



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org



05721



United Nations Industrial Development Organization

Distr.
LIMITED

ID/WG.187/12
10 September 1974

ORIGINAL: English

Meeting of Experts/Decision Makers for Promotion
and Development of Machine Tool Industries in
Developing Countries of Asia and the Far East
Tbilisi, Georgia, USSR, 5 - 15 October 1974

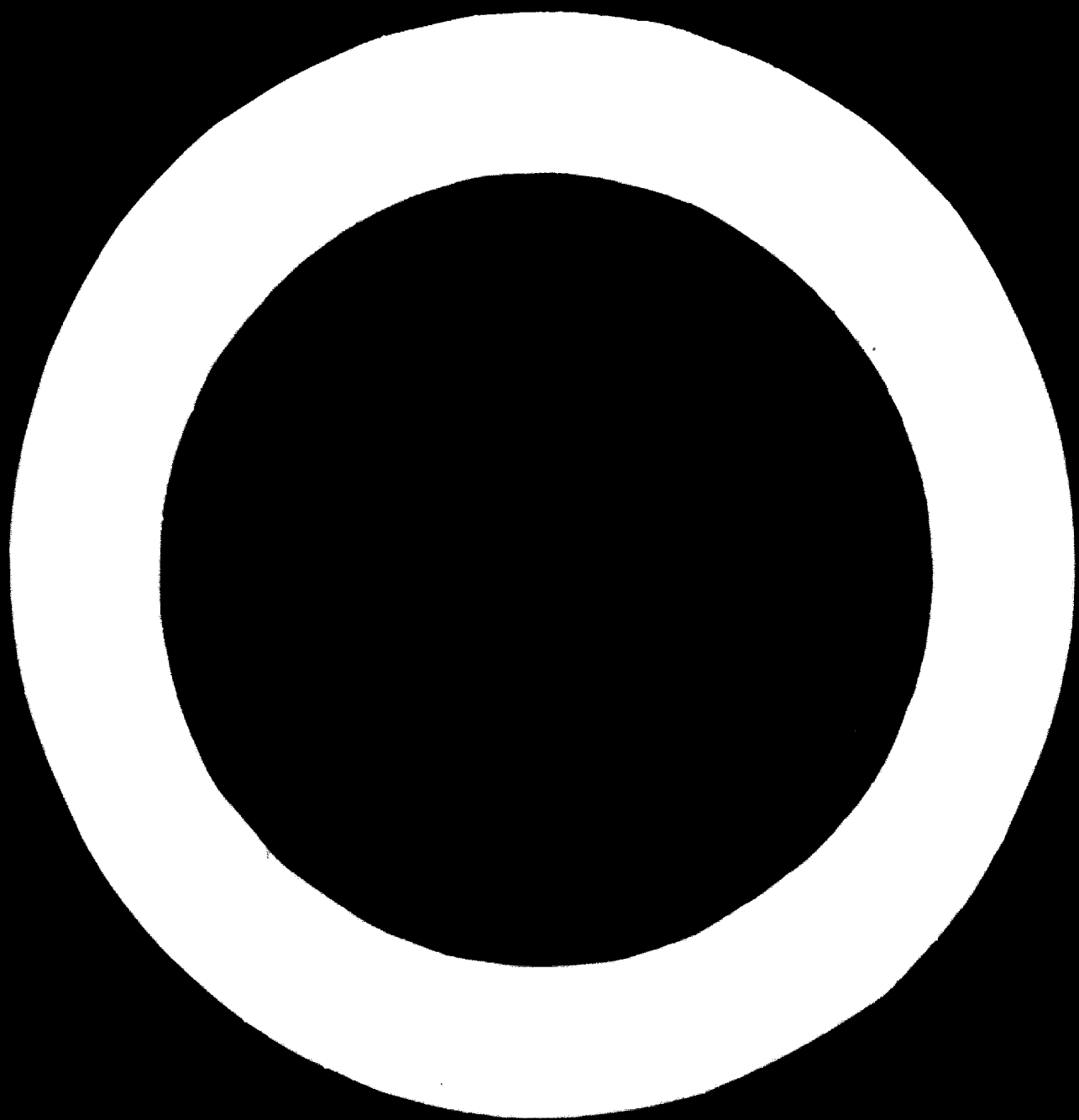
COUNTRY STUDY REPORT ON THE
MACHINE TOOL INDUSTRY IN MALAYSIA 1/

