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METAL WORKING INDUSTRIES
IN
SAUDI ARABIA

presented by

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UNIDO

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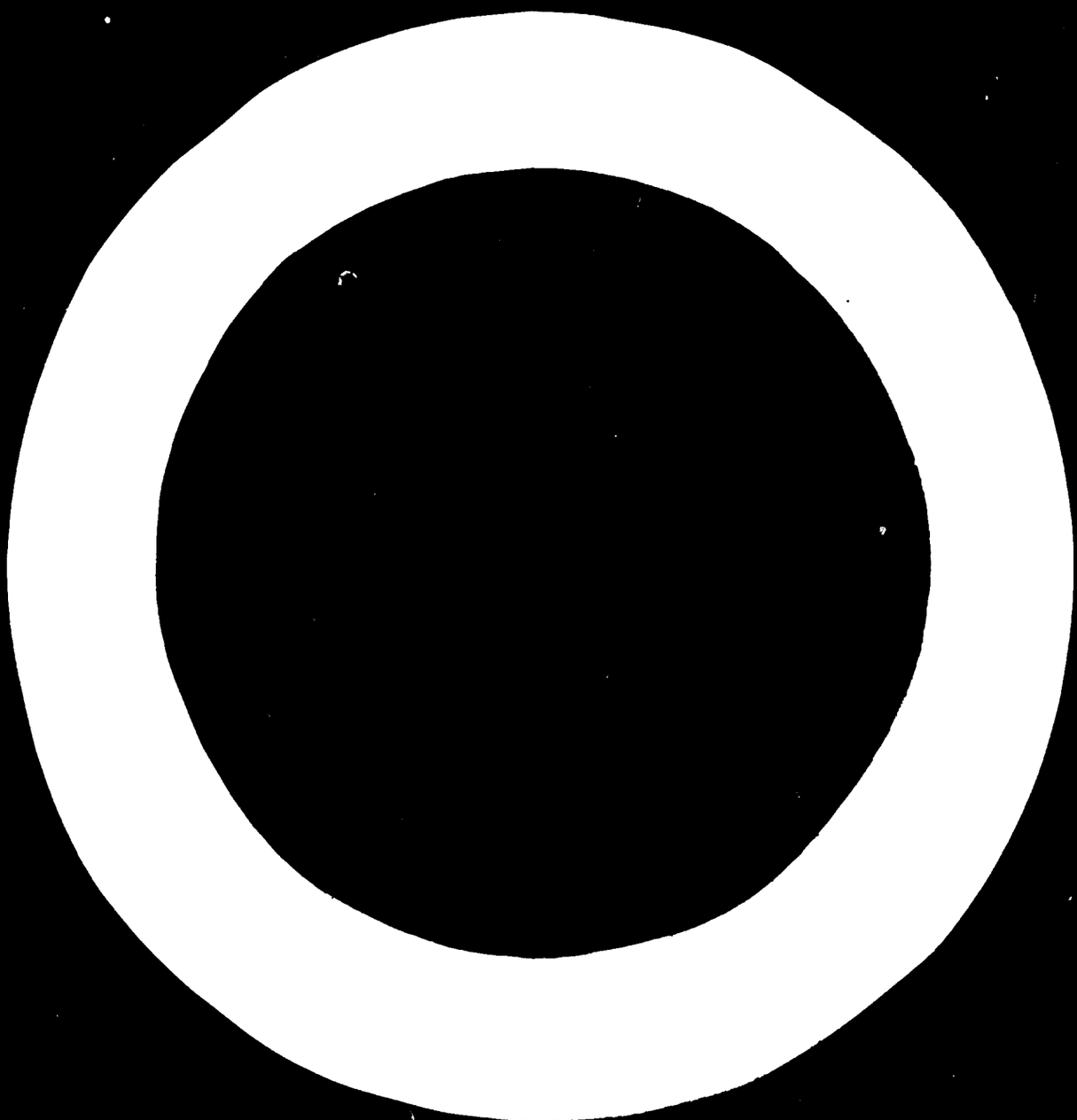


I. INTRODUCTION

1. Saudi Arabia has an estimated population of 7.1 million (UN estimate, mid-1968). The area of the country is about 2.2 million square kilometres. The GDP for 1386-87 was SR 13.12 billion and the GNP was SR 9.91 billion. (1 US $ = 4.5 SR (Saudi Riyals)). The important port on the West coast is Jeddah and on the East coast Dammam. The capital, Riyadh, is connected to Jeddah by a road about 1000 kilometres long and to Dammam both by road and railway - a distance of about 450 milometres. At present there is no other railway in the country. There are only a few national highways motorable throughout the Kingdom. There is a good internal airline serving about 26 towns. But lack of railways and other adequate communication systems for the movement of industrial machinery, equipment, raw materials and finished goods has more or less confine industrial development near the Eastern and Western ports and to a certain extent in the capital city of Riyadh. Thus it may safely be stated that industrial establishments are concentrated in Jeddah and the neighbouring towns of Mecca, Medina and Taif, in Dammam and adjoining Al-Khobar and Dhahran, in Riyadh and at Al-Hofuf, which is 250 kilometres to the East of Riyadh. In other areas real manufacturing industries do not exist to any appreciable extent.

