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07653



Distr.
LIMITED

ID/WG.263/A
12 October 1977

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

UNIDO/WCA Workshop on Technical Co-operation
among the Developing Countries of Africa in
the Field of Metalworking Industries

Addis Ababa, Ethiopia, 14 - 25 November 1977

A SURVEY REPORT ON METALWORKING INDUSTRIES
IN THE GAMBIA^{1/}

by

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id.77-7364

The Gambia is a small country about 4,000 square miles in Area, and with an estimated population of about half a million. It is situated on the great bulge of West Africa stretching east from the Atlantic Ocean for a distance of about 250 miles. It is cut in two by the Gambia River from which it has derived its name, and is some 14 miles wide throughout its entire length. Like most developing African countries, its inhabitants are mostly rural, and some 80 percent of whom are engaged in Agriculture. The kinds of occupations carried on by a country's inhabitants are major determinants of the kinds of prevailing industrial enterprises. It is not surprising that the majority of industries have been related to agricultural activities, one of these, though by no means the largest and not necessarily the most important, is the Metal Working Industry (MWI).

This paper attempts to make a survey of Metal Working Industries in the Gambia. We will in particular, consider the Metal Working Industry in the National Economy, its present structure, problems of Development and Current Economic Policy relating to it. Finally, we will consider and suggest the kind and volume of technical assistance required from UNIDO and we will make recommendations for the development and improvement of MWI to meet present and future industrial demands in the Gambia.

A BRIEF HISTORY OF THE METAL INDUSTRY

In Colonial Days and during the immediate post independence period, industrial activity in the Gambia was in its embryonic stages, primarily because of the relatively small demand of metal products, the lack of trained technicians and engineers, and also, of course, because of lack of funds. Existing industries, if there was anything worth the name, were carried on in Government and Semi-Government Departments notably P.W.D., Marine Department, Gambia River Transport Workshop and in the oil mill and ground-nut crushing and refining industry.

INDUSTRIAL WORKING HOURS

Four full days and two half days (Friday and Saturday) is the normal routine of work for government departments. But the number of hours per week differs according to the nature of work being done. Workers engaged in oil mills and factories (48 hours) and those in government services mainly with manual work (44 hours). Extra hours could be earned by factory workers on shift work and overtime bases.

ACTIVITIES OF THE DOCKYARD (MARINE DEPARTMENT)

The Marine Department was established in 1920 but The Gambia Ports Authority commenced operation on 1st July 1972

taking over from government those Port, Harbour, Dockyard, Ferry, River services and Maritime functions formerly shared by the Marine Department and other Government Departments.

The present location of the Dockyard is becoming crucial in relation to services rendered and possible future expansion. At the moment, expansion can take place but will be restricted due to the amount of working area now available. Expansion, if this is desired, must be in the vicinity of existing facilities - to facilitate the organization of services and also the positioning of equipment to meet manpower and other technological requirements. If another site is chosen for expansion, it will mean either reclamation of land for this purpose or a feasibility study would be necessary. Which ever measure is taken, it will mean more capital investment, but it might solve existing problems pertaining, for instance, to machine positioning and expansion.

General ship repairs are carried out by the Dockyard, but these ships must have a maximum capacity of 500 tons due to the present shipway available. The Gambia Ports Authority handle 20 times more work than the Gambia River Transport. According to plans, the dockyard will be engaged in the building of metal ferries and the setting up of a new foundry

to cope with its technological requirements. Facilities to engage in such a project are available, but instructions are not yet released by management.

The country is in need of metal lighters which are more durable than wooden ones, and will serve to transport ground-nuts during the trade season. But to engage in such a project it has to be approved by the policy - makers. Manufacturing of such products might be expensive, but they could be hired by the Gambia River Transport for purposes beneficial to our National Economy.

MATERIAL AVAILABILITY

The availability of Raw Materials is a serious problem since the majority of them if not all, are imported. A particular job can be brought to a standstill when materials are not in stock, or production can suffer a serious setback when there is acute shortage of them. To prevent this unhappy situation from happening, present policy is one that makes certain that orders for large quantities of materials that are more often in demand are placed.

HUMAN RESOURCES - MANPOWER PROBLEMS OF THE DOCKYARD

At present, it is difficult to increase productivity because most workers, in my judgement, may not be aware of

the number of hours they should spend on a particular job, and also the number of hours required to achieve a certain level of output. From observation, more time is spent in idling than in working. Perhaps semi-skilled workers have reason to do so because they are less paid. Another observation is that division of labour among workers leaves very much to be desired, as apparently, most of the work is done by higher skilled personnel.

