



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



002900



United Nations Industrial Development Organization

Distr.
LIMITED

ID/WG.87/2
19 August 1971

ORIGINAL: ENGLISH

Regional Seminar on Machine Tools
in Developing Countries of
Europe, Middle East and North Africa

Slata Pjassazi (Golden Sands) near
Varna, Bulgaria, 18 to 27 October 1971

REPORT ON MACHINE TOOLS
IN THE
PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN ^{2/}

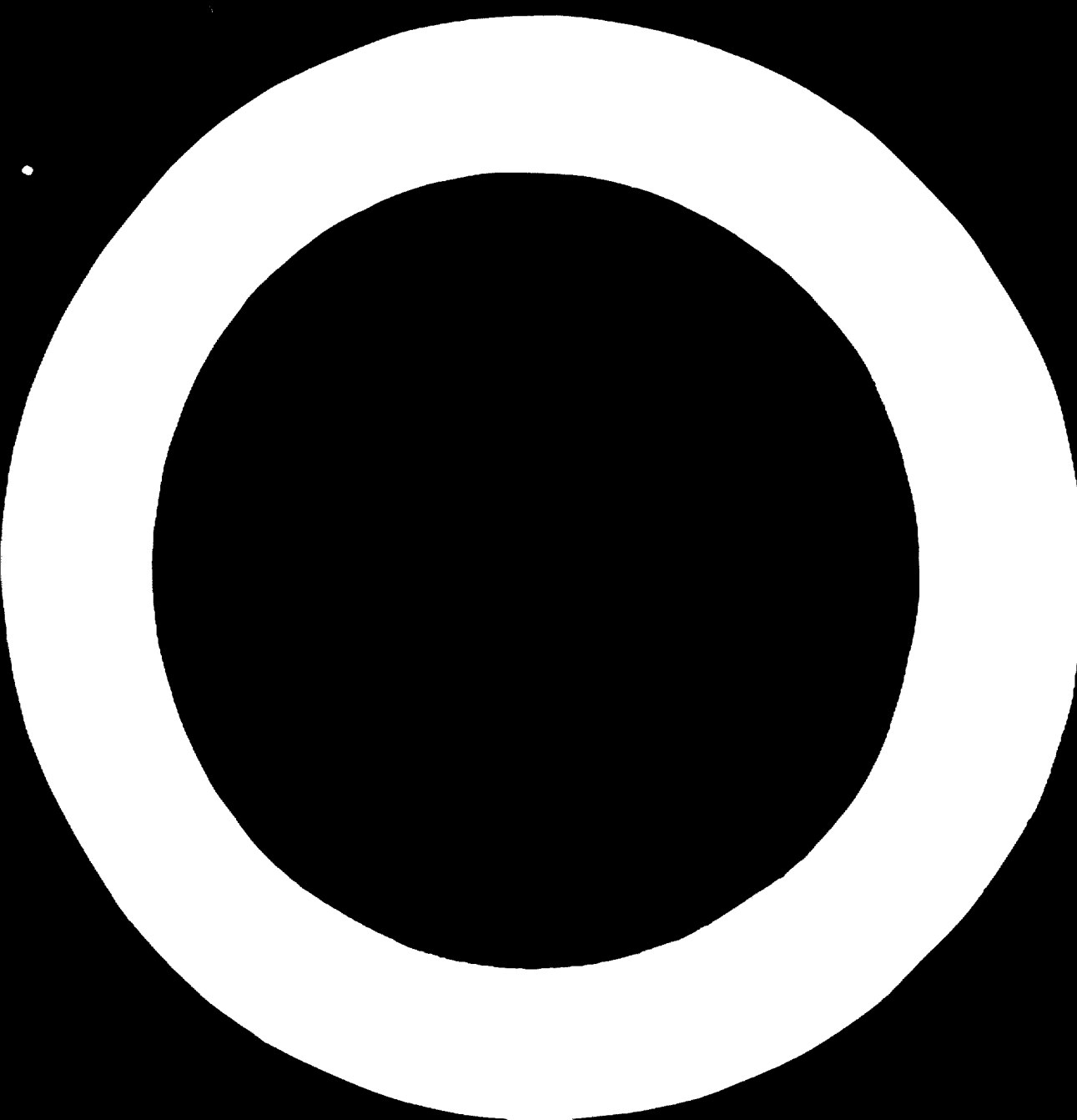
by

Shihab Ghanem
Deputy Director of the Department of
Planning and Statistics
Ministry of Works and Communications
People's Democratic Republic of Yemen

^{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.

id.71-6629

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.



INTRODUCTION

The People's Democratic Republic of Yemen occupies the Southwestern corner of the Arabian Peninsula plus a few islands in the Red Sea and the Arabian Sea. It has an area of about 112,000 square miles and a population of about one million and a half. The country is divided into six governorates.

Very little industry exists in the country other than a medium sized B.P. Oil Refinery of which comprises more than 80% of the industry of the country. However, the draft of the 3 year plan of the country which has been recently prepared, lays great stress on the development of industry in the country. Nearly \$10 million i.e. nearly a quarter of the capital investments of the Government in the plan are to be allocated to the development of light industries in the country. The plan includes the construction of thirty new factories of which 28 are to be completed within the three years of this plan. These include factories for the manufacture of shoes, matches, cigarettes and plastic goods; ginning and weaving of cotton cloth and also a leather tannery, tomato puree canning factory and fish meal factory.

The country does not produce machine tools and the 3-year plan does not aim at doing so. The country does not produce iron ore or steel and the plan does not include factories for smelting or for producing machinery or metal products.

It is, therefore, not surprising that any machine tools available in the country are not of the fully automatic type. The machine tools which can be found in the country are mainly of the manual type, with some semi-automatic machines.

