production.

- From First March - 15th March :

  To continue the field work and to draft recommendations in the issues sketched in the job discription.

- From 16th March - 30th March :

  Discussions for the recommendations in a Seminar by local authorities, presentation the results of the mission and preparing the final report.

- 30th March :

  Departure from Jakarta back home and debriefing.

APPENDIX III

Decree of the Minister of Industry
No. 172/M/SK/5/1976
Concerning
INDUSTRIAL STANDARDIZATION AND QUALITY CONTROL
OF INDUSTRIAL GOODS AND PRODUCTS
WITHIN THE JURISDICTION
OF MINISTRY OF INDUSTRY

MINISTER OF INDUSTRY

Considering : That in order to promote fair competition in the industrial business sector to assure production, rationalization and to protect the consumers' interest, it is deemed necessary to define the implementation of industrial standardization and quality control on industrial goods and products within the jurisdication of the Ministry of Industry.

with a view to :
1 - Law No. 10 Year 1961
2 - Government Regulation No. 9 Year 1964 concerning Industrial Standards.
3 - Presidential Decree No. 9 Year 1973
4 - Presidential Decree No. 44 and No. 45 Year 1974.
5 - Decree of Minister of Industry No. 249/M/SK/4/1975, dated April 30, 1975.
6 - Decree of Minister of Industry No. 589/M/SK/10/1975, dated October 23, 1975.

HAS DECIDED

To Enact : Decree of the Minister of Industry concerning industrial standardization and quality control on industrial goods/products within the jurisdication of the Ministry of Industry.

ARTICLE 1

In this Decree and its executive regulations :

(a) Industrial standardization is understood to mean :

- definition, terminology, abbreviation, symbols, classification mark, in the industrial sector.
- system of planning, drawing and executing technical and economic efforts,
- system of processing materials and ways of presenting the products,
- kinds, form, size, quality and safeguarding of industrial products and systems of packing,
- systems of testing, analyzing, inspecting and examining industry products.

(b) Quality control shall include all efforts to improve production apparatus/factories, so that they are capable of producing products, the quality of which meets the standards which have been promulgated.

(c) Quality supervision shall cover the conduct of testing and other measures to examine whether or not the produced goods comply with the requirements of the relevant standard.

(d) Product testing shall be the analysis and inspection of products in the field or in the laboratory to examine conformity with standard specifications.

ARTICLE 2

(1) To appoint Centres for Industrial Research and Development within the jurisdication of the Ministry of Industry to perform the tasks related with all efforts on industrial standardization, including quality control, quality supervision and testing of products, according to the respective sectors in industry.

(2) In performing the tasks as stated under Article 2 paragraph (1) above, the Centre for Research and Development of Metal and Engineering Industries, shall be the Coordinator of all Research and Development Centres within the jurisdication of the Ministry of Industry, as stipulated in Decree No. 589/M/SK/A/75, dated October 23, 1975.

ARTICLE 3

(1) In performing the tasks as stated under Article 2 above, each Centre for Research and Development shall be obliged to do the following activities :

(a) The preparation of standard glossaries of terms and their definitions.
(b) Composing quality standards.
(c) Composing the standards for test methods
(d) Composing the standards for sampling methods
(e) Composing marking methods
(f) Testing and quality control
(g) Certification marking
(h) Other efforts in the sector of industrial standardization.

(2) The implementation of the provision stated under paragraph (1) shall be coordinated by the Centre for Research and Development of Metal and Engineering Industries, taking into consideration the opinion of Industrial standardization Committee referred to under Article 5 of this Decree;

ARTICLE 4

(1) In permorming its tasks each Centre for Research and Development may be assisted by research institutes and/or industrial research centres within the jurisdication of the Ministry of Industry as well as by other parties concerned.

(2) For the purpose stated under paragraph (1) of this Article, Industrial Standardization Technical Committees may be set-up the membership of which covers the above mentioned elements.

(3) The composition of members and working scheme of Industrial Standardization Technical Committees shall be laid down by the Head of the centre for Research and Development of Metal and Engineering Industries, upon the proposal of the Head of the Centre for Research and Development concerned.

ARTICLE 5

(1) To assist the Minister of Industry in composing the priority and programme on industrial standardization Industry Standardization Committee shall be set-up, the members of which shall consist of government officials and elements representing the producers and consumers.

(2) The composition of members and working schemes of the Industrial Standardization Committee shall be laid down by the Minister of Industry.

ARTICLE 6

(1) Centres for Research and Development refered to under paragraph (1) Article 4, may perform testing of any party which needs them.

(2) The results of testing the products (which comply with the standard requirments) can be established as industrial standards and declared obligatory.

ARTICLE 7

(1) The industrial products of which the industrial standards have been declared obligatory shall be produced with the quality which comply with the industrial standards concerned and must be given the mark of the industrial standard as stipulated on the basis of this Decree.

(2) A company may use the mark or the industrial standard as stipulated in this Decree, after having obtained the approval from the Director General concerned.

ARTICLE 8

The Minister of Industry shall determine and establish the industrial standards and the obligatory effectiveness of the industrial standards.

ARTICLE 9

(1) The Director General concerned shall give his approval to the industrial enterprises which have fulfilled quality requirements continuously, to use the industrial standard mark and make announcement to the public and revoke if the quality requirments can no longer be fulfilled.

(2) The Director General concerned shall inspect industrial products and stipulate policy to promote the industry, so that it can produce the products which meet the quality requirements.

ARTICLE 10

(1) The Director General concerned may set-up an executive Team to assist the Director General in performing his tasks as stated under Article 9 above.

(2) The composition and working scheme of the Executive Team stated under paragraph (1) of this Article shall be enacted by a Decree of the Director General concerned.

ARTICLE 11

(1) Expenses for sampling, testing the product and quality control as well as other costs related to the implementation of the provisions stipulated in this Decree shall be imposed on the industrial enterprise or manufacturing factory concerned.

(2) The amount of the levies, systems of collecting and calculating shall be stipulated in the executive regulations laid down by the Director General concerned on behalf of Minister of Industry.

ARTICLE 12

All industrial standards which have been issued and legalized by virtue of a Decree of Minister of Industry shall remain effective by due compliance of the provisions stipulated in this decree.

ARTICLE 13

All Team and/or Committees for Industrial Standardization set up and appointed based on or by virtue of a Decree of the Minister of Industry are declared to be dissolved and substituted by Standardization Committee, Technical Teams and Executive Teams set up and appointed on the basis of this Ministerial Decree.

ARTICLE 14

Industrial enterprises which violate the provisions stipulated in this Decree and do not obey the executive regulations based on this Decree, are subject to administrative penality, including the revocation of their industrial undertaking permit.

ARTICLE 15

This Decree shall come into force on the date of its sanctioning, with the provision that if mistakes are found matters will be altered accordingly.

Sanctioned in Jakarta
on May 17, 1976
for Minister of INDUSTRY.

APPENDIX IV

LIST OF INDONESIAN INDUSTRIAL STANDARDS

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6.	Quality and Test Method of Clove-leaf Oil	0006-72	
7.	Quality and Test Method of Patchouli Oil	0007-72	
8.	Quality and Test Method of Ground Coffee	0008-80	
9.	Quality and Test Method of Table Vinegar	0009-72	
10.	Quality and Test Method of Milk Powder	0011-78	
11.	Quality and Test Method of Portland Cement	0013-77	SII
12.	Quality and Test Method of Cement Tile	0014-72	
13.	Quality and Test Method of Cement Asbestos Sheet	0015-76	SII
14.	Quality and Test Method of Fibre Cement Sheet	0016-72	
15.	Quality and Test Method of Dry Battery	0017-72	SII
16.	Quality and Test Method of Box Leather	0018-79	
17.	Quality and Test Method of Cow Sole Leather	0019-79	
18.	Quality and Test Method of Refractory Brick and Refractory Cement Chammote Type	0020-80	
19.	Quality and Test Method of Red Bricks for Building Material	0021-78	
20.	Quality and Test Method of Ceramic Roofing Tile	0022-73	

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21.	Quality and Test Method of Ceramic Floor Tile	0023-73	
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29.	Quality and Test Method of Ordinary Bread	0031-73	
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33.	Quality and Test Method Pickled Cow Hides for Export	0036-73	
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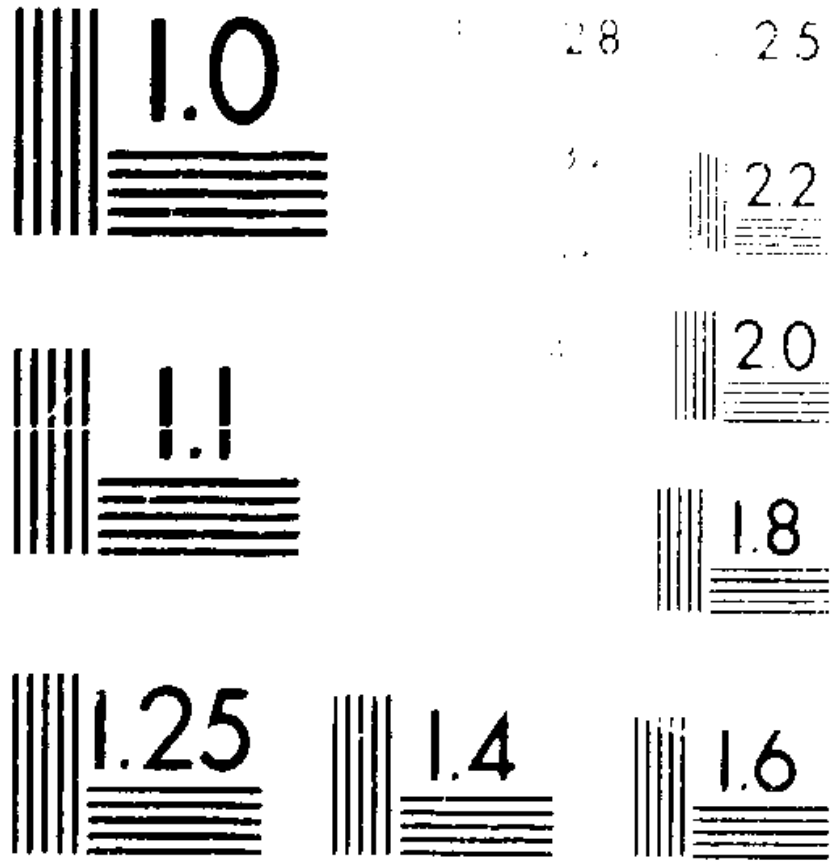
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APPENDIX V

GUIDANCE TECHNICAL MANUSCRIPT INDONESIAN STANDARD INDUSTRIES BY 1982/1983

Sector	Products	Number Indonesian Standard Industry	Author
I METAL	1. Brazier for Paraffin	0135 - 75	BBSBT Bandung
	2. Hand Sprayer	0198 - 78	"
	3. Hoes	0236 - 79	"
	4. Hand Pump	0259 - 79	"
	5. Drill for Wood	0328 - 80	Metal Industry, Develpment Centre, Bandung.
	6. Chisel	0329 - 80	
	7. Hammers	0330 - 80	
	8. Pliers	0331 - 80	"
	9. Tweezers	0332 - 80	"
	10. Spoon for Cement	0334 - 80	"
	11. Hand Chisel	0335 - 80	"
II FOOD	1. Plain Bread	0031 - 73	Chemical Research, Semarang.
	2. Sauce (Kecap)	0032 - 78	
	3. Coconut Oil	0150 - 77	"
	4. Lemonade from sugar	0153 - 77	"
	5. Palm sugar	0225 - 79	"
	6. Tahu (a cake fermented soya beans)	0270 - 80	Agriculture Research, Bogor
	7. Crisply baked (Kerupuk ikan)	0272 - 80	Chemical Research, Semarang.
III TEXTILE LEATHER	1. Cover Leather goat	0065 - 75	Leather, Rubber and Plastic Research, Yogyakarta.
	2. Pickle Leather goat	0066 - 76	
	3. Box Leather	0018 - 79	
	4. Sol Leather	0019 - 79	"
	5. Towel	0244 - 79	Textile Research, Bandung.

