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CURRENT STATE AND PROBLEMS OF HOUSING CONSTRUCTION INDUSTRY
IN SELECTED COUNTRIES OF THE MIDDLE EAST

by

the Secretariat of UNESOB

id.73-582

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.

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I. INTRODUCTION

The problems of housing in the countries served by the United Nations Economic and Social Office in Beirut (UNESOB) arise from causes deeply rooted in the economic conditions, the social structure and the customs and values of the populations concerned. As a consequence, it can be solved only by taking into account the many diverse factors which have created the present situation.

Prevailing housing conditions for families with limited resources, which constitute the overwhelming majority of the population, are far below the modest standard. A realistic appraisal reveals that the majority of the dwellings are structurally unsound, unsanitary, overcrowded, poorly ventilated and, in general, inadequate for meeting the essential physical and social requirements for shelter, except for Lebanon, where the dwellings in this region are two-storey. In Iraq, 98 per cent; Kuwait, 96 per cent; Saudi Arabia, 90 per cent; and Syria, 87 per cent, of the dwellings are detached houses. As an average, the dwelling has a total floor space of 70 square feet and averages 5 - 7 persons per dwelling. In most cases, the water supply is inadequate and/or impure and toilet facilities are lacking.

The countries of the region have paid increasing attention to this problem and have intensified their efforts to expand their various programmes. They are also engaged in developing their natural resources and economic infrastructure, a task which is vital to any general improvement. These combined activities are reflected in many public work construction projects of all types, which require adequate development of the building and building material industries.

That the building material industries should be developed and improved is, therefore, essential, not only for any reduction in the cost of house building, but for the execution of programmes requiring large-scale capital investment, as in the sphere of agriculture, industry, transport and infrastructure in the developing countries. There is, therefore, a vital need for these countries to increase the capacity and productivity of their building and building material industries, since these industries absorb a sizable proportion of investment funds. Furthermore, they constitute, in themselves, a very important sector of a country's industrialization, by reason of their contribution to capital

formation and employment opportunities and their indirect effect on many other industries, such as those involved in the production of furniture, textiles and domestic appliances, which are complementary to the building industry.

The methods and programmes adopted by the countries of the region to overcome the housing problem clearly shows the urgent need of reducing the margin between construction cost and the paying capacity of families in need of accommodation. This concern, to make housing available to low-income families, points in its turn to the need for special assistance for the purpose of improving and increasing the productivity of the building and building material industries.

Considering the progress made in other fields, building has so far been one of the most backward industries. While mass production permits a reduction in the cost of a host of industrial products, the methods used in the building industry are still rudimentary; they have undergone no important change for many years and clearly reveal poor utilization of labour, waste and general inefficiency.

Mechanization of construction is progressing slowly; prefabrication of building units is hardly existing and the use of machinery to accelerate the building process is also limited. Under these circumstances, efficiency is not increasing so as to balance, or at least partially offset, the continuous rise in the cost of material and manpower. This rise, caused by inflationary pressures, by building programmes not properly adjusted to the production of material and by inadequate financing methods, widens the gap, in housing, between the cost of building, on the one hand, and the capacity to pay on the part of the low-income classes, on the other.

II. PHYSICAL AND DEMOGRAPHIC CHARACTERISTICS OF THE REGION

Despite many common characteristics, the countries of the Middle East region present a wide variety of differences in development levels and techniques. Government philosophy and outlook range from central planning and state enterprise to laissez-faire and private enterprise. Tribal allegiances are strong in some countries, vestigial in others and non-existent in at least one. In some countries, oil is the predominant, if not the only sector; in others, services or trade provide much of the national income, while some lean heavily on agriculture. Per capita income for 1969, calculated on the basis of either gross domestic or gross national product, shows wide disparity, ranging from around US \$ 120 in the People's Democratic Republic of Yemen to US \$ 3,520 in Kuwait, with Iraq US \$ 310, Jordan US \$ 280, Lebanon US \$ 580, Saudi Arabia US \$ 380, Syria US \$ 260, Bahrain US \$ 420, Oman US \$ 210, Qatar US \$ 1,550 and the Gulf Federation US \$ 1,590 in between;^{2/} actual distribution in each country shows greater disparities.

There is also a similarity of problems. All countries have high rates of population growth with consequent pressure on arable land and considerable in-migration to cities thus straining the latter's already overstrained facilities.

With a population of over 34.5 million spread over a land area of more than 3.7 million square kilometres in 1970, it appears, at first sight, that the density in the UNESOB region is low; 9.1 persons per square kilometre. The density observed for the principal areas of the world in 1967 was as follows: World 25, Africa 11, North America 10, South America 13, Asia 69, Europe 92 and Oceania 2. As is shown in Table 2, this low figure for the region conceals a contrast of extremes; on the one hand Lebanon, with a density of 264 which is close to such densely populated countries of Europe as Belgium (314) or United Kingdom (226); on the other hand, Saudi Arabia with a density of 2.3 persons, which is nearly as low as the one observed in Australia (2).

^{2/} Source: World Bank Atlas, 1971

Table 1

Per capita GNP (in US\$) for Middle East countries for 1969

	<u>Per capita GNP (US\$)</u>	<u>Mid-1969 Population (Thousand)</u>
Iraq	310	9,350
Jordan	280	2,242
Kuwait	3,320	657
Lebanon	580	2,645
Saudi Arabia	380	7,235
Syria	260	5,866
Yemen Arab Republic	N.A.	5,556
People's Democratic Republic of Yemen	120	1,220
Bahrain	420	212
Oman	210	730
Qatar	1,550	110
Trucial States	1,590	205

Source: World Bank Atlas, 1971

It is natural for the population to concentrate along the Mediterranean sea shores and the Tigris and Euphrates Valley since these areas have the most fertile land for agriculture, together with abundance of water resources and a mild climate, while the remaining parts of the region are less fertile with a substantial portion consisting of desert and uncultivated land.

Urbanization is still very uneven. Setting aside extreme cases like Kuwait and, to a lesser extent, Lebanon, the most densely populated countries of the region, that is Syria, Jordan and Iraq, have less than 35 per cent of their population living in urban centres.

As Table 3 indicates, an indication of the speed of the urbanization process is given by analysing the annual growth rate of capital cities. Annual growth rates exceeding five per cent are frequent among the countries being reviewed. The rate for Baghdad and Riyadh are even as high as eight and ten per cent a year respectively.

Table 2

Geographic distribution of population and density, 1970.

Area and Country	Population estimate for 1970 in (000)	Area of Country (sq. kilometres)	Population density	Estimated annual rate of population growth (percentage)
Iraq	9,855	438,446	22.5	3.3
Jordan	2,314	90,185	25.7	3.1
Kuwait	782	16,000	48.9	7.5
Lebanon	2,687	10,170	264.2	2.8
Syria	6,350	185,180	34.3	3.0
Bahrain	221	598	369.6	3.5
Oman	668	212,379	3.1	2.5
Qatar	81	22,014	3.7	8.1
Saudi Arabia *	5,074	2,253,355	2.3	1.8
South Yemen	1,327	287,633	4.6	2.2
Gulf Federation	200	77,700	2.6	7.5
Yemen	5,802	195,000	29.8	2.2

Source: Data calculated by the United Nations Economic and Social Office in Beirut.

* 1969

Table 3

Importance of capital cities in relation to total and urban population

Country and town	Population of capital cities	Date of latest census or estimate	Annual growth rate (percentage)	Population of capital cities in relation to total and urban population			
				Total pop.	Percentage	Urban pop.	Percentage
IRAQ Baghdad	1,626,503	1965	8.3 (1957-1965)	8,047,415	20.2	3,548,910	45.8
JORDAN Amman	323,000	1966	6.1 (1961-1966)	2,100,801	15.4	907,280	35.6
KUWAIT Kuwait	295,273	1965	18.1 (1961-1965)	467,339	63.2	373,371	80.0
LEBANON Beirut	893,000	1964	-	2,246,000	39.8	-	-
SYRIA Damascus	618,457	1966	3.9 (1960-1965)	5,450,994	11.3	2,038,672	30.3
BAHRAIN Manama	79,098	1965	15.0 (1962-1966)	204,754	38.6	-	-
OMAN Muscat	6,200	1960	-	-	1.1	-	-
QATAR Doha	80,000	1970	15.0 (1962-1968)	111,133	72.0	-	-
SAUDI ARABIA Riyadh	300,000	1968	-	4,861,206	6.2	999,464	30.0
SOUTH YEMEN Aden	225,000	1964	-	1,094,000	20.6	-	-
YEMEN ARAB REPUBLIC Sanaa	120,000	1970	-	5,728,000	2.1	445,000	26.9
GULF FEDERATION							
Abu Dhabi	22,000	1968	-	46,500	47.3	-	-
Ajman	3,725	1968	-	4,245	87.8	-	-
Dubai	57,469	1968	-	59,092	97.3	-	-
Fujairah	2,001	1968	-	9,724	20.6	-	-
Ras al-Khaimah	8,764	1968	-	24,482	35.8	-	-
Sharjah	19,198	1968	-	31,480	61.0	-	-
Um al Qaiwan	2,928	1966	-	3,740	78.3	-	-

Source: Data compiled by UNESOB

III. THE NATURE OF THE HOUSING PROBLEM

Throughout the world, the growth of cities is gathering momentum. Whereas, in the more highly developed countries, the pace of industrial development - a necessary concomitant to urban growth - matches the rate of urbanization, this is not the case in the countries of the UNESOB region. As a result, problems of social disorganization and maladjustment multiply in both town and country and the rate of migration from rural to urban areas, often surpassing the country's total net population increase, causes increasing congestion in the cities. The condition created by the concentration of large numbers of uprooted rural people in shanty towns and slums of the capital and other major towns in the region are rapidly approaching a critical state which threatens to distort the pattern of their general economic and social development.

Along with the growth of population and increasing urbanization, demand for urban housing has grown, but construction has not kept pace with the demand and costs have risen beyond the paying capacity of the majority of the people. The consequence has been acute congestion in the older and deteriorated city cores, as well as in the city outskirts of unauthorized squatter settlements and shanty towns which lack elementary sanitary and sewage facilities, electricity, open spaces and community facilities such as schools, shops and health centres. Entire satellite towns have sprung up around major cities like Doura in Beirut, Ashrafiya in Amman and Al-Thour in Baghdad. Shanty towns ring the capitals because the population drawn to the city is from the most depressed part of the country - or from areas where there have been political troubles. The formation of satellite slums is often unwittingly encouraged by the city plan. Some of these plans, being very old, do not provide for growth or development along functional, geographic axes. Other plans provide plots for a population with an income level far higher than that of the population which requires the space to live. Thus plans may have:

- a) Large building plots;
- b) Strict, unrealistic regulations concerning percentage of plot coverage permitted;
- c) Unreasonably large roads;
- d) Numerous reserved open spaces; and
- e) No provision for local functions or community services.

Plans may be designed without regard to the fact that the municipal authorities, with meagre financial resources, will be unable to pave the spacious roads, bring sewage into the large plots, or make sensible use of reserved open space.

A conservative estimate places about 500,000 of Iraq's 766,000 houses in 1956 (64 per cent) as unacceptable, that is lacking toilet facilities among other things. United Nations has indicated that expenditure for housing and related facilities should amount to roughly 5 per cent of aggregate national income, just to stabilize the housing situation, or, in other words, to just meet the increase in population. This figure should be considered the minimum required for a housing programme including certain rural, public and private units for Iraq over the next 20 years.

Using similar estimating methods for determining the five years development programme (1970-1974) the following targets are obtained:

Iraq housing needs resulting only from net population increase.

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>Remarks</u>
Population total	9.50	9.82	10.15	10.49	10.84	3.4 per cent annual increase
Housing units to meet population increase	54,936	56,786	58,695	60,540	61,080	Average family size = 5.7 persons

Every year large numbers of houses become obsolete due to old age and structural inability. No exact figures are available for obsolescence, however UN estimated annual rate of obsolescence is given at 3,483 houses.^{3/}

To solve the housing problem in Iraq, therefore, it would be necessary for a houses to be built at the rate as indicated in the following table, for the planned period (1970-1974), and, in addition, to tackle the problem of replacing the 500,000 substandard units within a reasonable period.

^{3/} A.E. Alcock, Low-cost Housing in Iraq, United Nations Technical Assistance, February 1964, p. 5.

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Required for natural increase	54,936	56,136	58,695	60,540	62,080
Required for replacement of obsolete houses	<u>3,483</u>	<u>3,483</u>	<u>3,483</u>	<u>3,483</u>	<u>3,483</u>
Total	57,419	60,269	62,178	64,020	65,563

Existing rates of building may be deduced from Table 4 which shows that numbers of construction permits issued to the private sector was only 15,848 in 1968 and 18,240 in 1969. To offset this backlog by a government programme of building is most unlikely and other methods must be looked for in tackling the housing problem in the country.

The housing deficit in the past was mainly in the low-income category and present indications are that this will continue throughout the region in the future, with the countries experiencing increasing difficulty in overcoming their backlog. Rising land prices, the increasing pressure on urban land, lack of proper finance, high building costs and continuous shortage of basic building materials are all contributing to the increase in the gap between the demand for and supply of houses.

Similar conditions prevail in Jordan. The 1966 Social Survey of Amman, conducted by UNESOB, in co-operation with the government, indicated that more than one half of the population lived in one or two room dwellings; 27 per cent of the households with 5 - 7 persons were living in one-room dwellings and 25 per cent in two room housing. About 55 per cent of the households had no bedroom or only one bedroom. As for current construction activities in Jordan, statistics available for two major urban centres, namely Amman and Zarqa, which are summarized below, could be taken as an example of building activities in the country.

Table 4

Number of construction permits issued for residential buildings in the Middle Eastern countries, 1961-1970

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Iraq ^{a/}	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	15,848	18,240	n.s.
Jordan ^{b/}	3,029	3,517	3,659	4,532	n.s.	2,928	2,107	3,685	n.s.	n.s.
Kuwait	n.s.	n.s.	n.s.	2,666	5,461	5,897	5,955	n.s.	n.s.	n.s.
Lebanon ^{c/}	n.s.	7,702	8,039	10,063	8,222	7,915	6,308	7,068	n.s.	n.s.
Saudi Arabia	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
South Yemen	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Syria ^{d/}	3,958	5,078	7,320	7,229	7,257	8,186	6,621	8,803	11,634	8,602
Yemen Arab Republic ^{e/}	n.s.	n.s.	n.s.	n.s.	300	712	572	284	815	876

Source:

Stat. yearbooks of various years of the above countries

^{a/}

Include: Residences, residences and shops; and flats and shops

^{b/}

Data refer to newly constructed buildings in the municipalities of Jordan

^{c/}

Data include: Residences only and residences and others

^{d/}

Data refer to permits issued for construction in general

^{e/}

Data refer to Residence construction permits only

^{f/}

Data refer to Sana'a only.

Year	No. of Licences	Area (000 sq. metres)
1967	74	83.5
1968	1,690	257.9
1969	1,514	305.6
1970	1,128	220.0

Considering the number of licences as an indicator, the drop registered in 1970, compared to 1969, amounted to 28 per cent. This decline resulted obviously from the deterioration of the internal political situation, as of September. On the other hand, the sharp increase in the number of licences issued in 1968, compared to 1967, is obviously resulting from the June war, which caused the decline in construction activities in 1967 while in 1968, real estate entrepreneurs started a large scale housing construction scheme to meet new demand for housing.

The housing situation in Jordan is further complicated by over one million refugees who entered the country as a result of the war in Palestine in 1948 and 1967. The problem is further aggravated by the existence, as shown in Jordan's First Census of Population and Housing, 18 November 1961, of 95,343 Bedouin families or tent dwellers. The growth of key urban areas had also been rapid; the population of Amman, the capital, has grown from 108,000 to more than 600,000 in less than two decades. Living space is, by most standards, overcrowded. In 1966, more than half of the population lived in one or two-room dwellings and only 23 per cent lived in four or more roomed dwellings. The average density of occupation for the city as a whole is 2.5 persons per room.

In the past five years (1965/1970), the population of Kuwait has increased from 220,057 to 273,100 and the current annual increase is at the rate of 10,000 or about 4 per cent. Present housing needs are estimated at 71,000 units per annum. The rapid rise of oil production in Kuwait in the fifties has resulted in mass migration of Bedouins and others to the city for employment.

According to a 1965 census of the total 30,610 dwelling units in the country, 8,120 units were classified as tent or shack dwellings, which is roughly 40 per cent of the total dwelling stock.

Many factors have led the State of Kuwait to pay special attention to solving the housing problem during the past two decades. These factors may be summarized as follows:

- a) The rapid rise in oil production in Kuwait after the Second World War has resulted in major physical planning and housing improvements. The majority of old mud-brick houses and shops in Kuwait City and in the villages have been demolished. Occupants of these houses had to look for new ones to live in.
- b) Many Kuwaitis owned no houses and had to rent dwelling units at high rentals, which most of them could not afford.
- c) The rise of social and educational consciousness.
- d) The break-down of the extended family system due to urbanisation and modernization.
- e) The desire to change tents and huts and to provide decent houses to the nationals.

The above mentioned factors made the housing crisis particularly acute and was consequently a prelude to the adoption of the low-income housing programme, which is the major undertaking by the authorities.

In view of the absence of reliable data, it is difficult to accurately assess the problem and to measure the needs and requirements for the present and the future. Nevertheless, an attempt is made to estimate the low-income housing need until 1990 on the basis of two assumptions:-

- a) The first is the assumption that the low-income group in Kuwait constitutes more than 80 per cent of all Kuwaiti families.^{4/}
- b) The second assumption is based on the number of families which have received low-income housing (9,460) by the end of 1970, then to this figure is added (16,723), the number of those who registered their application at the Ministry of Social Affairs and Labour but are still waiting for housing distribution. The total, being 26,223 families, representing about 68 per cent of the total number of Kuwaiti families in 1969.

^{4/} The Ministry of Social Affairs and Labour, Low-Income Housing, Kuwait, November 1967, p. 46.

In the table below, an estimate of the number of Kuwaiti families is made on the basis of these two assumptions, in accordance with some population forecast until 1990.

Table 5
Population and number of families from 1965 to 1990

	1965	1969	1970	1975	1980	1985	1990
Kuwaitis	220057	271,165	273100	356000	414000	510000	631,000
Kuwaiti families	30073	30738	39014	50857	59143	72857	90143
Low-income families being:							
a) 80 per cent	24058	30990	31211	46686	47314	58286	72114
b) 68 per cent	20450	26342	26530	34583	40717	49543	61297

In order to complete the picture, it is necessary to study the financial aspect of the programme based on the above requirement and the current cost of low-cost housing.