The Workshops in the country belong mainly to the following organisations: - Public Works Department, Ministry of Agriculture and Agrarian Reform, Ministry of Defence, Port Trust, N.P. Refinery, National Shipping Co. + Dockyards and several private small jobbing workshops. Most of these workshops are situated in the 1st Governorate with one or two small workshops in the 5th Governorate.

The author is familiar only with Ministry of Works + Communications Workshops + Garages and, therefore, only the Public Works Machine Tools and workshops can be described in the following pages.

The Public Works Workshops

The Public Works Garages and workshops are responsible for the maintenance of government vehicles, trucks, and road construction equipments totalling over 1000 in number.

The problems of maintenance are rather formidable. Firstly, the shortage in funds due to the economic crisis forces the department to continue to use equipments well past their normal useful age. Secondly, the problem of non availability of skilled operators and mechanics continues to keep the standard of operation and maintenance rather low. Thirdly, the lack of materials means that practically all spare parts have to be imported, thus putting a continuous call on the government's scarce foreign exchange resources. In addition, there has been difficulty in controlling storage and the handling of materials mainly due to the lack of well trained stores personnel. Fourthly, the arduous climatic conditions which include high temperatures, high humidity, high salinity, and sand storms shorten the life of equipments of all types, and add to the problems of maintenance. In addition, the terrain is rough and the roads - or rather tracks - are very poor and put considerable strain on the vehicles and equipments which use them and add considerably to the need for maintenance.

All these difficulties reflect themselves on the Public Works workshops which have been inadequate in the face of such problems. The machine tools in these workshops are all of the manual type

and are old and in many cases no longer sufficiently accurate and reliable. The largest lathe is an ordinary centre lathe 16 " x 72" and is more than 10 years old. There are also a few smaller lathes of which only one is functioning properly. There are also drilling machines, power saws, shapers, etc., but there are no capstan lathes, crankshaft grinders, gear cutting machines or planing machines or even a satisfactory milling machine.