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	6. Size of Trosers	0306 - 80	Textile Research, Jakarta.
	7. Shoes (pantopel)	0311 - 80	Leather, rubber, Plastic Research Yogyakarta.
	8. Shoes (Derby)		
IV CHEMICAL			
	1. Clove Oil	0006 - 72	Agriculture Research, Bogor.
	2. Molucas Oil	0007 - 72	"
	3. Canangium Oil	0026 - 73	"
	4. Oil which as made from nutmeg cleaves (pala)	0028 - 73	"
	5. Fragrant grass oil	0025 - 79	"
	6. Grass with fragrant root oil (akar wangi)	0027 - 79	"
	7. Terpentine Oil	0257 - 79	"
	8. Aromatic herb oil (Nilam)	0069 - 75	"
V CONSTRUCTION & MATERIAL			
	1. Cement Tile	0014 - 72	Construction & Material Research Jakarta
	2. Tile Brick	0021 - 78	
	3. Ceramic pantile (Roofs)	0022 - 81	"
	4. Lime for Construction	0024 - 80	"
	5. Shuttle cock (Badminton)	0134 - 75	Batik Research, Yogyakarta.
	6. Racket for Badminton	0313 - 80	"
	7. Ceramic Isolator	0288 - 80	Ceramic Research Bandung.

GUIDANCE TECHNICAL MANUSCRIPT INDONESIAN
STANDARD INDUSTRIES F Y 1983/1984

Sector	Products	Number Indonesian Standard Industry	Author
I METAL	1. Fork (Agriculture)	0235 - 79	Metal Industry Development Centre, Bandung
	2. Axe	0239 - 79	"
	3. Steel Hinges	0407 - 81	"
	4. Mortice Locks	0408 - 81	"
II FOOD	1. Dried Noodle	0178 - 78	Agriculture Research, Bogor
	2. Dried Bread	0131 - 74	"
	3. Marquisa Extract	0177 - 78	"
	4. Lemonade	0153 - 77	"
	5. Ground coffee	0008 - 80	"
III TEXTILE & LEATHER			
	1. Gloves & Jacket Leather goat	0061 - 74	Textile Research Jakarta.
	2. Sarong	0634 - 82	"
	3. Size for Men's shirt	0203 - 78	"
	4. Lady's Shirts		
IV CHEMICAL			
	1. Washing soap	0005 - 73	Agriculture Research, Bogor
	2. Detergent Soap	0281 - 80	"
	3. Lawang Oil (Nutmegclove)	0377 - 80	"
	4. Castrol Oil	0154 - 77	"

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V	CONSTRUCTION & MATERIAL		
	1. Eternit (roof made from cement)	0016 - 72	Construction Research, Bandung
	2. Hollow Bricks	0285 - 80	"
	3. Concrete Roof	0447 - 81	"

APPENDIX V1

CATALOGUE OF STANDARD PRODUCT
BY SMALL SCALE INDUSTRY
MINISTRY OF INDUSTRY REPUBLIC OF INDONESIA

N o	Title of Standard	Number of SII
	FOOD SECTOR	
1.	Quality and Test Method of copra	0001 - 72
2.	Quality and Test Method of copra cake	0002 - 72
3.	Quality and Test Method of Frying Oil	0003 - 72
4.	Quality and Test Method of Ground Coffee	0008 - 80
5.	Quality and Test Method of Table Vinegar	0009 - 72
6.	Quality and Test Method of Alcoholic drinks	0031 - 73
7.	Quality and Test Method of Ordinary bread	0031 - 73
8.	Quality and Test Method of Soya Sauce	0032 - 78
9.	Quality and Test Method of Dried Cassava	0070 - 79
10.	Quality and Test Method of Tea	0073 - 79
11.	Quality and Test Method of Consumption Salt	0140 - 76
12.	Quality and Test Method of Table Salt	0141 - 7[illegible]
13.	Quality and Test Method of Coconut Oil	0150 - 77
14.	Quality and Test Method of Syrup	0153 - 77
15.	Quality and Test Method of Lemonade	0154 - 77
16.	Quality and Test Method of Honey	0155 - 77
17.	Quality and Test Method of Fruit Jam	0173 - 78
18.	Quality and Test Method of Tomato Sauce	0174 - 78

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19.	Quality and Test Method of Agar	0175 - 78
20.	Quality and Test Method of Noodles	0176 - 78
21.	Quality and Test Method of Fruit Extract	0180 - 78
22.	Quality and Test Method of Palm Sugar	0225 - 79
23.	Quality and Test Method of Hunkwee Flour	0226 - 79
24.	Quality and Test Method of Pulverized Black Pepper	0227 - 79
25.	Quality and Test Method of Chinese Vermicelli	0228 - 79
26.	Quality and Test Method of Pulverized Spices	0229 - 79
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35.	Quality and Test Method of Soya Flour Cake	0270 - 80
36.	Quality and Test Method of Soya Beans Cake	0271 - 80
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APPENDIX VII

THE MINISTER OF INDUSTRY OF THE REPUBLIC OF INDONESIA

DECREE OF THE MINISTER OF INDUSTRY

NUMBER : 517/M/SK/11/1980

C O N C E R N I N G

THE FIELD OF INDUSTRIAL UNDERTAKING'S ACTIVITIES

RESERVED FOR THE SMALL SCALE INDUSTRIES

THE MINISTER OF INDUSTRY

Considering : a. that the Small Scale Industries constitute an important sector within the framework of the Development Trilogy realization, particularly within the distribution of development and its achievements;

b. that in order to stimulate the Small Scale Industrial development, an undertaking's sphere should necessarily be created suitable to the protection policy and the provision of facilities, so that the programme and the course of the development will be more directed and settled;

c. that as protection effort for the Small Scale Industries, being a unit of the policy of the national industrial development, a field for industrial undertaking's activities reserved for the Small Scale Industries, should necessarily be stipulated;

d. that for this purpose, a Decree should necessarily be issued;

Taking into account :

1. The Presidential Decree of the Republic of Indonesia No. 44 Year 1974 concerning the Departmental Organization Principals;
2. The Presidential Decree of the Republic of Indonesia No. 45 Year 1974 juncto No. 27 Year 1978 concerning the Departmental Organization Composition;
3. The Presidential Decree of the Republic of Indonesia No. 59/M Year 1978 concerning the Formation of the Third Development Cabinet;
4. The Decree of the Minister of Industry No. 175/M/SK/10/1978 concerning the Organization and Work System of the Ministry of Industry;
5. The Decree of the Minister of Industry No. 176/M/SK/10/1978 concerning the Development of the Field of the Industrial Undertaking's Activities by the Directorate General within the Scope of the Ministry of Industry as being altered and added;

D E C I D E S

Stipulate : THE DECREE OF THE MINISTER OF INDUSTRY CONCERNING THE FIELD OF THE INDUSTRIAL UNDERTAKING'S ACTIVITIES BEING RESERVED FOR THE SMALL SCALE INDUSTRIES.

U N D E R S T A N D I N G

Article 1

(1) The Field of the Industrial Undertaking's Activities, which are reserved for the Small Scale Industries, constitute the policy which stipulates the Field of the Industrial Undertaking's Activities which only can be permitted to be performed or to be realized by the Small Scale Industries.

(2) The Field of Industrial Undertaking's Activities being reserved, is not permitted to be undertaken by large scale industries and medium scale industries as well as by small scale industries which assets entirely as well as partly being owned by large scale or medium scale industries.

O B J E C T I V E S

Article 2

The reservation of the Field of the Industrial Undertaking's Activities has the aim of giving an opportunity to the Small Scale Industries, to develop so that this sector is able :

a. to provide and to create a field of undertaking for the economically weak group;
b. providing and creating employment;
c. distributing undertaking's activities to the regional areas in order to support the regional development;
d. to achieve a growth-speed which should be rapid enough;
e. to become an unit of and to equip or to complete the national industrial structure.

S C O P E

Article 3

The field of Industrial Undertaking's Activities being reserved comprises the following sectors :

- Food
- Clothing and Leather
- Chemicals and Fibre
- Metal, Transportation means and Service apparatus
- Building materials and General materials.

C R I T E R I O N

Article 4

(1) The Field of Industrial Undertaking's Activities, producing commodities for local/rural markets are reserved for the small scale industries.

(2) The Field of Industrial Undertaking's Activities, producing art commodities, is reserved for the small scale industries.

(3) The reservation of the Field of Industrial Undertaking's Activities, is based on the following considerations :

a. Macro namely :
The industrial development position in the above mentioned field of undertaking.

b. Micro namely :
Technological ability and technological reach, capitalization, and the management of the small scale industry to produce the commodities concerned.

Article 5

The serve of the Field of Industrial Undertaking's Activities meant in Article 1 of this Decree, is mentioned in the list attached to this Decree.

M I S C E L L A N E O U S

Article 6

(1) The List of the Field for Industrial Undertaking's Activities being reserved will be completed periodically or at any time pursuant to the needs.
(2) The Field of Industrial Undertaking's Activities registered for being reserved, bu at the issue of this Decree, was still undertaken by large scale and medium scale industry, will be transfered to the small scale industry within certain limits, through the current permit procedure (licence procedure).

C L O S I N G

Article 7

This Decree starts to be in force at the date of issue.

Stipulated in : Jakarta
at the date : 20 November 1980

MINISTER OF INDUSTRY

SOEHOED

Appendix Ministrial Decree
Department of Industry
No. : /M/SK/11/1980
Date : November 1980

FIELD OF INDUSTRIAL UNDERTAKING'S ACTIVITIES
BEING RESERVED FOR THE SMALL SCALE INDUSTRIES

	INDUSTRIAL MAIN GROUP		FOOD INDUSTRIES
No.	Type of Industry	Code IK	Code of the Industrial undertaking's activities being reserved
1	2	3	4
1.	Cattle Slaughtering Industry Conservation and Processing of Meat	ISIC 3111	
	- Meat processing	IK 0102	
	- Drying process for meat		0102 01
	- Salting process for meat		0102 02
	- Candying process for meat		0102 03
	- Fumigating process for meat		0102 04
2.	Food Industry made for Milk	ISIC 3112	
	- Bottling and Packaging fresh milk	IK 0105	
	- Bottling of fresh milk		0105 01
3.	Canning of Fruits and Vegetables	ISIC 3113	
	- Drying process of	IK 0109	IK 0109
4.	Conservation and Processing of Fish and Crustacean in cans and the like		
	- Salting and drying of fish	IK 0112	IK 0112

1	2	3	4
5.	Seed Grinding Industries	ISIC 3116	
	- Rice flour industry Soya bean flour industry Small green pea plour industry		
	- Rice Flour Industry		0126 01
	- Soya bean flour Industry		0126 02
	- Small Green pea plour Industry		0126 03
6.	Starch-Biscuit-Noodle industries and the like	ISIC 3117	
	- Cookies and Fresh Food of the same type	IK 0150	
	- Cookies		0150 01
	- Fresh Food of the same type	IK 0154	
7.	Sugar Industries and the like	ISIC	
	- Sugar, Industry and the People's Sugarcane	IK 0135	IK 0135
	- Red Sugar producing Industry	IK 0136	IK 0136
8.	Food industries not belonging to wheresoever	ISIC 3121	
	- Soya Flour Cake and Fermented soyabean Cake	IK 0141	
	- Fermented Soyabean Cake		0141 01
	- Soya sauce Industry and Pressed Soya Bean Cake Industry		
	- Pressed Soyabean Cake Industry		0142 02

1	2	3	4
	- Edible Seaweed Gelatine	IK 0144	IK 0144
	- People's Salt Industries	IK 0146	IK 0146
	- Vanille Industries	IK 0148	IK 0148
	- Spices Industries	IK 0149	IK 0149
	- Honey Processing and Purifying Industries	IK 0155	IK 0155
	- Table Vinegar Industries	IK 0157	IK 0157
	- Founded and Roasted Belinjo Delicacy Industries	IK 0158	IK 0158

INDUSTRIAL MAIN GROUP : DRINK INDUSTRIES

	Type of Industry	Code IK	Code of Industrial Undertaking's Activities being reserved
9.	<u>Ice Industry and the like</u> - Lollypop ice Industry		IK 0307

INDUSTRIAL MAIN GROUP : TOBACCO INDUSTRIES

No.	Type of Industry	Code IK	Code of Industrial Undertaking's Activities being reserved
10.	<u>Tobacco Industries</u>	ISIC 3140	
	- People's Tobacco Drying Industry	IK 0401	IK 0401