Table 6 below shows the funds required, which have been estimated on the basis of the average cost per unit and in accordance with the two assumptions mentioned above.

Table 6
Funds required for housing construction in Kuwait

Year	Assumption	No. of houses required	Fund required at cost KD4,300	Fund required at cost KD3,084
1969	(a)	16212	69,711,600	49,997,808
1969	(b)	11564	49,725,200	35,663,376
1970	(a)	221	911,600	653,808
1970	(b)	188	808,400	579,792
1975	(a)	9475	40,742,500	29,220,400
1975	(b)	8053	34,627,900	24,354,452
1980	(a)	6628	28,500,400	20,440,752
1980	(b)	5634	24,226,200	17,375,256
1985	(a)	10972	47,179,600	33,837,648
1985	(b)	9326	40,101,800	28,761,384
1990	(a)	13828	59,460,400	42,645,552
1990	(b)	11754	50,542,200	36,249,336
Total	(a)	57327	246,506,100	176,796,468
	(b)	46519	200,031,700	142,983,596

Despite the fact that low-income housing programs in Kuwait has accelerated its pace during the last few years, the problem is still far from being solved. In this context, it may be noted that while the number of applications for housing submitted by 1962 amounted to 16,763, actual distribution of dwelling units by the end of 1970 did not exceed 9,460 units. This means that one-third of the problem has been solved while the remaining two-thirds are still waiting for a solution. On the other hand, these houses were distributed during a period of 16 years, which means that if the same procedure is followed, another 32 years is needed to solve the remaining two-thirds of the problem, irrespective of other complications that may arise from population increase and the expected rise in the number of families due to the breakdown of the extended families to small ones, and the increase of those acquiring the Kuwaiti nationality.

In Lebanon, a population census has not been made since 1932. Nevertheless, based on a Ministry of Planning study that there were 2,200,000 persons in Lebanon (1965) and, assuming that the population increased by 2.5 per cent per annum from 1965 to 1970, there would be about 2,500,000 persons by 1971. During 1971, at a population growth rate of 2.4 per cent per annum, set by the Ministry, about 60,000 new persons would be added. At five persons per family therefore, about 12,000 new housing units would be needed. Of this number, the breakdown by urban and rural families would be:

Table 7

	1970	1971	Per cent	1972	Per cent
Total population	2,500,000	2,560,000	100	2,621,440	100
Total new persons	-	60,000	100	61,440	100
Urban	-	34,200	57 ⁰	35,910	58
Rural	-	25,800	43	25,530	42
Total new families	-	12,000	100	12,288	100
Urban	-	6,840	57	7,092	58
Rural	-	5,160	43	5,196	43

Recensement des Logements par Sondage, Jan. - Oct. 1970, Direction Centrale de la statistique. Provisional results from a sample survey report dated May 1971 gives the urban housing percentage as 59,546 per cent and rural housing and population figure as 40.459 per cent. Rural is defined in the report as villages less than 5,000 persons. These figures are probably based on urban buildings only and, most probably, they are for multi-storey buildings which contain several apartments; but even these assumptions would mean that the short-fall in urban areas is at least 4,000 units in 1971.

It can be concluded from Table 8 that just to keep pace with the population growth rate of 2.4 per cent and an urbanization growth rate of 5 per cent, more than 6,840 urban and 5,160 rural units should have been built in 1971. In fact only 696 building permits were issued for the same year (1971) as the table below indicates. All of the rural units can be expected to be built by the farmers themselves, not always according to government specifications. However, in addition to the 6,840 urban units needed, another 600 units per year are needed for slum clearance and urban renewal programmes. This latter rate will allow the government to eliminate present slum conditions over a 30-year period.

Building permits issued

<u>Year</u>	<u>No. of permits</u>
1966	1513
1967	832
1968	769
1969	748
1970	584
1971	696

In Saudi Arabia, statistical information regarding housing problems is virtually non-existent. Net population growth is estimated at 2.4 per cent.^{5/} At this rate, and on a population base estimated at 5.5 million, about 142,000 new persons can be expected in 1971. Assuming an average size of 5.5 persons per family, at least 24,545 new housing units, whether they are single houses, flats or additional rooms on existing houses, will need to be created. A preliminary estimate for the period 1970-1975 based on similar rates of growth and family sizes is given below:

Table 8

Saudi Arabia housing need

based on net population increase in units

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Population estimate ^{5/}	5,274,000	5,416,000	5,562,000	5,712,000	5,866,000	6,102,400
Annual increase in persons at 2.4 per cent	139,000	142,000	146,000	150,000	154,000	158,000
Annual increase in families	25,273	25,818	26,454	27,273	28,000	28,700

^{5/} UNESOB (Population Unit) Estimate, 1970.

^{5/} UNESOB (Population Unit) Estimate, 1970.

In Syria, the creation in 1961 of the General Housing Agency, which was later in 1971 called the Centre for Housing and Construction, gave impetus to several projects for the design and construction of new community and housing areas. In rural villages housing conditions are often better than in the towns, in part because of the maintenance of effective traditional building techniques with more spacious standards. The major problems, therefore, are in the urban areas. In Damascus, for example, it is estimated that unauthorized construction of dwellings is spread over an area of 6,000 hectares; and about 120,000 persons live in overcrowded dwellings; density in one of the old centres surveyed was 610 inhabitants per hectare, with 92 families comprising 492 persons living in 32 dwelling units.

Although the results of the 1970 Housing and Population Census have not yet been released by the Government of Syria, the magnitude of the housing problem in the country is indicated by the sample surveys and studies carried out by the Centre for Housing and Construction of the Ministry of Municipal and Rural Affairs. They estimate that for the period 1960-1970, a total of 81,000 dwelling units were required just to take care of the population increase in 12 major towns.^{6/} The rate of deterioration of the existing housing stock was estimated to be about 6,000 dwelling units annually or about 60,000 dwelling units for the ten-year period. The number of dwellings required to replace those destroyed as a result of implementation of public works schemes is estimated at 9,000 units for the period. Lastly, there was an estimated shortage of 33,000 dwellings to accommodate the existing population living in substandard areas, in acceptable standards of density and hygiene. On the basis of these calculations, a total of about 183,000 dwelling units were required or about 18,300 dwelling units annually.

For all the smaller municipal centres, the total housing need could be roughly taken to be about 4,000 dwelling units per annum, at the rate of about 8 units per 1,000 inhabitants. Thus, the total housing need in the urban areas could, thus, be estimated at about 22,300 units per annum over the period of ten years (1960-1970).

In other smaller towns and in the rural areas, the housing situation is reported to be not so acute. It would thus appear that the major housing problem, at least for the present, is in the urban centres of the country.

^{6/} Damascus, Homs, Hama, Latakia, Tartus, Idlib, Aleppo, Rikka, Dair-el-Zour, Hasaka, Sweida and Deraa.

In order to determine and analyse the housing and building problems of countries like the People's Democratic Republic of Yemen, North Yemen and Oman one encounters great difficulties. Lack of statistics and systematic studies on these subjects are outstanding obstacles to making a diagnosis of the situation. On the whole, the average density for the three countries is 11 persons per square kilometre. The situation varies greatly, however, from one country to another. With Northern Yemen a density of 26 followed by the People's Democratic Republic of Yemen with four persons and finally Oman with only three persons per square kilometre. The majority of the people are residing in the rural areas. The quality of the housing of the scattered rural population is generally far below acceptable standards. The difficulty to provide public facilities to a scattered population is the reason for this state of affairs. In most cases, they neither have electricity nor portable water facilities. In Oman, electricity exists only in the capital city of Muscat-Matrah, where the first diesel generating power was put into service, which supplies only half the population.

The systems of sewage are very rudimentary and they constitute a hazard to health conditions.

However deficient the state of the dwellings may be, no less important is the difficulty to integrate this population in an organic system of community development.

The best statistics for housing available, are those of Bahrain which conducted its latest census in 1971. The total number of households in 1971 amounted to 33,783, giving an average of 6.1 persons to a household. Of the 31,045 dwelling units, 29,521 units were classified as "sound" buildings constructed of stone and only 656 dwellings were baresti (small huts constructed of palm leaves). The census also shows that the population prefers single villa houses which totalled 26,858 dwelling units. Of the total number of dwellings in the country, 20,471 units were owner-occupied and 11,345 were rented. Considering the total population of the non-Bahrainis in the country which was 38,000 in 1971, who are not allowed by law to own property in the country, it can be stated that more than 80 per cent of the population of the country own their own house. It is also remarkable to note that public utility services of one kind or another in 1971 were available for slightly more than 85 per cent of all houses, but of these only 30 per cent had connexions to main sewers, whereas over 90 per cent were connected to main electricity supplies and 80 per cent had supplies of main water.

IV. THE ROLE OF HOUSING AND URBAN DEVELOPMENT IN NATIONAL DEVELOPMENT POLICIES AND PROGRAMMES

In the countries of the UNESOB region, as indeed in most of the developing countries, housing and building is viewed more as a social welfare activity than as an economic activity by the government. Housing finance is considered as an unavoidable social expenditure. Consequently, economic plans in these countries, although they allocate a certain amount of resources, do not provide for a targeted number of houses/buildings to be constructed in the plan period. Owing to the lack of any co-ordination between investment in the construction sector and investment in other mutually inter-related sectors, housing and building activities remain largely a paper plan.

Defective institutional framework for housing investment is to a large extent responsible for not only the lop-sided development of construction activity as between urban and rural areas, but also for aggravating the housing problem. In the countries of the region, building activity has been, by and large, the domain of the private enterprise. Measured both by the size of actual investment and number of units constructed, the role of the government appears to be marginal, if not symbolic. Large investments are made in urban areas, especially in the capital towns. With the increasing rate of urbanization and rising population, pressure on dwelling units increases. At the same time, the stimulus given to industrialization by economic planning leads to greater demand for office and factory building.

The role of the government in the region is not significant with regard to land speculation and house construction. The increased emphasis focussed on industrialization and agriculture has resulted in pushing the construction sector to a place of secondary or tertiary importance.

Adequate housing to meet the needs of the people is important not only from the social welfare point of view, but its production is an integral part of the development process itself. It is not necessary to labour the point that housing and the infrastructure it requires are by no means "unproductive" investments compared with such "productive" projects as factories. Although the validity of this premise is recognized in the region, the reality of the housing situation in each country is one of inadequate public and private response to accumulated and ever expanding need. The problems currently experienced will be aggravated in the years of the Second Development Decade.

Current house-building trends indicate that, except in Kuwait, housing needs will have to remain unsatisfied for a long time. Using as a basis the number of building permits issued, and, assuming that 150 square metres of useful floor space is an average for a dwelling unit, it has been estimated that the dwelling units constructed per thousand population in 1970^{1/} was 1.81 in Iraq, 1.28 in Jordan (East Bank), 2.5 in Lebanon, 23.4 in Kuwait and 1.21 in Syria. This rate is quite low when compared to the rates achieved in some developed and even developing countries. It is low even when compared to the 10 units per thousand suggested by the United Nations.

As indicated above, a national policy in the sense of a statement of short, medium and long-term objectives, which has been formulated on the basis of established requirements and resources, does not exist in most of the countries reviewed. It should be implicitly recognized, particularly when drawing up the housing plans, that there is an acute housing deficiency in the region as well as an absolute lack of housing for part of the population.

During the sixties, there has been some government response, occasioned by accelerated urbanization and increasing in-migration from rural areas to urban housing needs. Generally speaking, however, the response has been limited and selective; it has been left to the private sector to provide housing.

In Iraq's current National Development Plan (1970/71 - 1974/75), of the I.D.160,250,000 total allocation for housing, I.D.10,250,000 is allocated for the public sector. This is about 1.3 per cent of the total investment by the public sector. Jordan's Economic Development Plan (1964-1970) recommends only a modest programme for middle-income groups, especially civil servants. In Kuwait, on the other hand, the Economic Development Plan (1966-1971) allocated KD.105 million (US\$ 294 million) as public, private and mixed investment in housing and community facilities, which is about 19.4 per cent of the total investment of the plan. In Lebanon, the Plan de Développement (1965-1969) aimed at the construction of about 19,000 dwelling units over the plan period, but the service de l'habitat, which was established to study and develop the housing programme, has not been able to implement the plan directives.

^{1/} Data refer to permits issued in urban areas since, in the countries of this region, rural residential constructions are not accounted for and do not take permits from without.

Again in the new proposed development plan of 1972 - 1977, allocation of LL.10,000,000 is being made for housing projects, which amounts to less than one per cent of the total allocation.

3. Investment in housing and its effects on economic development

Housing and urban development play an important role in the general level of economic activity. Factories, workshops, offices, commercial establishments, other economic structures and the urban development related to them should, therefore, be accompanied by, and integrated with, a comprehensive plan for urban and rural development. Failure to do so has exacted - and often continues to exact - a high real economic price in the unsuitability and inconvenience of so many cities, not only for residential purposes but also for manufacture, trade and commerce and the movement of goods and persons associated with these activities. This price may be measured in terms of wasted time of man and machine, high transport costs, higher cost of manufacture, reduced labour efficiency, high turnover of labour, uneconomic extension of urban services and costly reshaping and redevelopment of agglomerations badly laid out from the beginning. It is desirable, therefore, on purely economic grounds, that urban development in the UNESCB region should be rationally and efficiently related to the needs and demands it serves within the framework of regional physical planning. This implies that investment in economic capacity today must be co-ordinated with investment in necessary social capital.

In view of the scarcity of capital, technological means and skilled manpower, the countries of the region should try to plan their economic, social and physical development comprehensively and in an integrated way. In particular, account should be taken of the following shortcomings: lack of physical development plans, absence of land-use, zoning, mal-location of dwellings in relation to place of employment, inadequate by-laws and building-code control, absence of open space, inadequate road systems, insufficient pre-planning of water supply and sewage disposal, failure to decentralize industry, insufficient pre-acquisition of land and failure to stabilize land values so as to avoid too rapid economic obsolescence of building.

In the countries of the region, it is clearly recognized that housing and urban development are making a significant contribution both to social progress and to economic development. Housing and urban development represent

the largest single user of investment resources. In highly industrialized countries, residential construction alone amounts to more than 50 per cent of total investment in construction. In the countries of this region, it is assumed that the corresponding ratio varies from 15 to 50 per cent. If the total cost of the community services, facilities and roads in non-residential areas is included, the share of investment resources absorbed by housing and related programmes is still greater. In some cases, it may take, on an average, the same amount of investment in services and facilities for each dwelling unit as it costs to build the unit itself.

The significance of housing, as a user of investment resources, may be illustrated in another way. During the period 1961-68, investment in residential construction accounts for about 18 per cent of the total gross fixed capital formation in Iraq (see Annexes), 27 per cent in Jordan and 16 per cent in Syria. In Lebanon, for the period 1964-66, it is estimated that Lebanon's fixed capital investment in housing accounts for 10.49 per cent to 13.59 per cent; of total fixed capital formation, it ranged from 45.51 per cent to 53.83 per cent; and on a percentage basis of construction's fixed capital formation, it ranged from 69.83 per cent to 84.61 per cent. It can be concluded that the countries mentioned equal or exceed the minimum economic parameters usually set for housing which is 20 per cent of gross fixed capital formation. Furthermore, in the region, it has been accomplished since 1966, despite the economy being hampered by internal and regional disturbances and by decline in construction and tourism rates.^{8/}

The economy of Saudi Arabia is growing at the rate of 12 per cent per year, one of the highest in the world. This is mainly due to the production of oil. However, other production sectors are being developed, especially agriculture and building materials. The Gross National Product (GNP) for 1966-67 was estimated as SR.9,894.3 million, while the total fixed capital formation was estimated as SR.1,930 million or 19.6 per cent of the Gross National Product. Of special interest to housing, construction contribution to GNP was estimated as SR.1,192 million or 12 per cent of GNP and 61.8 per cent of gross fixed capital formation. Of this amount, SR.620 million or

^{8/} "Guidelines for housing policy formation in six countries of the Middle East", UNESOE, May 1970.

6.13 per cent of GNP and 32 per cent of gross fixed capital formation, was appropriated for building and housing purposes.

Although the building and construction sector in Syria is of considerable importance to development of the economy contributing on the average about 49 per cent to total gross fixed capital formation, the housing sector itself is of lesser importance; its percentage contribution to gross capital formation in the building and construction sector and to total gross fixed capital formation is, on average, 38 and 19 per cent, respectively.

Although the housing sector in the development of the Syrian economy is of lesser importance in relation to the building and construction sector, the percentage of national income invested in housing is high for a developing country. In developed countries such as France and Finland, the respective averages are 8.2 and 7.2.

The reason for this is that the housing sector was kept as an open sector in Iraq and Syria, in contrast to other sectors which were nationalized, and hence there was a tendency for new investment to be made in housing, or to continue on dwellings in the process of construction, despite the socio-political climate. In fact, investment might have been much higher had the climate been stable.

Whether the housing sector will grow in the future is, however, an open question, and will depend partly on investment opportunities available in other sectors of the country's economy. Whether expanded investment will meet housing needs is a question of a different order. As experience in Lebanon indicates, for instance, new housing can be of the wrong type. Investment in this country appears to have been dictated by certain peculiar conditions which are unrelated to housing needs. Investment has been in a class of housing of which there is an over-supply, and which is far beyond the means of the middle and low-income groups.^{2/} Resources available to some governments are limited, and hence it becomes of vital importance that a proper housing policy be adopted - a policy which will encourage and make private investment profitable in housing, but which will also direct investment into the area of middle and lower-income housing. Among the measures which may be considered as instruments of that policy could be the acquisition and allocation of land, the provision of urban facilities, the production of

^{2/} "Guidelines for housing policy formulation in six countries of the Middle East", UNESOB, May 1970.

inexpensive building materials, the lowering of interest rates to at least 5 per cent and the strengthening of legal, financial and administrative institutions.

In Syria the targets set in the First and Second Five-Year plans showed a serious underestimation of housing needs.

The first Five-Year Plan (1960/61 - 1964/65) aimed at building about 12,000 housing units per annum, that is, 60,000 units over the planned period, for which an investment of LS.260 million was programmed - LS.245 million in the private sector and LS.15 million only in the public sector.

The programmed investment of LS.260 million in housing amounted to 9.5 per cent of the total investment of LS.2,720 million envisaged in the Plan, and to about 1.3 per cent of the five-year national income estimated at LS.14,735 million in the Plan.

Actual investment in housing has far exceeded that envisaged in the Plan. As may be seen from Annex IV, fixed capital formation in dwelling for the years 1961-1965 amounted to LS.622 million. Even though the actual investment in housing has been more than double, as that of LS.260 million envisaged in the Plan, the number of permanent dwelling units constructed has not been much higher than the target of 12,000 units per annum. This is because the plan had assumed an average investment of only LS.4,333 per dwelling unit (60,000 units for a total investment of LS.260 million) which is very much on the low side.

