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CHANGES IN THE INDUSTRIAL GEOGRAPHY OF LIBYA 1970-1980

The paper deals with industrial structure and factors of location underlying the regional distribution pattern in Libya, as well as the industrial changes during the period 1971-1980, a subject that has hitherto not been given much attention in Libya.

Industry in Libya until the 1960's was limited in scope and production. There were traditional or cottage industries such as weaving, carpet making and rug weaving using hand looms, leatherwork, copperware, metal work, wood and mat making, which produced various articles for home consumption. Production was carried on chiefly in bazaars, where retailing also took place[1]. Modern industry has only been introduced in recent years. During the Italian period (1911-1942) some small modern establishments controlled by Italians were introduced, but most of them were destroyed during the Second World War.

Libyan industry was still confined to producing light consumer goods for local demand and service trade such as repairing vehicles and appliances. Moreover, it can be inferred from statistics that industry was in 1969 still at a primitive stage even through its contribution to GDP was almost half of the output contributed by the agriculture sector[2]. This may be explained by the widespread backwardness of the Libyan economy prior to the discovrey of the oil and the limitation of knowledge of modern technology, about 90 percent of the population being illiterate[3]. Although more than 80 percent of the inhabitants depended basically for their livelihood on agriculture and animal husbandry which were beset with extraordinary difficulties such as the inadequacy and unpredictability of rainfall, tribal ownership and tenure of land.[4]

Accordingly, the country had to depend largely on imported goods. During the period 1964-1970, the introduction of the manufacturing industry was somewhat greater than before but in general its growth was still limited. In this period the number of industrial workers increased by about 81 percent.[5]

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(1) El-Mehdawi, M., «The Industrialization of Libya», in Clarke, I.J. and Bone-Jones, H. (ed) *Change and Development in Middle East.* London, Methven, 1981, p. 253.

(2) Mazig, A.M., «The Contribution of Oil Industry to the Economic Development of Libya», *Ph.D. thesis,* Aston University, Birmingham. 1974, p. 65

(3) Murabet, M., *Facts about Libya,* Valletta, Malta Program Press 1964.

(4) Attiga, A., «The Economic Impact of Oil on Libyan Agriculture», In Paurose, E. (ed) *Agriculture and Economic Development,* London Frank Cass, 1973, p. 12.

(5) El-Mehdawi, M., «Modern Evolution of Manufacturing in Libya», *Bulletin of the Faculty of Arts,* Vol. 3, 1976, p. 11.

Realizing the need for manufactured goods, and in keeping with the new policy of the government since 1969, considerable attention has been focussed on developing the industrial sector. Investment in industrial establishments was encouraged in both the private and the public sector by means of tarif protection and the Real Estate Industrial Bank (R.E.I.B) and the establishment of new factories by the National Public Organization for Industrialization (N.P.O.I). The result was that the industrial sector gained during the 1970's in terms of its contribution to the GDP increasing from LD 36.2 million in 1972 to LD 148.7 million in 1978[1]. However, there is no doubt that the oil industry has exerted a marked influence on growth of manufacturing.

In 1980 industrial establishments employed about 39,321 workers which is reckoned to be 1.2 percent of the total population and about 7.9 prcent of the working population in various activities throughout the country. The study of industrial distribution offers a typical case of limited industrial concentration among industrial groups and industrial regions.

From Table 1, it can be seen that, food, building materials and chemicals are the most important industries actually employing about 60 percent of the total industrial work force.

This may be explained by the fact that these industries were mainly those which used raw materials to meet basic and immediate consumption needs and which do not require a high standard of skill or a large amount of capital. Moreover, food, soft drinks and tabacco dominate the industrial structure, employing about 27 percent of the work force. If we go into further details, cigrettes, soft drinks, dairy products, flour, sweets, fruit, juice, fish canning, posta and animal fodder are the main industries. Most of these industries are mainly dependent on local agriucltural products, or in some cases on raw materials which are imported, though they are obviously more economically produced locally.[2]

(1) Secretary of Planning, Libya, *Statistical Abstract*, Tripoli 1979, p. 227.
(2) El-Mehdawi, M., «The Industrialization of Libya», p. 256.

