

CHAPTER SIX

DEMOSTEC DEMAND FOR OIL

This chapter will look at the nature and extent of domestic oil consumption. This is carried out in three stages. Firstly, it discusses the phenomenal rise in the amount of domestic oil consumption from 1 million metric ton in 1970 to 5 million metric tons in 1985 and to 7.5 million in 1995. Secondly, it explains this increase in domestic oil consumption on the increased use of oil products as source of energy for the agricultural sector in the country, as well as the increasing consumption rates in the local power stations. Thirdly, it will analyze the future prospects for the domestic demand of oil and gas products in Libya.

6.1 Demand of oil :

The local oil product consumption has always followed the development rate in Libya in all fields. Oil products provide energy for power stations, distillation plants and hundreds of factories spread all over Libya. Oil provides the energy needed for tractors, harvesters and large cranes used in the huge projects. It provides thousands of tons of asphalt needed for paving roads, which are the vital link in connecting the country together. Therefore, the increase in demand for oil products required real commitment in securing supplies, providing and developing storage facilities and distribution networks throughout the country.

Thus, we shall be examining the rate and nature of oil consumption by dividing it into these stages:

6.1.1 First stage (1951-1961):

The first stage includes the period that extends from 1951-1961. This is the pre exploration of oil in terms of traded and exportable quantities. The foreign oil companies during this stage had to import the oil products from abroad and distribute them inside Libya at a high cost and in default of the states control (Table 6-1)

The table clearly indicates that the consumption rate in 1951 had reached 257024 barrels. The consumption increased to 1493911 barrels by year 1960, reaching an increase of five times.

As for the rate of consumption per product, the table further shows that in 1951, the consumption of diesel oil alone constituted a high percentage compared to other products. Consumption of super unleaded benzene, reached 428879 barrel, were the actual consumption began in 1956 at a rate of 29 thousand consumption during the period cited earlier barrel. products. The consumption in heavy fuel oils occupies a second place. This quantities in the super benzene had sharply increased in 1960 to reach 118 thousand barrel compared to the total consumption in the whole period (1951-1960) which was recorded at a rate of 3328621 barrel. Yet the total consumption of multifarious oil products reached 6966807 barrel for the whole period (1951-1960).

6.1.2 Second stage (1961-1969):

Table (6-2), also shows the rate of the local consumption, specially in the refined products has increased in diesel and kerosene. It is also noticeable that the total consumption of oil products has jumped to reach 33 million barrel; thus recording seven times increase in 1969 compared to that 1961, due to the increase in house usage and vehicles number.

The Table also shows an increase in the consumption of diesel oil , whereby it recorded 3579258 barrel in 1969 vis-à-vis 902780 barrel in 1961.

This stage was characterized by the appearance of supper benzene in local consumption markets. where the consumption rate of such fuel has reached 3.7 million barrel in the period ranging from 1961-1969 compared to a consumption rate 3.8 million barrel of normal benzene (leaded) in the same period.

6.1.3 Third stage (1970-1995):

This period is featured by a sharp demand for the refined oil products, particularly kerosene and diesel. Yet the marketing process has been bound only to Brega oil marketing company, thus excluding competition from taking place.

Consumption of oil products:

In the third stage the local consumption of energy has increased from one million metric ton in 1970 to five million metric ton in 1985. Later in 1995, it has increased up to 7.5 million metric ton as shown in table (6-3) below.

Table (6-3) also shows that the local consumption of oil products has slightly decreased at the beginning of the 1980s, but it started to increase in the mid 1980s.

The Table also shows that the local consumption of supper benzene ranks the third, following the consumption of diesel and fuel oil. The local consumption rate of supper benzene has increased from 138 thousand metric ton in 1970 to reach one million metric ton in 1985. It has further recorded an increase in 1990 to reach 1.2 million metric ton and to 1.79 million metric ton in during the year 1995.