For the Second Five-Year Plan, a target of 163,900 dwelling units was proposed by the Centre for Housing and Construction, but the actual target set in the Plan was 16,480 dwelling units to be built by the public sector at a total cost of LS.93 million. It was hoped that the balance would be absorbed by the private and co-operative sectors.

However, what was achieved in the plan period was far short of expectations, as may be seen from the table below:

Table 3
Achievement in housing construction (1965-1971)

<u>Public sector</u>		<u>Private and co-operative sector</u>		<u>Total</u> d.u.
<u>Units constructed</u>	<u>Cost in LS</u>	<u>Units constructed</u>	<u>Cost in LS</u>	
1,710	13,300,000	40,064	100,000,000	41,804

The implementation of housing plans in Syria has been hampered by the lack of good, efficient building contractors, and also by the lack of trained personnel. As the 1970 Report of the Centre for Housing and Construction indicates, annual public spending consistently fell short of allocations made during the entire ten-year plan period.

Table 10

Annual public spending in housing

Year	Actual allocation in thousand L.S.	Spending in thousand L.S.
1960	6,597	5,590
1961	7,097	2,515
1962	5,817	1,669
1963	10,633	2,783
1964	7,000	3,490
1965	7,000	4,711
1966	16,383	5,221
1967	16,383	7,928
1968	12,500	1,820
1969	5,719	4,180
Total	95,129	40,907

Source: Report of the Centre for Housing and Construction, Spet.1970, p.3.

Projections for housing in the third five-year plan period 1971-1975 are difficult to make because of the lack of proper information on the present density of occupation and the lack of statistics on actual migration, including population shifts as a result of the June war of 1967. Knowledge of the current habits and customs of Syrian families is also lacking, such as the tendency of newly-married couples to reside with parents and the disbursement of family income on rent or purchase of homes. Of the total allocation of the plan (SL.8,120,000,000) only SL.50,000,000 is allocated for housing, which is about .61 per cent of the total investment. However, if three major factors, namely population increase, rural-urban migration and obsolescence are taken into consideration, it is estimated that a total of 119,000 dwelling units are required for the planned period.

The number of dwelling units needed to replace those becoming obsolescent during the plan period is estimated at 7,600 and those needed to provide for migration at 59,200.

Assuming that an average of SL.17,000 is required for the construction of each dwelling unit, including cost of the land, a total sum of approximately SL.2,036 billion will be required to meet the new needs during the plan period.

The magnitude of the expenditure required to meet the new needs, leaving aside, for the moment, the backlog of unsatisfied needs at the end of the previous decade, makes it clear that the problem of urban housing will continue to be critical during the Second Development Decade and probably continue for many years thereafter; congested slums and shanty towns seem to be an inevitable part of the urban milieu.

In Saudi Arabia, for the first time, housing is dealt with in the new development plan 1971 - 1975 with objectives and targets to be reached. The general objective of the plan for the housing sector is summarised in the "Improvement of housing conditions where these fall below required social and health standards; and in particular raising the standard of housing of the low-income groups so that improvement in housing will go hand-in-hand with the government efforts for the improvement of health services, water supplies and urban development throughout the Kingdom".^{10/}

The plan also indicates that, in order to achieve this objective, it is necessary to undertake a comprehensive housing survey for the Kingdom in co-operation with the Central Statistical Department. Subject to the conclusion of this survey, the following targets are set:

- a) Establishment of an institution to finance housing and real estate development projects during the second year of the Plan.
- b) Design of model residential communities in the second year of the Plan.
- c) Implementation of a comprehensive programme for the development of the housing sector, integrated with a plan for urban development in the third year of the Plan.

Thirty million riyals are allocated for the execution of the programmes.

In the remaining countries of the region, the pattern of past capital expenditure shows clearly the emphasis put in all the countries on creating

^{10/} Central Planning Organization, Development Plan, 1390 A.H., Saudi Arabia, p. 175.

the basic infrastructural facilities, particularly roads, harbours, airports, water and electricity supplies and public buildings. The exceptions are the two Yemens, where little information is available.^{11/} Housing was also an important development area in Bahrain, Abu Dhabi and Qatar,^{12/} and, to a lesser extent, in the rest of the Emirates. This pattern comes out clearly in the following tables:

Table 11

Public development expenditure in Bahrain (BD 000)

	1966	1967	1968	1969
Agriculture	30	30	10	-
Harbour	80	70	70	140
Water supply	450	120	230	200
Electricity	290	30	40	840
Housing	990	980	800	200
Municipal development (including streets)	-	10	210	-
Public buildings	100	700	530	310
Education	100	270	160	200
Health	40	40	70	290
Other	120	20	30	140
Total	2,200	1,970	2,100	2,370

^{11/} For Oman, the only information available is that during the first year of independence 193 housing units were constructed and it is expected that in 1972 another 100 dwelling units will be completed.

^{12/} In Qatar, the 1972 budget gives the highest priority (43 per cent of the total) to social development, which includes housing, water supply, sewage and electricity supply. A total of \$11,130,000 is allocated for housing projects and land expropriation for housing purposes, which is about 20 per cent of the total budget (\$50,610,000).

Table 12
Public development expenditure in Abu Dhabi (B.D. 000)

	1966	1967	1968	1969
Agricultural research and forestry	—	16	110	1,440
Industry	—	—	—	170
Roads	1,200	4,460	19,080	5,000
Harbours	100	2,020	3,030	4,670
Airport	700	2,270	1,540	2,040
Communications	—	—	10	120
Water supply	100	990	960	640
Electricity/Desalination	600	250	2,760	16,360
Housing	1,300	300	4,200	4,950
Municipal development (including streets)	1,600	880	2,010	6,770
Public buildings	—	370	1,010	3,680
Education	—	60	1,000	2,080
Health	—	390	210	1,630
Total	5,600	12,035	35,920	49,550

Table 13
Development expenditure in the Gulf States (BD 000)

	1966	1967	1968	1969
Agriculture and Fisheries	120	220	380	300
Roads	50	530	3,140	2,830
Harbour	40	640	1,700	410
Airport	—	—	90	20
Communications	50	—	—	—
Water supply	230	270	220	320
Electricity	40	130	80	310
Housing	20	170	130	120
Municipal development	220	240	140	140
Education	220	250	280	280
Health	50	70	220	580
Others	—	20	—	30
Total	1,040	2,540	6,380	5,340

A/ Dubai, Sharjah, Ajman, Um al-Qayman, Ras al-Khaimah and Fujairah.

The problem of housing in countries like the People's Democratic Republic of Yemen, Yemen Arab Republic, Oman and the non oil-producing countries of the Gulf Emirates arises from causes deeply rooted in the economic conditions, the social structure and the customs and values of the populations concerned. A solution to this may have to take into account the many diverse factors which have created the situation.

Prevailing housing conditions in the countries mentioned above are too low even by modest standards. There is no systematic data available regarding the housing conditions of these countries; however, observation reveals that the majority of the dwellings, urban and rural, are structurally unsound, unsanitary, overcrowded, poorly ventilated and, in general, completely inadequate for meeting the essential physical and social requirements for shelter. In most cases the walls are either mud or stone with mud mortars. The roofs are thatch. The floors are earthen, the water supply is impure, and the toilet accommodation, if available, consists merely of an outside open pit latrine often shared with a neighbour and subject to contamination; windows are lacking or are boarded up, and there is no outlet for the smoke from the stove; household equipment is virtually non-existent.

It is generally recognised that the problem cannot be solved by tackling it from one specific angle but that, on the contrary, any programme of amelioration must not only be based on improvement of building techniques but must also take into account existing economic, social and cultural conditions, as well as the particular requirement of geography and climate.

Thus, it is obvious that from a long-range point of view, any housing policy, to be successful, should be part of a comprehensive programme for economic development, which would, for example, include development of existing resources and exploration for new resources; general improvement of economic conditions in order to increase employment so that more people can afford decent housing; reorganisation, where needed, of existing agricultural practices, thereby providing better living standards for the agricultural workers; and development of building industry adequate for the construction of houses, as well as industrial projects and public works, at a cost substantially lower than at present.

In the welfare state of Qatar, the government provides either land and a house or a house alone if the application is to build privately or on family land.

The government in this case provides 70 per cent of the total cost of the construction. As housing costs are particularly high in Qatar, loans run as high as \$12,000 with repayment periods of twenty-five years at no interest. The government also builds houses for the invalids and elderly people against payment of nominal rents of between \$1.75 - \$2.50. Even furnishing of the houses is provided by the government with a loan of about \$500 which will be added to the loan given for the construction of the dwelling.

Although the programme is relatively new (1968) however, by the end of 1971, some 650 dwelling units had been provided and about 1,182 applicants are waiting for housing.

2. Employment and labour force in the building sector

The creation of an effective continuing demand for housing and certain services and facilities compatible with the increasing rate of urbanisation would help in planning for a progressively expanding manufacture of building materials and for a growing construction industry with corresponding employment. In the countries of this region, housing is an essential factor in creating sufficient demand to enable building materials to be manufactured economically, not only for dwellings but for all kinds of construction. Also, the employment created by a stable or rising level of housing and urban development programmes may act as a dynamic economic force. It can provide opportunities for other employment by creating a demand for other market products.

The importance of the construction industry, which is not very dissimilar to the manufacturing industry, is derived from its many side effects on investment, consumer expenditure and, therefore, also on employment volume. As regards its economic ramifications, it is generally regarded that when the building industry flourishes, all goes well, because this industry, which employs an important proportion of the countries' working population, contributes significantly to the volume of goods produced and also absorbs a large proportion of public and private investments. The importance of the building and construction sector to the national economy, from the standpoint of the employment opportunities it provides, could be assessed due to the fact that between 10 to 25 per cent of the total employment is provided by this sector. This percentage assumes additional importance when it is realized

that most of those employed in this sector are unskilled and almost uneducated workers, many of whom have migrated from rural areas to the cities and have swelled the ranks of the unemployed.

Table 14

Manner situation in relation to construction^{a/}

<u>Country</u>	<u>Year</u>	<u>Total labour force</u>	<u>Labour force in construction</u>	<u>Per cent</u>
1. Iraq	1969	2,511,000	67,000	3.6
2. Jordan	1961	490,000	40,000	10.3
3. Kuwait	1966	186,000	29,000	16.6
4. Lebanon ^{b/}	1968	647,000	136,000	20.9
5. Saudi Arabia	1970	1,492,200	124,390	11.99
6. Syria	1968	1,774,000	56,000	3.2
7. Yemen Arab Republic	-	-	-	-
8. Democratic Republic of Yemen	1967	42,000	490	1.17
9. Bahrain	1965	53,328	8,328	15
10. Oman	N.A.	N.A.	N.A.	N.A.
11. Qatar	1970	48,390	7,785	16
12. Federation of Arab Emirates	1968	77,013	19,874	25.8

^{a/} Data compiled by UNESCO

^{b/} Data includes the industrial workers also.

Planning for manpower in the region is generally new and data of the economically active population by sector of activities are sporadic. This is particularly due to the lack of population census in most of the countries and when available, it does not cover the proper classification of the labour force according to the educational levels and occupations. However, from the information at hand, it can clearly be seen that the construction sector has a very important share in the labour force in the countries of the region.

The table above indicates that, except for the two agricultural countries of Iraq and Syria, where less than four per cent of the labour force is engaged in construction work, the remaining countries of the region are averaging about 1 1/2 per cent. The People's Democratic Republic is an exception where the percentage of labour force engaged in construction activities is only 1.17 per cent. This is mainly due to the closing of the British base in that particular year which was the largest single source of employment and which directly, or indirectly, benefited from the construction activities.

It is interesting to note also that in the newly established states of the Gulf area, the proportion of the labour force engaged in construction activities is quite high. This is due to the tremendous building activities taking place in that area where due to the oil revenue new states are literally being reconstructed.

In Bahrain, the total labour force in 1965 represented about 29.2 per cent of the total population and only 4.4 per cent of the total labour force was classified as unemployed. The data indicate that a very low percentage of 0.4 per cent is working in mining and quarrying and 8.7 per cent in agriculture. Shortage of Bahrainis in agriculture is due to the fact that most of them have abandoned the sector and joined the oil company as workers. Construction (15.6 per cent) ranks only second to services, 17.2 per cent in total labour force.

It is interesting to observe in the following table that the construction sector constitutes the highest percentage of non-Bahrainis, which is about 58.5 per cent. This is true in all the states of the Gulf area where local people show less interest in joining this sector due to traditional attitudes and customs.

Table 15

Active population by type of economic activities and nationality in 1965

Economic activity	(A) Bahrainis	(B) Non-Bahrainis	(C) Total	(B) as per cent of (C)
Agriculture, forestry, hunting and fishing	3,562	1,092	4,654	23.5
Manufacturing	5,388	1,953	7,341	20.6
Construction	3,452	4,876	8,328	58.5
Commerce	4,729	3,011	7,740	38.9
Transport, storage and communications	2,328	2,566	5,494	46.7
Services	6,922	3,472	10,394	33.4
Activities not adequately described	4,126	5,020	9,146	54.9
Total	31,231	22,043	53,274	-

Source: 1965 Census of Bahrain, p. 13.

Another example of peculiarity in the labour force which is quite common to most of the countries of the Gulf area, which lack industrial skills and capable artesian labour, is that of the State of Qatar. The country in 1970 had a population of 111,133 people of which 59 per cent were classified as non-Qatari. In the table that follows, the economically active population according to branch of activity is indicated. Roughly 83 per cent of the economically active work force is non-Qatari. Only in the case of the oil industry does the number of Qataris employed exceed the number of expatriates. Another important observation that can be made from the table is that, of the 7,785 labour force engaged in agriculture, only 207 workers were Qataris. This is also due to the same reasons given for the Bahrain situation.

Table 16
Employment by branch of activity, 1970

	Qatari	Non-Qatari	Total	Per cent
Agriculture and Fishing	86	1,984	2,070	(4)
Manufacturing, Quarrying and Public Utilities	1,825	3,417	5,242	(11)
Construction	207	7,578	7,785	(16)
Oil	1,259	450	1,709	(4)
Wholesale and Retail	880	7,005	7,885	(16)
Banking	10	292	302	(1)
Transport and Communications	655	2,571	3,226	(7)
Government	1,391	4,781	6,172	(13)
Other Services	1,855	11,644	13,499	(28)
Total	8,168	39,722	47,890	100
Per Cent	(17)	(83)	(100)	(100)

Source: 1970 Population Census

V. HOUSING COST AND ABILITY TO PAY

Due to the magnitude of the housing problem in the region, the importance of adequate housing programmes and facilities becomes readily apparent when comparing the cost of the housing currently being produced with the ability to pay of the families in need of housing. Here distinction should be drawn between urban and rural areas. There is almost exclusive reliance on the use of traditional building materials, techniques and local manpower in rural areas, so that neither the final product nor the resulting costs can be readily compared with housing produced under urban conditions. As most of the countries in the region are still predominantly rural in character, it is apparent that the majority of housing is built in this way and is largely unrecorded.

It is in the urban areas that concentrated attention must be directed towards the creation of savings and financing instruments which are needed to mobilise resources and to make them available on a long-term credit basis so that families will be able to pay the capital costs of their dwellings over a period of time. None can virtually provide housing for themselves out of current income because of technological and other factors involved in producing more housing and in reducing the cost of house building. Similarly, all the national plans establish goals for the increase in per capita income through the increase in overall national productivity, which will again mean that more families will be able to acquire decent housing. However, for the moment, this chapter is primarily concerned with showing the size of the gap between the cost of the housing currently being produced and made available and the income, or ability to pay, of the families in need of housing.

The studies that have been made in Europe of the capital cost of dwellings compared with the average annual income of adult male workers show that a modern dwelling, in many of the countries, costs about four times the average annual income. Of course, there are many variables with respect to such dwellings, including type of construction, equipment, etc. Standards tend to rise with time and with an increase in income. In the region, it is attempted to compare the cost price of a typical low-cost dwelling, meeting the following specification: one hundred metres of floor area, constructed of durable walling material with a concrete or terrazo tile floor or similar

alternative finish, reinforced concrete roofing, simple sanitary fittings and electrical fixtures, adequate quality joinery and modest finish. The results are summarized in Table 17.

Table 17

Approximate cost of a seventy square metre low-cost dwelling, expressed in terms of annual income of skilled and unskilled construction workers, 1970

Country	Cost of dwelling	Annual income of unskilled labour	Cost of dwelling expressed in terms of annual income of unskilled labour	Annual income of skilled labour	Cost of dwelling expressed in terms of annual income of skilled labour
	US \$	US \$	US \$	US \$	US \$
Iraq	2,352	528	4.45	960	2.45
Jordan	2,800	624	4.48	1,248	2.24
Kuwait	5,180	744	6.96	2,352	2.20
Lebanon	2,155	768	2.80	1,680	1.28
Saudi Arabia	2,822	576	4.85	2,184	1.28
People's Democratic Republic of Yemen	-	-	-	-	-
Syria	1,701	576	2.95	912	1.86
Yemen Arab Republic	-	-	-	-	-
Bahrain	3,780	750	6.2	1,500	2.50
Oman	6,440	840	7.66	1,680	3.89
Qatar	4,700	882	5.32	1,764	2.66
Federation of Arab Emirates	5,600	899	6.22	1,798	3.11

Source: Data compiled by UNESOB

Table 17 shows that in the majority of the countries of the region, the cost of such dwellings represents between two and three years of earnings of a skilled worker, with the best ratios obtained in countries like Lebanon, Saudi Arabia and Syria. Lebanon and Syria have had considerable experience in the construction of low-cost dwellings, while in Saudi Arabia, the income of skilled workers is high and the price of the building materials is relatively low. It is also worth mentioning that the cost of land is not included, where it is highest in the two countries of Lebanon and Saudi Arabia. It could also be concluded that it is unlikely that adequate accommodation can be provided in urban areas for unskilled workers at their present low level of income, as in more than two-thirds of the countries of the region, the cost of a dwelling of the type used for the model would represent an annual income of four to seven years. It is quite clear that when the capital cost of the dwelling reaches three or more times the annual income, the ability to pay an economic rent to fully cover loan charges, maintenance, etc. disappears. Where the cost of the dwelling is twice the annual income or less, economic rent becomes readily possible, given reasonable interest and amortization rates. In certain countries of the region, particularly the oil-producing states, as has been referred to in this paper, the house building construction is highly subsidized, yet in the others, due to lack of proper financing and availability of funds, the primary objective of technical and research policy in housing should, therefore, be to reduce the cost of dwellings to the reasonable area of twice the annual income. This aim at least provides a yardstick against which the kinds and types of houses required may be measured.