2. Reliable statistics for industrial activity in Saudi Arabia are not available. There is no legislation compelling industrial establishments either to inform the government of their existence or to submit production and other industrial data to the authorities. Unless foreign capital is involved or the industrial unit wants exemption from customs duties in respect of import of industrial plant, equipment and raw materials, no industrial licence is necessary for setting up any manufacturing enterprise. Hence the meagre statistics which are available have to be supplemented by assumption based on personal experience.

3. In the year 1387 A.H. (please see Appendix) the Central Department of Statistics of the Ministry of Finance and National Economy conducted a survey (later on referred to as CDS Survey) of all industrial establishments in 25 cities. In 1387 and 1388 the Industrial Studies and Development Centre conducted a survey of industrial establishments in 9 towns of the Kingdom (later on referred as ISDC Survey). The coverage of the CDS Survey and the ISDC Survey are not the same. Whereas the CDS Survey covered all establishments irrespective of employment size, the ISDC Survey covered establishments with 5 or more workers. Table I indicates the coverage of these two surveys. The Central Department of Statistics also conducted a sample survey in the year 1389 A.H. Table II gives the basic

TABLE I

DISTRIBUTION OF MANUFACTURING ESTABLISHMENTS

Regions & Cities	Number of Manufacturing Establishments	
	CDS Survey (All Establishments)	ISDC Survey (Establishments with employment of 5 or more) +
Central Region		
*Riyadh	1749	49
Buraidah	238	
Unaiza	81	
Western Region		
*Mecca	1513	30
*Jeddah	1744	65
*Ta'if	800	10
*Medina	569	6
Yanbo'	65	
Eastern Region		
*Dammam	441	12
*Al-Khobar	214	10
*Al-Hofuf	468	8
Al-Mubariz	194	
Qateef	153	
Al-Thuqba	59	
*Dhahran	12	**
Rahima	46	

(continued)

+Figures include units working but not reporting.

*ISDC Survey covered cities marked with an asterisk.

**Figures included with figures for Al-Khobar.

TABLE I (continued)

DISTRIBUTION OF MANUFACTURING ESTABLISHMENTS

Regions & Cities	Number of Manufacturing Establishments	
	CDS Survey (All Establishments)	ISDC Survey (Establishments with employment of 5 or more)
Northern Region		
Ha'il	169	
Ar-'ar	77	
Skaka	40	
Turaif	31	
Tabouk	98	
Southern Region		
Abha	112	
Khamis Mushait	85	
Nejran	151	
Jizan	64	
TOTAL:	9173	190

Source: 1. Statistical Year Book 1380 A.H. published by the General Statistical Department, Govt. of Saudi Arabia.

2. ISDC Survey Vol.1 - Riyadh
Vol.2 - Western Districts
Vol.3 - Eastern Districts (Draft)

economic data of manufacturing industries for the year 1388 A.H. in respect of all manufacturing establishments by employment size. Table III similarly indicates the data for metal working industries only. Table IV indicates the position of the metal working industries compared to all manufacturing industries.

4. If establishments employing less than 5 persons are excluded from the CDS Survey, and attention is confined to establishments with 5 or more workers, the total number of manufacturing units will be only 1342 of which 314 are metal working units. Table V indicates the position in detail. Thus it appears that in 1388 A.H. there were 314 metal working units with an employment of 3,926 persons; the gross output from these units was SR 72.44 million and the value added SR 35.71 million.

II. METAL WORKING INDUSTRIES: PRESENT POSITION

5. The metal working industries in Saudi Arabia started primarily as service industries and there is at present quite a large number of small repair shops catering basically to servicing and maintenance of automobiles, bicycles and motor scooters. On the manufacturing side the metal working industries are primarily manufacturing:-

(a) Steel furniture, both sheet metal and tubular type.

TABLE II

PRINCIPAL ECONOMIC CHARACTERISTICS OF MANUFACTURING INDUSTRIES BY EMPLOYMENT SIZE 1388

Employment (Number)	Establishments (Number)	Total Employment (Number)	Fixed Asset (SR'000)	Raw Materials (SR'000)	Wages (SR'000)	Value Added (SR'000)	Gross Output (SR'000)
1-4	7,821	18,675	46,571	78,493	38,152	104,121	189,020
5-9	1,078	2,840	19,919	17,396	17,355	18,722	40,128
10 and above	264	8,488	167,447	79,651	45,511	119,430	258,173
TOTAL:	9,163	30,003	233,937	175,540	101,018	242,273	487,323

Source: CDS Sample Survey of Manufacturing Establishments 1389.