Table (6 - 1)

The development of oil consumption in Libya during 1951-1960 (by barrel)

Year	Supper benzene	Normal benzene	Kerosene	Diesel oil	Heavy fuel oil	Lubricant oils and greases	Liquid gas	Asphalt	Total
1951	-	24220	29843	142346	49107	8836	-	2672	257024
1952	-	86459	32692	158295	53855	11679	-	7247	350227
1953	-	122484	45258	174591	52126	7497	-	8705	410661
1954	-	159503	50654	221648	45006	11717	-	5728	494256
1955	-	182818	51994	230786	46440	13906	-	1769	527713
1956	29188	205189	47258	265233	30434	16440	-	20716	614458
1957	75100	208151	80390	381396	17761	16704	-	67301	846803
1958	111057	216855	85308	414641	13855	15648	-	14353	871717
1959	94616	275264	94308	561000	26264	25686	-	22899	1100037
1960	118918	316585	110547	778685	29704	38623	43790	57059	1493911
Total	428879	1797528	628252	3328621	364552	166736	43790	208449	6966807

Source: 1-Ministry of Oil. 2-National Oil Corporation.3-Brega Petroleum Marketing Company.

Table (6 - 2)

The development of oil consumption in Libya during 1961-1969
(by barrel)

Year	Supper benzene	Normal benzene	Kerosene	Diesel oil	Heavy fuel oil	Lubricant oils and greases	Liquid gas	Asphalt	Total
1961	144163	294163	135981	902780	49742	40270	49465	199769	1816333
1962	179541	307937	159075	994811	193321	46642	54849	76354	2012530
1963	210220	328428	171478	1144057	235981	53119	64699	59762	2267744
1964	270371	382937	219327	1301290	302264	57044	79969	45317	2658519
1965	313673	440258	269270	1387226	260811	61792	102535	105512	2941077
1966	408880	495245	291031	1706119	435899	65686	121847	139672	3664379
1967	512717	490371	328924	1989472	443428	80918	143288	640451	4629569
1968	732811	545069	433233	1691983	590220	107264	169811	1172426	5442817
1969	928707	514704	556163	3579258	648113	110277	208253	962745	7508220
Total	3701083	3799112	2564482	14696996	3159779	623012	994716	3402008	32941188

Source: 1- Ministry of Oil. 2-National Oil Corporation. 3-Brega Petroleum Marketing Company.

Table(6-3)
The development of oil consumption in Libya during 1970-1995
(by thousand metric ton)

Year	Supper benzene	Normal benzene	Kerosene	Diesel oil	Heavy fuel oil	Lubrication oils and greases	Liquid gas	Asphalt	Total
1970	138	56	85	400	124	21	19	58	901
1975	399	48	257	1026	315	38	43	175	2301
1980	817	16	426	1527	1165	52	77	300	4380
1985	968	1.3	381	1568	1735	57	128	190	5028.3
1986	1001	0.7	381	1409	1715	57	134	148	4845.7
1987	980	0.3	398	1494	1912	57	139	118	5098.3
1988	1032	-	349	1814	2055	54	148	117	5569
1989	1158	-	327	1775	2386	55	154	122	5977
1990	1262	-	329	1684	2536	59	163	108	6141
1991	1379	13	339	1699	2429	47	176	91	6173
1992	1496	15	227	1999	2290	51	189	73	6340
1993	1560	14	300	2150	2390	54	198	70	6736
1994	1680	16	327	2296	2485	55	215	72	7146
1995	1790	19	349	2399	2565	60	245	75	7502
Total	15660	199.3	4475	23240	26102	717	2028	1717	74138.3

Source: 1- Ministry of Oil. 2-National Oil Corporation. 3-Brega Petroleum Marketing Company.

In this respect it is noteworthy that the percentage increase of the consumption of this element reached 0.8% in 1970, 6.1% in 1985, 8% in 1990 and 11.43% in 1995 due to the huge economic structural change. It is also worth noting that in 1991, the unleaded benzene started to invade local markets within the framework of preserving healthy environment and preventing air pollution.

The Table also indicates that the consumption of benzene has begun to sharply and continuously decrease since 1975, recording a consumption fall from 48 thousand metric ton in 1975 to nearly 1.3 thousand metric ton in 1985. This is due to a change in the local consumption of fuel for vehicle. Table (6-3) also indicates that normal benzene has disappeared completely from local market within the period of 1988 to 1990. However, normal benzene has made a comeback in 1991. A rise in the consumption of Diesel has recorded an increasing rate of one million metric ton in 1975 to reach its consumption utmost of 1.56 million metric ton in 1985. The consumption rate of diesel has started to decline gradually in mid of 1980s reaching 1.4 million metric ton in 1986 as a result of having replace it with heavy fuel oil in power stations. However, its consumption rate reach two million metric ton in 1992 and further increased to 2.4 million metric ton in 1995.