TRAINING FACILITIES

The Dockyard is engaged in a five year industrial training programme in order to enable workers improve existing standard of work. Previously, the number of craftsmen involved in training was negligible, due to the small number of trained nucleus of craftsmen to assist in supervising the workmen. They could not cope with the assistance required for the vast majority of trained workers engaged in a given project. New measures have been taken mainly to enhance training requirements and to consolidate training activities. An experimental programme based on mass training is being embarked upon. It is hoped that this will improve standards and quality of work. About 80% of Dockyard workers presently engaged in the metal and fabrication works, however, cannot benefit

from this training programme. The majority of them can read and write but cannot understand simple instructions and are therefore not significantly better than the so-called "Bush craftsmen". For this reason, among others, we must encourage young graduates from the vocational training centre to build on the basic craft instructions they have already received and to enhance their prospects of further training in industry either abroad or locally.

MECHANIZATION AND PRODUCTION

The majority of machines installed at the Dockyard particularly rollers, shears, and heavy duty power drills have been under operation for at least fifty years now. These machines have therefore no capital value at the moment, because they have been paid for. It is time that they are replaced by new ones, because functional efficiency has deteriorated immensely. To cut down maintenance costs on partially derelict machines and equipment, new heavy duty lathes and multi-operator welding sets have recently been installed. The demand for metal products is increasing rapidly, and to cope with it the men available are to be engaged gainfully in order to have more work done.

It is planned to create a new department within the dockyard so that the manufacturing of small farm tools can

be carried out. Major ship repair work would also be handled by this new department. It is envisaged that majority of contracts will come from government rather than from individuals, for the simple reason that most farmers are poor and would not be able to pay for such contracts.

INVESTMENT

A new foundry is to be established soon in order to improve the present standard of foundry work. Most of the work done utilizes non-ferrous materials because of lack of experienced personnel and the necessary equipment. The proposed foundry will be under the management of a U.N. expert, who is expected to give instructions and to provide training for staff already engaged in this field.

THE (MWI) IN THE NATIONAL ECONOMY

The scope of the Metal Working Industry is limited due to the:

- (a) Type of natural resources available at present, and
- (b) The Country's preoccupation with Agricultural work.

As there are no known mineral deposits economically profitable to exploit except perhaps Ilmenite, production is geared towards the manufacturing of agricultural tools and implements including building framework. Existing industries

are mainly concerned with the production of simple farm tools, press steel doors and windows, ship repair work and machine shop work. Due to this limited scope for local metal industries, production does at present contribute little to the National Economy. This is why the value added on imported items dealing with the (MWI) is almost negligible. Government is doing this to encourage more industries so that basic tools and other essential requirements could be manufactured locally in the near future. The country is in need of good quality equipments and machines that will promote productivity throughout.

Output of the (MWI) is limited to local use, value added is controlled because of the problems local industries are facing currently i.e. high costs of imported steel. Expansion is taking place at a very slow rate, and in most cases it is due to lack of capital. To encourage expansion, there is a duty free development certificate for those companies wishing to operate for more than five years.

THE STRUCTURE OF THE (MWI)

Industrial development in the Gambia is not, and will not be, a substantial employer for the foreseeable future. It does not claim as high a priority as agriculture.

It is not, however, to be disregarded. Existing small industrial estimates will undoubtedly expand but every effort should be made to encourage new industries so that they may be labour intensive in the near future. The proposed National Investment Board will be intimately involved in the promotion and support of new private investments in this sector.

HUMAN RESOURCES - MANPOWER PROBLEM OF THE (MWI)

The (MWI) is in desperate need of qualified personnel to handle the management and organization of existing industries, and to restructure and reorientate the system at shop floor level and the training of craftsmen and technicians, so as to produce a skilled labour force to meet its manpower needs.

TABLE 1.1 EMPLOYMENT RATE IN THE (MWI) BETWEEN 1975-1977

DEPARTMENT	MARCH 1975/76	MARCH 1976/77
CHAM & SECKA LTD	142	120
MARINE DOCKYARD	100	110
GAMBIA R. TRANSPORT		
P.W.D.	25	30
OTHER SMALL FIRMS	95	115

The table covers both the Private and Public Sector engaged in the (MWI).