VI. DEVELOPMENT OF BUILDING MATERIALS AND CONSTRUCTION INDUSTRY

In setting goals, targets or standards to serve as the basis for development programmes in housing and residential services, consideration has to be given to a number of related factors. For each of these factors needs must be identified, goals and standards worked out and programmes carried through. At each level, they interrelate with housing and its environment. In fact, they are frequently of such dominating an influence that it is virtually impossible to deal realistically with the problems central to this study unless a parallel process is assumed to be going on in these related factors. Of the many factors that might be selected as bearing a more or less important relationship to housing and related services, developing building materials and an efficient construction industry are discussed here as they should have been the topic of the report. It is not within the scope of this report to examine in full enough detail to develop a methodology for setting goals, standards or targets for them, as it aims to do for housing and its supporting services.

A few decades ago in the countries of this region, which were characterised by a comparatively limited, simple and highly scattered building demand, as well as by the lack of, or insufficient transport facilities, the building material and components required were of necessity to be found locally and delivered to the building site in a crude or simply processed state. Most of the material used was cheap and the labour required was also cheap or acquired through aided self-help effort. However, it is important to note that, even at those early stages of economic development, considerable construction activities were going on, since they were required to satisfy some of the basic needs of human society. In those early stages of economic development, one could hardly speak of the building material industry. Construction was mainly a question of labour input in terms of quarrying, transport of materials and their processing and assembling on the construction site. Since both materials and labour were normally abundant and cheap, construction costs

were not particularly high as compared with other essentials. Technical equipment and even simple furniture being too expensive, the need for sophisticated equipment and sanitary services were not so essential at that stage of development. From the social and health point of view, therefore, the living conditions at that stage of development can be said to have been at least acceptable.

The process of industrial, economic and social development, which is characterized by a gradual concentration of the population in urban areas and by rising incomes creates a completely new situation with regard to building, production, living conditions and standards in general. At this stage of economic development, the building materials and construction industries are faced with a demand for highly sophisticated and elaborate civil engineering work, for industrialized buildings, for more and better housing, schools, office buildings, hospitals, etc. These requirements, since they are indispensable and rapidly increasing, are difficult or impossible to meet using the building methods, materials, labour and managerial skills traditionally employed in construction. A serious mistake is made by neglecting this mounting building crisis and by seeking a temporary and expedient way out of it through extensive imports of building materials and components and through the insufficiently considered application of building methods and material used in the more industrially-advanced countries.

As was mentioned earlier, the largest share of scarce investment capital in the region finds its way into construction, but the construction industry appears to be the least developed industry in terms of mechanization, productivity and the benefits derived from building progress by the ultimate user of its product. Reference has already been made on the percentage of construction in the capital formation. If the cost of community facilities, utilities, public buildings, roads, irrigation projects and factory buildings are included in the total cost, the share of investment resources absorbed by these programmes is still greater. In spite of the economic importance of construction as an instrument of capital formation and a mix of investment capital, its crucial

role has only rarely been recognized in the context of development. The lack of determined and continuing efforts towards rationalizing the production of building materials and components is causing serious problems and suffering all over the region, a fact which is hard for the people to understand and for governments to accept. Throughout the region none of the development plans devote any attention to this sector beyond an occasional building materials plan, such as for cement.

Material sources for building construction are available in the region and, in certain locations, are even abundant. However, the building materials industries, except for Lebanon, are still at an early stage of development and are usually centred in the greater densely populated urban areas, particularly the capital cities where facilities for operations, skilled labour and a ready consumer market are assured. In the smaller localities and in the rural areas, the utilization of materials originating from craftsmanship and primitive manufacturing is still predominant. Further development of both types of manufacturing is encouraged for obvious national and economic reasons and because eventual adequate production would contribute to the elimination of expensive imports which apparently are necessary in order to satisfy the demands from the building industry.

The efforts at maintaining two types of manufacturing is also related to the distribution problem which is hindered by topographic extremes and inadequate transportation systems. This situation has promoted the development of the small craftsmanship-type manufacturers whose product, made from local raw materials by cheap labour, can reach the local consumer at considerably lower cost than materials imported from industrialized centres and abroad. There is also a tendency to decentralize some of the major material industries, e.g. cement, where Iraq, Syria and Saudi Arabia have established new plants at strategic locations for both local consumption and exporting purposes, which will tend to increase not only domestic production but also make industrially manufactured products available in areas which previously suffered from meagre supply at high costs.

1. Major construction materials

The major industrial products, whether they are locally produced or imported, are cement and cement-based products; asbestos-cement (sheets and pipes) and concrete blocks, bricks, flooring slates and tiles; steel and steel products: sheets, rolled profiles, bars for reinforcement, tubes and pipes; timber and wood products: plywood, doors, windows and processed boards; clay products: fired bricks, hollow tile blocks, drainage pipes, floor tiles and roof tiles; processed sand and gravel, gypsum and lime and derivative products.

The relatively primitive craftsman products are: adobe, a solid element of regular shape made of soil, straw and water, sun dried and used in masonry, particularly in the rural areas. Natural stones in certain countries of the region; bamboos and reeds are used in marsh areas of southern Iraq for almost any structural element. Primitive manufacturing includes also a home industry of fired clay bricks in certain locations, e.g. Iraq, Saudi Arabia and the Yemen.

It is noticed that the building materials industry at present in the region is largely confined to the processing of bulk building materials such as clay products, cement, cement products and asbestos-cement, whereas the production of building components, fittings, fixtures and sheet glass is in its infancy. Because of the lack of forests in the area, the countries of the region entirely import all their requirements of sawn wood from outside the region. As for iron and steel, the local production is usually based on imported finished or semi-finished products and directed towards the fabrication of components such as steel windows and door frames, gates, drainage items, etc., rather than towards building materials like rods, profiles and corrugated sheets for which the demand is the highest.

A few countries, namely Iraq, Lebanon, Jordan, Syria and Saudi Arabia have taken preliminary steps to produce some of the most needed iron and steel products. Small re-rolling plants are operating in the above-mentioned countries and, therefore, the ground for more extensive manufacture of iron and steel products is being prepared.

It is not within the scope of this paper to go into the detail of building materials and component industries, but since it is tied up with the housing problems and the industrialization of building, it is worthwhile giving some of the overall characteristics of this sector. The current general situation can be summarized in a few basic characteristics: the general inadequacy of local production to meet total demand; the unbalanced regional pattern of production and consumption of the building material; the absence in most of the countries of the region of the production of electrical equipment, sanitary equipment, sheet glass, hardware, metal and metal products; the lack of technical and managerial skills, etc.

The following section contains a brief review of relevant information collected by UNESOB regarding the present supply, production and trade of some important building materials.

Cement is one of the basic building materials of all developing countries. Cement, in all forms, has been gradually replacing stone, burnt brick, mud and other indigenous building material which has been used traditionally throughout the region. The growth of the industry has been helped by the ever-increasing demands of industrial, commercial, residential and infra-structural projects on the one hand, and the availability in great quantity of the raw material (limestone) and a source of fuel, on the other. Another important factor that has encouraged the production of this material has been the comparatively little technical knowledge and skill required for cement manufacture. Thus, by the end of 1971, six countries of the region had established their own cement plants and all of them had given high priority to their further expansion to meet anticipated and planned requirements. The Arab Republic of Yemen, Kuwait, Abu Dhabi and Oman are reported to be considering the establishment of their own plants. Normal Portland cement is the main type produced; sulphate resisting cement and low-heat cement, which is used for foundation construction in salty soils and dam construction are also produced in most countries. White cement is only produced in Lebanon.

In the region, as Table 18 shows, cement production has increased from 4,077,000 tons in 1966 to 5,043,000 tons in 1970. This represents an increase of about 24 per cent in a four year period. The earliest producer of cement is Iraq which began in the late forties and the latest producer is Qatar which started in 1969. The Qatar plant has a capacity of 300 tons per day with an annual output of 95,000 tons per year at 88 per cent capacity. A new kiln at the cost of £4 million is being constructed with a nominal capacity of 330 long tons per day. The two plants should, therefore, produce about 218,000 tons per year. Concurrent with the steady expansion in current production, there has been an equally steady expansion in the consumption of cement sub-uses, not merely direct use in poured concrete and plastering, but indirect use in the manufacture of asbestos - cement, tiles and mosaics, as well as the manufacture of concrete products such as beams, roofing blocks, kerbs, sidewalks, slabs, lintels, sills, pipes, staircases, etc. The use of cement-based materials in building and construction is growing steadily, and in fact it is estimated that such materials represent about 40 per cent of the cost of all materials used in any building.

Table 18

Growth of cement production in the UNESOB countries (,000 metric tons)

Country/Year	1966	1967	1968	1969	1970
Iraq	1,300	1,313	1,320	1,575	1,600
Jordan	374	289	376	480	378
Lebanon	1,150	1,016	906	1,253	1,339
Saudi Arabia	279	418	511	574	667
Syria	614	688	917	933	964
Qatar	-	-	-	85	95
Total	4,077	3,724	4,629	4,900	5,043

Asbestos-cement, which is a mixture of asbestos fibre and ordinary Portland cement, is manufactured in Iraq, Kuwait, Lebanon and Syria. The largest plant is located in Lebanon. Its average annual production is 20,000 tons of pipes and 10,000 tons of sheets. All four factories are reportedly functioning

successfully. For one, there is an expanding demand for asbestos-cement products, particularly for pipes for drinking water - drainage, sanitary and irrigation systems, even for oil and gas distribution. For another, asbestos-cement products are generally not perfectly substitutable and hence enjoy virtual immunity from competition.

It would appear that, with the exception of Lebanon, production of asbestos-cement is geared to the local rather than to the export market. At the moment, local demand absorbs the entire supply, and since there is an expanding demand in these countries, exports cannot be anticipated even if production were increased. Perhaps it is this consideration, plus the fact that asbestos-cement products have a high weight-to-cost ratio and suffer from a high breakage incidence in handling and transport, which caused Saudi Arabia to establish two asbestos-cement plants to meet its own requirement for these products. Other important cement-based industries are the manufacture of tiles and mosaics and concrete blocks. These are manufactured in all countries of the region; the manufacturing process varies, however, from the most primitive to the highly mechanized.

The building materials and components segment of the economy subsumes, in addition to the cement and cement-based industries, a number of other industries like clay-bricks in Iraq, aluminium industries in Bahrain and Lebanon, sand-lime bricks in Iraq, Kuwait and Saudi Arabia, sheet glass in Iraq, sanitary wares and paints in Iraq, Jordan, Kuwait, Lebanon and Syria and doors and windows in all countries of the region. Little information is available, however, and data has not been collected and analyzed on a systematic basis and it is not within the scope of this report to go into detail on the subject.

2. Trade in major building materials

Prior to 1950, all the major building materials, namely cement, asbestos, sanitary wares, plumbing and lighting fixtures, pipes and fittings of iron and steel, iron and steel bars, angles, shapes and sections were imported. Since

that time, there has been domestic production in some of these items in some of the twelve countries. Despite such production, as has been outlined in a previous section of this report, each of the twelve countries has had to import all or some of these materials from appropriate producers in the region or from outside. The extent of the dependence of these countries on imports is indicated in the trade statistics in major building materials for the year 1965-1969; the material constitutes between 60 to 70 per cent of all materials used in construction and building.

Not unexpectedly, the value of imports has always exceeded that of exports. Despite the pictures that are shown in the export graphs, cement and cement products are the only items which are produced locally in exportable quantities. Cement is produced in six countries of the region, but only in Iraq and Lebanon does domestic production exceed demand.

Intra-regional trade in cement has been carried out on a considerable scale. Statistics show that a major part of the imports of cement during 1965-1969 had come from within the region, with Lebanon and Iraq being the major suppliers to Bahrain, Kuwait and the Gulf States. The export and import graphs do not necessarily indicate excess or shortage of domestic supply over domestic demand. Lebanon, Iraq, Jordan, Kuwait and Syria are all exporting countries according to the graph. Nevertheless, they import some of their domestic requirements. Part of the explanation is that they take advantage of price differentials when importing these materials from other countries; another explanation, in the case of cement, is the difference in export and import prices of the same type of cement. Certain cement producing countries in the region are exporters of ordinary Portland cement and importers of a special brand of cement, including white cement, low-heat, rapid hardening and sulphate resisting cement, which cannot be produced locally everywhere.

Trade in other materials like lime and lime products, stones and aggregate clay and clay products, glass and glass products, wood and wood-based products, sanitary fixtures, lighting and electrical appliances, plastic and plastic produ

rubber and rubber products, building fittings and fixtures is of considerable importance in the region since they are relatively minor but indispensable items in building and hence have to be imported when not locally produced. Trade figures for these items are given in the graphs for five countries where statistics were available and it would appear that regional trade in these items forms only a small proportion of each country's total trade in them. This is not surprising inasmuch as only in Lebanon, the production of such items is of any quantitative significance; imports have necessarily to be from outside the region.

In order to give some indication of the importance of the different industries and deliveries of construction input and, consequently, of the priority to be given to the development of the various branches of the building materials and components sector at different stages of economic development, it would be helpful to know the present composition of the total expenditure on the import of building materials and components in the countries where data are available.

Iron and steel products are the key materials in building construction and they account for between thirty to forty per cent of the imports of major building materials in the region. Although, as shown in the graph, certain countries export these materials, these exports form only a small fraction of the imports of such products by these countries. With the large development and infrastructural programmes now under way or completed, imports of iron and steel products were worth US \$37 million, thus amounting to more than double the amount spent on imports of all building materials, which amounted to US \$60 million.

VII. INDUSTRIALIZATION OF BUILDING INDUSTRY

As has been discussed earlier in this report, the countries of the region are faced with the task of providing adequate housing in sufficient quantity to fulfil the immediate needs of their population. The means and techniques available to cope with this problem vary considerably from region to region. In countries possessing a highly industrialized system of production, the last two decades have witnessed the introduction of new building materials, the accelerated development of prefabrication and standardization, an increased specialization in labour skills, etc. In contrast to these manifestations of a complex economic and social structure, the situation in the developing countries is predominantly pre-industrial, with large areas still presenting the characteristics of primitive economic societies.

In the absence of large-scale production of building material, and of modern transportation facilities and marketing techniques, the production of housing in most countries of the region is almost exclusively the concern of the consumer who, in coping with the problem of meeting his personal needs and those of his dependents, continues to this day to follow traditional patterns of production and construction.

Under these conditions, the type and quality of housing for the majority of the population in the region is dependent on whatever building materials are available on or very near the location where they are actually needed.

There is no doubt that technical advances have occurred in the building construction, as in other fields, and have been accelerated in recent years. Unlike other major industries, however, the building industry has not so far been able to use technical development effectively to reduce building cost. The reduction of building costs cannot be brought about only through technical progress but requires a better organization of the demand for the products of the building industry and a better organization of the industry itself. The reasons why the building industry has not been able to reduce production costs in the same way as other industries are inherent in the sheer bulk and weight

of its products, the type of material used, dependence on open sites and the individuality and complexity of demand. These factors in turn account for the traditional structure of the industry, with its multiplicity of small firms and comparative absence of powerful associations or large producing units with the responsibility and power to prepare and carry out fully co-ordinated production plans; and for the present high cost of production. Nevertheless, changes are now beginning to occur; the building industry has a prospect of developing along lines similar in principle to those of mass production industries, although the details are bound to be different. Of the twelve countries in the region, only Kuwait has attempted the industrialization of housing by establishing a prefabricated houses factory in 1967 which started operating in 1968 with a total cost of more than \$2 million. The factory produces 220 cubic metres of concrete daily. The factory is jointly owned by the government and private enterprises with the former holding the majority shares. Information regarding the feasibility and the status of the factory is very limited. Regarding total labour force in the factory, there were 170 workers in 1971, according to general information. Of the seven engineers employed in the factory, there were six Arab expatriates and one Swedish production engineer. The factory engaged mainly in the production of low-cost housing for the public sector. According to the annual report, the factory was able to complete 443 dwelling units for the low-income families in 1970, about five months before the contract expired.

Besides housing construction, the factory also completed in 1970 two buildings for the Ministry of Defence, a boarding house and a private school. The net profit of the factory in 1970 was about \$600,000. The unit cost of construction as compared to conventional methods is not available, but judging from the fact that the low-income houses are usually of the same specification and types, the factory can produce these on a large scale and hence save time and labour cost in their construction.

Due to the most severe housing problem in nearly all countries of the region, and particularly in the bigger cities or urbanized regions, the

possibility of industrialization of housing and building has always been considered. Industrialization is a loose term, but it is most useful in its widest sense when it covers the whole approach to the subject, bringing organization to the design office, to the site and to management, as well as to the factory production of components. The most obvious form of industrialization is the prefabrication of building parts. This is nothing new and particularly in this region. Mass-production ideas were deeply rooted in ancient architecture as demonstrated by the use of standardized bricks in ancient Mesopotamia, and by the use of stones and tiling of uniform dimension in Baalbeck in Lebanon. Prefabrication today is naturally more complex and a distinction should be made between prefabrication of the main structure, prefabrication of the interior and prefabrication of the whole building.

While technical progress in prefabrication is still at a comparatively early stage and the technical merits of different systems used in the industrialized countries vary greatly, the problem now requiring a solution is essentially an economic one; how far can any system, which is technically sound, prove economical in practice and lead to the reduction in building cost.

Since at present the potential savings from prefabrication are to be found in labour and not material costs, the first real steps forward in the analysis of the economics of prefabrication was to determine the proportion of wages to total building costs represented by the main structure.

The reduction in construction time on site with the use of prefabrication can be as much as 20 to 30 per cent for the main structure; 20 to 60 per cent for the interior, and for complete houses up to 90 per cent. Against these gains must be set the increase in factory man-hour and in overhead cost. So far, few precise data are available.

Whatever part of a house is to be prefabricated or whatever system is used, far too little attention has been given to the appropriate scale of operation and the need for continuity. It is apparent that the amount of investment required in prefabrication is in general substantially larger than in conventional construction. The amount of investment need not be very large,

but nevertheless financial difficulties appear to have accounted for the failure of many technically promising systems. The raising of capital and its amortization depends primarily on obtaining orders of adequate size and sufficient continuity. It is surprising that more attention has not been paid to this factor, particularly in view of the emphasis given to prefabrication on the part of public authorities.

It is a safe general proposition to say that, as a matter of policy, the countries of the region are under no compulsion to economize on labour. The developed countries from which the developing countries have borrowed the productivity concepts are short of labour; and labour is costly. In the building trade, the ratio of labour costs to the total construction cost of a finished house is 30 to 40 per cent in the developed countries. It is 10 to 25 per cent in some of the countries in the region. A reduction in labour cost of, say, 10 per cent means a reduction in total cost of 1 to 2 per cent. This, therefore, is not the line of economy in building industry in the region. Probably, training techniques in handling building materials will pay more than any other productivity techniques.