In terms of fuel oil, the contribution of fuel oil in the overall consumption of oil products has increased from 315 thousand metric ton in 1975 to 1.7 million metric ton in 1985. In 1995, the fuel oil had jumped to reach 2.56 million metric ton vis-à-vis 2.5 million metric ton in 1990, putting it at the front of oil products instead of diesel as shown in Table (6-3).

In terms of Kerosene which includes house kerosene and fuel for airplanes. Kerosene comes in the fourth place out of the total consumption of oil products, constituting 8.5% of the entire local consumption for 1985 alone. It is shown in Table (6-3) that

kerosene had fallen from 9.5% in 1980 to only 8.5% in 1985, the reason being attributed partly to the replacement of liquid gas instead of house Kerosene. Yet in the period 1985-1995 the status of Kerosene has witnessed drastic rise in the local consumption of oil products.

Table (6-3) shows that there was an increase in local consumption of liquid gas. In 1975, its consumption constituted only 43 thousand metric ton, while in 1985 it reached 128 thousand metric ton, and in 1990 it reached 163 thousand metric ton. Such rise in the local consumption of liquid gas has been unceasing till 1995 where it has recorded 245 thousand metric ton, hence reflecting a preference in its utilization for both industrial and house purposes.

The rate of consumption of asphalt increased from 175 thousand metric ton in 1975 to reach its peak of 300 thousand metric ton in 1980. Since then such figures have begun falling gradually, recording only 75 thousand metric ton in the last quarter of 1995.

In 1975, the total consumption of lubrication oils and greases recorded only 38 thousand metric ton after which it recorded 59 thousand metric in 1990. It will be noticed from Table (6-3) that consumption rate of lubrication oils and greases have maintained a stable rate of 50 thousand metric ton per year for the period extending from 1991 to late 1995.

Consumption of oil products by sectors:

The prime sectors consuming oil products include the transport sector, electric sector, industrial sector, agricultural sector and household sector. Transport and electric sectors together consume on average 80% of the total consumption in the 1980s and the first half of 1990s. The consumption pattern as sectorial basis will be discussed briefly as follows:

1) Transport sector.

This sector is regarded as one of the main sector that consumes oil products. In 1975, the total quantities consumed raised from one million metric to 2,6 million metric ton in 1990 to reach 3 million in 1995 (Table 6-4). The average rate of consumption of oil products in this sector contributed of Supper and normal benzene 49%, Diesel 41% and Kerosene 10%. It is clear that there has been stability in the consumption of oil fuel for this sector between 1981-1990, due to the systematic policy in exploiting and preserving energy sources.

2) Electric sector.

This is the second main sector in term of domestic oil consumption and represented 42% of the gross oil consumption in 1990. In 1975 alone the rate of consumed quantities reached 800 thousand ton of both diesel and fuel oil . However, in 1985 it increased to 2 million metric ton ,and further increased to 2.7 million metric ton in 1992 until it recorded 3 million metric ton in 1995 as shown in Table 6-5. From this Table, we notice an increase in the use of heavy fuel oil in power generation at the expense of diesel, that is it raised from 28% in 1975 to 65% in 1992 and 65.47% in 1995.

3) Industrial sector.

According to Table (6-6),the consumption rate of both diesel and fuel oil in this vital sector, increasing from nearly 100 thousand metric ton in 1975 to nearly 360 thousand metric ton in 1985. It further recorded an increase of 500 thousand in 1990 to reach 610 thousand in 1995. The rate of contribution of heavy fuel oils in this sector has contributed to 82% in 1975, 95% in 1990 and 95,8% in 1995, which reflects a development in industrial sector specially in the heavy industries like cement.

Table (6-4)
Consumption of oil products by transport sector (in metric ton)

Product	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Benzene	447,200	832,324	969,643	1001,468	979,926	1032,151	1157,923	1262,464	1378,947	1495,542	1595,542	1599,400	1640,310
Kerosene	166,200	299,630	310,521	317,104	342,111	289,623	267,911	265,838	-	-	298,630	260,875	275,935
Diesel	389,222	584,669	847,741	753,523	716,638	695,843	807,059	1062,047	858,743	936,515	1030,470	987,710	1130,350
Heavy fuel oil	2,835	6,470	12,427	15,366	-	-	-	-	-	9,340	8,663	8,405	9,410
Total	1005,457	1723,093	2140,332	2087,461	2038,675	2017,617	2232,893	2590,349	2237,690	2441,397	2933,305	2856,390	3056,005