The greatest Resources for Development that the Gambia has is her people. The Government intends to use this resource as an effective force for development by investing in the human capital of the Nation. The primary objective of Government in relation to manpower policy is to develop this human resource in a way that is consonant with the development needs of the economy so as to ensure the fullest participation possible in the Development process. Some of the strategies could be summarized as follows:

- (a) Maximising productivity, employment of skilled and semi-skilled labour in the formal and informal sectors, particularly in the rural areas.
- (b) Introducing special advisory and training services and facilities for the informal sector.
- (c) Selectivity in increasing the output of fully skilled Artisans, Technicians and Managerial staff.
- (d) Introducing special advisory and training services and facilities that will meet future industrial needs.

TABLE 1:2 MANPOWER REQUIREMENTS 1975-1980

TYPE OF PROFESSION	EMPLOYMENT IN DEC 1974	REQUIREMENTS IN 1980	INCREMENTAL M.P REQUIRE MENT
PROFESSIONAL & TECHNICAL	2,200	2,700	500
PRODUCTION & RELATED WORKERS	4,100	5,400	1,300
UNSKILLED	11,700	14,100	2,400
TOTAL	18,000	22,200	4,200

The underdeveloped state of the Industrial Sector is due principally, to the lack of entrepreneurial and management skills. The main objective for government is to encourage in the IWI the creation of stable employment for Gambians in industries which will effectively make a positive foreign exchange contribution to the economy.

TECHNOLOGY TRANSFER

For transfer of skills to be more effective, more encouragement should be given to on-the-job training to upgrade and improve skills of local craftsmen and technicians. Another possibility is to encourage foreign investors

interested in establishing a metal industry, that will create an open market for the Gambia and at the same time promote skills of local craftsmen and technicians.

Technology transfer in the Gambia is more pronounced within the urban sector. In order to gain an even transfer throughout the country, Government is planning to establish rural technical centres. The aim is not to produce mastercraftsmen but to propagate the transference of simple mechanical and engineering skills which will contribute towards the maintenance and repairs of agricultural tools and equipment.

This system is to be based on workshop clusters which will upgrade inservice training required by small scale industrial enterprises, organised by master craftsmen and technicians. More attention will be directed towards enhancing the training of higher technical and management skills. It is anticipated that if the project is in full operation, it might help solve the problem of youth unemployment, but cannot stabilize the growing problem of Urban youth unemployment.

There is at present shortage of "skilled" workers in both public and private sectors. The Government will

reconstitute the training board in order to identify detailed training requirements and to establish effective trade testing machinery. The Government will also examine the possibility of establishing a formal apprenticeship scheme which would function together with training programmes at the technical institute. Courses will be upgraded to the level of H.N.C. or Intermediate City & Guilds. Skill upgrading courses will be made available at the institute on a day release or on evening class basis for selected trade workers in both the public and private sectors. It is hoped that the present shortage of skilled workers, and also of management staff, will be ameliorated by the provision of training facilities at the new institute and by increasing the volume of specialised overseas training.

STANDARDIZATION

More research needs to be carried out into ways and means by which existing standards can be improved and inevitably too the quality of industrial products. The majority of local industries are mainly concerned with the manufacture of a particular product, but have not set standards or specifications to work upon.

To prevent bad workmanship, this should be discouraged. It is essential to set up a panel of engineers from both the private and public sectors to draw up relevant standards, code, and specification to govern production with a view to improving both the skill of the craftsman and the quality of his products.

Before local industrial products can compete with imported products, they must aim at a standard equivalent to relevant British standards or other recognized standards. The management should emphasize the quality of the product much more than the quantity of products produced, and also the fact that we are not competing with industries in developed countries. We are merely trying to achieve higher standards in metal production. The fact that present standards

leave very much to be desired, does not mean that our craftsmen are inexperienced. Their professional qualifications may be low, but management must be blamed for neglecting to introduce working standards, code and specification.

QUALITY OF PRODUCTS

It is estimated that about 60% of finished products and the (MWI) are below international standards. The following factors are responsible:

- Lack of a quality control unit
- lack of good quality equipment and machinery.
- inadequate funds
- inadequate trained personnel

It is appalling to discover that quality control equipment and machinery are not available in any of our (MWI).

They may be expensive but they are necessary for the achievement of high quality products. There are also no quality control inspectors or metallurgists to give advise to management when complex products are to be manufactured.

It is essential to have such qualified personnel whose main duty is to inspect certain products on the assembly line, and not just the finished product. Such inspection would detect and rectify faults at the early stages of production and, among other things, would contribute to the minimization of costs of production. Quality control is essential if profits are to be maximized in the (MWI).