The standard of the machinists is rather low and most of the time they are engaged in the production of bushes and bolts or are cutting plates to sizes for welding purposes. The machine shop has no foundry attached to it. In fact very little casting is done in the country. However, there are casting facilities in some workshops. For instance there is a workshop which has a capacity to handle castings up to 3 (three) tons for the benefit of ships passing through Aden Harbour that are in need of repairs.

The difficulties encountered in obtaining foreign exchange for spare parts have lead the department to review the question of the functions of its workshops.

It has become evident that the workshops should be reinforced and also it should be possible to produce the simpler spare parts locally. Firstly the Ministry decided to extend the main two existing workshops considerably.

These are the central workshop at Khormaksar and the workshop at Mukalla in the 5th Governorate.

The facilities in these workshops are very limited at the moment but it is expected that by the beginning of the next year the workshops would have added to them many different machines. Khormaksar Central Workshop will have added to it a universal milling machine, a radial drilling machine, an upright line boring machine, a grinder, a heavy duty bow sawing machine, an open fronted hydraulic press and pedestal grinder.

All the above mentioned machines will have a sufficient number of attachments, tools and accessories. The Mukalla Workshop is to have a universal tool grinding machine, a universal milling machine, a shell and mill arbor, a heavy duty bow sawing machine, an open front hydraulic press, an upright fine boring machine, etc. with the necessary accessories. The above mentioned lists are in fact quite modest yet signify a considerable reinforcement to our workshops. The above machines will be obtained from a bilateral aid sources. The total cost of this equipment, attachments, tools and spare parts amount to more than \$ 70,000.

These extensions of the above mentioned workshops are merely to enable them to cope with their present duties more adequately. At the same time the Ministry managed to obtain help from UNIDO in the form of two experts (each for about six months) to improve the organization of the workshops and the standard of maintenance carried out by the workshops. These two have just arrived in Aden.

The government also arranged to obtain from U.N. two mobile workshops and has also contracted through bilateral agreement for more mobile workshops.

However, the question of the production of the simpler spare parts locally still persisted and the government approached the International Bank with a request for financing a project which included expansion of the workshops so as to make them able to produce the simpler spare parts. The IBRD noticed that nearly half the P.W.D. road equipment was out of order due to lack of spare parts and also noticed that the workshops machinery and tools were inadequate. Also it noticed that all the equipments and machinery needing spare parts were of western origin and as there was no appropriate bilateral aid, it decided to include in the project the procurement of spare parts and workshop equipments, etc. It evaluated the present useable tools and equipments of the P.W.D. at above \$100,000 and found that these equipments were not capable of keeping presently useable road equipments in good working order. It decided to allocate over \$300,000 for the procurement of