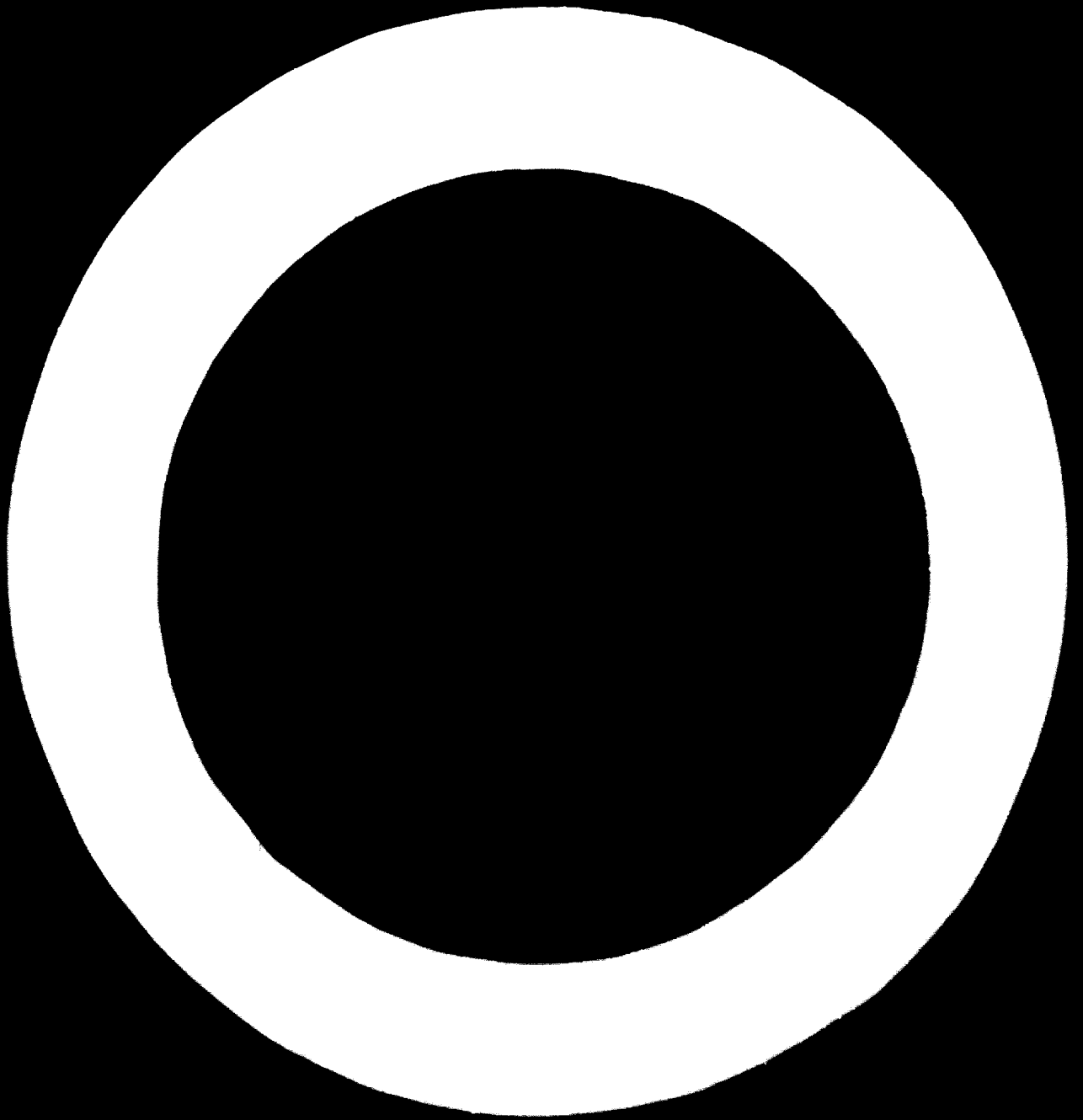
by

Koh Teck Seng *

* Engineer, Federal Industrial Development Authority

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





Status of Machine Tools in the Country

Until today, there is hardly any manufacture of machine tools in Malaysia. The imports of machine tools for the period 1963 to 1972 as shown in Table A, show that imports have risen from 2.3 million US\$ to a high of 16.4 million US\$ in 1971.

Table A

Imports classified by types of machine tools for the period 1963-1972

(in 000 US\$)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Machine-tool for working metal	1,270	1,123	1,153	3,448	2,982	2,111	2,085	4,354	6,127	7,6
Machine-tool for working wood	969	1,603	2,437	1,375	1,171	2,679	3,144	6,426	7,851	3,7
Accessories and parts	559	316	1,671	2,143	1,956	1,913	1,576	1,837	2,452	1,8
Total	2,798	3,042	5,261	6,966	6,109	6,703	6,805	12,617	16,430	13,1

Source: STATISTICS DEPT., MALAYSIA

An analysis of the imports by types of machine tools as in Table B, shows that lathes, grinders, drillers, power saws, presses and shapers represent about 86% of the total quantity imported with lathes and drillers forming nearly 47% of the total quantity imported. Other machine tools items which represents a total of about 12%, is insignificant when taken individually.