FISCAL POLICY

It is the intention of government to consider relevant administrative and fiscal control to ensure that industries attain their objectives with minimum inconvenience to the investor.

Problems of inflation could be a threat to investors, but government is to determine effective methods of counteracting it.

It is also government policy to encourage the growth of labour intensive techniques of production, and to ensure adequate progressiveness of the tax structure. The Development Act of 1973 which is still operational, offers income tax duty concessions to potential investors.

TRADE POLICY

All metal working machinery and raw materials are imported. The country's export of metal work products is almost negligible. Cham & Secka industries is the only (MWI) which exports almost 20% of its total products to neighbouring West African countries. The table below indicates the type of metal working material imported between 1972 to 1975, irrespective of country of origin.

TABLE 1.3: ALL VALUES ARE IN DALASIS (ONE DALASI IS EQUIVALENT TO FIVE SHILLINGS SERRALIAN.)

UNIT	1972 - 1973		1973-1974		1974-1975	
	Quantity	Value	Quantity	Value	Quantity	Value
IRON & STEEL - BARS AND REINFORCING RODS						
TONS	687	214,909	466	247,473	432	232,510
STEEL DOORS AND WINDOWS						
CWT	832	107,050	1099	155,175	711	245,360
OTHER STRUCTURAL PARTS AND CONSTRUCTION OF IRON AND STEEL						
	13148	607,644	4208	403,869	1310	528,531
PLATES AND SHEETS OF IRON AND STEEL UNCOATED						
	7	5,612	306	49,817	30	21,895
COMPRESSED GAS CYLINDERS						
CUBIC FT/M.BARS	287	46,704	331	9,902	1116	20,471

Other imported iron and steel materials which make little contribution towards the (NWI) are not included in the above table.

Also attached is a list of press steel doors and windows manufactured by Cham and Secka. Prices are in Dalasis and can be compared with those of the P.W.D. and Balfour Beatty which are imported from England.

CHAM and SECKA INDUSTRIES PRICE LIST

<u>WINDOWS</u>	<u>PRESS STEEL DOORS</u>
HD1 = D40 - 00	Press Steel Doors 2'4" x 6'6" = D155 - 00
HC1 = D45 - 00	" " " 8'6" x 8'0" = D450 - 00
HD7 = D72 - 50	" " " 2'9" x 6'6" = D200 - 00
HC7 = D65 - 00	" " " 3'0" x 6'9" = D250 - 00
	" " " 4'3" x 6'9" = D300 - 00
	" " " 4'6" x 6'9" = D350 - 00
<u>DOORS</u>	" " " 6'0" x 9'3" = D500 - 00
HA25 = D190.00	" " " 4'3" x 6'8" = D300 - 00
A16 = D130.00	

BALFOUR BEATTY

<u>WINDOWS</u>	
TP HD1 HD7 = D225.88	Press Steel Door 2'4" x 6'6" = D 726.
HC1 = D111.33	" " " 8'6" x 6'0" = D1425-
HD7 = D167.77	" " " 2'9" x 6'6" =
HC7 = D156.55	" " " 3'0" x 6'9" = D725.59
	" " " 4'3" x 6'9" = D1294.29
	" " " 4'6" x 6'9" = D1290.52
<u>DOORS</u>	" " " 8'0" x 9'3" = D1470.63
HA25 = D435.50	" " " 4'3" x 6'8" = D1278.88
A16 = D330.83	

P.W.D. PRICE WITHOUT 30%

WINDOWS

HD1 R.H. = D20.97

HD1 L.H. = D20.30

HC1 R.H. = D15.55

HC1 L.H. = D26.15

HD7 = D59.01

HC7 = D54.34

DOORS

HA25 = D231.84

HA15 = D141.61

Press Steel Door R.H. D188.91

" " " L.H. D213.52

EDUCATION AND INDUSTRY

Technical and vocational training facilities have expanded considerably in recent years. The government vocational training centre for semi-skilled tradesmen was established in 1955. A similar mission financed institution started in 1970, and a new combined teachers/agricultural extension training college is currently under construction. In a country so small and so poor as the Gambia, it would be uneconomical to establish a university or specialised training facilities for many skills. We must of necessity, therefore, depend heavily on overseas courses and in-service training. Emphasis has been on identifying the nature and scope of training that can be reasonably

done locally, and the most appropriate overseas training opportunities for those wishing to specialize in their respective fields of study.

