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The Relationship between Oil Production and Energy Consumption in Arab Countries

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ABSTRACT:
Energy consumption has been essential to societies; because societies depend on the rising provisions of energy to meet their requirements for goods and services and endorse sustainable development. The major source of energy nowadays is oil; oil consumption is dependent on oil availability, production and price. Several Arab countries are considered as major suppliers of oil in the world; consequently, there is a need to shed the light on oil as a source of energy in the Arab countries. Accordingly, Arab countries have been divided into five different oil type categories; furthermore, data for electricity consumption, estimated population and ranking for every country have been collected. Moreover, sample data for 19 Arab countries has been extracted, which included GDP/capita and Energy use (kg of oil equivalent/capita) (ECPC) that will be studied.
Results attained showed that Arab countries differ from each other when it comes to energy consumption depending on what oil type category they belong to. This has been asserted from the results attained from the electricity consumption data; as well as, from sample data results of the 19 Arab countries, which have shown that Average GDP/capita, GDP/capita across all Arab countries and ECPC exhibited the highest energy consumption for the oil producing and lowest for the non-producing and importing countries. Nonetheless, further research should be done on amending energy price policies and on determining the effect of the fluctuation of oil prices on the implementation of other types of renewable energy methods in the different Arab countries.

Keywords: *Arab countries, Energy consumption, Production, Price, Oil category, Policies*

INTRODUCTION

Energy consumption has been essential to societies, even prior to the Industrial Revolution. Societies have depended on the rising provisions of energy to meet their requirements for goods and services. Oil consumption quantity is dependent on oil availability, production and price. Several Arab countries are considered as major suppliers of oil in the world; consequently, there is a need to shed the light on oil source of energy in Arab countries. However, the accumulative consumption increase with time has led to an increase in environmental degradation due to excessive exploitation of existing resources. Ahuja and Tatsutani (2009) have shed the light on this environmental degradation aspect when they discussed how much economies rely on energy for development. They state that a minimum of 1.6 billion people, what represents 25 % of the world's population until now has no electricity. Hence, developing economies face a two-way energy challenge in the 21st century. The first is to meet the requirements of millions who until now have no access to energy systems. The second is the enhanced efficiency, decarbonization, higher fuel types and lower pollutant emissions that nations

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are opt to attain (Ahuja and Tatsutani, 2009).

A nation's economy can be segregated into various sectors; the primary sector deals with the use of primary materials from the earth such as agriculture and mining and production of basic goods. The secondary sector or the manufacturing sector produces finished goods whether from manufacturing, processing, and construction. The tertiary sector or the service industry; this sector avails services to the general population and to businesses, such as retail and wholesale sales, transportation and distribution, entertainment, restaurants, clerical services, media, tourism, insurance, banking, healthcare, and law (Sen, 1983). As such, the petroleum industry represents a unique product that exists in the three sectors; and this has been a major reason why the Arab countries in this study have been segregated into different oil type categories.

Arab countries differ among each other when it comes to energy consumption. Several Arab countries have some of the highest energy consumption per capita in the world. Figure 1 shows the energy consumption per capita per year in each Arab country. It indicates that there is an increase in energy consumption per capita over the years and this increase is witnessed in all countries at different values. However, the highest increase across the years has been witnessed in the major oil producing countries followed by the small oil producing and non-producing ones (figure 1).

Henceforth, and as mentioned earlier, several Arab countries are considered as major world oil suppliers, consequently, this paper aims to identify if energy consumption shows distinctive patterns in Arab oil producing countries as compared to non-producing Arab countries; and to compare GDP/capita values and energy consumption ones.

Literature Review

Energy availability nowadays is crucial for endorsing sustainable development, challenging poverty and worldwide inequalities (Banuri and Hällström, 2012).

Global energy consumption signifies the aggregate energy used by all humans; this energy consumption is measured per year. Furthermore, it encompasses all types of energy used towards all humankind activities across every country. Consequently, world energy consumption has profound inferences for humankind social-economic-political domain (*Crosbie, 1998, pp. 4-5)*. Institutions such as the International Energy Agency (IEA), the European Environment Agency (EPA) and the U.S. Energy Information Administration (EIA) record and publish energy data regularly (table 1).