TABLE (1)
Distribution of Industrial Workers Among Industrial Groups 1980

Industrial groups	*No. of workers*	*Percentage (%)*
Food, soft drinks and tobacco	10,504	26.9
Textiles and carpets	2,463	6.3
Leather, shoes and clothes	3,313	8.5
Paper and printing	1,139	2.9
Wood and furniture	3,641	9.3
Chemicals	5,902	15.1
Building materials	6,975	17.9
Metalwork	4,819	12.3
Miscellaneous*	291	0.7

* Machinery and transportation repairs subtracted from this group.
Source: Secretary of Planning, *Final Result of Labour force Census* 1980, Tripoli 1981.

The building materials industry includes cement products, cement bricks, pipes and china and earthenware, while the chemical industry mainly comprises petroleum refineries, gas, batteries, plastic, rubber products, paints and polish, matches, soap, perfume and frtilizer. However, besides the local raw materials, there are a number of semifinished commodities, such as wheat, flour, fat, sugar, metal, aluminium, sheets, wood timber, cork, wool, artificial and natural spun silk, cotton, yarn and diestuffs.

New industries of many types have been introduced as we have seen from the local market, while traditional industries have either delined or assumed a new character. Some industries which are now well established have managed to improve on their final product considerably.

Figure 1 which indicates the distribution of the industrial workers among the regions (municipalities) in 1980, shows an uneven regional distribution. There is a marked concentration in certain localities, mainly in the northeast and northwest. As far as individual regions are concerned, Tripoli has the greatest proportion: nearly half the total industrial work force, which is more than that of any other region (in fact, more than seven times those of El-Zawia, Azizia, Misurata, and Homes regions) and about three times the Benghazi region which comprises the second main urban area after Tripoli. At the other extreme are the south and the central regions having a proportion rating less than 2 percent or 1/20 that of Tripoli region. It is clear from Figure 1 that the main regions of manufacturing activities in 1980 are Tripoli, Benghazi, El-Zawia, Misurata, Azizia, Ho-

mes and El-Fatah, with about 82 percent of the total industrial workers.

In interpreting the distribution of manufacturing certain basic and to some extent related influences must be mentioned at the outset. The influence of the environmental, historical, social and economic factors which have developed over the years.

The environmental contrast between the regions especially north and south is matched by the pattern of population distribution. North coastal representing about 5% of the area of Libya, has about 85 percent of the total population whilst the south a large area has only 15 percent of the population. Therefore, there is a significant relationship between the population concentration and the industrial location. The development of the country from the early conlonial period had its effect on the present patteern of settlements. The northern area, especially the northwest and northeast with its favourable resources and its coastal centres which were the main administrative seats, undoubtedly had priority in early development projects. Population and economic activities have been drawn mostly into the urban settlements in the north. The regions with the most industrial activity obviously are those with the major urban areas.

Furthermore, the figure shows there is a high degree of concentration of industry in Tripoli and Benghazi which is perhaps the most striking feature of the location of the industry in Libya in 1980. Various specific factors account for this concentration.

(1) Proximity to the market: since Tripoli and Benghazi contain such a large proportion of the population, the consumption and the demand in the two cities is inevitably greater than elsewhere. In 1973, population estimates indicated that the two areas had a population of about 800,000 inhabitants, making them by far the most significant centres of industrial production in Libya. A great proportion of the purchasing power is therefore concentrated in two citties. The high concentration in these two cities makes them economically the most active focal points and markets. The sizeable increase in population in the two cities and their expected future growth, was found to affect closely decisions concerning manufacturing location.

(2) Availability of workers: the number of workers available and the regularity of supply was a factor favouring location in the two cities. The supply of workers in the two cities arose from the high rate of population growth and migration from rural areas. The migration of the people from rural to urban centres has favourably affected the location of industry. According to the 1973 population census, there is a tendency for migration to take place from small towns to large cities, particularly, Tripoli and Benghazi. These two cities received about 72 percent of all migrants. Tripoli as expected experienced the largest gain with a total of about 114,000 inhabitants. Two-thirds of

its inhabitatns in 1974 were born in other regions.[1]

A further factor favouring the cities is the concentration there of a foreign work force. Foreign workers in Libyan industry account for about 46 percent of the total workers in manufacturing and more of two-thirds of them skilled. Industry requires a supply of consultants, scientist-technicians and administrators, who prefer living in cities, where comfortable facilities are available.