A lot of research needs to be carried out before we can really determine the country's industrial and economic needs and potential. Although industrial expansion is taking place, it must be linked with better training facilities to meet future industrial demands. Because of lack of qualified or trained technicians and engineers, it is difficult to assess the country's industrial needs and to make any realistic and effective planning.

Government is making much effort to remedy existing difficulties by creating a new training nucleus in order to assist industry as part of the national development programme. But this can only be effective if existing industries are ready to co-operate. This co-operation is necessary if industrial concerns can make an effective and positive contribution to national development.

A national panel should be constituted to look into the possibility of effecting close liaison with the Curriculum Development Centre of the Ministry of Education. Together, they can draw up realistic and functional educational and training programmes. This would also make it

possible for training policies to be reviewed and the possibility of diversifying course offerings considered with a view to meeting the needs of young persons attending technical colleges and who may wish to take up industry as a vocation.

A locally devised syllabus and not a foreign one like that of the city and guilds of London institute is more likely to meet our industrial needs. The City & Guilds of London institute can still be conducted, but we would need to teach students according to a local set syllabus first, and at their final year, they may specialize for the City & Guilds. This may require an increase in the number of years it may take a student to graduate, but it still has its advantages in relation to industrial development. It is being proposed that students who have already obtained the secondary technical school leaving certificate undergo a course duration of 3-4 years which will be both practically and theoretically oriented. If a local syllabus is to be incorporated, the course duration may be extended to 5 years.

TYPE OF TECHNICAL ASSISTANCE REQUIRED

More scholarship awards are needed to enable more Gambians to study and specialize in agricultural engineering. Technicians, craftsmen, and managerial personnel are also

required presently in order to resolve manpower shortage. The government should welcome metal working experts who would assist both in the technical institute and in industry. At present there are no engineers or metallurgists associated with local banks to give advice in industry. Assistance is required in the following specific areas:

- Planning for production in the (MWI)
- Labour employment and investment in relation to machinery for small scale simple farm tools.
- Market investment
- The teaching of metal work at the technical institute
- Training of trainers, and
- The possibility of multipurpose training and production (in the form of workshop clusters).

The need for a cluster is predicated on the necessity to promote on-the-job training in order to have locally trained craftsmen who will transfer skills to rural areas. This may help to discourage people from travelling very long distances to purchase certain products which in fact they themselves could produce if they were trained.

UNIDO's response towards assistance for the Gambia Government has so far been very disappointing in comparison to the assistance they offer to Mali and other neighbouring countries. At present there are no UNIDO experts to advise

on metal working industries in the Gambia. We hope that much more serious consideration will be given by UNIDO to help The Gambia make an effective onslaught on her present problems with a view to (a) making the metal working industry reach take-off point (b) Enabling it become a viable economic proposition, and (c) contributing in its own way to national development.

RECOMMENDATION

A look around the Dockyard, and a survey of the work being done and its quality reveal four areas where substantial improvement is needed if production is to meet manpower and technological needs:

- (a) Quality control equipment
- (b) Introduction of incentive schemes
- (c) Workshop layout
- (d) Material control (in relation to fabrication work).

Recent changes have caused the Dockyard to become part of the Gambia Ports Authority. In my judgement, however, a 'Dockyard' and a 'Ports Authority' are conceptually, and two fundamentally different entities.

- (a) A Ports authority should mainly be concerned with the handling of cargo and ships.
- (b) The Dockyard should be responsible for repairs and for the production of ships, ferries and the like.

Such differentiation between the two is necessary if conflicts and duplication in their activities and functions are to be avoided.

To remedy some of the problems related to manpower and human resources, management is advised to introduce incentive scheme for daily paid workers (in the form of bonus schemes) and also to allocate job cards.

- (a) Incentives can motivate workers and in so doing also enhance maximization of their output. Such a measure could also go a long way towards eliminating or, at best, minimizing time wasted.
- (b) The introduction of job cards will enable management to check the amount of work done in relation to time required for a particular job assignment.

It will also be easier to locate jobs given to individual workers, and in case of any defect, it would make it easy to trace the person responsible for it. These are suggestions that, in my judgement, are likely to solve intrinsic problems at work, and to motivate workers which will in turn increase communication between staff and management, and also morale generally. Once these requirements are met, output is bound to increase.