TABLE III

PRINCIPAL ECONOMIC CHARACTERISTICS OF METAL WORKING INDUSTRIES BY EMPLOYMENT SIZE 1388

Employment (Number)	Establishments (Number)	Total Employment (Number)	Fixed Asset (SR'000)	Raw Materials (SR'000)	Wages (SR'000)	Value Added (SR'000)	Gross Output (SR'000)
1-4	3,808	7,545	33,707	16,024	14,372	43,366	62,076
5-9	216	1,341	8,432	2,860	5,620	8,804	13,207
10 and above	98	2,585	22,997	15,494	17,324	26,905	53,230
TOTAL:	4,122	11,471	65,136	34,378	37,316	79,075	134,513

Source: CDS Sample Survey of Manufacturing Establishments 1389.

TABLE IV

ECONOMIC CHARACTERISTICS OF METAL WORKING INDUSTRIES EXPRESSED AS PERCENTAGE OF FIGURES FOR ALL INDUSTRIES

	All Industries	Metal Working Industries	
		Absolute Figures	Percentage
Number of Establishments	9,163	4,122	45
Employment (Number)	30,003	11,471	38
Fixed Assets (SR'000)	233,937	65,136	28
Raw Materials (SR'000)	175,540	34,378	20
Wages (SR'000)	101,018	37,316	37
Value Added (SR'000)	242,273	79,075	33
Gross Output (SR'000)	487,323	134,513	28

Derived from CDS Sample Survey.

TABLE V

ECONOMIC CHARACTERISTICS OF METAL WORKING INDUSTRIES
(EMPLOYING 5 OR MORE PERSONS)
EXPRESSED AS PERCENTAGE OF FIGURES FOR ALL INDUSTRIES
(EMPLOYING 5 OR MORE PERSONS)

	All Industries	Metal Working Industries	
		Absolute Figures	Percentage
Number of Establishments	1,342	314	23
Employment (Number)	11,328	3,926	35
Fixed Assets (SR'000)	187,366	31,429	17
Raw Materials (SR'000)	97,047	18,354	19
Wages (SR'000)	62,866	22,944	37
Value Added (SR'000)	138,152	35,709	26
Gross Output (SR'000)	298,303	72,437	24

Derived from CDS Sample Survey.

(b) Aluminium doors and windows, out of imported extruded sections.

(c) Venetian blinds and window awnings, from imported aluminium and steel strips.

(d) Aluminium utensils, spun and pressed (but not cast).

(e) Rolling shutters.

(f) Wrought iron grills for railings and fencing.

(g) Desert Coolers.

(h) Non-ferrous and ferrous castings, to a limited extent.

6. In some of the industries the quality of products is good. Designs are mostly copies of current European products. Shop floor management, skilled workers and to a certain extent non-skilled workers are mostly expatriates. Hence comparatively high wages have to be paid to induce them to leave their home countries and come to work in Saudi Arabia. There is a tendency for employing more labor saving devices, and the degree of mechanisation in almost all industrial units is fairly high compared to the position in other developing countries. Automation, however, has not yet come in the metal working industries in Saudi Arabia. The machinery are still general purpose ones, and automats are non-existent. There is virtually no local supply of tools, jigs and fixtures. Heat treatment facilities do not exist in the country.

Mechanical, metallurgical and metallographic testing facilities are not available. So is the position about designs facilities.

7. Almost all metal working industries suffer from the problems of maintenance and repair. There are no commercially run maintenance and repair workshops to look after the machine tools and other industrial machinery.

III. PROBLEMS OF DEVELOPMENT OF INDUSTRIES

(a) Human Resources

8. There is an acute shortage of skilled manpower and entrepreneurship. As has been indicated earlier, most of the technicians and skilled workers are expatriates. Unless local skill can develop quickly, the labor cost will remain high.

(b) High Cost of Material Inputs

9. There are virtually no locally available industrial raw materials for metal working industries. All these have to be imported and naturally the cost is high. Due to communication problems, for quite some time industries will continue to grow in the selected areas around Jeddah, Dammam and Riyadh, where land costs are high. In spite of the immense local supplies of oil, electricity supply costs are quite high.

(c) Size of the Market

10. With a population of only about 7 million spread over a vast country, with limited transport facilities the

market is fragmented and concentrated around Jeddah, Dammam and Riyadh. Because of the high cost of production due to increased labor and material costs, export is not feasible, at least for the time being. Thus the industrial units can look only to the domestic markets.