Another important point worth discussing is that in the developed countries, roughly 10 per cent of the cost of the finished house is accounted for by planning, designing, organizing, supervising, etc. In the Middle East, this cost is around one per cent and, in any case, not more than five per cent. This is an important factor as well as the willingness to spend liberally on items which are really productivity-raising factors. The costs are high, because the region has not yet learned to value properly the services of the planning, architect and the organizing engineers. At the same time, the system allows terrific leakages through the contractor system. Society pays, but does not pay openly and properly for items of work, which alone can make a marked contribution to enhanced productivity.

1. Pre-requisites of industrialized housing

If one first considers the production of building materials and components, it will be apparent that they conform to the conventional pattern of other mass-produced industrial goods, i.e. that they are manufactured before they are sold. Market conditions or centrally-planned demand determines the length of time over which the same products can be manufactured and used. It is, therefore, assumed that building material and components have already reached, in certain countries of the region, a high degree of industrialization, which is itself the result of a long development process including research, laboratory testing, etc.

On the other hand, one characteristic of that sort of building process, which is concerned with the assembly of building materials and components, is that the product is almost always produced after it is actually sold. Therefore, the importance of a continuous demand for building as an essential condition for a rapid development of the building process should be recognised.

The above process is, of course, accelerated if the total demand for building material and components is not only steady but also concentrated on a limited number of types, both in terms of quality and dimension. In the countries of this region, the impact of technological and organisational change experienced in the developed countries has been disparate. Some building material industries are modern, mechanized and produce items of standardised quality and specification; others are traditional, hand operated and produce items of unreliable quality and irregular specification. Often, the problem posed by poor and irregular material together with the unsuitability of imported architectural designs and plans, the instant decrepit is thus not uncommon in the capital and other urban centres of these countries. In the early stages of a country's development, the demand for building material and some components is met, to a large extent, by imports from other countries. This has led to the use of numerous patterns, sizes and scales of one and the same material or component. Recently attempts have been made by the Organization of Arab Engineers to lay down adequate rules and regulations concerning the standardization of products. Committees have been set up to

accept definition with regard to dimension, composition, quality, performance, methods of manufacture and testing of various products. Although an effective and practical use of modular standardization is of ultimate importance, ideally it should be viewed with due regard to the special circumstances which govern the development efforts in the region. No doubt, standardization and the introduction of norms for the manufacturing of building materials will improve efficiency of construction in general, it must be realized that the existence of the great number of small workshops using improvised and often manual production methods makes the application of norms and standards difficult. Yet, because of their continued important role in supplying the local demand, attention should be given to the improvement of production methods at these small establishments and thus furthering the utilization of local material which could assist greatly in an accelerated housing production.

Another important factor to be considered in introducing industrial methods in building is the state of the transport network. Transport forms an integral and important part of the building production process. The main problem today in many countries of the area is not the availability of building materials, nor the cost of extracting or processing them, but the cost of transport. Transport cost constitutes an important part of the building materials final cost on site.

Irrespective of how one defines economic prosperity, it is easy to see that today, invariably, nations which enjoy a high standard of living have at their disposal large and varied transportation systems, while nations which are poor are characterized by strong barriers to mobility. A brief glance at the table below shows clear evidence of the strong relationship between mobility and prosperity. In spite of the tremendous strides made in the transportation systems of the six countries in the UNEBOB region, the transportation gap, between them and the rich nations, continues to be wide.

Table 19

Transport and income characteristic of selected countries, 1968

Country	Road network	Population (mill.)	Km. of road network per sq. km. of area	Km. of road network per capita	National per capita income (US \$)
Belgium	92,000	9.6	3.00	9.6	1,696
Denmark	62,000	11.9	1.43	12.7	1,960
Italy	284,000	53.6	0.94	5.4	1,149
U.S.A.	5,900,000	201.1	0.63	29.5	3,578
Sweden	172,000	7.9	0.42	22.0	2,905
India	900,000	523.9	0.28	1.7	73 (1967)
Lebanon	7,000	2.6	0.69	2.7	448
Iraq	18,000	8.6	0.04	2.1	228 (1967)
Jordan	3,000	2.0	0.032	1.5	249 (1967)
Syria	9,700	5.3	0.075	1.8	214
Saudi Arabia	9,400	2.1	0.004	1.3	336
Kuwait	1,520	.54	0.086	2.7	3,474

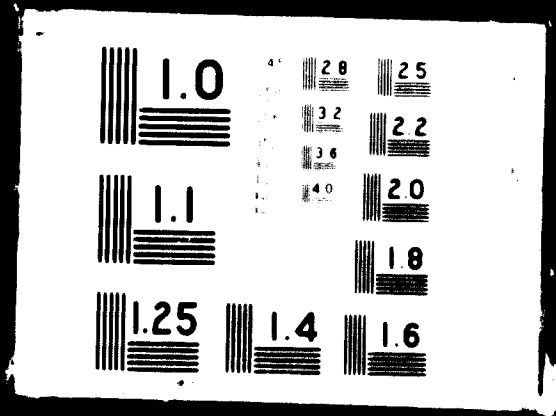
It is clear that the relationship between transportation and economic development cannot be over-emphasized, and it could be a polemic exercise to attempt to establish whether it is economic activity that creates the need for transportation or whether it is the availability of a transportation system that moves economic development. The relationship is reciprocal: in some situations, transportation is a major factor in development, and in others, it is merely a requirement. However, the economic implications of poor transportation are many regarding the industrialization of buildings. Shortages, poor designs, inaccessibility of roads in most countries of the region and transportation costs could isolate the prefabricated products from their potential markets because building materials and components are often heavy and bulky and sometimes require very sophisticated trucks for transportation over long distances. Transport costs will, therefore, constitute an important part of



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their final cost on site. Apparently, savings in this field can be achieved only through the reduction of the bulkiness and weight of the materials, the shortening of transport distances, or an improvement in transport facilities, or a combination of all these measures.

Other factors to be studied carefully, when introducing industrial methods in a given situation, are the standards of the technical personnel and operatives available, the shortage or excess of manpower, the materials which are available in the country and those which must be imported, and whether building activities are sufficiently concentrated to allow further development of the building industry.

Regarding the standard of the technical personnel in the region, Iraq, Lebanon and Syria and, to a certain extent, Jordan have had the training for the building professions and the number of graduates with technical education is very often adequate to meet current demand in the building industry. In the above-mentioned countries, the building industry is relatively well organized, both in terms of employers and labour organization, especially in the major urban centres.

As for the other countries in the region, there is a wide range of situations and conditions for the development of the building industry. However, with the countries in the latter category, the obvious source of skilled labour is foreign workers. Almost all expatriate skilled labour is recruited from the Arab countries of the first category, namely Iraq, Jordan, Lebanon and Syria. In the countries of the region and particularly the less developed ones, high priority must be given to the setting up of local vocational training centres and concerted efforts must be devoted to imparting the necessary skill to the large masses of recently-urbanized population, with a view to rapidly improving the productivity of even the simplest manual operation. At a higher level, intensive programmes of training for the building professions must be undertaken, not only in the technical field but also in those related and long-term building programmes and the management and maintenance of the building stock. There are even

greater shortages of professional and managerial skills which constitute obstacles to industrial development.

2. Analytical evaluation of prefabrication

It must be realized that although prefabrication has not yet shown its full promise, the impact of the technological and industrial progress has begun to manifest its potential and unlimited rewards in the building sector at large. These are some of the rewards:

- a) Precision engineering due to factory-controlled conditions. Thus, prefabrication can meet accurately any specified standard and specification.
- b) Mass production results in volume saving which is, in turn, passed on to the consumer.
- c) Substantial saving in labour material and efforts.
- d) Definite earnings in time of construction directly affords earlier occupancy which is rewarding in terms of rentals and time.
- e) Better workmanship and superior execution is gained.
- f) Minimum wall and roof thicknesses reduces load hence reduced columns and foundation cross-section.
- g) Minimum field assembly and saving on labour and trade union problems.
- h) Erection in all weather.
- i) Minimum scaffolding required.
- j) Standardized components are easy to maintain and replace if necessary at minimum cost since factories stock replacements, as car manufacturers, guarantee an inventory of spare parts.

Theoretically, prefabricated structures can be dismantled and their components are re-used in the erection of a new structure somewhere else.

Due to the above-mentioned factors, the depreciation element in evaluating the value of a structure over a number of years can be radically eliminated or appreciably minimized. Thus, the value of a structure can economically be counted upon as a stable capital, which has its economic and fiscal consequences.

On the other hand, prefabrication has initiated some unavoidable - though by no means unsurmountable - problems. Generally, they can be summarized as follows:

- a) Imaginative designs cannot be easily executed by standardized components.
- b) Interior organization in housing blocks is inherently limited by structural interior partitions - a hindrance to maximum flexibility.
- c) Repetition of prefabricated structures in the same vicinity may result in certain monotony and dullness. Attempts of innovation by using a variety of units, shapes, textures, colours, landscape and modulation have partly reduced the "rubber stamp" architecture.
- d) Social ordinance and building code restrictions have, in some localities, discouraged the application of prefabrication. By the same token, promotion of such a method has not produced a thoroughly convincing argument.
- e) Trade unions have boycotted construction in sites where prefabrication was thoroughly used. Certain delays have resulted in many cases where automation has increased lay-offs.
- f) The romanticists of the highly individualistic patrons would not find their answers - and will not for some time - in an industrialized product. Architecture still remains a very personal thing; many physical as well as psychological questions are involved.
- g) Small jobs located at inaccessible areas might not be economically served by the total industrialization of building due to the transportation problems. On the other hand, on the site, plant will not be economically justifiable either. This scope of projects, however, represents a vital proportion of the building industry in terms of budget and size. It is an essential problem which requires an appropriate answer on the part of the industry.

- b) Although prefabrication had been used as a swift and appropriate answer to the desperate housing situation in Europe, particularly after the Second World War, it must also be remembered that the industrialisation of man's physical environment should not put the machine in his control. Man must manipulate the product of his machines to serve his physical as well as psychological needs.

VIII. CONCLUSIONS

From what has been previously said in this paper one can safely conclude that an increasing demand for better and cheaper housing will stem, throughout the region, from the increasing population growth and rapid urbanization. Although new inventions, techniques, mechanization and automation are being adopted in other fields of productive activity, housing production unfortunately continues to lag behind. Also the cost of housing, as compared to the limited financial resources in the majority of the countries of the region, remains very high. This has resulted in acute shortage and ultimately in the growth of unhealthy slums.

In the absence of organized efforts at housing construction, it is indeed difficult to introduce new and cheaper techniques on a larger scale in this area of development. The bulk of housing construction is done in an unorganized manner upon structural concepts, by private citizens - villages as well as townsfolk - and developers according to tradition and time. Even in the UNESOB region, a small percentage of the total housing construction is done by professional designers or developers. In this context, the introduction of new housing techniques and low-cost housing development schemes becomes a national concern for the countries.

In order to be able to cope with the housing situation, which is overwhelming in sheer proportion, co-ordinated research work, demonstration of practical designs, standardization, proper use of material, new technical innovation, improved planning, etc. are resorted to.

The two principal components of housing cost are the cost of land and the cost of construction. With increasing urbanization, the price of land relentlessly moves up, and, at a certain level in land price, it becomes economical to construct high-rise multi-storey apartment houses, rather than single-storey buildings, as it is being practiced in this region, in spite of the fact that pre-unit space cost in multi-storey houses is comparatively high. Fortunately, in the countries under review, except for Lebanon and Jordan, land for low-cost housing is generally available at free or at low cost. The governments play an important role in providing low-cost land for such purposes since most of the land surrounding the urban centres is

publicly owned. Privately-owned land is also available at low cost but at a further distance from the centre of the cities. The cost of privately-owned land decreases as the distance from the city centre increases. In Iraq and Syria the government provides land for co-operative housing organisations at a very nominal cost. In Kuwait, Qatar and most of the Gulf States, the government distributes land even free of charge.

The cost of construction is again subdivided into cost of labour and cost of material. As has been discussed earlier, the cost of labour in the region averages about 30 to 40 per cent of the total cost of construction, the cost of material being 60 to 70 per cent. So, it is all the more important in the region to begin with introducing such housing concepts as would assure reduction in the consumption of structural materials. Moreover, any reduction in the consumption of materials directly reduces the cost of labour and this can be achieved by introducing better design concepts and new structural techniques.

It is widely recognized that prefabrication has proved to be the most satisfactory method for reducing the consumption of structural materials and consequently the cost of materials. Prefabrication does not necessarily mean mechanization or mass production nor, for that matter, the installation of expensive equipment. On the other hand, there is no reason to rule out all this if economically desirable or feasible.

Large scale mechanized prefabrication industry will be premature at the present stage of housing efforts in the region. Partial prefabrication or a simple style of prefabrication, without the use of expensive equipment or mechanization, is the need of the countries of the UNESOB region.

ANNEX I

IRAQ

(million dinars: at market prices of 1966)

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
A) Gross fixed capital formation in dwellings	27.0	25.0	22.4	24.5	28.1	29.1	23.9	28.5
B) Gross fixed capital formation in non-residential buildings	21.2	20.3	22.9	34.3	19.9	15.5	18.9	19.2
C) Total gross fixed capital formation	143.6	123.3	119.9	144.7	136.5	144.7	149.0	151.9
D) Gross domestic product (at factor cost of 1965)	644.7	680.9	669.9	745.5	842.2	888.2	857.0	975.1
E) A as percentage of C	18.8	20.3	18.7	16.9	20.6	20.1	16.0	18.8
F) A as percentage of D	4.2	3.7	3.3	3.3	3.3	3.3	2.8	2.9
G) B as percentage of C	14.8	16.5	19.1	23.7	14.6	10.7	12.7	12.6
H) B as percentage of D	3.3	3.0	3.4	4.6	2.4	1.7	2.2	2.0
I) C as percentage of D	22.3	18.1	17.9	19.4	16.2	16.3	17.4	15.6

Source: UN Yearbook of National Accounts Statistics, 1969, Vol. I pp. 325-326

ANNEX II

JORDAN

(million dinars at current market prices of 1966)

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
A) Gross fixed capital formation in dwellings	5.2	6.5	7.6	7.7	7.4	6.0	4.1	8.0
B) gross fixed capital formation in non-residential buildings	1.1	0.9	1.5	1.3	1.4	1.5	1.0	1.2
C) Total gross fixed capital formation	17.0	22.0	20.0	18.8	23.9	27.7	26.5	30.0
D) Gross domestic product (at current factor cost)	110.9	108.6	117.7	135.5	150.9	149.6	177.1	168.5
E) A as percentage of C	30.6	29.5	38.0	41.0	31.0	21.7	15.5	26.7
F) A as percentage of D	4.7	6.0	6.4	5.7	4.9	4.0	2.3	4.7
G) B as percentage of C	6.5	4.1	7.5	6.9	5.8	5.4	3.8	4.0
H) B as percentage of D	1.0	0.8	1.3	1.0	0.9	1.0	0.6	0.7
I) C as percentage of D	15.3	20.2	17.0	13.9	15.8	18.5	15.0	17.8

Source: UN Yearbook of National Accounts Statistics, 1969, Vol. I p. 390.

ANNEX III

LEBANON

(million LL: at current market prices of 1966)

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
A) Gross fixed capital formation in dwellings	459	516	593	503	495
B) Gross fixed capital formation in non-residential buildings					
C) Total gross fixed capital formation	697	779	889	759	-
D) Gross domestic product (at current market prices)	3,200	3,523	3,867	3,820	-
E) (A and B) as percentage of C	65.8	66.2	66.7	66.3	-
F) (A and B) as percentage of D	14.3	14.6	15.3	13.2	-
G) C as percentage of D	21.8	22.1	23.0	19.9	-

Source: UN Yearbook of National Accounts Statistics, 1969, Vol. I, p. 418.

ANNEX IV

SYRIA

(syrian pounds: at market prices of 1963)

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
A) Fixed capital formation in dwellings	84	176	131	127	104	117	91	150
B) Fixed capital formation in non-residential buildings	71	68	60	65	-	64	53	55
C) Gross total fixed capital formation	488	654	639	616	586	702	809	834
D) National income	2,667	3,377	3,115	3,289	3,141	3,435	3,737	4,052
E) A as percentage of C	17.2	26.9	20.5	20.6	17.7	16.7	11.2	18.0
F) A as percentage of D	3.1	5.2	4.2	3.9	3.3	3.4	2.4	3.7
G) B as percentage of C	14.5	10.4	9.4	10.5	-	9.1	6.5	6.6
H) B as percentage of D	2.7	2.0	1.9	2.0	-	1.9	1.4	1.3
I) C as percentage of D	18.3	19.4	20.5	18.7	18.6	20.4	21.6	20.6

Source: UN Yearbook of National Accounts Statistics, 1969 Vol. I p.690.

ANNEX V

Total value of imports of building materials (thousand. US\$)

<u>Country/Year</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Iraq	74,534	83,201	58,755	58,660	60,021	-
Jordan	14,017	16,108	17,790	13,286	18,003	-
Kuwait	57,742	73,089	109,141	90,622	92,479	-
Bahrain	-	5,443	5,090	4,826	4,878	13,925
Qatar	-	-	4,710	6,205	-	-
Abu Dhabi	-	-	4,570	10,248	-	-
Dubai	-	-	8,799	15,527	-	-

ANNEX VI

Iraq: Average annual wholesale prices of building materials (in US\$). Indexed.
1965 - 1970

<u>Item</u>	<u>Unit</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Cement (local)	ton	18.62	19.01	19.32	19.25	19.32	19.32
Stone white bricks	1,000	14.56	14.56	14.56	10.58	11.57	11.82
Pinewood (Rumanian)	m ³	68.12	65.11	68.12	79.07	82.95	90.10
Iron bars (Different sizes)	ton	122.40	114.64	117.52	131.61	135.46	181.12
Plate glass (3mm.)	m ²	1.09	1.09	1.18	1.58	1.55	1.62

Source: Iraq: Statistical Abstracts.

ANNEX VII

Jordan: Average annual wholesale prices of building materials,
Amman (in JED), 1965-70

<u>Items</u>	<u>Unit</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Cement (local)	ton	24.64	24.36	27.44	27.44	28.28	29.96
Iron bars (8 mm.)	ton	140.28	148.12	143.36	149.80	180.88	226.52
White wood	m ³	67.48	71.96	73.08	73.92	78.12	92.68
Glass (window, 5mm.)	m ²	8.40	8.40	4.76	4.20	3.36	4.48
Galvanized tube	m	0.42	0.42	0.42	0.56	0.56	0.56
Slay drainage tube	m	0.87	1.04	1.09	1.12	0.84	0.84

Source: Jordan: Statistical Yearbooks

ANNEX VIII

Kuwait: Average wholesale prices of building materials (in US\$),
Kuwait, 1965-68

<u>Item</u>	<u>Unit</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Common white bricks	1,000	...	46.20	46.20	47.60
Iron bars(round Belgium)	ton	112.00	114.80	116.20	116.20
Iron black sheets	ton	161.00	161.00	161.00	152.00

Source: Kuwait: Statistical Abstracts.