1	2	3	4
	- Cornhust, Incense and Klembak Cigaret Industry	IK 0405	
	- Incense Klembak Cigaret Industry		0405 01
	- Cornhusk Cogaret Industry		0405 02
	- Industries of other Tobacco products (dried over the fire)	IK 0406	

INDUSTRIAL MAIN GROUP : TEXTILE INDUSTRIES

No.	Type of Industries	Code IK	Code Industrial Undertaking's Activities being reserved
11.	Weaving Industry	ISIC 3212	
	- Non Machine Weaving Industry	IK 0510	IK 0510
	- Handloom Weaving	IK 0511	IK 0511
	- Other Matting and Plating Industry	IK 0512	IK 0512
12.	Knitting Industries	ISIC 3214	
	- Knitting Industry with Hand Flat Knitting Machine	IK 0513	IK 0513
	- Knitting Industry with Hand Round Knitting Machine	IK 0514	IK 0514
	- Knitting Industry with Hand Knitting Machine producing Stockings	IK 0515	IK 0515

1	2	3	4
	- Knitting Industry with Machine producing shoulace	IK 0156	IK 0156
	- Other Knitting Industries with Machines and Tools operated by hand	IK 0517	IK 0517
13.	Textile Perfecting Industries	ISIC 3213	
	- Textile Printing Industry (Screen - printing, transfer printing, block printing operated by hand)	IK 052	
	- Batik Drawing Industries	IK 0523	
14.	Clothing Industries and Textile Finished Products	ISIC 3220	
	- Handicrafts Industry produced from textile	IK 0602	IK 0602
	- Sarong Industry (Gayor sarong and Ikat Sarong)	IK 0604	
	- Gayor Sarong Industry		0604 01
	- Ikat Sarong Industry		0602

INDUSTRIAL MAIN GROUP : LEATHER, INDUSTRY, LEATHERWARE INDUSTRY, SHOES INDUSTRY AND THE LIKE

No.	Type of Industries	Code IK	Code of Industrial Under - taking's Activities being reserved

1	2	3	4
15.	Leather Tanning Industries	ISIC 3231	
	- Reptile Leather Tanning Industry	IK 0703	
	- Other Leather Tanning Industry	IK 0704	IK 0704
16.	Leather ware Industries		
	- Leather ware Handicrafts Industry and Leather Painting Encrusted Industry	IK 0705	IK 0705
	- Leather Trunk-, Leather Case-, Leather Brief-Case and Leather Purse Industry	IK 0706	IK 0706

INDUSTRIAL MAIN GROUP : RUBBER PROCESSING AND MANUFACTURING INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
17.	Rubber Processing and Manufacturing Industry	ISIC 3551	
	- Rubberware Handicrafts Industry	IK 1106	IK 1106
	- Ornamental rubberware Handicrafts Industry for motor vehicles	IK 1107	IK 1107

INDUSTRIAL MAIN GROUP : PLASTICWARE INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
18.	<u>Plasticware Industries</u> - Plasticware Handicrafts Industry	ISIC 3560 IK 1201	IK 1201

INDUSTRIAL MAIN GROUP : PRINTING INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activitites being reserved
19.	<u>Printing Industry and the like</u> - Bookbinding Industries	ISIC 3420 IK 1302	IK 1302

INDUSTRIAL MAIN GROUP : METALWARE INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
20.	<u>Metal Furniture I Industries and the like</u> - Metal Souvenir Industry	ISIC 3812 IK 1401	IK 1401

INDUSTRIAL MAIN GROUP : MACHINES AND METAL EQUIPMENT INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
21.	Kitchen Utensils Industries, Craftsguild appliances and other Tools	ISIC 3811	
	- Kitchen Knifes Industry and the like	IK 1501	IK 1501
	- Craftsguild Appliances Industries	IK 1503	IK 1503
	- Metalware Handicrafts Industries such as produced from copper, brass, alluminium, silver and electroplating gild.	IK 1505	
	- Copperware Handicrafts Industry		1505 01
	- Brassware Handicrafts Industry		1505 02
	- Alluminiumware Handicrafts Industry		1505 03
	- Silver Handicrafts Industry		1505 04
	- Kitchen Utensils and other Household Utensils Industry such as racks for dishes, towels, shoes and book-shelves		1505 06
22.	Equipment Industries and Agricultural Machines Industries	ISIC 3822	
	• Industry/Forge or Smithy producing Agricultural Equipments and Tools such as Hoes, Spades, Ground Fork, Axe, Sickle etc.	IK 1506	

1	2	3	4
	- Industry/Forge or Smithy producing Spades		1506 03
	- Industry/Forge or Smithy producing Groundfork		1506 04
	- Industry/Forge or Smithy producing Axes		1506 05
	- Industry/Forge or Smithy producing Sickles		1506 06
	- Industry producing Ploughs, Fruit picker instruments and Milking Equipment	IK 1507	
	- Plough Manufacturing Industry		1507 01
	- Soil-breaking Implement Manufacturing Industry		1507 02
	- Fruit-picker Implement Manufacturing Industry		1507 03

INDUSTRIAL MAIN GROUP : MACHINES AND ELECTRICAL APPLIANCES INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
23.	<u>Industrial Machinery and Electrical Appliances in the Small Sector</u>		
	- Radio, TV, and Communication Appliance Servicing	IK 1601	IK 1601
	- Tape Recorder Repair		
	- Refrigerator Servicing		
	- A.C. Repair		
	- Telephone & Telegram Appliances Repair	IK 1602	IK 1602

1	2	3	4
	- Electric Heater Repair - Electric Flat-iron Repair - Fans Repair		

INDUSTRIAL MAIN GROUP : INDUSTRIES FOR MANUFACTURING, ASSEMBLING AND REPARATION OF TRANSPORTATION MEANS

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
24.	Industries for manufacturing, Assembling, and Servicing of Transportation.		
	- Servicing Industry for four-wheel motor vehicles and the like	IK 1702	IK 1702
	- Servicing Industry for motorcycles and Scooters	IK 1703	IK 1703
	- Servicing Industry for bicycles and Beca	IK 1704	IK 1704
	- Wooden Boat Building	IK 1706	IK 1706
	- Wooden Bullock-cart and Bodieng Building Industry	IK 1707	IK 1707

INDUSTRIAL MAIN GROUP : WOODWORKING INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
25.	Sawmill and other Wood-working Industries	ISIC 3311	
	- Industry producing goods of wood and cork	IK 1802	IK 1802
26.	Industries Producing Goods made of Wood and Cork not belonging to other groups	ISIC 3319	
	- Industry Producing wooden cases and wooden packing material	IK 1804	
	- Wooden cases Industry		IK 1804 01
	- Wooden packing material Industry		IK 1804 02
	- Industries producing wooden frames for pictures and wooden decorations	IK 1806	
	- Industry producing wooden frames for pictures		IK 1806 01
	- Wooden decorations industry		IK 1806 02
	- Wooden Handicraft and wood Carving Industries	IK 1807	
	- Wooden Handicraft Industry		IK 1807 01
	- Wooden Carving Industry		IK 1807 02
	- Industries producing Goods made of Wood and Cork not belonging to other groups	IK 1808	IK 1808
27.	Rattan Basket and Rattan Goods Industry		
	- Rattan Baskets/Rattan Packing materials Industries	IK 1813	

1	2	3	4
	- Rattan Baskets Industry		IK 1813 1
	- Rattan packing materials Industry		IK 1813 02
	- Rattan household utensils Industry	IK 1814	IK 1814
	- Rattan handicraft industry	IK 1815	IK 1815
28.	Ceramics Industries		
	- Ceramic Handicraft Industry	IK 1901	IK 1901

INDUSTRIAL MAIN GROUP : GLASS AND GLASSWARE PRODUCING INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
29.	Glass and Glassware Producing Industries		
	- Glass and Glassware Industry	IK 2002	IK 2002
	- Other Glass and Glassware Industry	IK 2003	
	- Glassware Industry with blowing method		IK 2003 01

INDUSTRIAL MAIN GROUP : MINERAL (NON METAL) BSED INDUSTRIES

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
30.	Earthen Goods and Building Materials	ISIC 3691	
	- Manufacturing industry in glazed earthenware	IK 2101	IK 2101
	- Manufacturing industry in bricks, roofing tiles, pipes and other building materials	IK 2102	
	- Pipes manufacturing industry		IK 2102 03
	- Earthenware and building materials manufacturing industry		IK 2102 04
	- Earthen sanitary industry	IK 2103	IK 2103
31.	Manufacturing Industry in Cement, Lime and Plaster Materials Based Product	ISIC 3692	
	- Tiles, Terrazo and Concrete pipes industry	IK 2105	
	- Tiles industry		IK 2105 01
	- Terrazo Industry		IK 2105 02
	- Manual and Semi Mechanical Industry producing concrete pipes		IK 2105 03
	- Pozollant/trust cement industry	IK 2106	IK 2106
32.	Mineral (Non-Metal) Based Industry		
	- Slate producing industry	IK 2108	IK 2108
	- Stone carving industry	IK 2110	IK 2110

INDUSTRIAL MAIN GROUP : MANUFACTURING INDUSTRIES PRODUCING MUSIC INSTRUMENT, SPORT GOODS AND THE LIKE

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
33.	Music Instrument Industry	ISIC 3902	
	- String instrument industry	IK 2201	IK 2201
34.	Sport Goods Industry		
	- Manufacturing industry producing tools for physical exercises	IK 2204	IK 2204
	- Manufacturing industry producing accessories for playing Badminton, Tennis and Bilyard	IK 2205	
	- Badminton accessories industry	IK 2205 01	
	- Badminton rackets industry		IK 2205 01 01
	- Shuttle cocks industry		IK 2205 01 02
	- Badminton nets industry		IK 2205 01 03
	- Manufacturing industry producing accessories for playing Tennis	IK 2205 02	
	- Tennis nets industry		IK 2205 02 03
	- Manufacturing industry producing accessories for playing Bilyard	IK 2205	
	- Bilyard table industry		IK 2205 03 01
	- Bilyard sticks industry		IK 2205 03 02
	- Manufacturing industry in other sport goods	IK 2206	IK 2206

No.	Type of Industries	Code IK	Code of Industrial Undertaking's Activities being reserved
35.	Manufacturing Industry not belonging to any specific groups	ISIC 3909	
	- Manufacturing industry producing rubber, plastic and metal toys	IK 2303	
	- Rubber toys industry		IK 2303 01
	- Plastic toys industry		IK 2303 02
	- Manufacturing industry producing umbrella and walking stick	IK 2305	
	- Umbrella industry	IK 2305 01	
	- Manufacturing industry producing umbrella with wooden/bamboo/frame		IK 2305 01 01
	- Walking stick industry		IK 2305 01
	- Lamp shade industry	IK 2306	
	- Manufacturing industry producing cigarette pipes, cap, hair wigs and the like	IK 2307	
	- Cigarette pipes industry		IK 2307 01
	- Stamps (tools for imprint mark) industry		IK 2307 02
	- Hairwigs industry		IK 2307 03
	- Caps (headdress)		IK 2307 04
	- Mosquito repellent (insecticide) industry		IK 2307 05
36.	Miscellaneous Small Industries		
	- Manufacturing industry producing goods from horn and bone	IK 2308	

1	2	3	4
	- Horn handicraft industry		IK 2308 01
	- Bone handicraft industry		IK 2308 02
	- Manufacturing industry producing handicraft from clam-and tortois shell	IK 2309	
	- Grinding and polishing precious stones	IK 2310	IK 2310
	- Braided ropes from coconut fiber and the like	IK 2311	IK 2311
	- Handicraft from nutshell and the like	IK 2312	IK 2312
	- Miscellaneous articles from bamboo	IK 2313	IK 2313
	- Gamelan instrument industry	IK 2314	IK 2314
	- Kerawang embroidery industry	IK 2315	IK 2315
	- Special embroidery industry	IK 2316	IK 2316
	- Kris (dagger) making industry	IK 2317	IK 2317