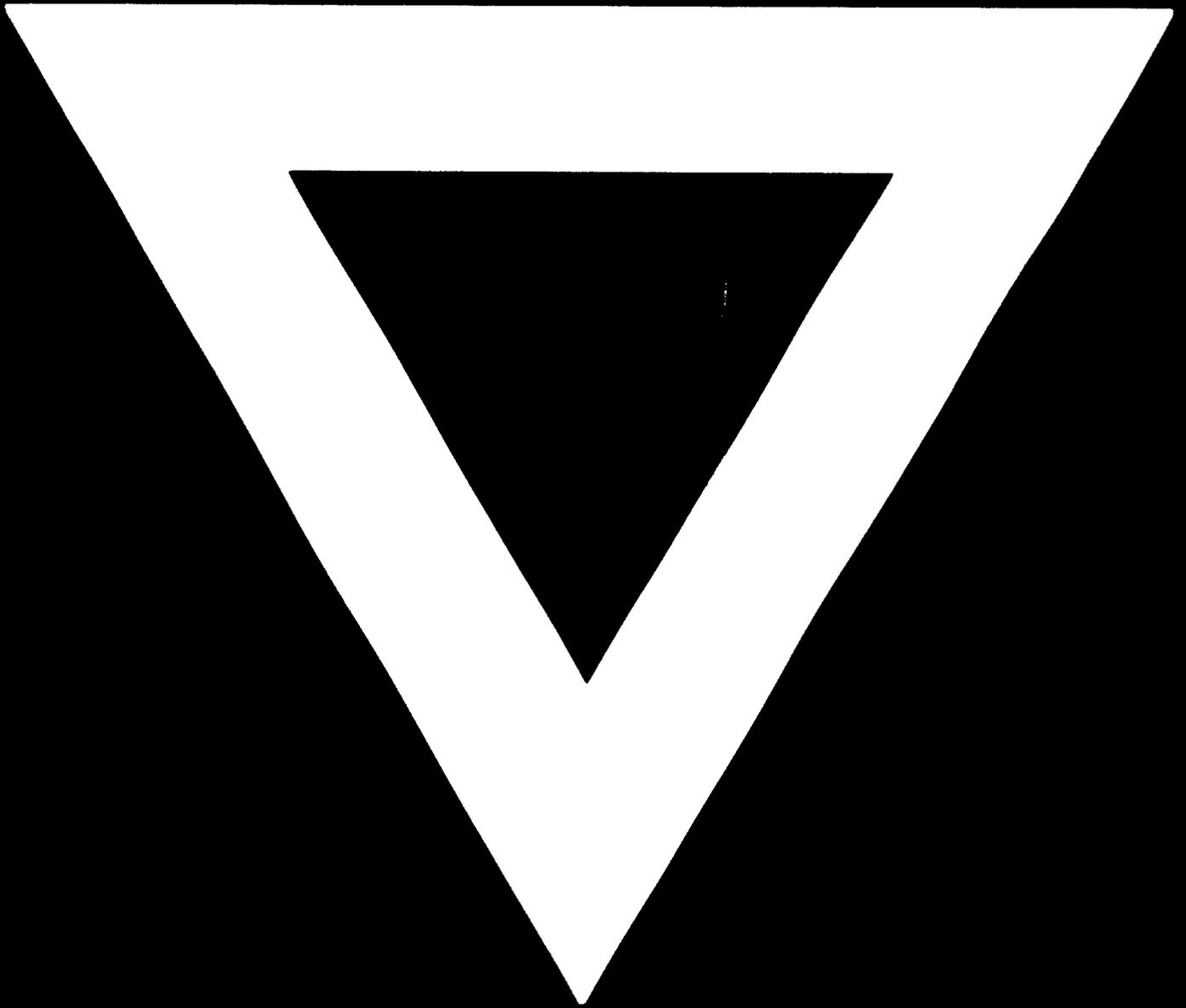
As most workers in industry are semi-skilled craftsmen, it is essential to train personnel to meet future manpower requirements. Since the majority of workers are semi-skilled, assistance is given on the shop floor by management. But this tends to adversely affect or retard the amount of work to be carried out at the office.

In developing countries, very few employers (including government departments) can distinguish between what is wanted and what is needed. They may be knowledgeable about what they want but may have difficulty in determining what they really need.

Employers use vague terms - they speak of wanting 'Better', 'more efficient', 'more skilled' workers, but are unable to define such terms in the context of their own problems. Many employers do not really know what their problems are, let alone what the solutions might be.



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