(3) Transportation: the two cities are favoured by a relatively better system of transport. They have good access to transportation routes especially the main roads. They are the main seaports in the country, so they enjoy a convenient linkage with the world ports and mainly the import of raw materials from overseas may facilitate easily at minimal cost.

(4) Power, except the pertochemical industries and some new manufacturing establishments, industries depend on electricity for power, and the first plants in the country were established in Tripoli and Benghazi. These two cities now have the largest aggregate of potential electricity production, where there is the largest investment.

(5) Raw materials: Libyan industry is heavily dependent on large supplies of bulky imported raw materials such as timber, steel and aluminum sheet, most of which are transported by sea. So seaports are an important factor in choice of location.

Added to the above, the location of industry in the cities offered the factories a chance to benefit from external economics due to the expansion of industry as a whole. The importance of external economics will tend to diminish after a certain point, however, excessive localizgtion may give rise to external dis-economics.[2]

As far as regional industrial distribution is concerned, even the worker's census of 1980 does not give information on this subject, but one can deduce that some industrial groups like food, building materials and woodwork seem to be widely scattered and exist in most of the regions. Establishments using local materials tend to be dispersed generally throughout the country, while those using imported raw materials tend to be highly concentrated in Tripoli and Benghazi or in the regions close by. In the case of local materials some industries using materials which are perishable, such as milk or fragile such as fruit or bulky such as clay, most of these industries have been set up near their basic resources. Fish and fruit canning, dairy production, grain milling, cement and bricks, and wood-

(1) El-Mehdawi, M., «Some Aspects of Population Movement in Libya», in Mandal, R.B. (ed) *Frontiers in Migrations Analysis,* New Delhi, Concept Publishing Co. 1981, p. 428, 429.

(2) Said, G.M., «Newer Aspects of Location in Egyptian Industry», *Legypte Contemporaine,* Vol. 271, 1953, p. 12.

work establishments are numerous in many regions. Other industries have a dispersed pattern of location due to the market, such as bakery production, which is a perishable product and must be processed near the point of consumption; the same applied to soft drinks, which are affected by the increase in the bulk and weight of the production. Some industries use local materials but are generally concentrated in one or two regions such as petrochemical industries, because their production is for the export market.

INDUSTRIAL CHANCE 1971-1980

During the seventies, the industrial structure in Libya underwent a profound drastic change. Thus the changing structure and the spatial distribution of industry in Libya during the period 1971-1980 is the main theme of this section.

During this period, the overall increase in total work force engaged in industry was about 20,900 workers, about 135 percent of the 1971 total. Significant growth has taken place in Libyan industry during the past two decades with the application of the social and economic development plans as well as the introduction of the loan system. But did every industrial group and industrial region expand at the same rate of growth, or did some have a different rate? If not, which region had the fastest rate, and which had the lowest? Which industrial group had a rapid growth rate and which had a declining one? Moreover, was the rate of growth and decline of these industrial groups the same or different in each of the regions?

Before answering these questions it is worth noting that the industrial change will be discussed in terms of the work force figures available in information given by the 1971 survey and the 1980 census.

This study will therefore consider both aspects of growth percentage and net growth. A comparison of changes throughout the industrial groups between 1971-1980 is shown in Table 2. Inspite of the fact that all the industrial groups experienced a considerable increase in the number of workers employed during this period, it is quite obvious that the rate of the growth is uneven. Certain industries gained more workers while others showed less than the national average.

When we consider the relative rate of growth, the chief groups of industries in the industrial sector, it can be seen from Table 2 that five of the groups grew more rapidly than the nation's industry as a whole, four grew more slowly. Those with the greatest growth between 1971 and 1980 are textiles, clothes, leather and shoe production, chemical industries and metalworks.