(d) Protection of local industries

11. There is virtually no restriction about imports in the country. Hence local industries have to compete with industrial products of advanced countries, which are sometimes dumped at prices which may not necessarily be based on the cost of production. With no price protection industries are hard-put to compete with imported products. The concession which industries get is to have their industrial plant and equipment and raw materials imported duty free. But the customs tariffs on finished products are not high. Hence the margin which the manufacturers have by obtaining raw materials duty free is often not sufficient for them to compete with imported products. It is thus felt that for some time metal working industries will develop along those lines where, due to sheer bulk, for example, the outside manufacturers cannot compete on account of excess freight. Thus it seems development for the near future will be restricted to service type industries like maintenance and repair and to production of bulky items such as steel furniture, refrigerators, desert coolers, bulk containers, etc.

IV. DEVELOPMENT OF METAL WORKING INDUSTRIES DURING THE NEXT FIVE YEARS

12. The metal working industries which, it is felt, can expand profitably during the next five years are now discussed. So are a few new industries for which there is prospect of development during the same period. The International Standard Industrial Classification (ISIC) (United Nations Statistical Papers, Series M No.4 1959 edition, reprinted 1964) has been indicated against each industry for easy reference.

13. METAL DOORS AND WINDOWS (ISIC 260)

Present Position

The industry almost exclusively makes aluminium doors and windows out of imported extruded sections. Steel doors and windows are also produced but to a limited extent.

The ISIC Survey gives the following figures for the establishments covered by the survey.

No. of Units	Paid-up Capital SR	Value of Machinery SR	Employment	Annual Consumption of Raw Materials SR
4	375,000	288,000	56	796,000

It is, however, felt there are presently about 12 units in the country and that about one third of their capacity is idle.

With the rise in building construction there is good

case for expanding the production capacity for this industry.

Expected Expansion
During the Next Five Years

Capacity	- 400 tons
Machinery and equipment	- SR 1,000,000
Total fixed capital required including machinery and equipment	- SR 1,500,000
Working capital	- SR 525,000
Raw materials (Aluminium extruded sections, metal sheets etc.)	- SR 1,500,000
Output	- SR 3,000,000
Capital-output ratio	- 1:2
Power required	- 100 KVA
Employment	
Managerial/administrative	- 15
Technical	- 10
Workers	- 100
Total	- 125

Machinery and equipment needed are primarily:

a. Disc saws, ordinary (10)
b. Disc saws, double blade, automatic (2)
c. Milling machines (2)
d. Automatic boring machines (2)
e. Power presses (5)
f. Drills (4)
g. Electric spot welders (2)
h. Electric Arc Welders (2)
i. Gas Welding Equipment (2)

14. STEEL FURNITURE (ISIC 260)

Present Position

This is the most important metal working industry of

Saudi Arabia and quite a large number of units are manufacturing steel furniture. Definite data are available for 14 units although it is believed there exist a few more units. The ISDC Survey indicates:-

No.of Units	Paid-up Capital SR	Value of Machinery SR	Employment	Annual Consumption of Raw Materials SR
14	3,680,000	1,630,000	405	4,837,000

It is estimated that about one-third of the capacity of the existing units is idle.

Since the demand for furniture is growing it is expected that production would increase to cater to the local markets. Export is not visualised at present.

Expected Expansion During the Next Five Years

Capacity	- 800 tons
Machinery & equipment	- SR 2,500,000
Total fixed capital required including machinery & equipment	- SR 5,000,000
Raw Materials (Steel sheets, pipes, angles, strips, other metal strips, leather, foam rubber or plastics, bed springs, paints)	- SR 3,000,000
Working capital	- SR 1,500,000
Output	- SR 6,000,000
Capital-output ratio	- 1:1.2
Power required	- 400 KVA

Employment

Managerial/Administrative	- 15
Technical	- 25
Workers	- 200
Total	- 240

Machinery & equipment needed are primarily:

a. Shearing & punching machines (10)
b. Power presses (20)
c. Pipe rolling machines (2)
d. Pipe bending machines (6)
e Drills (4)
f. Grinders (4)
g. Screw presses (2)
h. Shapers (2)
i. Lathes (4)
j. Bonderising units (2)
k. Enamelling furnaces (2)
l. Electroplating unit (1)

15. ALUMINIUM HOUSEHOLD UTENSILS AND KITCHENWARE (ISIC 350)

Present Position

Import figures for aluminium kitchenware for the past year were as follows:

Year	Quantity (Tons)	Value (SR'000)
1384	50	502
1385	599	3,287
1386	845	4,370
1387	643	3,291
1388	744	3,628

The ISDC Survey indicates:

No.of Units	Paid-up Capital SR	Value of Machinery SR	Employment	Annual Consumption of Raw Materials SR
4	750,000	779,000	123	2,099,000

The actual number of units, including those closed, is, however, 11.

A substantial portion of the capacity of the existing units is lying idl[illegible] or four units are completely closed. Some of the units do not have balanced equipment. Production capacity can safely be increased by 20 percent by adding the balancing equipment only. Establishment of new units does not seem to be economically feasible during the next five years.