Table B

Quantity of machine-tool per type imported
between 1961 to 1972 (Metalworking machines only)

Type of machine-tool	Qty. 61 - 72	%
Center lathe	1,326	26.7
Turret lathe	34	0.7
Drilling machine	1,022	20.6
Radial drilling machine	72	1.4
Power saw	330	6.6
Shaping machine	308	6.2
Milling machine	164	3.3
Slotting machine	16	0.3
Planer	48	1.0
Cylindrical grinder	6	0.1
Bench and pedestal grinder	648	13.2
Surface grinder	26	0.5
Centerless grinder	2	0.05
Tool and cutter grinder	28	0.6
Shear	114	2.3
Rolling machine	4	0.1
Punch shearing machine	82	1.6
Press	620	12.5
Hammer	12	0.2
Buffing machine	10	0.2
Polishing machine	40	0.8
Crankshaft grinder	16	0.3
TOTAL	4,968	100

The predominance of grinders, center lathes and drillers (of small capacity) can be attributed to the fact that the mechanical engineering industry in Malaysia at present is mainly composed of small scale assembly shops, repair shops, manufacture of spare parts and sheet metal workshops.

Projected Demand

Statistical correlation indicates that the future demand for machine-tools in Malaysia may follow the following trend.

Table C

Market Forecast of Machine Tools
in Malaysia

	1970	1975	1980	1985
Machine-tools for working metal	4.35	7.3	13.2	22.7
Machine-tools for working wood	6.43	7.8	13.8	24.0
Accessories & Parts	1.84	4.7	8.6	14.7

Proposal

As a first step towards the development of a machine tool industry in Malaysia, in the initial stages it would be advisable to produce universal machines, that is, those machine designed to perform a wide range of operations. The type which are in greatest demand in the country as indicated by the import statistics are lathes, drillers, shapers, presses, grinders, power saws and standard small-size wood working machines. However, in order to take advantage of serial production, only the machine tool most commonly used should be considered for local production.

Based on the above consideration and the analysis of import statistics, a workable structure for local production of machine tools may be as follows:

- 4 -

Structure of the manufacturing programme

Design of machine-tool	COMPOSITION OF PRODUCTION MIX
A. <u>Metal working machines</u>	
Lathe (centre type)	20.0%
Drilling machine (Column + Bench type)	18.0%
Grinder (Bench type)	5.8%
Power saw	4.8%
Shaping machine	10.7%
Press	10.7%
B. <u>Woodworking machines</u>	
Band saw	6.6%
Circular saw	11.4%
Combined woodworking machines	12.0%
TOTAL	100%

Ancillary Industries

In Malaysia, most of the existing foundries and mechanical workshops are small scale and are based on traditional skills and outdated equipment. They are, in general, inefficient by modern standards and their products lacking in quality.

There are over 150 foundries in Malaysia employing about 3,000 workers. The total tonnage of grey iron castings produced is estimated to be 12,000 - 15,000 tons per year. A small quantity of non-ferrous and steel castings are also produced. The main outlet for these castings is in the manufacture of spare parts for the tin mining and rubber planting industries.

Electric motors, another important component of the machine-tool, are manufactured in Malaysia by one company with castings from its own modern foundry. The company, a joint venture with an international electric motor manufacturing company, is capable of producing electric motors from 0.5 H.P. to 100 H.P.

Other machine tools such as lathes, shapers, grinders, reamers, oil seals, clutches, high speed gear cutters, pneumatic controls, cutting tools, rigs and fixtures are absent in the country. In view of the importance of ensuring that the local foundry and metal working industries can supply the local market with quality castings, moulds, tools, jigs, fixtures etc. and of raising the technological and managerial efficiency in existing establishments, the Government of Malaysia has decided to establish a foundry, tool, die and Mould-Making Centre which has tentatively been named the Metal Industries Development Centre of Malaysia (MILCOM).

Government Policy

The manufacture of machine-tools can be considered for one of the many investment incentives e.g. pioneer status, investment tax credit etc. available to the manufacturing sector in the country. In the interest of technological development, the Government would consider more favourably projects which utilize new and advanced technology and equipment. This would accelerate the growth of more advanced machine tools and equipment. It is also the policy of the Government that the domestic cost of production of machine tools be competitive with world prices.

Co-operation with Developed Countries

At this stage it is probably preferable to undertake the manufacture of machine tools to the design of a reputable foreign manufacturer under a licensing agreement. A joint venture with the foreign manufacturer is proposed whereby the foreign partner could provide the necessary technical 'know-how'. In later stages the project could perhaps design and manufacture the simpler machine tools, suitable for local industries.