ANNEX IX

Lebanon: Average annual wholesale prices of Building Materials
(in US\$), Beirut 1965-70

<u>Items</u>	<u>Unit</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Cement (local)	ton	18.67	18.46	13.46	18.46	18.46	18.30
Cement blocks	1,000	43.10	43.10	43.10	43.10	45.10	50.70
White wood	m ³	55.34	57.11	57.80	56.91	68.70	76.86
Iron rods (12 mm.)	ton	94.72	97.30	101.88	100.77	134.06	153.80
Glass (window)	m ²	1.23	1.23	1.23	1.28	1.31	1.34

Source: Lebanon: Statistical yearbooks.

ANNEX X

Saudi Arabia: Average annual wholesale prices of building materials
(in US\$), Jeddah, 1965-69

<u>Item</u>	<u>Unit</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Cement (local)	100 sacks	110.82	115.54	122.21	121.28	119.99
Cement (imported)	100 sacks	117.90	121.10	140.08	156.37	155.85
Reinforced bars	ton	124.01	119.20	123.07	122.41	121.28
Bricks	1,000	14.99	15.55	16.94	18.42	19.74
White wood	m ³	56.44	56.56	62.79	70.36	70.28
Glass (glazed)	28 metre	35.55	44.19	58.57	53.61	56.28
Glass (plain)	23 metre	24.72	31.16	43.42	41.73	41.01

Source: Saudi Arabia: Wholesale Price Index, 1962/63 - 1968/69 A.H.

ANNEX XI

Syria: Average annual wholesale prices of Building materials (in US\$),
Lamascus, 1965-70

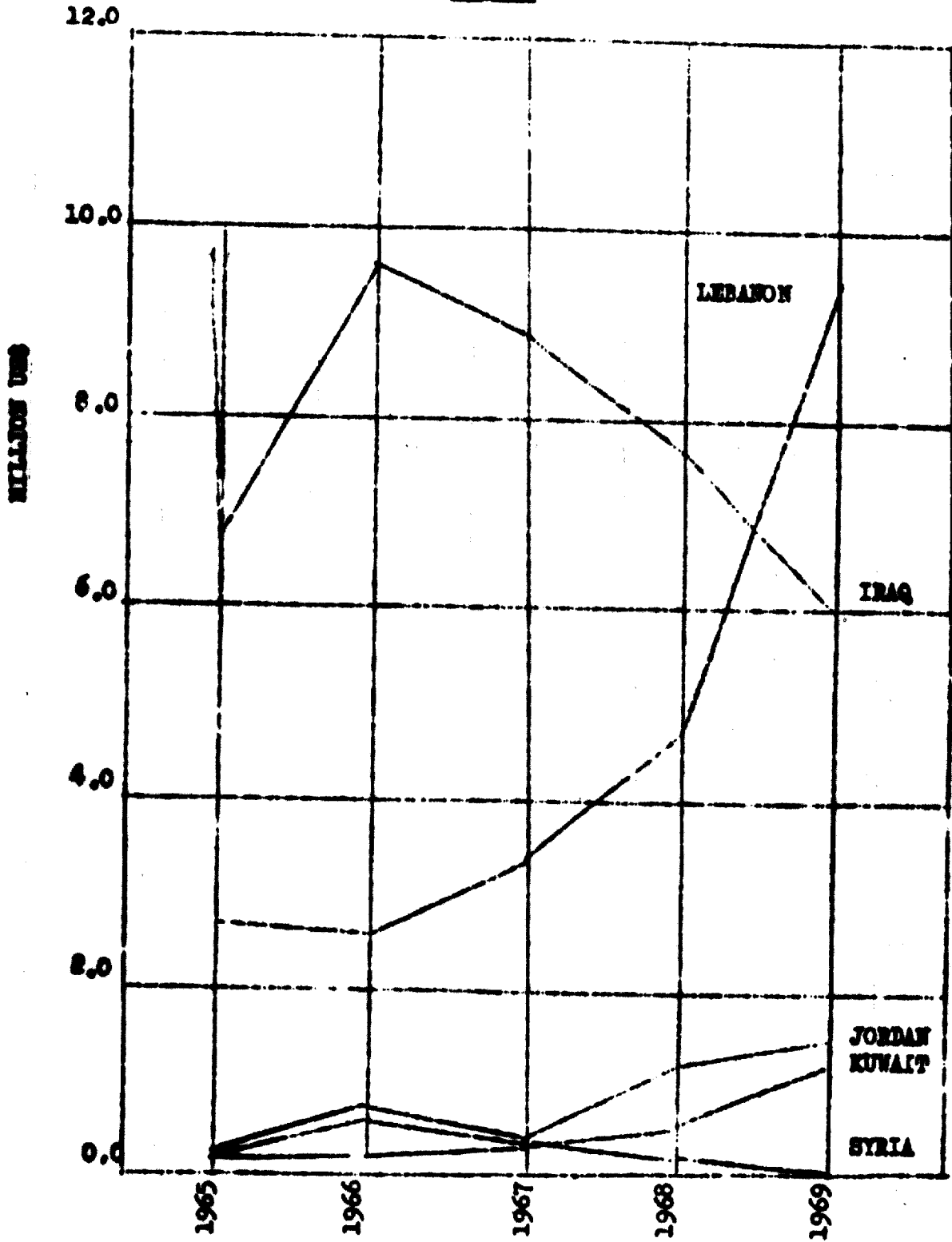
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Cement (local)	ton	20.15	20.15	20.94	20.94	20.94	21.19
Cement (imported)	ton	71.18	71.97	71.97	57.57	57.57	56.53
Timber (Rumanian)	m ³	73.80	78.25	71.51	78.51	83.74	101.54
Timber (Swedish)	m ³	84.27	87.15	87.67	86.36	88.98	106.77
Iron bars (round)	ton	139.75	148.12	142.63	157.02	150.74	235.79
Concrete blocks (20 x 40)	1,000	104.70	99.40	94.20	107.30	117.80	143.90
Glass sheets (3mm.)	m ²	1.44	1.44	1.47	1.50	1.50	1.34

Source: Syria: Statistical yearbooks.

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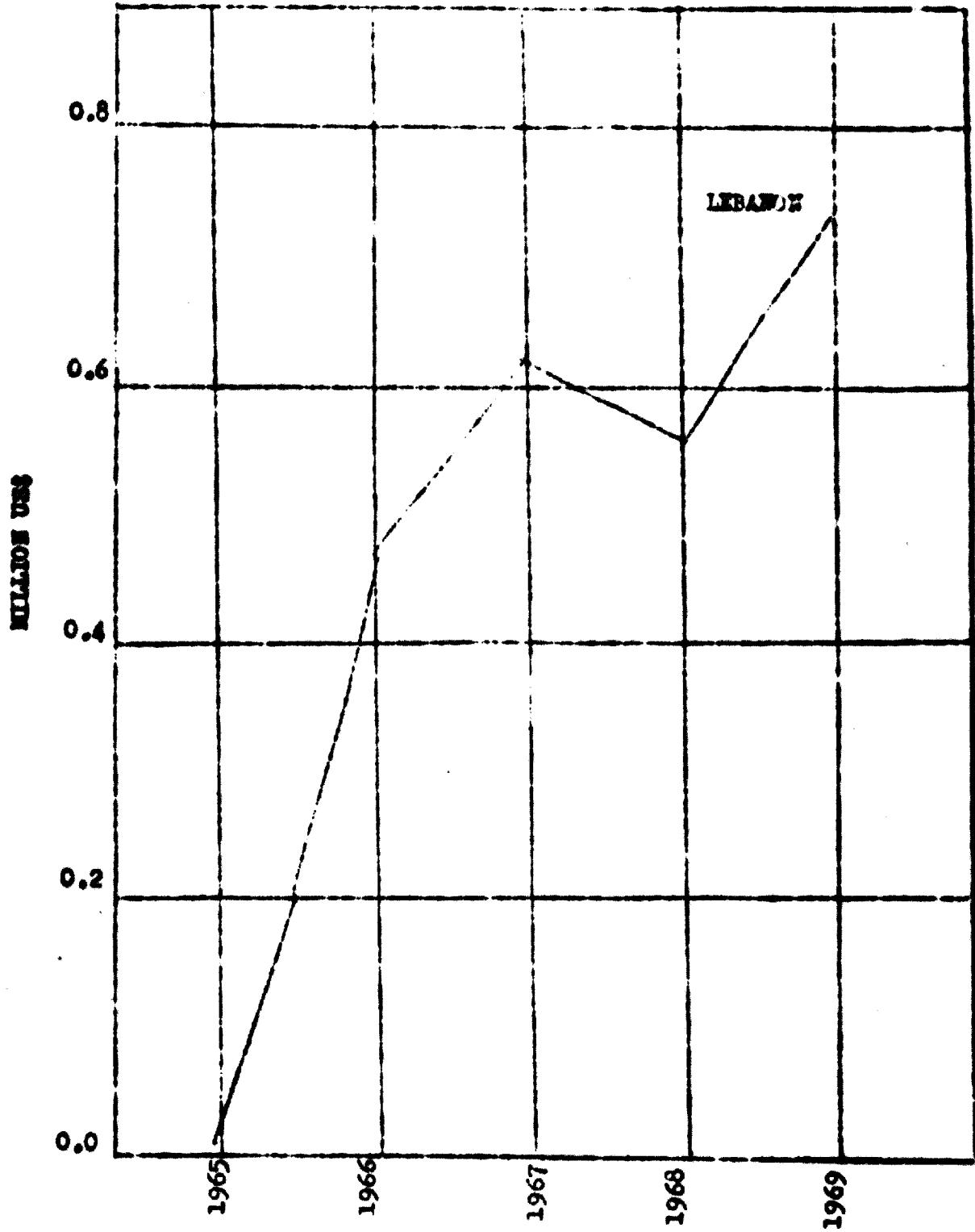
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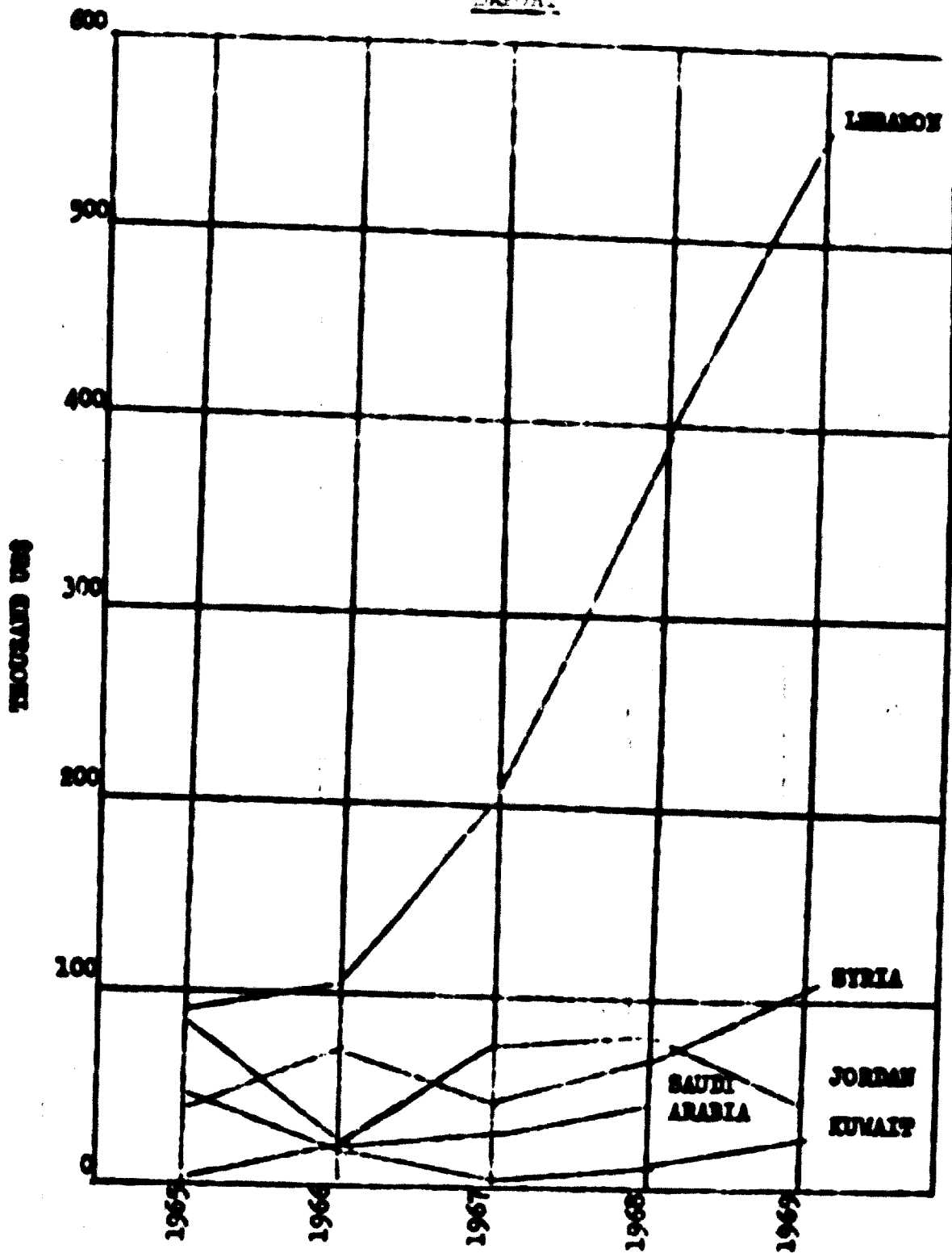
II