Table (6-5)
Consumption of oil products by electric sector(in metric ton)

Product	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Diesel	578,945	843,249	657,617	592,092	706,552	1036,175	880,187	524,826	741,492	959,319	989,425	1025,178	1054,372
Heavy fuel oil	226,974	783,854	1393,896	1423,194	1643,675	1722,928	1858,165	2056,083	1991,329	1756,221	1978,430	1990,263	1999,628
Total	805,919	1627,103	2051,513	2015,286	2350,227	2759,103	2738,352	2580,909	2732,821	2715,540	2967,855	3015,441	3054,000

Source. 1- Office of studies and energy information, Libya. 2- National Oil Corporation.

Table (6-6)
Consumption of oil products by industry sector (in metric ton)

Product	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Diesel	18,411	29,621	15,660	14,098	20,011	25,209	23,070	23,929	25,000	25,000	25,235	25,395	25,400
Heavy fuel oil	84,890	327,407	343,751	291,935	267,974	332,478	527,695	479,648	437,587	533,355	530,565	540,930	585,360
Total	103,301	357,028	359,411	306,033	287,985	357,687	550,765	503,577	462,587	558,355	555,800	566,325	610,760

Table (6-7)
Consumption of oil products by agricultural sector (in metric ton)

Product	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Diesel	39,120	69,487	46,700	49,500	50,501	56,823	64,577	73,390	74,000	75,000	76,305	76,575	76,840

Source: 1- Office of studies and energy information, Libya. 2- National Oil Corporation.

Table (6-8)
Consumption of oil products by household sector (in metric ton)

Product	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Kerosene	91,000	126,738	70,505	63,398	55,962	59,762	58,842	62,676	74,809	74,449	74,890	75,000	75,220
Liquid gas	43,200	77,380	127,615	134,486	139,312	148,085	153,946	163,348	176,316	188,890	192,310	197,250	199,840
Total	134,200	204,118	198,120	197,884	195,274	207,847	212,788	226,024	251,125	263,339	267,200	272,250	275,060

Source: 1- Office of studies and energy information. 2-National Oil Corporation.

Table (6-9)
The natural gas usage during 1987-1995 (in million cubic meter per day)

Year	Liquidation and condensation	Petrochemical	Injection	Fuel	Raising by gas	Flaring
1987	3.4	4.6	4.4	4.0	0.14	12.9
1988	2.9	4.6	9.5	4.8	0.11	12.6
1989	4.4	3.7	8.0	5.0	0.14	13.0
1990	4.6	4.6	7.4	5.6	0.71	15.6
1991	7.7	6.0	9.8	4.8	0.85	17.4
1992	7.0	7.8	6.3	5.4	1.10	17.4
1993	7.2	7.8	5.6	6.0	0.95	16.5
1994	7.6	7.5	6.1	6.4	0.95	16.7
1995	7.9	7.9	6.3	6.9	1.10	13.0

Source: Brega Petroleum Marketing Company.

4) Agricultural sector.

The sector has witnessed a relatively steep demand for oil products that are represented in diesel due to the agricultural development as well as its increasing consumption in power stations. Table (6-7) indicates a double increase in diesel consumption between 1975-1995 with an average of 40 thousand metric ton. In spite of all this, the consumption rate of this sector out of the total consumption of oil product remains around 1.5-2% per year, the reason being that in this sector there is an increasing reliance on electric energy.

5) Household sector.

The oil consumption of this sector depends upon the two by-products of liquid gas and household kerosene. Where the consumed quantities of such by-products increased from approximately 134 thousand metric ton in 1975 to 275 thousand metric ton in 1995 with an annual growth rate of 5%. Table (6-8) shows the consumption rate by this sector of the oil products. It is observed from the Table that more liquid gas was consumed at the expense of kerosene. In 1975 the consumption rate revolved around 32% and in 1990 it reached 72% while in late 1995 it recorded 72.65%.

Consumption of natural gas:

Apart from the utilization of natural gas in petrochemical industries, this oil-related element is also used as a source of energy in the operations of oil producing fields, steel complex, power stations, water desalination plants, and in cement industries as a result of the construction of the gas pipe line which stretches from Al -Brega to Al-koms with 650 K.M long. It was built in 1988 with an initial capacity of 410 million cubic feet per day. Table (6-9) illustrates the applications of natural gas within the

period 1987-1995. It also shows that growing demand for natural and liquid gas and actual surplus of light and heavy oil as a result.