APPENDIX VIII

COMMODITIES HAVE BEEN DEVELOPED BY DIRECTORATE GENERAL OF SMALL SCALE INDUSTRY

FOOD SECTOR

1.	Gula	(Sugar reed)
2.	Dodol	(Delicacy = Cake of glutinous rice)
3.	Sagu	(Sagu Flour = metroxylon)
4.	Kopra	(Copra)
5.	Kerupuk	(Crisply baked = made of shrimps or fish)
6.	Minyak Kelapa	(coconut oil)
7.	Tapioka	(Tapioca)
8.	Jambu mete	(Anacardium occidentale)
9.	Emping Melinjo	(Delicacy from a fruit tree)
10.	Pengawetan Ikan	(Preservative fish c.q Dried fish)
11.	Tahu	
12.	Tempe	) a cake of fermentated soya beans
13.	Roti	(Bread)
14.	Sele Pisang	(Banana Jelly)
15.	Gula Siwalan	(Fan Palm Sugar)
16.	Gaplek chip	(Dried cassava)
17.	Gula Aren	(Palm Sugar)
18.	Pala	(Nutmeg)
19.	Arak	(Arrack, gin)
20.	Markisa	(Extract Marquisa)
21.	Dendeng	(Small Strips of Dried Meat)
22.	Garam	(Salt)

TEXTILE & LEATHER SECTOR

1.	Tenun Adat	(Textile made by traditional/ traditional weabe)
2.	Konfeksi	(Garment)
3.	Sepatu	(Shoes)
4.	Pencelupan	(Dying & Dipping)
5.	Penyamakan Kulit	(Tanned Leather)

6. Sulaman Inda (Embroider)
7. Batik
8. Tas Kerajinan Kulit (Handicraft bag = made from leather)
9. Kap/Jok (Cover c.q. on cloching motorcar)
10. Kopiah (Fez c.q. a scull cap)
11. Serat Nenas (Pineapple Fibre)
12. Sutra Alam (Natural Silk)

CHEMICAL SECTOR

1. Minyak Nilam (Aromatic herb oil = Pogostemon Catlin Benth)
2. Kulit Manis (Cinnamon Tree)
3. Minyak Daun Cengkeh (Clove Oil)
4. Minyak Sereh Wangi (Fragrant grass oil)
5. Minyak Kenanga (Canangium Oil)
6. Kertas (Paper, Wrapping)
7. Grafika (Printing, Graphic)
8. Minyak Lawang (Oil from a tree with medicinal bark)

METAL SECTOR

1. Black Smith (c.q. Hoes, Axe chisel etc)
2. Bengkel (Repair/Workshop Motorcar)
3. Kapal (Peoples Shipyard = Boat, Canoe etc)
4. Cor (Moulding & Casting = Casting for Artificial things)
5. Perak (Silver Handicraft)
6. Kompor Minyak Tanah (Store with Kerosine)
7. Kaleng (Can/Drum = Tinned food)
8. Kuningan (Bronze/Brass)

9.	Aluminium	
10.	Suku Cadang	(Spare parts = nut, bolt etc)
11.	Tembaga	(Bronze/Yellow)
12.	Komponen Elektronik	(Ecectronic Equipment = Transfomator)
13.	Perânggu	(Copper)
14.	Alat-alat Pertanian	(Agriculture Equipment)

CONSTRUCTION MATERIAL SECTOR

1.	Batu Bata	(Tile)
2.	Kapur	(Lime)
3.	Rotan	(Rattan)
4.	Bambu	(Bamboo)
5.	Anyaman Pandan	(Pandanus = to make basket work)
6.	Keramik	(Ceramic)
7.	Marmer	(Marbel)
8.	Batu Aji	(Gemos stone)
9.	Kayu	(Furniture, Statue etc)
10.	Ubin	(Cement Tile)
11.	Batako	(Hole Brick)
12.	Karet	(Crumb rubber)
13.	Gerobak	(Van, Wagon)
14.	Mutiara	(Pearl)

APPENDIX IX

SUGGESTED ADDITIONS TO THE LIST OF RESERVED PRODUCTS AND WHICH IS TO BE PUT IN THE PLANS OF ISSUING GUIDANCE TECHNICAL MANUSCRIPT

No.	Name of the Product	Likely Investment (Million Rp.)	Employment Potential	Raw Material
	I. Wood Based Industries			
01.	Wooden Crates	3	10	Wood, Nails
02.	Cable Drums	10	18	Soft wood, Mild Steel Tie-rods, Washers, Plates
03.	Wooden Plugs, Handles	10	20	Wood, m.s. rods, Strips, Nails
04.	Wooden Furniture	10	16	Wood, Plywood, Paints, Nails
05.	Truck body building	15	40	Wood, m.s. Sheets, Sections
	II. Food and Allied Industries			
06.	Bread	10	12	Flour, Sugar, Yeast, Wrapping paper
07.	Confectionery (Sweets)	6	18	Sugar, Condensed milk, Colouring and flavouring agents.
08.	Dehydrated Vegetables	20	25	Wrappers, Fresh vegetables, Sugar, Preservatives, Aluminium foil, Tin containers.

1	2	3	4	5
09.	Ice - cream	10	6	Milk cream, Flavouring agent, Paper containers
10.	Poultry Feed	10	14	Oil-cake, Molasses, Bone, Meal, Vitamin, Wheel bran, Containers.
	III. Paper Products			
11.	Decorative paper	20	14	Paper, Ink, Thinner
12.	Paper Bags	15	6	Paper, Glue, Printing ink
13.	Paper Napkins, Toilet papers	20	15	Tissue paper, Paper-cartons, Polyethylene film, etc
14.	Waxed Paper	25	16	Paper, Wax and printing ink
15.	Drinking Straws	10	10	Kraft paper, Glue, Wax
16.	Note-books and Registers	10	12	White-paper, Gum, printing ink
17.	File covers and Boards	5	15	Card-board, White-paper, Tape, Ink, Gum.
	IV. Rubber Products			
18.	Rubberised Cloth	25	12	Pale Crape, Zinc Oxide, Stearic acid, Titanium dioxide, Cloth.

1	2	3	4	5
19.	Tyre Retreading	15	8	Retread Compound, Adhesive, Solvent Oil
20.	Surgical Gloves-Latex	10	10	Natural Rubber, Oleic acid, Acetic acid, Methyl alcohol, etc
21.	Hot-Water Bags, Ice-bags	25	12	Smoked sheet, precipated calcium carbonate, etc
22.	Rubber Ballons	5	5	Natural rubber, latex
23.	Rubber Eraser	5	15	Pale crape etc
24.	Rubber blowing agent	15	15	Hexamine, Sodium Hydro-chloric acid
V.	Plastic Products			
25.	PVC Foot-wear	20	12	PVC Granules, Plastic cloth, packing materials
26.	Blow moulded plastic HDPE PVC Containers	25	8	HDPE; Polypropylene
27.	Spectackle Frames	10	10	Cellulose Nitrate Sheets
28.	Plastic buttons/Combs	10	10	Acrylic sheets, Polypropylene, Urea Formaldehyde
29.	Compression moulded Plastic Products	25	30	Thermo-setting, Plastic material
30.	Plastic Rain-coats	10	8	PVC Sheet, Zip, Buttons
31.	PVC Watch-straps	1	10	Foam Leather Sheet, Adhesive, Stainless Steel Bhips.

1	2	3	4	5
	VI. Chemicals and Allied Products			
32.	Laboratory Chemicals (to be specified)	30	20	Corresponding in-organic Salts activated charcoal
33.	Wax Candles	1	6	Paraffin Wax, Stearic Acid, Dyes, Wicks
34.	Calcium Chloride Calcium Silicate	15	15	Lime, Hydrochloric, Acid, Sodium Silicate
35.	Zinc nitrate	10	12	Zinc ash, nitric acid
36.	Coppier Sulphate	20	15	Copper scrap, Sulphuric acid
37.	Zinc Sulphate	12	15	Zinc Ash, Sulphuric Acid
38.	Zinc Chloride	8	10	Zinc Ash, Sulphuric Acid
39.	drtists'o Colours	5	10	Precipitated Chalk, whiting, Titanium Dioxide, Paraffin Wax, Linseed oil, etc
40.	Shoe Polish	6	10	Waxes, Solvents
41.	French Polish	6	10	Shellac, Denatured spirit, Plasticizers
42.	Metal Polish	10	10	Abrasive powder, Mineral oil, Oleic Acid, liquid ammonia, etc
43.	Floor Polish	6	10	Soft and hard waxes, Solvents, Plasticizer
44.	Laundry soap	8	15	Resin Tallow, and other non edible oils, Caustic soda, Sodium Sodium Silicate

1	2	3	4	5
45.	Tooth powder	5	10	Charcoal, Alum, Tannic Acid, Eucalyptus oil, Clove oil, etc
46.	Hair Oil	5	8	Coconut Oil, Perfume, Colour
47.	Safety Matches	5	8	Splints, Veneers, Chemicals, Kraft paper, etc
48.	Office Gum-Industrial	5	8	Gum arabic, Starch, Sodium, Silicate, other chemicals
49.	Sealing Wax	1	7	Shellac, Rosin, Fillers, Colours
50.	Fountain pen-ink	15	20	Tannic acid, Gallic acid, Ferrous Sulphate, Ink-blue, Carbolic acid, Hydrochloric acid, denatured spirit, etc
VII.	<u>Electrical Industries</u>			
51.	Battery Cell-tester	3	6	Bakelite, Cooper strips, Volt Meter
52.	Domestic Appliances such as mixers, Toaster, Room-Heater, Water-heater	20	20	Metal Sheets, Nichrome Wire, Motors, Filling etc
53.	Electric Horns	4	10	Aliminium, Copper strips, Stampings, Spring steel

1	2	3	4	5
54.	Voltage Stabiliser	5	15	Silicon steel stampings, Volt Meters, Relays, Rotary switch, Accessories
55.	Emergency Lamps	3	15	Flourescent tube, high Voltage, capacitors, Plastic sheet, reflectors, etc
56.	Battery Eliminators	15	20	Resistors, Diodes, Capacitors, PCB, PVC wire
57.	TV Antenna	5	5	Aluminium tubes, Hardware
58.	Public Address System	10	20	Microphone, Electronic components, Transformers Loudspeaker, PCB's, Hardware
59.	Electronic Fan Regulator	6	20	Triacs, Copper-wire, Moulding Powder, Ferrites, PCB's
60.	Regulated DC Power Supplies	10	12	Transistors, Components, PCB's Transformers, Chassis.
	VIII. <u>Glass and Ceramics</u>			
61.	Flooring tiles	15	30	Portland, Cement, White-cement, Sand, Marble chips, Mineral colours

1	2	3	4	5
62.	Scientific Laboratory Glass ware	6	15	Glass Tubing, Hydrof flouric acid, Paraffin Wax, Grinding Powder
63.	Plaster of Paris	10	10	Gypsum withpacking material
64.	Chalk Crayons	7	25	Plaster of Paris, China-clay, quick lime and colouring Oxida
65.	Asbestos Pipes and Fittings	15	20	Cement Asbestos Fibre
66.	RCC Pipes (upto 100 cms diameter)	15	25	Cement, MS Wire, Sand
67.	Sodium Silicate	8	20	Soda Ash, Silica, Sand, Bleaching powder.
	IX. Leather Products			
68.	Leather Shoes	15	20	Chrome, Upper-leather, Lining Leather, Leather/ Rubber soles
69.	Leather Suitcases	10	20	Printed or plan chrome, Leather cloth or Silk lining, Cardboard
70.	Watch straps Leather	3	6	Finished Leather
71.	Industrial Leather Gloves	12	15	Chrome split leather, Thread.

1	2	3	4	5
	X. Metal Products			
72.	Steel Trunks	1,5	7	M.S. Sheets
73.	GI Buckets	2	6	GP Sheets
74.	Barrels, Drums, Bins	5	6	M.S. Sheets
75.	Aluminium Furniture	4	6	Aluminium pipes, sections, Timber, Foam, etc
76.	Iron and Steel Racks	7	5	Angle irons, BP Sheets
77.	Hacksaw Frame	8	10	M.S. Strips, BP Sheet, Rivet
78.	Locks	10	25	Zinc alloy, Brass Ingots, MS Sheet
79.	Simple Agricultutal implements (to be specified)	10	10	Pigiron, GP Sheet, MS Rods, MS Flats
80.	Dusters and sprayers	15	10	GP Sheets, MS Rods, Brass scrap
81.	Wire Nails	12	4	Hand-drawn bright wire
82.	Weighing Scales	5	6	Bronze Ingots, Brass Sheets, Brass Rods, Wires
83.	Hair-pins	10	10	String steel-wire
84.	Agricultural Machinery such as Threshers, Grain driers, reapers, etc (to be specified)	20	15	MS Sheets, Rods, MS Angles, Cast iron castings
85.	Hack Saw Blades	3	5	High carbon steel strips.