Expected Expansion
During the Next Five Years

Capacity :	- 1000 tons (annual) (unless neighbouring export market can be captured, output may not exceed 500 tons)
Machinery & equipment (balancing equipment)	- SR 400,000
Total fixed capital including machinery & equipment	- SR 750,000
Working capital	- SR 700,000
Output	- SR 2,500,000
Capital-output ratio	- 1:3.3
Power	- 50 KVA
Employment	
Managerial/administrative	- 5
Technical	- 10
Workers	- 35
Total	- 50

Machinery & equipment needed are primarily:

a. Degreasing units (5)
b. Anodising plant (1)
c. Buffing & polishing units (5)
d. Spinning lathes (20)

16. GENERAL PURPOSE FOUNDRY (ISIC 3600)

Present Position

Although no reliable statistics are available, yet it is known that at present there exists in the Kingdom modest facility for producing cast iron products. It is felt that there is scope for setting up a centralised general purpose foundry for catering to the needs of larger and complicated castings during the next five years.

New Capacity expected to be developed During the next five years

Capacity	- 6,000 tons per year
Machinery & equipment	- SR 400,000
Total fixed capital required including machinery and equipment	- SR 1,000,000
Raw Materials (Non-ferrous metals, pig iron, steel scrap, moulding sand, core chemicals)	- SR 1,500,000
Working capital	- SR 780,000
Output	- SR 4,500,000
Capital-output ratio	- 1:4.5
Power required	- 100 KVA
Employment	
Managerial/administrative	- 15
Technical	- 5
Workers	- 90
Total	- 110

Machinery & equipment needed are primarily:

a. Cupola furnaces (2)
b. Melting furnace, tiltable type (1)
c. Grinders (2)
d. Shot & sand blasting equipment (2)
e. Fettling equipment (2)
f. Core oven (1)
g. Moulding ovens (2)

17. TRUNKS, SAFES & BARRELS (ISIC 350)

Present Position

Quite a large number of small industrial establishments manufacture these products, mostly out of galvanised sheets.

The ISDC Survey gives the following figures:

No.of Units	Paid-up Capital SR	Value of Machinery SR	Employment	Annual Consumption of Raw Materials SR
8	1,096,000	603,000	148	1,052,000

The actual number of industrial units is, however, much larger.

It is expected that during the next five years there would be substantial increase in production.

Expected expansion During the next five years

Capacity	- 150 tons
Machinery and equipment	- SR 500,000
Total fixed capital required including machinery & equipment	- SR 1,000,000
Raw Materials (galvanised sheets)	- SR 75,000

Working capital	- SR 500,000
Output	- SR 2.000,000
Capital-output ratio	- 1:2
Power required	- 75 KVA
Employment	
Managerial/Administrative	- 20
Technical	- 10
Workers	- 100
Total	- 130

Machinery and equipment needed are primarily:

a. Strip feed presses (5)
b. Auto sheet feeders (2)
c. Power presses (10)
d. Grinders (3)
e. Tandem slitters (4)
f. Slip and repeat machines (2)
g. Irregular seamers (3)
h. Gas welding equipment (5)

18. REPAIR AND MAINTENANCE WORKSHOPS

Present Position

There are quite a large number of small units doing maintenance and repair of automobiles, bicycles, motorscooters etc.

The ISDC Survey indicates the following:

No.of Units	Paid-up Capital SR	Value of Machinery SR	Employment	Annual Consumption of Raw Materials SR
29	4,538,000	2,483,000	470	4,139,000

It is felt that during the next five year period such decentralised workshops would grow in number as well as in size

and will cater to more sophisticated needs for maintenance and repair.

Expected Expansion
During the next five years

Machinery & equipment	- SR 1,500,000
Total capital required including machinery & equipment	- SR 2,500,000
Raw Materials (Steel shafts, pig iron, sheet metal etc.)	- SR 1,000,000
Working capital	- SR 1,000,000
Output	- SR 5,000,000
Capital-output ratio	- 1:2
Power required	- 100 KVA
Employment	
Managerial/administrative	- 20
Technical	- 30
Workers	- 75
Total	- 125

Machinery and equipment needed are primarily:

a. Lathes (20)
b. Shaping machines (10)
c. Grinders (20)
d. Drills (20)
e. Power presses (5)
f. Special machines for automobile repair and maintenance like cylinder grinders, honing machines etc. (10)
g. Hack saws (5)
h. Milling machines (5)
i. Welding equipment (5)

19. ALUMINIUM EXTRUSION (ISIC 342)

Present Position

At present there is no extrusion plant in the country.

Available import figures for the past years are erratic and do not represent actual consumption. Since the demand for extruded sections which are at present all imported, is growing, it is felt that there is a good scope for setting up one extrusion unit during the next five years.

New Capacity expected to be developed During the next five years.