LINE & LIFE PRODUCTS

EXPORT



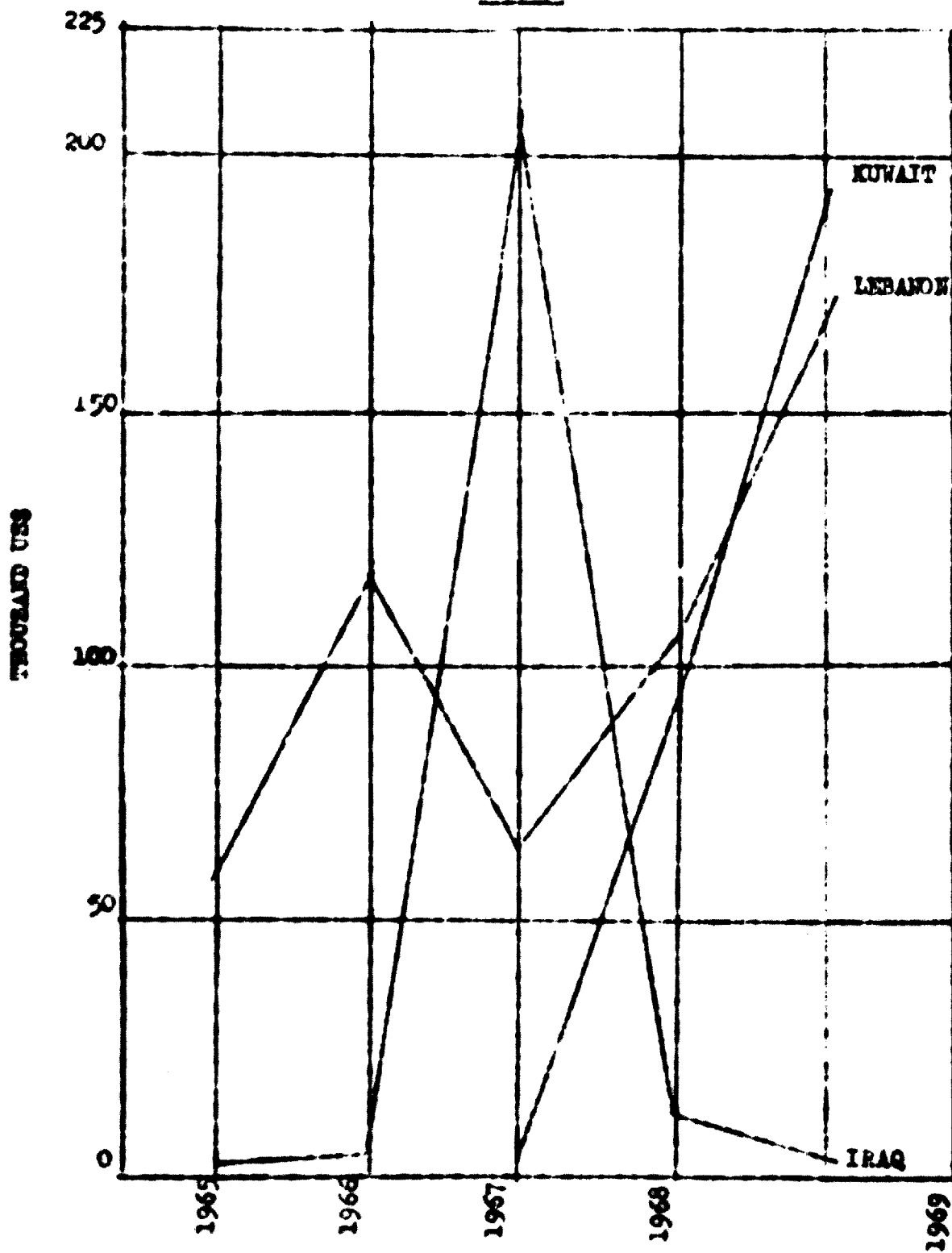
III
STATES & AGGREGATE
EXPORT



IV

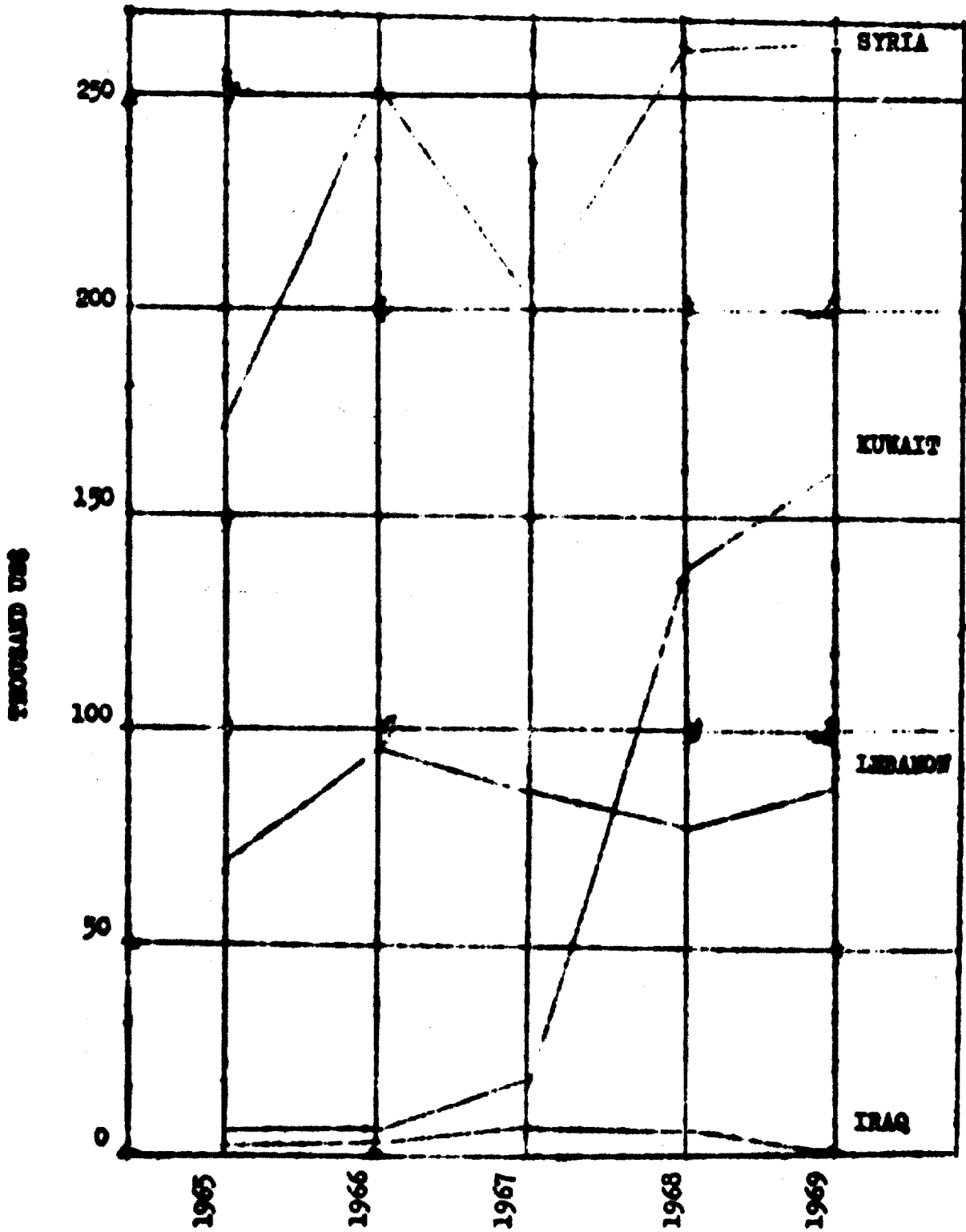
CLAY & CLAY PRODUCTS

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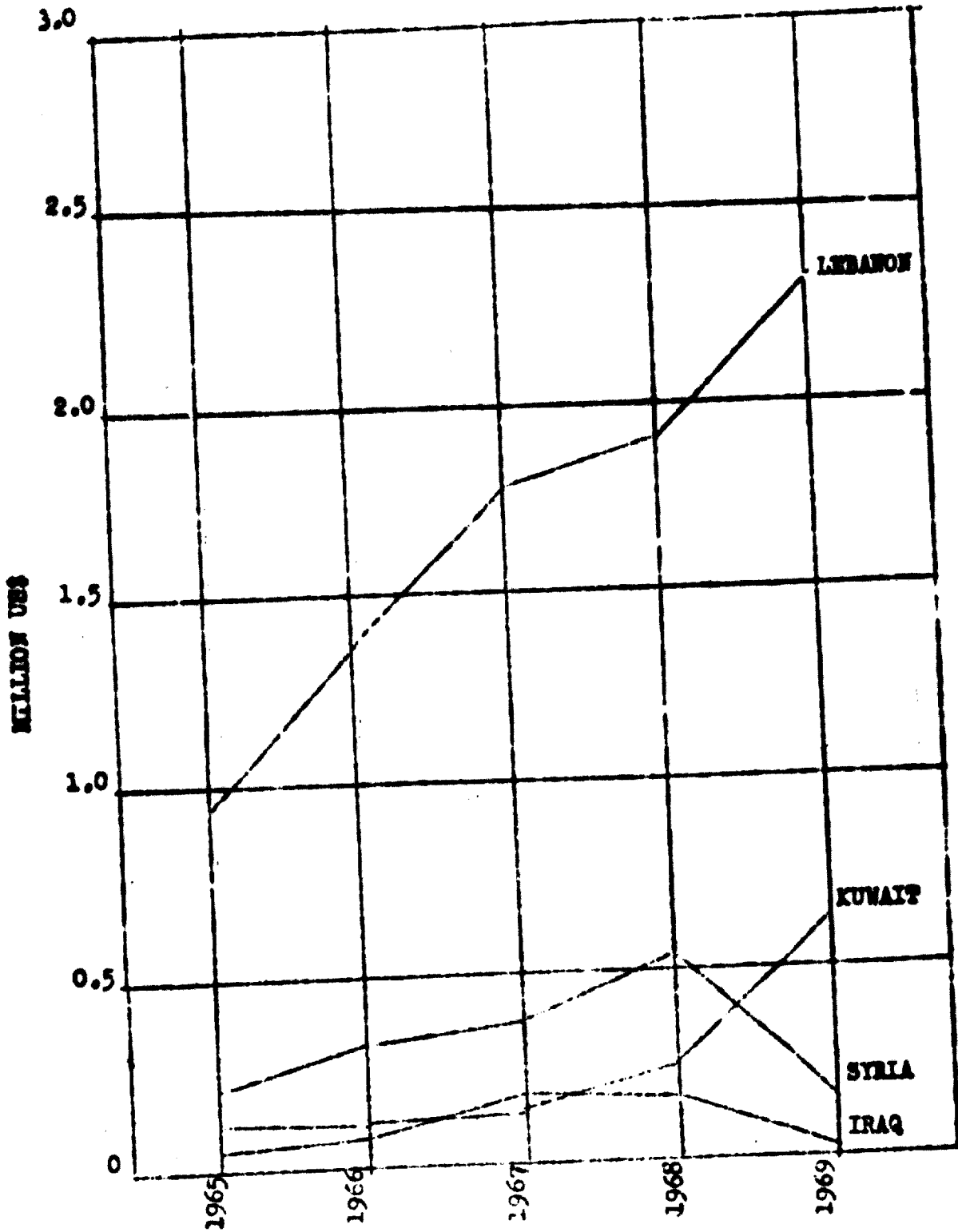


V

GLASS & GLASS PRODUCTS
EXPORT



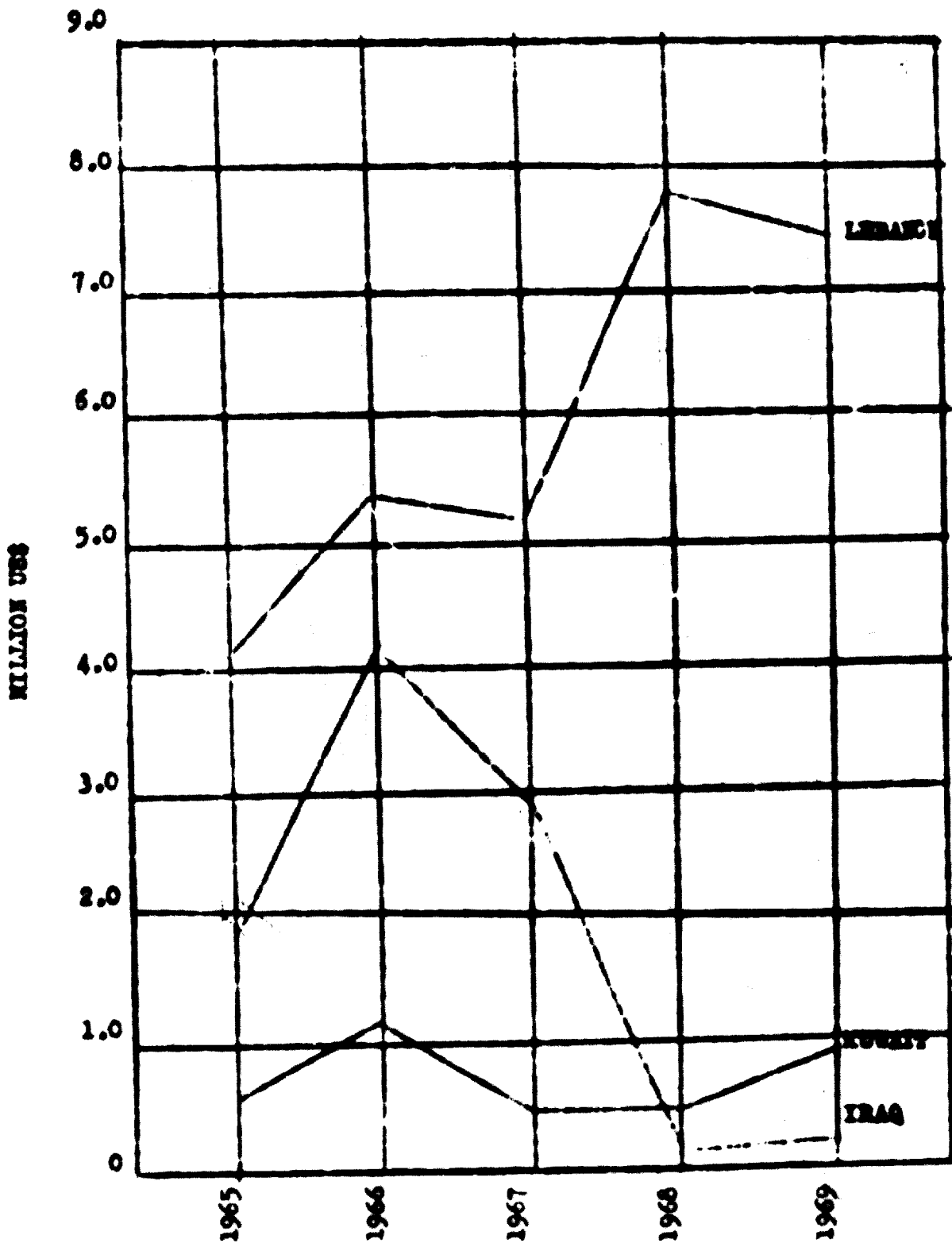
VI
WOOD & WOOD BASED PRODUCTS
EXPORT



VII

METAL BUILDING MATERIALS & PRODUCTS

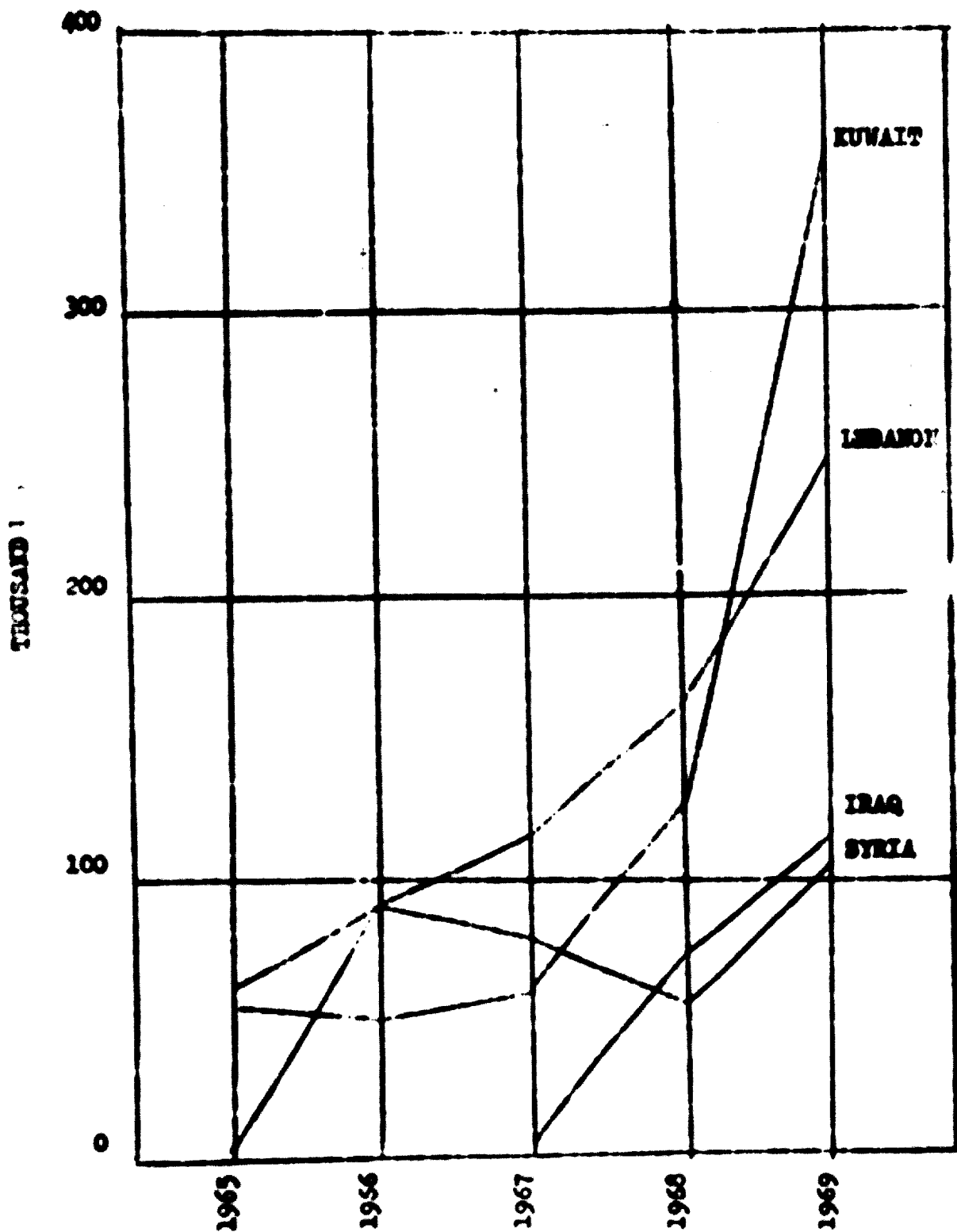
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VIII

SANITARY FIXTURES & FITTINGS

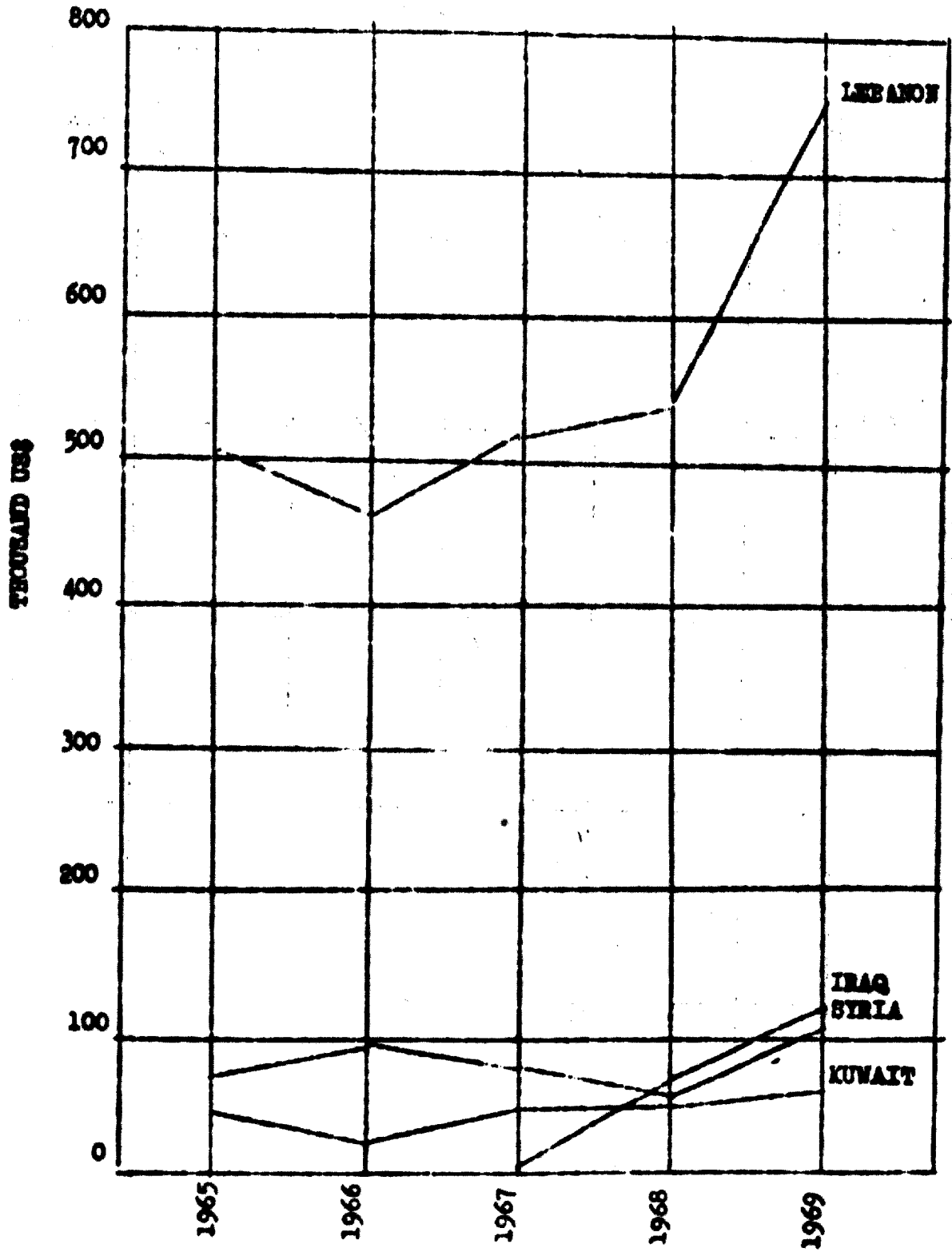
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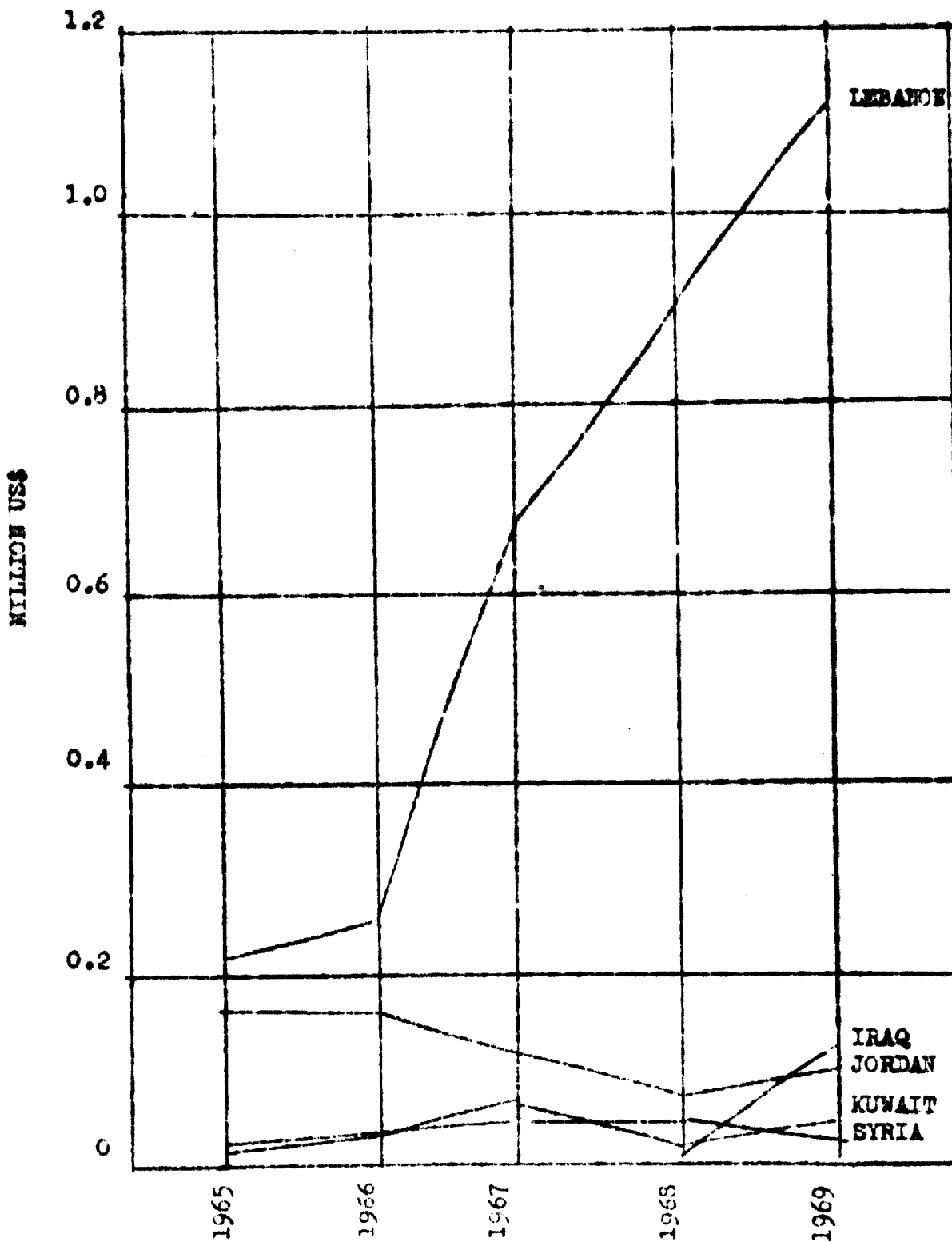
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LIGHTING & ELECTRICAL APPLIANCES