In term of Fuel prices, tariff and pricing policy in Libya is based on budget and equilibrium between supply and demand, taking into account the wise consumption of energy and the economic growth of the country. The increase of certain fuel prices and the disparity in accordance with the economic sector and their role in development is shown in the Table 6-10).

Table (6- 10)
Prices of oil in local market during (1970-1995)
in (liter/Durham)

Year	Supper Benzene98	Supper Benzene 94	Normal Benzene	Kerosene	Diesel	Heavy fuel oil	Liquid gas oil
1970	37.5	-	32.5	15	23.7	8	750
1975	37	-	32.5	15	23.7	8	840
1980	75	-	65	30	40	12	1000
1985	120	-	65	40	50	12	1000
1986	120	-	65	40	50	12	1000
1987	120	-	65	40	50	12	1000
1988	120	-	65	40	50	12	1000
1989	120	-	65	40	75	12	1000
1990	140	-	65	40	75	12	1000
1991	140	105	-	40	75	12	1000
1992	140	105	-	40	75	12	1000
1993	140	120	-	40	75	12	1000
1994	140	120	-	40	75	12	1000
1995	140	120	-	40	75	12	1000

Note: 1- The price of liquid gas oil is for cylinder size 15 kilo gram. 2-LD = 1000 Durham (Dollar = 0.37 LD in1995).

Source: 1- National Oil Corporation, 1995.

Table (6-11)
The future prospects for local consumption of oil

(Thousand metric ton)

Year	Liquid gas oil	Supper Benzene	Jet Benzene	Kerosene	Diesel	Heavy fuel oil	Asphalt	Lubrication oils & greases	Total
1993	181	1,493	0.700	336	1,761	2,464	102	80	6,418
1994	186	1,552	0.700	343	1,796	2,366	104	90	6,438
1995	192	1,614	0.700	350	1,832	2,271	106	100	6,466
1996	148	1,679	0.700	357	1,869	2,180	108	112	6,504
1997	204	1,746	0.700	364	1,906	2,096	110	125	6,551
1998	210	1,816	0.700	371	1,944	2,015	112	140	6,608
1999	216	1,889	0.700	378	1,983	1,938	115	157	6,676
2000	223	1,964	0.700	386	2,023	1,863	117	176	6,752

Source: 1- National Oil Corporation. 2- Brega Company of Oil Marketing.

It can be observed from Table (6-10) that oil prices for the domestic market have remained relatively stable during 1970-1995. This apparent price stability for the domestic market may be explained by the government policy of price control for oil in order to protect the less well off in Libyan society. Moreover, much of the oil revenue is derived from the overseas markets which contributes a bulk of the GDP as indicated in the next chapter.

As for the natural gas prices for local consumption in industrial establishments, there is one single price for all consumers along the coastal gas pipe line (Albreaga-Musratah-Alkomes) where one million heat unit cost 208 Durham. The new price constitutes an incentive for industrial and electric sectors to make the most of the lose-generated power and to reduce the power units required for production.

6.2 Future prospects for local consumption of oil and gas:

Future oil consumption are based on the development schemes in the various sectors particularly the industrial ones, and the policies to preserve energy. In this respect preliminary studies indicate that the demand for oil products is anticipated to reach 6.5 million metric ton in 1997. The figure is expected to increase to 6.8 million metric in the year 2000.

Table (6-11) shows the forecasted consumption rates by local markets of the oil products. These predictions has taken account the replacement of natural gas instead of heavy fuel oil for consumers along the natural gas pipe line whose capacity will be doubled by the year 2000 to reach Abukmmash in west of Tripoli, and the Benghazi city in the eastern part of Libya.

6.3 Conclusion:

The level of domestic oil consumption in Libya rose concurrently with the economic development, witnessed in recent times. This increased domestic demand for oil called for concerted efforts on the part of the government to develop the distribution network for oil throughout the country. The chapter divides the rate and nature of domestic oil consumption into three stages i.e. from 1951-1961, 1961-1969, and 1970-1995 and concludes with a commentary on the future prospects for domestic oil and gas consumption for 1997 and beyond. Consequently, the high increase in demand for oil reflects that the consumption of oil products is following the growing growth in the economy. Particularly during 1970-1995 period which characterized by various development plans.