Capacity	- 1,500 tons
Machinery & equipment	- SR 7,500,000
Total fixed capital required including machinery & equipment	- SR 10,000,000
Working capital (aluminium ingots)	- SR 2,500,000
Output	- SR 10,000,000
Capital-output ratio	- 1:1
Power required	- 225 KVA
Employment	
Managerial/administrative	- 12
Technical	- 8
Workers	- 70
Total	- 90

Machinery & equipment needed are primarily:

Complete extrusion plant with Extrusion Presses, Heating furnaces, toolroom equipment etc.

20. GAS STOVES (ISIC 350)

Present Position

At present no gas stoves are manufactured in the country although oil gas being cheap cooking is done almost

exclusively on gas stoves. The import of stoves, ranges, cookers, heaters, burners and gas rings were as follows:

Year	Value (SR'000)	Tons
1385	5,579	1187
1386	5,965	1319
1387	5,874	2933

It is felt that a factory for manufacturing gas stoves may be encouraged during the next five year period.

New Capacity expected to be developed during the next five years.

Capacity	- 200 tons of castings per year (or 80,000 pieces)
Machinery & equipment	- SR 120,000
Total fixed capital required including machinery & equipment	- SR 330,000
Raw Materials Pig iron Steel Scrap Moulding sand Core chemicals Paints	- SR 500,000
Working capital	- SR 250,000
Output	- SR 800,000
Capital-output ratio	- 1:2.4
Power required	- 10 KVA
Employment	
Managerial/administrative	- 5
Technical	- 8
Workers	- 22
Total	- 35

Machinery & equipment needed are primarily:

a. Cupola furnace (1)
b. Foundry sandmill (1)
c. Moulding machines (4)
d. Moulding oven (1)
e. Core oven (1)
f. Grinders (2)
g. Drill (1)
h. Power press (1)
i. Spray painting equipment (1)

21. ENAMELLED WARES (ISIC 350)

Present Position

Some enamel wares are manufactured locally by industries primarily engaged in manufacture of other products. Data about the total production, however, is not available. It is felt that one unit for manufacturing such items as teapots, Turkish coffee pots, small dishes etc. can be developed during the next five years.

New Capacity to be developed During the next five years

Capacity	- 500 tons per year (or 300,000 pieces approximately)
Machinery & equipment	- SR 1,300,000
Total fixed capital required including machinery & equipment	- SR 2,000,000
Raw materials Steel sheets Coating materials Pickling chemicals	- SR 900,000
Working capital	- SR 500,000
Output	- SR 2,500,000

Capital output ratio	- 1:1.25
Power required	- 50 KVA
Employment	
Managerial/administrative	- 5
Technical	5
Workers	- 25
Total	35

Machinery & equipment needed are primarily:

a. Shearing & punching machines (2)
b. Power presses (8)
c. Grinders (4)
d. Drills (2)
e. Screw presses (2)
f. Semi automatic enamelling plant (1)

22. WIRE MESH (NETTING) (ISIC 350)

Present Position

The most prevalent use of wire mesh in the Kingdom is for windows to protect against mosquitoes and other insects. It is felt that the import of wire mesh would increase with building construction. The available import figures are given below:

Year	Quantity Tons	Value SR'000
1384	575	1,100
1385	258	434
1386	777	1,036
1387	858	1,114

Since there is no wire netting factory in the country, it is felt that one wire netting factory with a capacity of 1500 tons can be encouraged during the next five year period. The plant may not initially work on full capacity but is

expected to achieve full production towards the end of the five year period, as market is likely to expand by that time.

New capacity to be developed During the next five years

Capacity	- 1500 tons per year
Machinery & equipment	- SR 1,000,000
Total fixed capital required including machinery & equipment	- SR 1,300,000
Working capital	- SR 420,000
Raw materials galvanized wire	- SR 1,200,000
Output	- SR 1,800,000
Capital-output ratio	- 1:1.4
Power required	- 100 KVA
Employment	
Managerial/administrative	- 5
Technical	- 5
Workers	- 15
Total	- 25

Machinery and equipment needed are primarily:
Wire weaving machines (10)

23. AIR CONDITIONERS, REFRIGERATORS AND REFRIGERATOR CASES (ISIC 360)

Present Position

Import figures for refrigerators, cooling units and air conditioners for the last four years were as follows:

Year	Refrigerators & Cooling Units		Air Conditioners	
	Number	Value (SR '000)	Number	Value (SR '000)
1385	16,089	19,5[illegible]	15,464	2[illegible],300
1386	20,3[illegible]	13,[illegible]12	14,725	28[illegible]91
1387	17,562	12,649	18,023	[illegible],263
1388	22,870	16,494	24,76[illegible]	35,610

At present there is no industrial unit manufacturing refrigerators or air conditioner, although there is one unit manufacturing desert coolers.

It is felt that during the next five years at least one unit may profitably be set up to manufacture air conditioners and refrigerators. Foreign collaboration or know-how will be necessary. The sealed compressor units and the controls will have to be imported.