1	2	3	4	5
86.	Bottle Washers (wire brushes)	2	10	Nylon Synthetic fibre, GI wires
87.	Poultry Equipment	5	10	GI Sheets, MS Wire, MS Rods
88.	Auto-ancillaries and Garage Tools (to be specified)			
89.	Bicycle Parts and assembly (to be specified)			
	XI. TEXTILES			
90.	Cotton Knit-wear	5	15	Cotton yarn, thread
91.	Woolen Knit-wear	10	15	Woolen yarn, cloth yarn
92.	Measuring tape	3	6	Cotton tape, Synthetic rubber emulsi
93.	Stove Wicks	8,2	6	Cotton yarn, Cotton
94.	Sanitary Towels	1	6	Cotton yarn, Absorbent cotton
95.	Canvas Hoses	20	10	Cotton yarn.
	XII. Miscellaneous			
96.	Drawing Boards	8	8	Pine wood

1	2	3	4	5
97.	Drawing Instruments	8	10	Brass sections, Rods, Stainless Steel Rod, Strips
98.	Protractors, Flat-rule Tea, T. Square, etc	10	10	Seasoned wood, brass steels, etc
99.	Hand-staplers	10	10	CRCA Sheets, MS Sheets
100.	Non mecnanical toys (Plastic)	4	12	Polyethylene Blow, Paints, Colours.

* Dr. Ram K. Vepa No. 38, December 1983.

APPENDIX X

THE NAMES OF INSTITUTE FOR RESEARCH IN INDONESIA
DEPARTMENT OF INDUSTRY

1. Balai Besar Penelitian dan Pengembangan Industri Kimia (Institute for Research and Development of Industrial Chemical).
   Jalan Karang Anyar No. 55, Phone : 623979, Jakarta.

2. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian (Institute for Research and Development Agriculture Product).
   Jalan Ir. H. Juanda No. 5 - 9, Phone 24068, 23359,
   Bogor - West Java.

3. Balai Besar Penelitian dan Pengembangan Industri Logam dan Mesin (Institute for Research and Development of Engine and Industrial Metal.
   Phone : 81171, 81172, M.I.D.C. (Metal Industry Development Centre).

4. Balai Besar Penelitian dan Pengembangan Industri Bahan dan Barang Teknik (Institute for Research and Development of Engineering and Industrial Materials).
   Jalan Sangkuriang No. 14, Phone : 82027, 82028,
   Bandung - West Java.

5. Balai Besar Penelitian dan Pengembangan Industri Tekstil (Institute for Research and Development of Industrial Textile).
   Jalan Jend. Ahmad Yani No. 390, Phone : 71214, 71215, 78010,
   Bandung - West Java.

6. Balai Besar Penelitian dan Pengembangan Industri Keramik (Institute for Research and Development of Industrial Ceramic).
   Jalan Jend. Ahmad Yani No. 392, Phone, 71221,
   Bandung - West Java.

7. Balai Besar Penelitian dan Pengembangan Industri Sellulosa (Institute for Research and Development of Industrial Cellulosa).
   Jalan Dayeuh Kolot No. 158, Phone : 50623, 59182,
   Bandung,- West Java.

8. Balai Besar Penelitian dan Pengembangan Industri Kulit, Karet dan Plastik.
   (Institute for Research and Development of Rubber, Plastic and Industrial Leather).
   Jalan Sukonandi No. 3, Phone 88655, 2929, Yogyakarta.

9. Balai Besar Penelitian dan Pengembangan Industri Kerajinan dan Batik. (Institute for Research and Development of Batik and Industrial Handicraft).
   Jalan Kusumanegara No. 2, Phone : 2557, 3757, Yogyakarta.

AGENCY FOR RESEARCH & DEVELOPMENT

1.	Province Aceh	:	Jln. Teuku Umar Lamteumen Phone : 2933, Aceh.
2.	" North Sumatera	:	Jln. Sisingamangaraja No. 24 Phone : 27744, 27745, Medan.
3.	" South Sumatera	:	Jln. Kapten Rivai Phone : 20080, 0711, Palembang.
4.	" Central Java	:	Jln. Ki Mangunsarkoro No. 6 Phone : 21515, Semarang.
5.	" East Java	:	Jln. Jagir Wonokromo No. 360 Phone : 816612, Surabaya.
6.	" South Kalimantan: (Borneo)		Jln. P. Batur Barat No. 2 Phone : 115, 261, Banjar Baru.
7.	" South Sulawesi	:	Jln. Supratman No. 4 Phone : 22578, 22856, Ujung Pandang (Makasar).
8.	" North Sulawesi	:	Jln. Diponegoro No. 21 - 23 Phone : 3595, Manado.
9.	" Maluku	:	Jln. Towema Phone : 2046, 2666, Ambon.

APPENDIX XI

PROGRAMME SCHEDULE
DR EL MORSY CONSULTANT IN STANDARDIZATION
AND QUALITY CONTROL
IN BANDUNG

No	Days/Date	T i m e	Subject
I	Monday 1st Feb 1984		Orientation
II	Thuesday 2nd Feb 1984	08^{30} - 10^{00}	Metal Industry Development Centre
		10^{00} - 11^{30}	Material Construction Industry Development Institute
		11^{30} - 12^{30}	Chemical National Research Institute
		12^{30} - 13^{30}	Physics National Research Institute
		13^{30} - 14^{00}	———
		14^{00} - 16^{00}	Technical Service Unit (Cluster of Shoes) and CSF
III	Friday 3rd Feb 1984	08^{30} - 09^{30}	Ceramic Industry Development Research Institute
		09^{30} - 11^{30}	Textile Industry Development Research Institute
		14^{00} - 16^{00}	Discussions and Lecturing
IV	Saturday 4th Feb 1984	08^{30} - 11^{30}	Mini Estate Industry
		11^{30} - 12^{00}	Discussions in the office.

MEMBERS PRESENT IN THE MEETING
WITH THE UNIDO CONSULTANT (DR. EL MORSY)
BANDUNG, 3rd FEBRUARY 1984

No	N a m e	J o b
1.	Drs. H.O. Kusnadi	Chief of Branch Office
2.	Ir. Hanafi Wirabrata	Vile Manager of UNIDO West Java
3.	Ir. Kosasih Anggawi-sastra	Chief of BIPIK Project
4.	Ir. Herman Priatna	Chief of Extention Officer
5.	Ir. Syamsul Arif	Chief of Basic Industrial Metal
6.	Rasmali	Chief of Basic Industrial Metal
7.	Syafrudin Dachlan B.Sc	Chief of PPIK
8.	Hengky Herwanto B.Sc	Coordinate of SII in West Java
9.	Ir. Etty Tresnalarawaty	Chief of Multivarious Industry
10.	Momon Bk. Teks	Staf Textile Devision
11.	Syafrida Bk. Teks	Staf Textile of Standardization
12.	Anian Sentosa	Secretary SII Div West Java.

APPENDIX XI

PROGRAMME SCHEDULE

DR EL MORSY CONSULTANT IN STANDARDIZATION

AND QUALITY CONTROL

IN YOGYAKARTA

No	Days/Date	Programme
I	Wednesday 8th Feb 1984	Orientation Visiting the Institute for Research Development of Rubber, Plastic & Leather Industries (Laboratories & Workshop).
II	Thursday 9th Feb 1984	Giving Lecture/Meeting with Industrial Engineers and Discussions. Visiting Mini Industrial Estate (LIK) Yogyakarta. Visiting a cluster in Kota Gede (Silver Cooperation) & Tannery.
III	Friday 10th Feb 1984	Visiting a cluster in Nitikan (Aluminium Cooperation). Visiting a cluster in Manding (Suitcase and Shoe).

MEMBERS PRESENT IN THE MEETING
WITH THE UNIDO CONSULTANT (DR. LL HORSY)
YOGYAKARTA, 9th FEBRUARY 1984

No	Name	Job
1.	Effendi	UTP-IK/Staf Bidang Penyuluhan
2.	Markus	UTP-IK/Pembinaan
3.	Trisila	Promosi BIPIK DIY/ Bidang Pembinaan
4.	Awik	PPIK/Staf Bagian Umum
5.	Noorchayati	PP2W-IK/Kabag Penyuluhan
6.	Wagiman	Kandep Gunung Kidul
7.	F. Sunaryo	Kandep Bantul
8.	Wirawan	Bagian Pengendalian Kanwil Perindustrian
9.	Ngadiyono	Kandep Kodya Yogyakarta
10.	Pasidi	Bidang Penyuluhan Kanwil Perindustrian DIY
11.	Zainal Arifin	Bagian T.U./Umum
12.	Ridwan Rivai	Koordinator Proyek P3P2-IK, DIY
13.	Pak Sucipto	Kandep Kulon Progo
14.	Heroe TH	Sekretaris Proyek P3P2-IK, DIY.

APPENDIX XI

PROGRAMME SCHEDULE
DR EL MORSY, CONSULTANT IN STANDARDIZATION
AND QUALITY CONTROL
IN MAGETAN SURABAYA (EAST JAVA)

No	Days/Date	Programme
I	Saturday 11th Feb 1984	Visiting Mini Industrial Estate (LIK) Magetan, Shoe and Tannery.
II	Sunday 12th Feb 1984	Arrive Surabaya
III	Monday 13th Feb 1984	Orientation Visiting a cluster in Waru Ngingas (Electrical Appliances & Motor car Spare parts Cooperation). Visiting several clusters in Pasuruan (Brass, Cooling Water Pump, and Furniture).
IV	Tuesday 14th Feb 1984	Visiting several clusters in Malang (Ceramics, Shoe, Kerosene Stove & Rattan Furniture) and pinda Keramika belongs to Ministry of Industry Visiting a cluster in Tanggul Angin (Suitcase Cooperation and Workshop of an Entrepreneur, Mr. Teguh).
V	Wednesday 15th Feb 1984	Giving Lecture to Industrial Engineers and producers Surabaya and discussions.

MEMBERS PRESENT IN THE MEETING
WITH THE UNIDO CONSULTANT (DR. EL MORSY)
SURABAYA, 15th FEBRUARY 1984

No	Name	Job
1.	Soeyono	Kandep Perindustrian Kodya Surabaya
2.		
2.	Paribowo Sutigno	Balai Industri Surabaya
3.	Hoesodo	UNIDO Local Expert
4.	Ahmuddin Harun	Kabagpro PPIK
5.	Jusuf Kusnadi	PSP2-IK, Jawa Timur
6.	K. Suamba	Staf PPIK
7.	Soemariadi	Staf ILD
8.	Kuter H	———
9.	Djoko P	P P I K
10.	P. Pardede	Bantekstand BI, Surabaya
11.	Sigit D	B.I. Surabaya
12.	Prihawdono	Staf BIPIK
13.	Sarifuddin HR	Staf PPIK
14.	Soedasya P	PSP2-IK
15.	Tati Tampubolon	Pimpinan Kendedes
16.	Maya Tampubolon	Sekretaris Kendedes
17.	Tjuk Suariadi	P.P.T. Lamongan
18.	Mrs. Prihadi	P.T. Santi
19.	Nyoman W	PPIK
20.	N. Ifansyoh	PPIK
21.	Djoko A.P.	PPIK.

Appendix XII

Essential Testing Equipment for Tanned Leather Laboratory
(I) Physical and Mechanical Testing Laboratory.

The Lastometer :

To measure the tendency of an upper material to crack or tear in lasting and give information about its strength, extensibility and "tightness" under multi-directional strain. All types of materials can be tested including the poromerics. It is useful for determining the effect of treatments such as humidification, mulling and softeners.

Quantity : one.

Rub Fastness Tester

This machine is designed to carry out the rub fastness test on the surface of leather, so as to determine the amount of marring of the leather surface or finish and the amount of colour transfer to the rubbing pad.

Quantity : one.

Thickness Guage

For measuring the thickness of the leather.

Quantity : one.

The Adhesion of Finish Tester :

Poor adhesion of the finish of an upper material can give rise to flaking or peeling in the shoe factory or in wear. Measurement of the actual strength of adhesion is therefore important.

Quantity : one.

The Bottom Leather Grain Crack Tester

For determining the resistance of bottom leather to grain crack in a single bend. The test is particularly useful in investigating problems concerned with the cracking of sole leather in dry atmospheres.