Specialists from industrially developed countries could provide assistance in all phases of the operation of the industry such as project planning, the provision of technical services, machines, equipment, the organisation of production, the training of staff at all levels, etc. It is also necessary that local counterparts should also be given the opportunity to go to industrially developed countries for training and study on the subject.

Assistance from UNIDO could include:

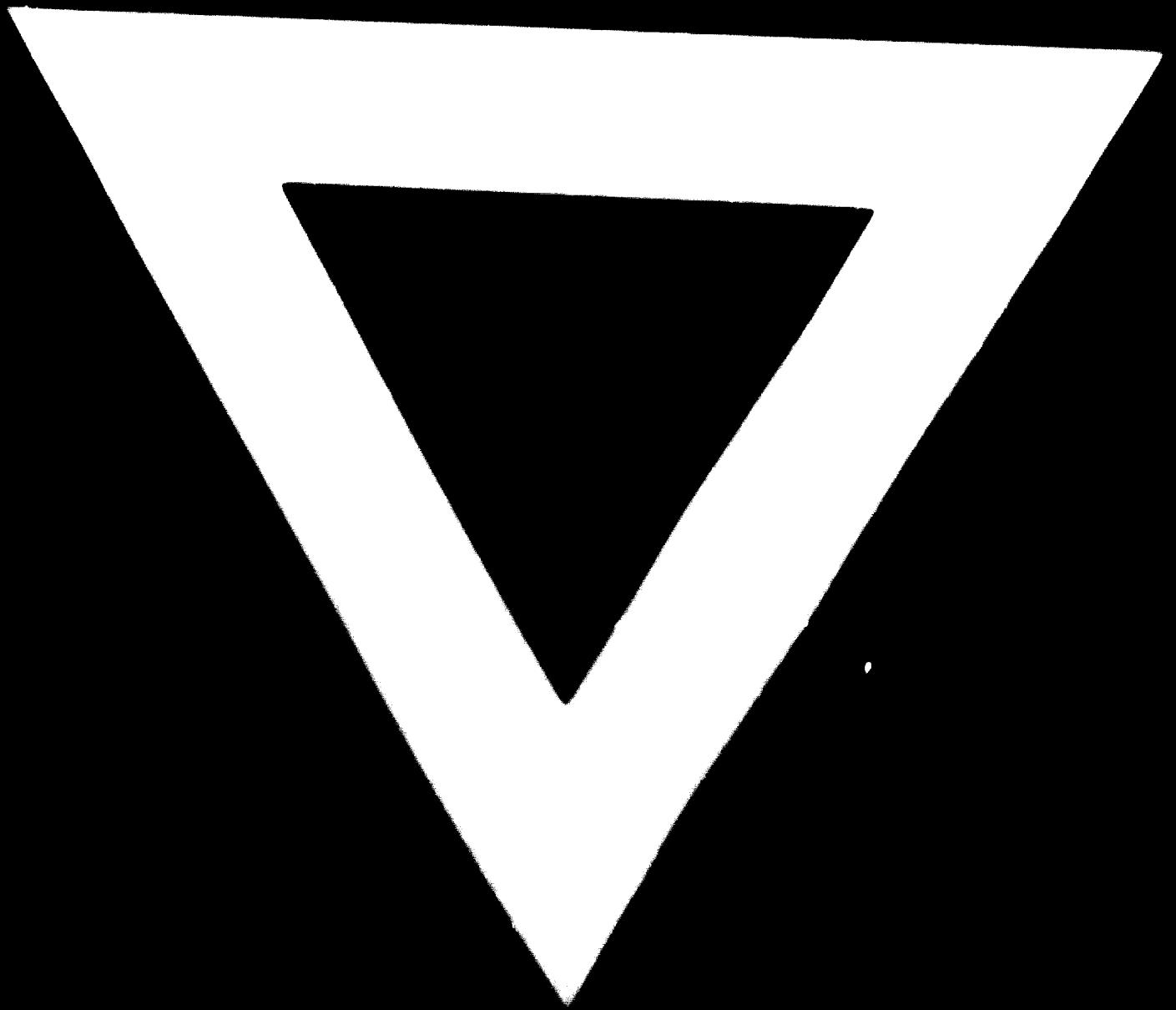
- (a) Training local personnel for the machine-tool building and tool-making industries;
- (b) Assigning experts to Malaysia to assist the Government in establishing the machine tool industry.

Numerically Controlled Machine Tools

Although numerical control can offer many advantages, mistakes in utilising it are extremely costly. Assistance from UNIDO would be greatly appreciated to determine whether numerical control will benefit any particular factory. A detailed review of production requirement covering component design, method of manufacture, batch sizes and frequency of design changes, would be required with the assistance of experts before making any decision to introduce numerical control.

KTC/shs.





74.11.27