Excluding miscellaneous industries, leather, shoes and clothes production experienced the greatest growth. It expanded at a rate of 915 percent exceeding by more than seven times the national rate of growth. This

boom in leather, shoes and clothes group has given it the sixth largest share in the nation's industrial structure. By 1980 it represented about 8.5 percent of the nationwide employment in manufacturing industries whereas in 1971 the proportion was about 1.8 percent, Figure 2. The industry or region which grew the most between the two dates did not necessarily grow the fastest, because there is a difference between the amount of growth and the rate of growth. Amount is measured in terms of increased numbers, while rate is measured in terms of percentage. Two groups of industries, food and wood industries, had low rates of growth and lagged far behind the others, 28.7 and 75.8 percent respectively.

TABLE 2
Change in Number of Industrial Workers by the Group of Industries 1971-1980

Industries	*No. of workers*		*Net Total workers shift*	*Percentage of increase shift*
	1971	*1980*		
Food, soft drinks and tobacco	8,159	10,504	2,345	28.7
Textiles and carpets	503	2,463	1,960	389.7
Leather, shoes and clothes	308	3,313	3,005	975.7
Paper and printing	543	1,139	596	109.8
Wood and furniture	2,013	3,841	1,628	80.9
Chemiacls	1,010	5,902	4,892	484.3
Building materials	3,198	6,975	3,777	118.1
Metalwork	956	4,819	3,863	404.1
Miscellaneous	43	291	248	576.7
TOTAL	16,723	39,047	22,324	133.5

Source: (1) Computed by author from data in I.R.C., *Industrial Establishment Census 1971,* Tripoli 1972.
(2) Secretary of Planning. *Final result of labour force census 1980,* Tripoli 1981.

In terms aboslute growth, Libyan industry added about 22,300 industrial workers. Most of the growth occurred in five industrial groups. These are chemicals, building materials, food and leather products. The five groups gained about 17,882 more than four-fifths of the new workers employed by industries. The rapid growth of the industry can, in general, be attributed to economic growth and social welfare. The rapid growth of the population and improvement in the standard of living of the population

and the social changes which occurred during this period had a major direct and indirect influence on the growth of industries.[1]

It is clear from Table 3, 1970-1979 that population increased by a milion and the per capita income increased by more than three times from L.D. 642 in 1970 to about L.D. 1964 in 1979, with an annual increase of about 13.3 percent[2]. The industrial sector received more attention after 1969. The most important changes were in the role of industry in the development plans. The share of the industrial sector in the plan was increased from 3 percent 1963-1968 to 19 percent in 1976-1980.[3]

During 1970-1979 capital investment in the public sector for industry totalled about L.D. 1153 million and averaged about 115 million per year.

The oil industry had a remarkable effect on the growth of manufacturing industries. This is clear from the fact that the government derives over 60 percent of its annual revenue from that source. The value of exports of Libyan oil increased from about L.D. 916 million in 1972 to about L.D. 2779 million in 1978[4]. Moreover, the activities of the oil companies have benefited the economy of the country through local purchase of materials, services and remuneration of employees at an annual average of over L.D. 60 million.[5]

Considering the five industrial groups mentioned before, figures show that the public sector though the N.P.O.I. during 1970-1980 established 159 establishments by 1980, 77 establishments had been finished and were in operation. These were 31 food, 18 building materials, 11 chemicals, 9 leathers and shoes and 8 metal works, represented about 98 of the total establishments.

It is worth noting that it was the woodwork and furniture industry which achieved the fastest rate of growth during 1964-1971, at a rate three times more than the national average[6]. It had a relatively low rate of about 80.9 percent in 1970-1979. This slow growth can be attributed to competition from substitutes such as plastic and metal products (especially alluminum) and imported manufactured goods, such as furniture, doors, windows and decoration.