The apparatus provides a means of bending a strip of the leather, grain side out, round a series of mandrels of progressively smaller diameter, until the grain of the leather cracks. From the number of the mandrel which produces cracking and the leather thickness, a grain crack index is calculated which presents the percentage extension of the grain necessary to cause cracking.

Quantity : one.

Measurement of the Absorption of Water

By Kubelka apparatus which is made of glass.
The apparatus must be thoroughly cleaned before use, and it is to be used in a room at a controlled temperature of 20 ± 2^{0}c.

Quantity : one.

The Upper Material Flexing Machine

Used to assess the tendency of all types of shoe upper materials, clothing leathers, upholstery coverings, to crack or break as a result of flexing in wear. It is equally suitable for testing leather plastic coated fabrics, poromerics and fabrics. 12 samples can be tested simultaneously and the machine is fitted with a timer enabling the test time to be present.

Quantity : one.

Shrinkage Temperature Apparatus :

Quantity : one.

(II) Chemical and Wet Testing Laboratory

	Quantity
- PH Meter	1
- Soxhlet Apparatus	1
- Water Bath	1
- Oven 150°c	1
- Muffle Furnace to 1000°c	1
- Single plate Balance	1
- Wiley Mill with 4 mm Mesh	1
- Flask Rotator with Heater	1
- Kjeldal Apparatus	1
- Set of General Glassware	set

(III) Equipment to be provided for in process quality control in a Tannery

1 - Viscometer

2 - Litmuspaper

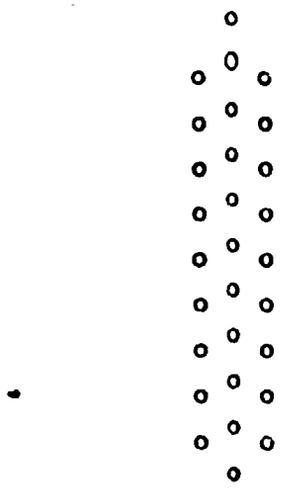
3 - Thickness gauge

4 - Iron ruler and Metal Disc of Diameter 10 cm.

5 - Thermometer.

APPENDIX XIII

PENGENDALIAN MUTU
SECARA TUNTAS DAN TERPADU



O l e h :

EL MORSY ABDOU SELTET

KONSULTANT UNIDO

DALAM BIDANG STANDARDISASI & PENGENDALIAN MUTU

Definisi Mutu/ Kualitas

Mutu/ Kualitas merupakan istilah yang sering dipakai oleh setiap orang tanpa terpikirkan maknanya.
Namun, secara umum kata mutu sering dipakai untuk menunjukkan dan melukiskan suatu produk yang baik dan istimewa.
Bilamana dari 2 (dua) macam produk yang kita bandingkan, ternyata mutu produk yang satu lebih baik dari yang lain, orang akan cenderung mengatakan dan mengaitkannya dengan ongkos yang lebih mahal dari produk tersebut.

Kadang-kadang sebutan produk bermutu baik, hanya diberikan kepada barang yang dibuat oleh pabrik yang senang akan reputasi. Oleh karena itu, hal ini merupakan fakta yang dapat dimengerti, hampir disetiap iklan, banyak pabrik mengatakan bahwa mereka adalah pabrik yang bermutu baik.
Disamping itu, mutu juga sering dikaitkan dengan keadaan bahan baku yang murni dan mulia.

Dari definisi di atas, mutu masih merupakan masaalah yang relatif dan orang hanya bermaksud bahwa mutu suatu barang selalu berkaitan dengan tujuan penggunaan barang itu sendiri.
Hal ini juga berarti, bahwa suatu produk bisa disebut bermutu baik bila ditinjau dari sudut A, akan tetapi bisa bermutu rendah bila ditilik dari sudut (tujuan) B.
Misalnya saja, bila kita ingin membandingkan mutu suatu produk, katakanlah kita ingin membandingkan mutu mobil cadillac dengan mobil biasa (Minicar), tentu saja keputusan kita akan banyak di

pengaruhi oleh kreteria yang kita pergunakan sesuai dengan maksud yang ada dalam benak kita, atau dipengaruhi oleh rasa kagum terhadap sifat-sifat istimewa yang dimiliki barang itu.
Andaikata kita menginginkan kendaraan yang nyaman, harga yang tinggi sesuai dengan kondisi mobil itu sendiri, tentu saja kita akan memilih mobil cadillac. Namun sebaliknya, bila kita menghendaki kendaraan yang ekonomis, praktis, mudah diparkir, sudah barang tentu kita akan memilih Minicar (Mobil biasa).
Dari gambaran di atas, kita dapat simpulkan, bahwa produk yang mahal kadang-kadang kurang cocok dan sesuai dengan tujuan dibandingkan dengan produk yang lebih murah.

Dengan demikian, pengertian mutu dapat diartikan sebagai tingkat atau derajat kepuasan, dimana produk mampu memenuhi kebutuhan sesuai dengan sasaran tertentu.

Sumber Mutu/ Kualitas

Lingkaran Mutu/ Sirkuit Mutu

Banyak orang berpendapat, bahwa mutu barang-barang industri semata-mata merupakan hasil kegiatan tertentu selama proses pengerjaan/ manufacturing. Sebenarnya Akhli dan tenaga produksi merupakan orang pertama yang dihadapkan kepada berbagai masaalah pelik di dalam produk. Dia juga merupakan orang pertama yang harus mengetahui betapa penting pendekatan mutu sebagai hal selalu berobah.
Namun, pada tahun-tahun terakhir orang bertambah sadar, bahwa mutu produk tidak semata-mata terjadi selama proses produksi.

Dari definisi mutu yang telah dikemukakan sebelumnya, dapat disimpulkan bahwa tidak ada peningkatan dalam desain, produksi dan konsumsi selama mutu itu sendiri tidak dipengaruhi apa pun.
Andaikata mutu dianggap sebagai derajat benda produk yang disesuaikan dengan kebutuhan konsumen, lalu mutu tersebut timbul di semua tingkat dimana kebutuhan konsumen dikenal, benda produk diformulasikan dan direalisasikan, kemudian langkah-langkah layak diambil untuk membuat produk itu sampai ke tangan konsumen yang dituju.

Untuk memberikan gambaran yang jelas tentang arti pengendalian mutu ternadu, kami gunakan Lingkaran Mutu atau The Quality Circuit. Disebabkan berbagai jenis kebutuhan di pasar, barang-barang industri biasanya hanya diarahkan sebagai pemenuhan kebutuhan disektor pasar. Pemilihan sektor pasar seperti itu merupakan salah satu keputusan dasar yang dapat dianggap sebagai langkah pertama dari lingkaran mutu. Kemudian diikuti dengan pembuatan program kebutuhan dengan melibatkan sejumlah besar keputusan fungsional. Program Kebutuhan ini diserahkan kepada Akhli atau Tenaga Perancang. Dialah yang bertugas membuat keputusan tentang rancangan tersebut, dengan mengikuti langkah-langkah produksi yang membutuhkan sejumlah keputusan produksi.

Akan tetapi, tidak demikian halnya. Produk bermutu baik yang sampai langsung ketangan konsumen yang dimaksud dan sesuai dengan keputusan dasar tadi. Apakah masaalah ini bergantung kepada sistim distribusi ataukah kepada keputusan distribusi yang telah diambil. Dengan kata lain, distribusi produk merupakan hal yang penting dalam sirkuit mutu, dan merupakan salah satu langkah yang menentukan mutu produk itu sendiri.

Kesimpulannya, tujuan kita tidak hanya mengusahakan agar produk sampai ke tangan konsumen saja; namun lebih dari itu, yaitu konsumen harus ditempatkan pada posisi yang menyenangkan, dimana konsumen bisa memanfaatkan produk tanpa ada rasa khawatir akan mutu barang itu. Hal ini dilakukan dengan jalan meyakinkan mereka (konsumen) melalui usaha pemberian jasa pelayanan yang baik.

Pemberian jasa pelayanan sering menentukan kelangsungan hidup suatu produk yang sedang tumbuh, dan tentu saja hal ini merupakan aspek penting disamping mutu produk itu sendiri.
Langkah-langkah tersebut di atas menyebabkan produk yang dihasilkan sampai ke tangan konsumen.
Salah satu hal pokok yang harus kita pikirkan adalah mengenai masa transisi ke langkah-langkah berikutnya yang bisa menyebabkan keinginan untuk memperoleh barang-barang yang baik menjadi pudar.
Di dalam produksi itu sendiri, fakta seperti ini sudah lama dikenal. Untuk memproduksi barang secara seri yang seluruhnya harus sesuai dengan desain, secara teknis tidaklah mungkin. Bagaimana pun hal ini bertalian dengan langkah-langkah lainnya.
Desain tak pernah dapat mewujudkan seluruhnya apa yang telah digariskan dalam program. Sistim distribusi yang paling sempurna pun tak akan pernah berhasil tanpa kesalahan yang menyebabkan produk sampai ke konsumen yang tidak tepat, dan lain-lain.
Semua ini disebabkan adanya kelemahan mutu di dalam Lingkaran Mutu (The Quality Circuit).
Konsumen kadang-kadang mendapatkan barang yang tidak sesuai dengan kebutuhannya, hal ini disebabkan adanya perbedaan situasi kebutuh

an/ permintaan di pasar, dimana pasar harus mampu melayani serta memuaskan semua pihak dengan barang standard yang sama.

Sekarang kita akan membahas Langkah-langkah sirkuit mutu yang berbeda.

A. Keputusan Pokok

Dalam mengambil keputusan, kita memerlukan pengetahuan pasar, seperti pengetahuan tentang mutu, jumlah dan waktu.

Keputusan pokok biasanya diakhiri dengan jawaban ringkas atas pertanyaan-pertanyaan seperti :,Haruskah kita memproduksi atau tidak haruskah kita memproduksi " ?. Bila jawabannya positip, kita boleh melangkah ke tahap berikutnya, yaitu perencanaan/ Programming.

Di dalam membuat keputusan, intuisi atau ilham pimpinan perusahaan sangat diperlukan sekali, akan tetapi ilham itu sendiri tidak bisa bekerja secara vacuum. Intuisi yang baik adalah intuisi yang didasari oleh pengetahuan pasar yang mendalam, pengalaman yang luas tentang berhasil tidaknya suatu produk serta ramalan yang mantap mengenai bagaimana kebiasaan konsumen berkonsumsi dan daya - beli masyarakat.

Ringkasnya, di dalam membuat keputusan para pimpinan harus selalu dibantu dengan penelitian pasar yang cermat. Namun pada praktiknya penelitian pasar semacam itu sering diabaikan atau dilaksanakan dengan tidak semestinya, ini terbukti dengan adanya kegagalan-kegagalan dalam memulai produk baru yang sulit.

Masaalah yang meliputi : tujuan berproduksi, daya-beli masyarakat, ukuran produksi dan pasar sama sekali tidak dapat dipecahkan tanpa adanya penelitian pasar.

Namun sebaliknya, penelitian semacam itu belum menjamin untuk di jadikan pegangan dalam membuat keputusan. Perasaan dan intuisi an da terbukti sangat berarti disini.

Sebelum melaksanakan penelitian yang ekstensif, kita dianjurkan untuk mengecek kembali ide-ide kita dan bandingkan dengan pendapat orang lain.

Ada berbagai macam tehnik yang dapat anda pakai dalam melakukan penelitian.

Pertama, Penelitian Pasar bisa digambarkan sebagai suatu Study Permintaan dan Penawaran yang sistimatis (Systematic Study of The Demand and Supply) bagi produk industri yang khas yang sudah ada, atau yang akan direalisasikan, serta penelitian terhadap faktor-faktor yang mempengaruhi permintaan dan penawaran itu sendiri.

Di dalam penelitian pasar, ada 2 (dua) macam penelitian yang bisa dibedakan, yaitu :

a) Penelitian Meja (Desk Research), adalah penelitian berdasarkan data-data statistik resmi yang berasal dari Pusat Statistik, dan sumber lainnya tentang luasnya distribusi pasar serta pengaruh yang ditimbulkan oleh faktor-faktor penting, seperti :
pendapatan masyarakat, ukuran dan susunan keluarga, standard sosial serta perkembangan penjualan tepat pada waktunya.

b) Penelitian Lapangan (Field Research), ialah sejenis penelitian tentang keadaan konsumen berdasarkan penerapan metoda sampling yang ilmiah. Penelitian lapangan biasanya terdiri dari :
Wawancara, yaitu mengadakan wawancara dengan konsumen secara pribadi mengenai produk yang mereka pakai, juga mengenai komoditi baru

yang diperkirakan akan mereka sukai.