New capacity to be developed During the next five years

Capacity	- 6,000 units
Machinery & equipment	- SR 1,200,000
Total fixed capital required including machinery & equipment	- SR 2,200,000
Raw materials & components M.S. sheets, aluminium sheets, copper tubings, compressors, motors etc.	- SR 2,400,000
Working capital	- SR 1,500,000
Output	- SR 6,000,000
Capital-output ratio	- 1:2.7
Power required	- 125 KVA

Employment

Managerial/administrative	- 10
Technical	- 15
Workers	- 50
Total	- 75

Plant & equipment needed are primarily:

a. Heavy brake presses 500 ton (2)
b. Power presses 50 100 ton (3)
c. Power presses 5 ton (5)
d. Shearing & punching machines (4)
e. Lathes (2)
f. Drills (2)
g. Planers (2)
h. Shapers (2)
i. Grinders (4)
j. Sand blasting equipment (1)
k. Pipe bonding machines (2)
l. Electric & Gas Welding Equipment (4)
m. Spray painting equipment (2)
n. Enamelling plant (1)

24. ELECTRIC FANS (ISIC 370)

Present Position

At present this industry does not exist in Saudi Arabia. Import figures of fans (all varieties) during the last four years were as follows:

Year	Quantity	Value (SR'000)
1385	26,802	1,808
1386	65,891	3,675
1387	51,085	3,033
1388	68,517	3,502

It is felt that a small fan factory importing electric motors and fabricating fan blades and guards may be feasible. Since there is a problem of market penetration, to start with

a modest production of 10,000 units per year is suggested.

New capacity to be developed
During the next five years.

Capacity	- 10,000 fans per year
Machinery & equipment	- SR 140,000
Total fixed capital required including machinery & equipment	- SR 380,000
Raw materials Sheet steel Bolts & nuts Electric motors Paints	- SR 550,000
Working capital	- SR 200,000
Output	- SR 1,000,000
Capital-output ratio	- 1:2.6
Power required	- 45 KVA
Employment	
Managerial/administrative	- 4
Technical	- 2
Workers	- 6
Total	- 12

Machinery and equipment needed are primarily:

a. Shearing & punching machine (1)
b. Power presses (2)
c. Drills (2)
d. Grinders (2)
e. Dynamic balancing machine (1)
f. Spray painting equipment (1)

25. ELECTRIC WIRES (ISIC 370)

Present Position

At present there is no factory manufacturing electric wires. The import of electrical wire, conductors etc. in recent

years is given below:

IMPORTS OF ELECTRICAL INSULATED WIRE, CONDUCTORS, BUS BARS ETC.

Year	Value (SR'000)	Quantity Tons
1384	7,595	2,079
1385	16,974	13,672
1386	19,830	4,614
1387	20,206	4,814
1388	25,923	5,462

On the basis of the above figures it is felt that there is justification for one PVC insulated cable factory to be set up, with a capacity of about 120 tons per year.

New capacity to be developed During the next five years

Capacity	- 120 tons per year
Machinery & equipment	- SR 340,000
Total fixed capital required including machinery & equipment	- SR 500,000
Raw materials Copper rods PVC insulating material	- SR 375,000
Working capital	- SR 140,000
Output	- SR 500,000
Capital-output ratio	- 1:1
Power required	- 375 KVA
Employment	
Managerial/administrative	- 4
Technical	- 2
Workers	- 4
Total	- 10

Machinery and equipment needed are primarily:

a. Wire drawing machines (2)
b. Stranding machines (2)
c. PVC extruders (2)
d. Testing equipment (1)

26. BICYCLES (ISIC 385)

Present Position

At present no bicycles are manufactured in the Kingdom. The import figures for bicycles, tricycles and carriages for the last four years were as follows:

Year	Units	Value (SR'000)
1385	8,534	979
1386	11,141	1,468
1387	13,678	1,394
1388	17,121	1,804

It is felt that a small bicycle factory may be feasibly set up.

New Capacity to be developed During the next five years

Capacity	- 12,000 cycles/yr.
Machinery & equipment	- SR 150,000
Total fixed capital required including machinery & equipment	- SR 555,000
Raw materials Steel strips & pipes Rubber parts Tires, tubes	- SR 1,650,000
Working capital	- SR 500,000
Output	- SR 1,000,000
Capital-output ratio	- 1:3.2

Power requirement	- 20 KVA
Employment	
Managerial/administrative	- 4
Technical	- 3
Workers	- 16
Total	- 23

Machinery & equipment needed are primarily:

a. Shearing & punching machines (2)
b. Power presses (6)
c. Shapers (2)
d. Lathes (4)
e. Pipe bending machines (2)
f. Drills (4)
g. Grinders (4)
h. Screw presses (2)
i. Electroplating unit (1)
j. Bonderising units (2)
k. Enamelling furnaces (2)