Turning to the size of the establishments, although there are no figures for 1980, there is no doubt that the proportion of medium and large size establishments witnessed a higher rate of growth during this period. This may be due to the setting up of new public and collective partnership esta-

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(1) El-Mehdawi, M., «Modern Evolution of Manufacturingin Libya», p. 13.
(2) Secretary of Planning, *The Achievement of the Revolution in 10 Years, Tripoli 1979, p. 10.*
(3) *Secretary of Planning, Social and Economic Development Plan 1976-1980,* Tripoli, p. 48.
(4) Secretary of Planning, Libya, *Statistical Abstract 1979,* Tripoli, p. 227.
(5) El-Mehdawi, M., «The Industrialization of Libya», p. 252.
(6) El-Mehdawi, M., «Modern Evolution of Manufacturing in Libya», p. 15.

TABLE 3
Population and Per Capita Income and Amount Budgeted For Industry in Libya 1970-1979

Year	*Population in thousands (1)*	*Per capita in L.D. (1)*	*Amoutn budgeted in L.D. million (2)*	*Actual investment (2)*
1970	2,006	642	21.0	15.0
1971	2,100	755	32.1	29.0
1972	2,203	796	68.1	65.1
1973	2,349	929	79.7	62.5
1974	2,513	1510	110.9	107.0
1975	2,683	1369	129.7	100.0
1976	2,840	1679	199.4	165.5
1977	2,939	1900	194.7	160.7
1978	3,014	1903	226.3	157.1
1979	3,127	1964	273.8	291.5

Source: (1) Secretary of Planning. *The Revolution; Achievement in Ten Years,* Tripoli 1970, p. 10
(2) Secretary of Planning, *Achievement in Eleven Years,* Tripoli 1980, p. 17, 19.

blishments and some private establishments began to take advantage of the economics of scale. Although most of the seventy seven establishments mentioned previously employed more than one hundred workers and some employed more than 250 workers, besides that in 1977 a large number of industrial establishments joined together under collective partnership management. The growth in the contribution of industry to the GDP also explains that larger establishments have greater effect on the economy of the country, because smaller establishments operate in an unefficient manner and are traditionally organized.

As far as ownership is concerned, Table 4 reveals that during the period under study, it is clear that a new type of ownership appears for the first time in the country.

TABLE 4
Changes in the Ownership of the Industries 1971-1980

Ownership type	*Percentage of 1971*	*Percentage of 1980*
(1) Private*	86.7	36.7
(2) State-owned	13.3	16.6
(3) Partner	—	46.7

* Including cooperative and joint-stock companies.
Source: (1) Computed by author from date in I.R.C., *Industrial Establishment Census 1971,* Tripoli 1972.
(2) Secretary of Planning, *Final Result of Labour force Census 1980,* Tripoli 1981.

This began in 1977 following the change in the economic system of the country in line with The Green Book when most of the private and stateowned establishments came under collective partnership management. Partners gained about half of the rate. Accordingly, one can imagine that most of the expansion in the future will be in this type of ownership.

Furthermore, Table 4 shows the private sector still controls about 36 percent of the total industrial establishments. Most of these establishments are owned by individuals, families, brothers and foreign companies.

CHANGES IN REGIONAL PATTERNS

As has been pointed out in the previous section, the various industrial groups in Libya had different rates of changes from 1971-1980. The different regions can also be expected to show various types of changes - Table 5, lists the growth of the industry in the major regions in terms of employed workers. In terms of growth percentage, the figures reveal that the number of industrial workers grew in all of the regions, but the growth rates among the regions varied considerably. However, regions which showed a small industrial base in 1971 exhibited relatively high growth rates with percentage, much higher than the national rate. Regions which had a relatively large number of industrial workers in 1971, such as Tripoli, Benghazi, El-Zawia, Misurata, Homes and Derna registered a low rates of growth far behind the smaller regions.