B. Keputusan Program

Tidak ada satu pun produk baru dibuat tanpa keputusan dasar. Akan tetapi pada praktekhya dalam industri, langkah-langkah tersebut (The Programme Decisions) sering dilangkahi atau diperlakukan sebagai anak tiri.

Menurut pendapat kami, hal ini dapat menimbulkan kegagalan-kegagalan pada produk baru yang dibuat, oleh karenanya kita tidak boleh membiarkan kesalahan-keslahan itu berkembang terus.

Kesalahan-kesalahan itu terjadi karena tidak adanya program yang mantap. Dan kenyataannya, hal ini terjadi berulang-ulang, dimana para pengusaha memberitahukan para perancang (Designer) tentang keputusan dasar yang sudah diambil, lalu menyuruhnya membuat model, gambar dan spesifikasi produk baru.

Prosedur ini seolah-olah menjadi tuntutan bagi perancang dimana dia sendiri tak akan merasa puas. Dengan dilengkapi peralatan untuk mendesain produk berdasarkan kebutuhan yang diformulasikan secara lisan, dimana dia sendiri tak dapat merumuskan kebutuhan seperti yang terkandung dalam program tersebut, karena mereka memerlukan metoda dan peralatan yang berbeda dari metoda dan peralatan yang dia pakai. Perencanaan kebutuhan mempunyai 2 (dua) sisi pandangan ditinjau dari sudut sirkuit kualitas.

Jangkauannya ke belakang dan ke depan secara bersamaan.

Program harus berpandangan jauh ke belakang, karena program itu sendiri merumuskan kebutuhan-kebutuhan produk yang dapat memuas-

kan sebelum benda-benda produk itu sesuai dengan kebutuhan/permintaan di pasar. Program juga harus berpandangan jauh ke depan, karena program harus mencakup semua unsur sirkuit kualitas berikutnya, seperti : Desain produksi, distribusi, dan jasa pelayanan penjualan.

Berarti,dalam hal ini program kebutuhan bertindak sebagai rantai penghubung antara kebutuhan fungsional dengan kemungkinan teknis dan ekonomisnya. Dengan mengabaikan hubungan ini, akan membawa kita ke arah program yang maya (bila pembuat program hanya mencurahkan perhatiannya pada faktor fungsional) atau membawa kita kearah program produk yang buruk (bila perencana hanya terpaku pada unsur-unsur dalam produksi dan distribusi saja).

Program kebutuhan yang lengkap akan memuat definisi produk yang dibuat yang mencakup benda-benda produk dalam penggunaannya yang nyata di satu pihak dan kemungkinan produksi dan distribusinya di - lain pihak. Untuk membuat program semacam itu, berbagai keputusan harus diambil.

Keputusan fungsional, pertama mengenai kapasitas produk, kendaraan pengangkut, kapasitas terpasang harus ditentukan ; bila pada sebuah hotel masaalah di atas diumpamakan sebagai tempat tidur yang berfungsi penting. Disamping itu, petunjuk tentang manfaat produk harus ditekankan. Misalnya , sebuah gedung direncanakan sebagai bangunan permanent atau semi permanent. Untuk perlengkapan kantor, barangkali usia pakai perlengkapan tersebut akan lebih dipertimbangkan dibandingkan dengan perlengkapan untuk rumah tangga yang hanya ditentukan oleh model saja.

Dalam memilih mesin, umur mesin merupakan faktor penting.

Pembuatan program juga meliputi :

- Tingkat kekuatan produk
- Tingkat ketelitian produk
- Bentuk produk
- Warna produk
- Bagian-bagian yang bisa diganti
- Peraturan Pemerintah, seperti segi keamanan dan kebersihan .

C. Keputusan tentang desain

Meskipun tugas perancang adalah mendesain, namun ia tidak semata-mata membuat desain produk yang rumit saja.

Pertama, fungsi desain berbagai produk dibagi rata diantara kelompok perancang tersebut dimana sebagian besar dari mereka adalah akhli di bidang konstruksi dan model.

Kedua, Akhli-akhli produksi, pembuat biaya, peneliti dan ~~pimpinan~~ Manejer pemasaran ~~perusahaan~~ harus dilibatkan dalam pengembangan desain.

Mereka merupakan satu kesatuan , menyumbangkan pengetahuan mereka dan mencoba memperoleh keseimbangan antara benda produk yang diinginkan dengan kemungkinan membuat dan menjualnya.

Tim desain bisa dikatakan berhasil bila dapat mewujudkan keinginan dan kebutuhan program dalam desain dengan menimbang kebutuhan teknis dan ekonomis yang dibuat oleh bagian produksi dan penjualan serta kebutuhan-kebutuhan yang berkaitan dengan penggunaan produk yang dapat menentukan mutu desain.

Para perancang seharusnya berpikir masak, bahwa memproduksi secara besar-besaran tidaklah mungkin tanpa seimbang dengan pemakaian yang besar (Konsumsi yang besar) dari konsumen.
Tugas utama para perancang industri adalah membebaskan para akhli konstruksi dari rasa khawatir akan aspek-aspek produksi.
Mutu desain bergantung kepada : tingkat program, produksi, distribusi dan jasa pelayanan yang sudah dipertimbangkan dan dengan cara yang telah dikembangkan ke dalam bentuk yang asli dan menarik.

D. Keputusan Produksi

Pengendalian mutu sebagaimana diterapkan di negara-negara industri dewasa ini, biasanya terjadi dan berlangsung selama proses produksi. Karena itu, produk membutuhkan bahan-bahan produk yang dapat menentukan tinggi-rendahnya mutu. Misalnya, mesin, peralatan tangan bisa menyebabkan terjadinya perobahan bentuk yang jelas , umpama nya saja bahan besi dan baja menjadi lokomotif atau arloji tangan.
Akan tetapi, penulis kurang setuju dengan konsep mutu yang dangkal ini. Dalam pengertian yang lebih luas, mutu mencakup banyak hal dalam sirkuit kualitas. Namun mutu bukan merobah fakta.
Menurut pendapat kami, bentuk fisik produk dalam produksi merupakan mata-rantai yang berarti dalam rangkaian kualitas.
Di samping itu, dalam pembuatan produk secara massal dan moderen, penentuan mutu tentang produk tertentu kadang-kadang mendahului produk itu sendiri yang terjadi tanpa berulangkali, padahal penentuan produksi bersifat terus-menerus.

Setiap produk, setiap proses produksi membutuhkan tindakan-tindakan tertentu untuk menjamin bahwa produk yang dijual memenuhi syarat yang diinginkan . Metoda yang tampaknya paling sederhana untuk hal ini, adalah dengan cara memeriksa kembali produk pada - akhir proses, apakah produk memenuhi sifat-sifat yang diminta dan dianggap bisa memuaskan bila dijual. Bentuk inspeksi semacam itu dapat diperbandingkan sebagai sebuah layar pada akhir proses produksi, dimana akan berhenti bekerja bila produk jelek, dan terus bekerja bila produk baik.

Secara umum, inspeksi tersebut merupakan bentuk pengendalian pertama yang diperkenalkan dalam proses produksi. Hal ini sangat diperlukan dalam mengambil langkah-langkah untuk menjaga mutu produk yang dihasilkan. Namun salah satu sifat dari sistim ini ialah bahwa sistim inspeksi ini berjalan/bekerja lambat.

Sistim ini sangat lambat dalam mencegah terjadinya kesalahan. Andaikata inspeksi ini tidak menghalangi proses, inspeksi ini bisa disebut inspeksi kualitas pasif.

Bertolak belakang dengan hal ini, yaitu dengan adanya bentuk inspeksi aktif, yang menitik beratkan pada tindakan pencegahan yang diarahkan kepada pencapaian sasaran, yaitu produk yang bermutu tinggi. Walaupun demikian, inspeksi ini merupakan cara yang paling sederhana untuk mencegah terjadinya pengiriman produk yang bermutu kurang.

Cara yang paling effisien untuk mencapai tujuan ini, tentu saja ada. Dan hal ini merupakan sasaran daripada sistim inspeksi kualitas aktif atau dengan sebutan lain yaitu " Pengendalian MUtu "

Pengendalian mutu tersebut sebenarnya sudah diterapkan di seluruh proses produksi yang mencakup unsur-unsur : Screening Inspection (berfungsi melindungi pembeli)dan inspeksi kualitas aktif atau Pengendalian Mutu (berfungsi mencegah terjadinya produk yang cacat). Jelas sudah, bahwa peranan Pengendalian Mutu sangat penting sekali. Tujuan pengendalian produksi/mutu dalam produksi tidak hanya untuk memuaskan para pimpinan perusahaan, tetapi juga untuk melindungi konsumen terhadap barang-barang yang bermutu rendah dan pengendalian mutu juga ditujukan untuk menata kembali proses produksi dengan cara yang tepat agar dapat dihasilkan produk yang sesuai dengan yang diinginkan.

Gambaran kualitas tersebut merupakan RADAR kualitas ; dimana Operator dapat mengetahui apa yang dikerjakannya, pengendalian produksi menjadi lebih aman serta kekeliruan bisa dicegah.

E. Keputusan tentang distribusi

Dalam dunia industri kita dewasa ini, dimana tingkat produksi massal yang tinggi sudah dicapai, masaalah pokoknya adalah bahwa tujuan organisasi produksi tidak lagi untuk mengurangi kemelaratan, namun lebih dari itu yaitu memanfaatkan kemakmuran dengan effisien. Oleh sebab itu, upaya dan usaha harus dibuat untuk memuaskan konsumen secara optimal, seperti adanya kebutuhan yang tak terpenuhi yang membawa keputusahan untuk memulai memproduksi barang baru.

Proses programming, desain, dan produksi itu sendiri tidaklah cukup untuk mencapai sasaran akhir ini; seharusnya dilengkapi

dengan distribusi dan jasa pelayanan penjualan sebagai kunci utama yang sangat berarti.

Di dalam program kebutuhan, persyaratan mutu harus dikenakan terhadap produk atau jasa yang secara teori dibuat dalam keseluruhan proses. Ciri-ciri mutu yang sesuai dengan persyaratan dilaksanakan dengan cara-cara praktis dalam desain, sementara produk atau jasa yang mencakup ciri-ciri mutu yang dikehendaki dinyatakan dalam produksi sesuai dengan biaya yang dianggarkan.
Akan tetapi, mutu barang tidak menjadi effektif, bila barang tersebut tak terpakai. Masaalah ini akan menjadi jelas, sampai sejauh mana barang produksi dapat memuaskan dan memenuhi kebutuhan konsumen. Karena berbagai kesulitan fungsional dari produk komersil yang ada untuk tumbuh, maka fungsi distribusi ini bertambah penting, baik bagi produsen maupun konsumen, dimana produk dapat memenuhi sasaran dan berfungsi secara wajar.
Konsekuensinya, sistim distribusi seperti ini mengandung arti luas. Nilai barang dagangan akan tergantung kepada barang itu sendiri sampai tingkat-tingkat yang lebih luas lagi.
Mulai dari konsumen yang keliru, penggunaan produk yang kurang tepat, kesempatan memamerkan mutu barang yang sedikit, hal-hal diatas menentukan nilai beli barang itu.
Untuk mengetahui konsumen yang samar, yang juga kita ingin layani, kita seharusnya menguasai pengetahuan pasar secara luas, agar barang-barang kita bisa dipasarkan, berarti kita harus memahami motivasi apa saja yang dapat menarik hati konsumen untuk membeli, dan mengerti akan kebutuhan konsumen, hingga kebiasaan membeli itu

timbul pada diri konsumen.

Pengetahuan ini tidak hanya dipakai untuk menjalankan programing, desain dan produksi saja, namun juga untuk mempengaruhi tingkat yang lebih tinggi lagi, yaitu pemilihan metoda distribusi.

Di dalam industri, kebijakan pemasaran menjadi bertambah penting, terutama bagi firma yang berhasrat memainkan peranan aktif di - dalam evolusi industri yang sekarang sudah nampak jelas.