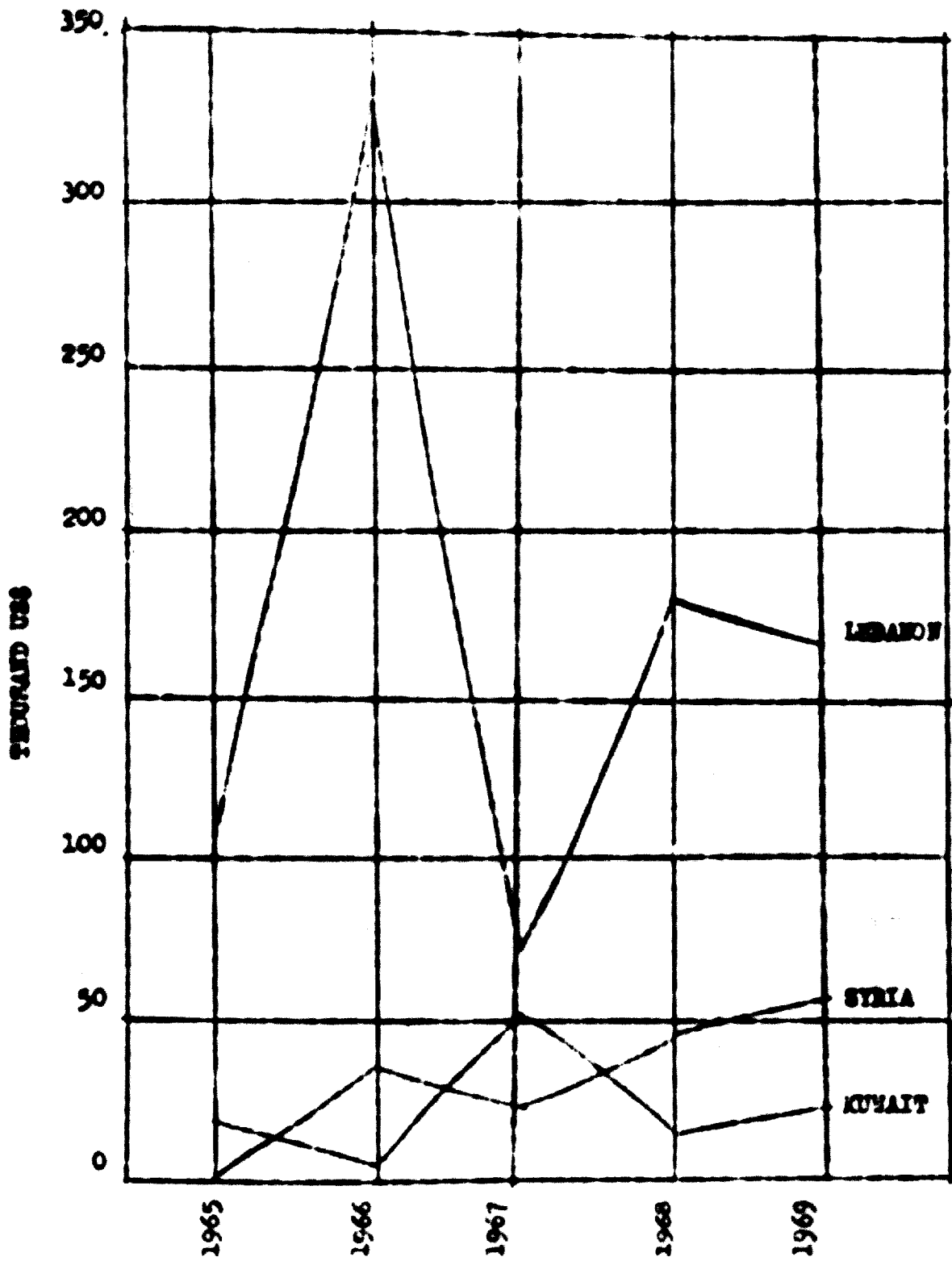
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X
PLASTICS & PLASTICS PRODUCTS
EXPORT



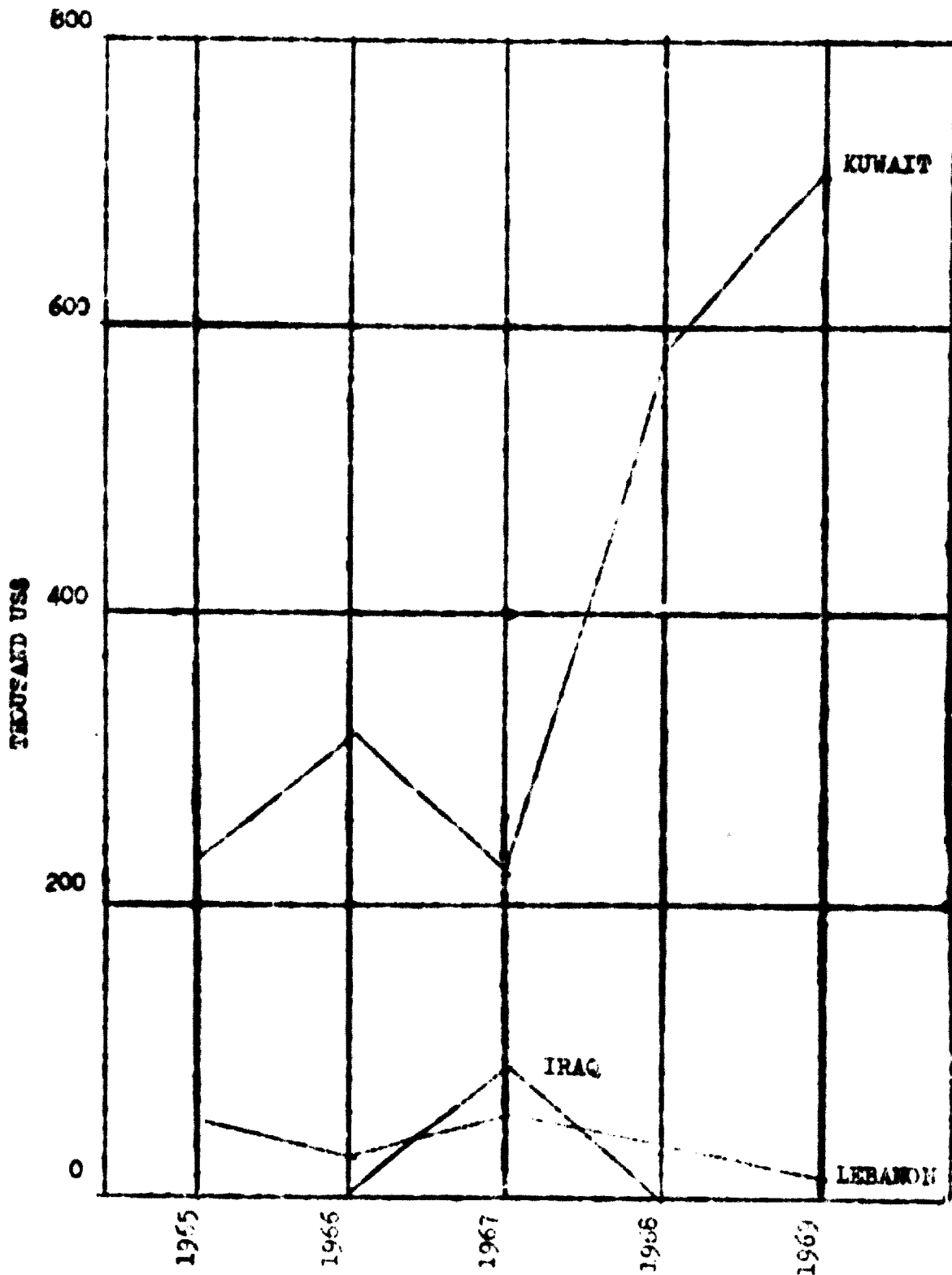
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KUWAIT & RUBBER PRODUCTS
EXPORT



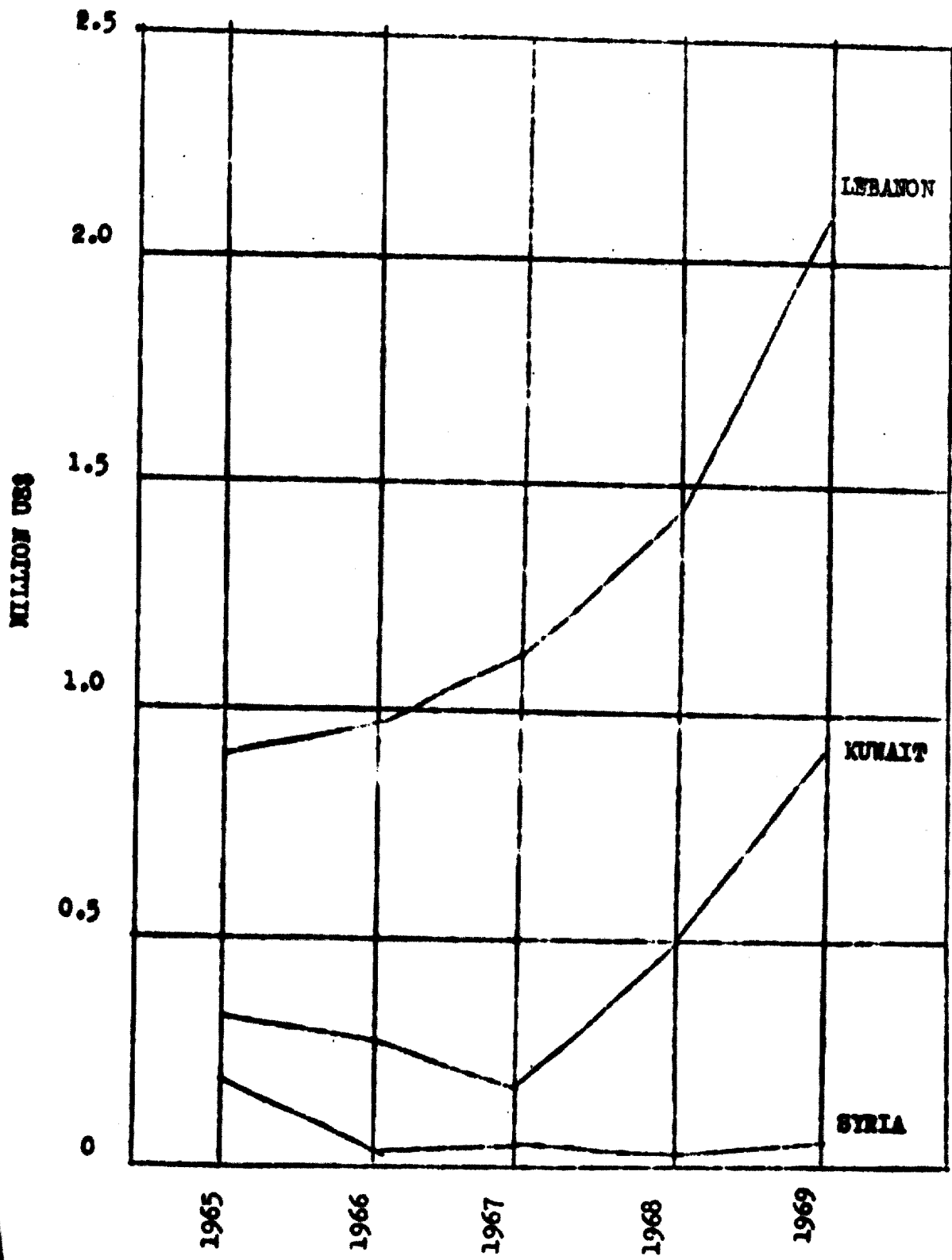
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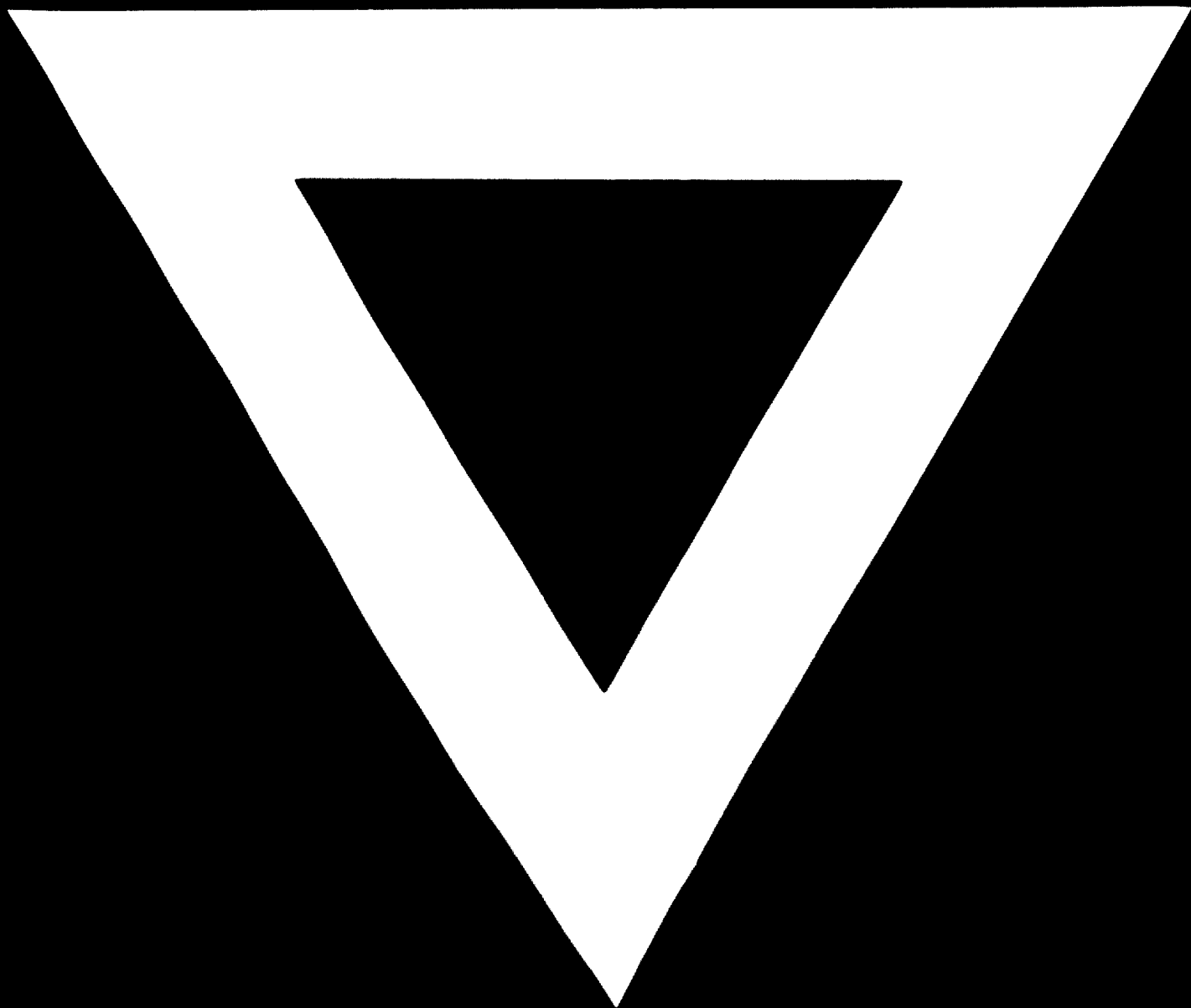
BUILDING FITTINGS & TEXTURES

EXPORT



XIII
MISCELLANEOUS
EXPORT





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