TABLE 5
The Growth of the Industry in Libya 1971-1980
by The Main Regions

Regions	*Industrial workers*		*Change*	
	1971	*1980*	*Total*	*Percentage*
Tripoli	17,754	9,386	8,368	89.2
Benghazi	6,320	3,390	2,930	86.4
El-Zawia	2,188	956	1,232	128.8
Azizia	1,725	599	1,126	187.9
Homes	1,481	483	998	206.6
Misurata	1,325	433	892	206.0
El-Fateh	1,214	115	1,099	955.7
Zura	1,003	311	692	222.5
Derna	093	271	262	96.7
Zletin	778	209	569	272.2
Gharian	744	100	644	644.0
Sabha	724	98	626	638.8
Beida	530	33	497	1506.0
Ajdabia	409	16	393	2456.3
Sirte	354	6	348	5800.0
Tobruk	272	126	146	115.9
Jofra	248	70	178	254.3
Tarhuna	235	50	185	370.0
Ubari	214	—	214	—
Yefran	170	43	127	295.3
Gadames	165	16	149	931.3
Mairjague	186	—	186	—
El-Kufra	145	—	145	—
S. El-Geen	96	8	88	1100.0
El-Shatti	136	—	—	—
TOTAL	39,321	16,723	23,598	135.1

Source: (1) Computed by author from data in I.R.C., *Industrial Establishments Census 1971,* Tripoli 1972.
(2) Secretary of Planning, *First Result of Labour Force Census 1980,* Tripoli 1981.

Table 5 shows that the industrial regions which grew the most in absolute were Tripoli, Benghazi, El-Zawia, Azizia, El-Fateh, Homes and Misurata. These were the only regions to gain more than 850 workers during

this period. Furthermore, these regions contributed a total growth of 16,645 workers, or about 73.7 percent of the nation's total growth. These regions contain the five major cities with the largest population in the country.

Although the single region of Tripoli leads with more than six times that of other regions, Tripoli and Benghazi together gained about half of the net growth. Keeping in mind the population growth, according to 1964 and 1973 census which show, Tripoli and Benghazi to have more than 45 percent of the total population, it may be suggested that there is a strong relationship between the growth of the population and the growth of the industrial work force in the contry. For example, it was the northwest region, extending from Misurata in the east to Zuara in the west, including Azizia, and Tarhuna in the south which had the largest increase in industrial workers, about 1.400 or 62 percent of the country's total growth, 1971-1981, it had an increase of about 66.5 percent in the population growth during 1964-1973.

It is clear also from Table 5, that there is a relationship between the pattern of distribution of the industrial workers and the distribution of absolute growth, especially in the first eight regions. Consequently, one can conclude that the regions which gained the most workers were those which had the largest number of workers in the first place.

Figure 3, which shows the relative rate of growth, emphasizes three types of groups.

(A) Those which grew at a high rate.
(B) Those which grew at a moderate rate.
(C) Those which grew at a rate less than the national average.

In group (A) Sirt, Beida, Ajdabia and El-Fateh are the country's most rapidly growing industrial regions, registering more than 150 percent growth each. This might be explained by the fact that these regions had a low number of industries in 1971 and benefited from the large state-owned factories which were built up in these regions, such as chemical and pertochemical works in Berga, Raslanuf, and canned fruit, milk products and furniture in Beida as well as an annual fodder plant, flour mill and a textile factory in El-Fateh. Misurata, Zletin, Homes and Tarhuna had a moderate rate of growth (B), while Tripoli and Benghazi, Derna and El-Zawia had a low rate of growth (C). Therefore, the greatest percentage changes in industrial workers during this period involved a relatively small actual number of workers, as they took place in centres which had a small work force in 1971. All these regions had a smaller number of workers than in Tripoli and Benghazi.

To conclude, it is clear that the manufacturing industry in Libya employed about 8 percent of the total workers in the country. Food, building materials and chemical industries are the most important industries. New

modern large scale industries, producing enough to meet home consumption have grown rapidly in recent years. It is assumed that new Libyan establishments will be capital-intensive rather than labour-intensive due to local conditions in Libya. In terms of location, most of the industry is concentrated in Tripoli and Benghazi, which offer favourable environment for industrial location.

In the seventies, industry began to develop, but it is still in its infancy. No doubt during the seventies industrial development was accelerated as a result of the new policy of the government. The expansion and the growth of industry was evident in Tripoli and Benghazi and in some other urban centres, and this growth may shed light on the problems of concentration and future regional planning. At all events during this period some other regions gained a proportion of industrial workers, and this may be due to the government's policy to provide the inducements which encouraged industrial establishments to move into less developed areas. It should be noted finally that there is tend for industrial activities to grow in the small urban centres in th future.