Haruskah kebijakan pemasaran dilakukan dalam jangka pendek, dan hanya bertujuan bagaimana kita menjual barang sebanyak mungkin menurut harga yang memberikan keuntungan besar ?

Kebijakan jangka panjang, bagaimana pun juga dirancang untuk memberi keamanan ekonomis dengan maksud agar barang dagangan memiliki nilai beli yang tinggi. Ini berarti kebijakan pemasaran di arahkan pada penjualan barang dan jasa dengan mutu optimum kepada konsumen yang dituju dan kepada siapa saja yang menggunakan barang dan jasa dengan tepat.

Realisasinya membutuhkan pengetahuan dasar tentang kebutuhan masyarakat yang ada serta motivasi dan kebiasaan membeli masyarakat, sementara itu hal-hal mengenai pasar harus diteliti dengan cermat sebelum keputusan diambil, seperti :

a. Kedudukan industri di pasar
b. Type-type kebutuhan yang dapat memuaskan konsumen
c. Barang dan jasa yang dibuat untuk memenuhi kebutuhan
d. Pasar, dimana produk dan jasa dijual
e. Ukuran pasar, yang akan dibuat sebagai dasar rencana penjualan produk.

Para pengusaha yang ingin menempatkan posisinya di pasar, harus mempengaruhi konsumen demi kepentingannya. Pengusaha berharap dapat meraih sukses selamanya. Namun, hal ini bisa terjadi bila pengusaha juga memperhatikan konsumen itu sendiri.

Pemilihan jalur distribusi yang tepat kerapkali membutuhkan akti vitas penelitian pasar yang khusus.

Masaalah kemasan memberikan pengaruh yang besar terhadap penjualan, dan memerlukan kebijakan jangka panjang serta harus sudah dipertimbangkan pada saat produk di desain; juga perlu dipikirkan tentang kecenderungan konsumen terhadap warna-warna tertentu, nilai pameran, perlindungan produk selama pengangkutan, dan sistim penggudangan yang aman terhadap kecelakaan, panas, cahaya, lalat dan sejenisnya.

p. Keputusan tentang pelayanan

Nilai praktis suatu produk menjadi jelas bagi konsumen pada saat/selama penggunaan barang tersebut. Misalnya, seseorang yang membeli sebuah mobil, lemari es, mesin cuci, Mereka mengharap untuk dapat memanfaatkannnya selama beberapa tahun dan bebas dari kekhawatiran akan barang tersebut. Sebenarnya konsumen tersebut tak layak menuntut, bahwa barang-barang yang dibelinya tak akan menimbulkan kekhawatiran seperti, rusak, macet dan sebagainya ; walaupun dia berhak atas semua itu.

Bila akan membeli sesuatu, konsumen harus memperhitungkan mutu barang dan jasa yang dia harapkan dari oraganisasi penjualan yang bersangkutan. Keuntungan dengan adanya perjanjian dan kesepakatan

tersebut akan dicapai bila produsen mau menjaga hubungan baik dengan konsumen.

Menampung keluhan-keluhan konsumen merupakan aspek pelayanan yang penting. Kegiatan ini juga melibatkan berbagai golongan.

Pertama, adanya pihak pengusaha pabrik. Bila ia telah menerapkan pengendalian mutu, dia akan hati-hati menimbang setiap keluhan konsumen yang diterima, guna memanfaatkannya sebaik mungkin implikasi yang tersembunyi untuk langkah/tindakan mendatang.

Kedua, adanya pedagang eceran yang menjalankan tugas penting, sebagai tempat keluhan, baik dari pengusaha maupun konsumen.

Mutu pelayanan yang baik sangat menunjang dan diperlukan bagi pengendalian mutu yang terpadu.

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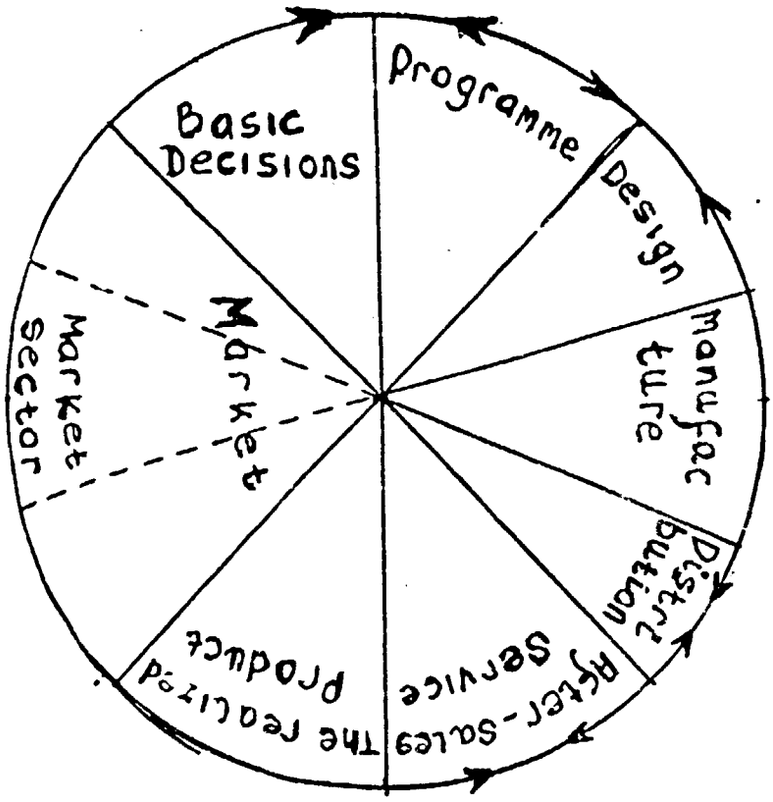

THE QUALITY-CIRCUIT

SIRKUIT-KUALITAS

APPENDIX XIV

LIST OF ENTREPRENEUR AND THEIR ACTIVITIES

IN MINI INDUSTRIAL ESTATE "PULOGADUNG"

JAKARTA - INDONESIA

No	Name	Commodity
1.	C.V. Sriharta	Container
2.	P.T. Epsilon Stahl	Spare part automobile
3.	C.V. Safira	"Jok" automobile
4.	C.V. Tiptop Indonesia	Equipment for to open tyre with hydroulic system
5.	C.V. Permata Metal	"Jok" automobile
6.	Yusiton	Spare part automobile
7.	Sinar Cahaya	Workshop/weld
8.	Elemen	Panel Box
9.	P.T. Klenco Indonesia	Equipment for Chemical
10.	C.V. Mustika Mitra	Packing Cylinder Cop
11.	Imago	Army Foot Ball
12.	C.V. Indonesia Original	Rattan Furniture
13.	P.T. Conserve	Construction
14.	Varia Merly Tailor	Ready mode Clothing
15.	Marsloda	Ready mode clothing
16.	P.D. Alam Jaya	Cutting papers
17.	C.V. Toho	Cutting papers
18.	Minitex	Knitting
19.	Rolina	Ready mode clothing
20.	P.T. Yamarco	Intefior
21.	Ratu Mekkah	Ready mode clothing
22.	Dian's	- " -
23.	Minatex	- " -
24.	P.D. Pribumi Jaya	- " -
25.	C.V. Sriwijaya	- " -
26.	Maju Terus	- " -

1	2	3
27.	Gaya Baru Tailor	- " -
28.	Jaya Express	- " -
29.	Yayasan Pencanita	- " -
30.	Raga Jaya	- " - & Glove
31.	P.T. Pencanita	Shuttle Cock
32.	P.T. Andatin Corp	Print
33.	P.T. Elberlian	- " -
34.	P.T. Kamila Jaya	Shuttle Cock
35.	Sagong Indah Jaya	"Jok" Automobile
36.	P.T. Susana Karya Mulya	Print
37.	P.T. Serayu Inmosi	Electronic Watch
38.	P.T. Lawata Permai	Net for fishing
39.	Edy Supriyanto	Fibre glass
40.	Omeca	Shoe
41.	C.V. Dharma Baja	Nut/Scrub
42.	Pratama	Dry Sheet
43.	P.T. BUMI Karya Jayatama	electro motor
44.	Pelita Agung	Print
45.	P.T. Derap Karya Bina	- " -
46.	Istana Ponch	Conar
47.	P.T. Alvita Utama	Print
48.	P.T. Binawam Niaga Mulya	Student Books
49.	Wira Satria	Spare part automobile
50.	Mustika print	Book binder's
51.	P.T. Kayama Putra	Amplifier
52.	Kartonoge padat karya	Book Binder's
53.	C.V. Ina Perdana	Foam syntetic
54.	CC Jaya Wijaya	Roll yarn
55.	Ground Aviation Service	Spare part Plane
56.	Tikon	Panel electricity
57.	Mangomo	Papert
58.	CC Batoro waya	Sandal
59.	Corona	Lady's Hand Bag.

APPENDIX XV

6.4.1/III/84/295 Jakarta, 2nd March 1984.

Dr. Ram K. Vepa
Team Leader

Dear Mr.

I am happy to learn from Mr. El Morsy that his programme of work is going on well, thanks to your support and cooperation.

2. His tenure will finish by the end of March, and, as was done in the case of other Short Term Consultants, it would be nice to have a meeting organised by DJIK along with other concerned agencies and institutions (such as MIDC, Badan, LIPI, LRI etc) where Mr. El Morsy can present his recommendations on the subject of his study - standardisation and quality control in the Small Industry. If you agree, I would suggest the week from 19th-23rd March for this purpose since Mr. El Morsy would like to take the comments made at the meeting in finalising his report.

3. I shall appreciate if you can consider my suggestion favourably.

With regards,

Yours Sincerely,

(Ram K. Vepa)

Mr. Soebardi Soeria Atmadja
Director, Evastand, DJIK
Ministry of Industry
Jakarta

cc : - Mr. S. Syarief, Director, DJIK-Jakarta
- Mr. Zabidin Yakub, Chief PSP2-IK-Jakarta
- Mr. A. Syorfai, Chief National Expert
- Mr. El Morsy, S.T.C. Standardisation

APPENDIX XVI

(M.I.E. = MINI INDUSTRIAL ESTATE IN INDONESIA &
C.S.F. = COMMON SERVICE FACILITIES)

1.	WEST JAVA	:	Bandung	(Various)
			Tasikmalaya	(Various)
			Sukabumi	(M e t a l)
			Indramayu	(Metal & Wood)
2.	YOGYAKARTA	:	Yogyakarta	(Various)
3.	CENTRAL JAVA	:	Semarang	(Various)
			T e g a l	(M e t a l)
			Cilacap	(Various)
4.	EAST JAVA	:	Sidoarjo	(Various)
			Magetan	(Leather)
			Sukoharjo	(Various)
			Malang	(Ceramic)
			Surabaya	(Various)
5.	B A L I	:	Toh Pati	(Various)
6.	SOUTH SULAWESI	:	Ujung Pandang	(Various)
7.	WEST SUMATERA	:	P a d a n g	(Rattan & Wood)
8.	NORTH SUMATERA	:	M e d a n	(Metal & Wood)
9.	JAKARTA	:	Pulogadung	(Various).

UNIT PELAYANAN TEKNIS (UPT)

DI INDONESIA

PROVINCE	UPT		TOTAL
	Working	Not working	
1. ACEH	2	-	2
2. NORTH SUMATERA	5	11	16
3. WEST SUMATERA	1	3	4
4. RIAU	-	-	-
5. JAMBI	-	-	-
6. SOUTH SUMATERA	-	2	2
7. BENGKULU	-	-	-
8. LAMPUNG	-	1	1
9. JAKARTA	4	-	4
10. WEST JAVA	5	1	6
11. MIDDLE JAVA	7	9	16
12. YOGYAKARTA	2	3	5
13. EAST JAVA	5	7	12
14. WEST KALIMANTAN	-	-	-
15. MIDDLE KALIMANTAN	1	-	1
16. SOUTH KALIMANTAN	-	1	1
17. EAST KALIMANTAN	-	-	-
18. NORTH SULAWESI	-	-	-
19. MIDDLE SULAWESI	-	-	-
20. SOUTH EAST SULAWESI	-	-	-
21. SOUTH SULAWESI	1	7	8
22. BALI	2	-	2
23. WEST NUSATENGGARA	-	-	-
24. EAST NUSATENGGARA	-	-	-
25. MALUKU	-	-	-
26. IRIAN JAYA	-	-	-
27. PUSAT	-	-	-
TOTAL	32	45	80