V. CONCLUSIONS

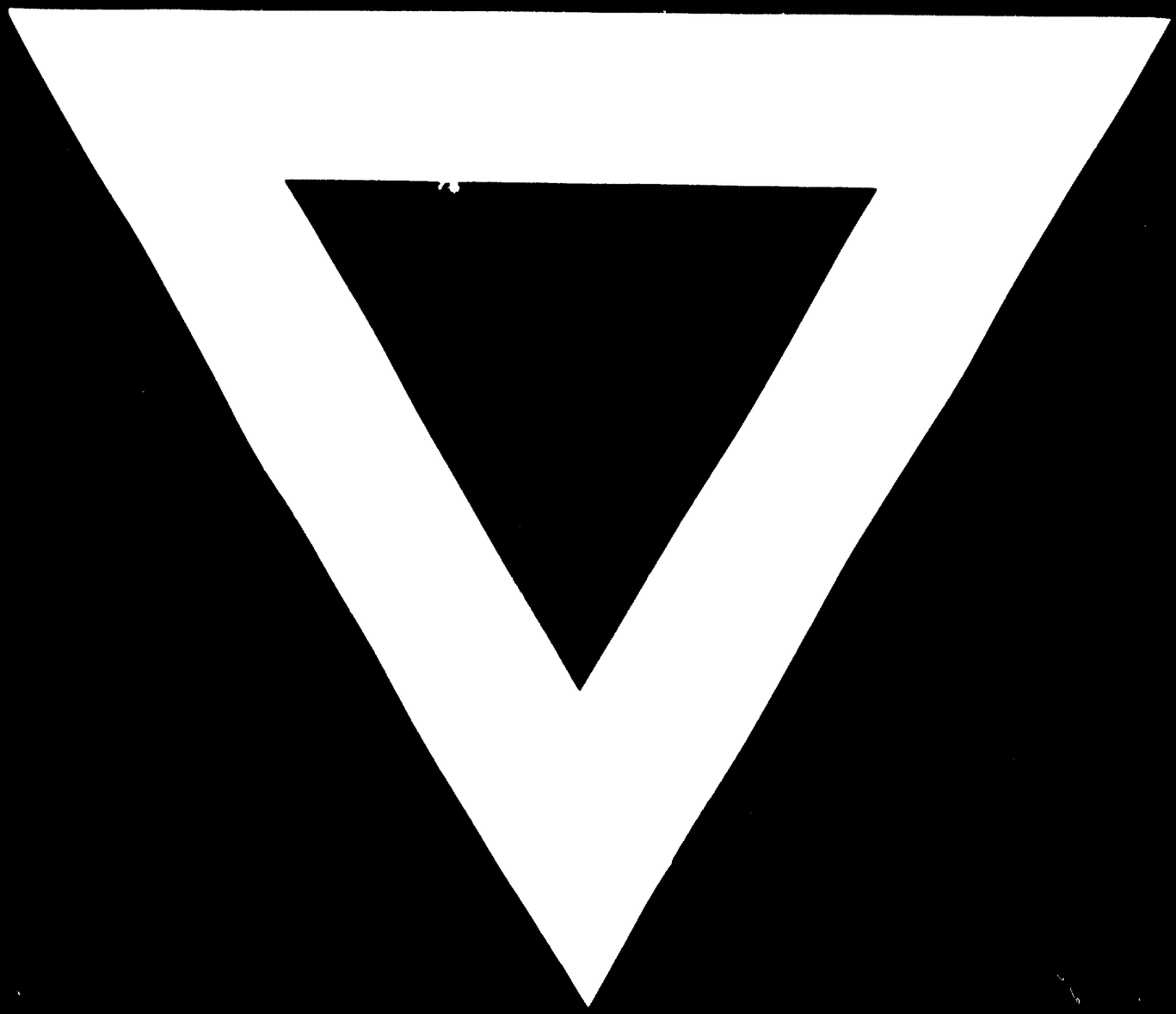
27. By allowing suitable growth rates, based on past experience, it is felt that at the end of the fiscal year 1394/95 A.F., all metal working establishments will employ about 18,000 people, will have an investment of SR 132 millions in fixed assets, will spend SR 76 million per year on raw materials and will give an annual gross output of SR 268 million with a value added of SR 157 million.

28. The corresponding figures for metal working industries employing five or more persons would be as follows:

Employment	6,000
Fixed Assets	SR 63 million
Annual consumption of raw materials	SR 40 million
Gross output	SR 71 million
Value added	SR 144 million

APPENDIX

Hijri year (A.H.)	First day of the year	Last day of the year
1386	21 Apr. 1966	9 Apr. 1967
1387	10 Apr. 1967	30 Mar. 1968
1388	31 Mar. 1968	18 Mar. 1969
1389	19 Mar. 1969	7 Mar. 1970
1390	8 Mar. 1970	24 Feb. 1971
Fiscal year 1394/95	19 Jul. 1974	7 Jul. 1975



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