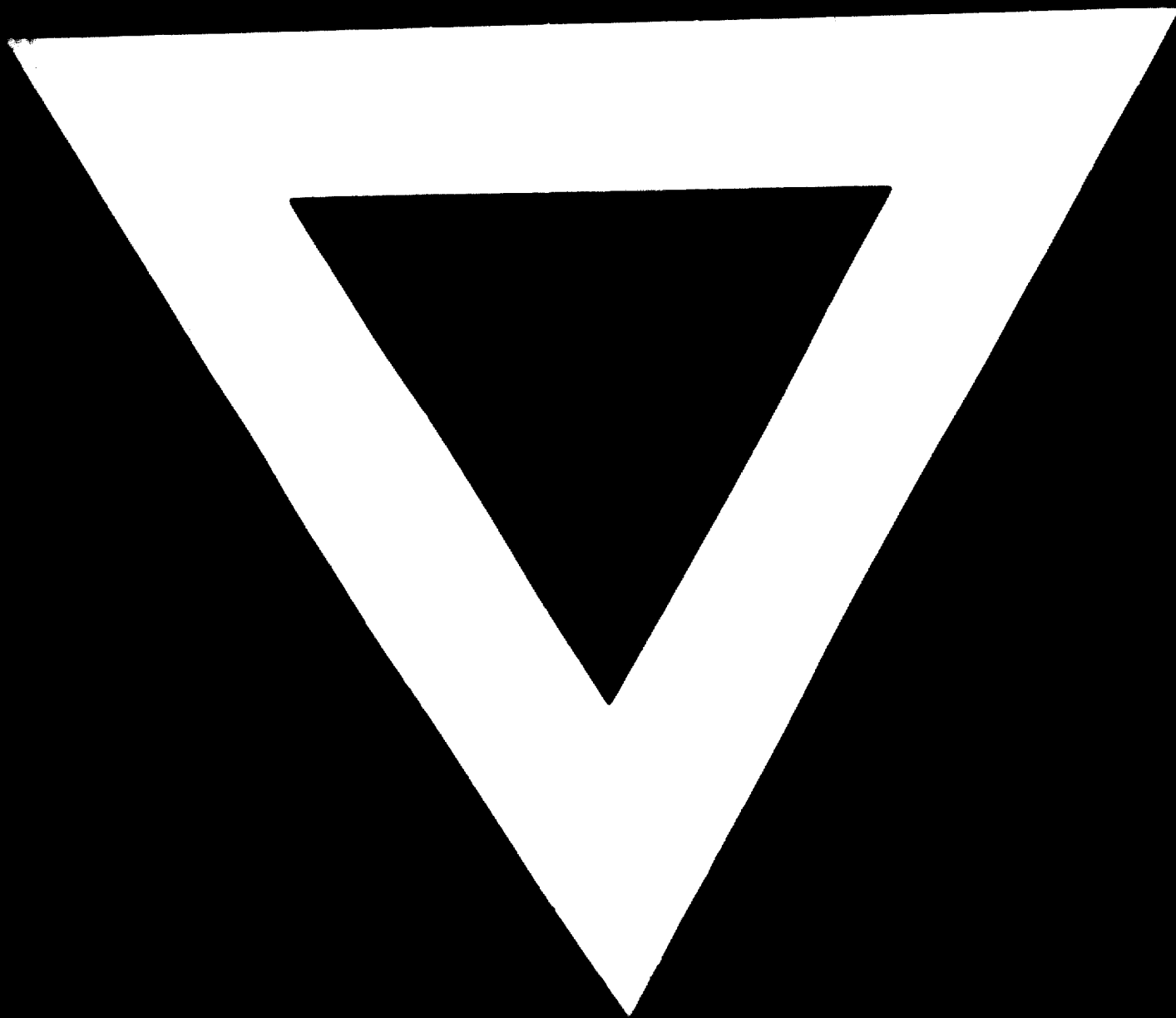
spares, workshops equipments capable of producing some of the simpler spare parts normally imported, tools, stores equipment and mobile workshops. The equipment is to include centre lathes, milling machines, gear shapers, boring machines, crank shaft grinding machines, sawing machines, etc. The tools are to include jacks, spanners, welding sets, electrical testing equipments battery chargers, etc. The IBRD included in its project the training of one machine shop supervisor.

The arrival of all the machines mentioned should alleviate the problems faced at the moment considerably, however, it will not solve them altogether. The department will still be lacking experienced machinists and mechanics for the operation and maintenance of the machines.

The suppliers of machines coming from bilateral aid sources will train our operators on the machines. However, we still need a lot of training programmes for the operators and maintenance staff of the machine tools. We hope that UNIDO will be able to help in this respect.

The problems of obtaining materials for making the simpler spare parts still exist and we hope to be able to obtain materials through bilateral aid sources as well as to continue purchasing from overseas. The control of the type and strength of the materials is also a problem as no mechanical testing laboratory or heat treatment section are available to the department, nor qualified staff to run them. UNIDO, her again might be able to lend a hand.





74.09.13

**4
13
1**