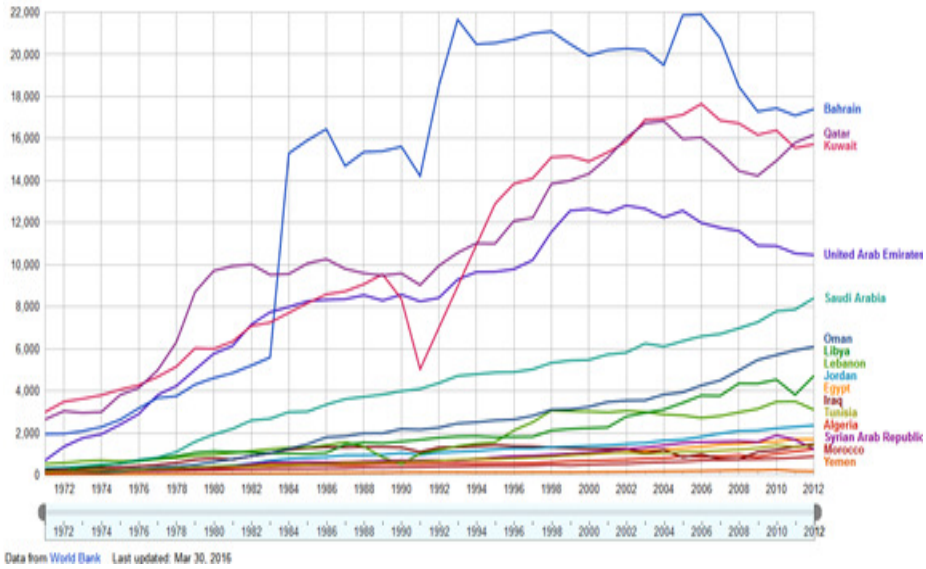

Figure 1: Energy consumption per capita in the different Arab countries

Table 1: Energy consumption estimates by sector (trillion Btu)

January to January	2016	2015	2014	2013	2012
End–Use Sector					
Residential	2,464	2,573	2,789	2,445	2,272
Commercial	1,762	1,786	1,863	1,692	1,629
Industrial	2,676	2,728	2,785	2,703	2,664
Transportation	2,228	2,233	2,168	2,144	2,110
Primary Total	9,130	9,322	9,612	8,984	8,675

Source: U.S. Energy Information Administration, *Monthly Energy Review*

The use, consumption and distribution of energy services vary immensely between rich and poor countries. This shortage of modern energy services in developing and middle income countries makes it compulsory for them to make tough decisions. These decisions involve provision of energy between human welfare, economic development and industrialization. This indicates that in very poor nations households consume practically all of the energy; however, middle-income, emerging economies tend to distribute an excessively large share to industry. Based on the above it is clear that there exist a need for additional energy in developing nations (UN- DESA, 2009c). Furthermore, national income, energy price and energy affordability are inter related in what looks like as a triangle form.

The three pillars of the triangle need to be defined so as to be able to provide an understandable picture of the relationship that joins them. First, national income is "the total net value of all goods and services produced within a nation over a specified period of time, representing the sum of wages, profits, rents, interest, and pension payments to residents of the nation". Second, energy price is "the monetary and non-monetary costs (such as the environmental impact) associated with the production, transmission, and consumption of energy". Finally, energy affordability, which has several meanings that varies with the situation on hand; here energy affordability, is "the lack of access of poorer households' in developing countries to sufficient quantity of efficient energy for their daily use"; or in other words, the amount of energy that people can afford based on their incomes (Kumar, R., 2011, p. i). Based on the above, low-income nations try to attain the least expensive systems of energy, regardless of environmental costs, such as China, India and Bangladesh (Banuri, T. & Hällström, N., 2012).

The affordability issue is a major factor in the process of energy availability; it has been resolved by the governments and their population, through the implementation of three different strategies. As a start, to this instant there still exist large sectors/areas that are deprived from access to energy.

According to Asrari et al. (2012) in Iran there are still areas where the electricity grid has not been implemented and they rely on generators (Asrari et al., 2012). Second, governments and people tend to lower the quality of the energy services provided by using cheap, incompetent machines, vehicles, equipment and technologies. Finally, the most important strategy that developing countries use to solve for affordability is through the implementation of targeted subsidies (Komives et al., 2005).

As for the differentiation between countries with respect to oil exporting and oil importing, Steinberger and Roberts (2010) examined the affiliation between human needs, energy consumption and carbon emissions for indicators of human development; including life expectancy, literacy, income and the Human Development Index. Results have shown that high human development can be recognized with medium energy and carbon levels production. Additionally, the process of increasing energy and carbon levels above this level does not fundamentally prime to developed living standards (Steinberger and Roberts, 2010).

The success of human development is dependent on the continuous growth of services

that are reliant on energy in developing nations. However, availability of energy to all nations' areas is not equally distributed in these countries. Moreover, energy consumption and availability is correlated with Human Development Index (HDI). This is clearly witnessed when measuring consumption in Kilowatt Hours (kWh) per person per day (kWh/person/day) (Banuri, T. and Hällström, N. 2012).

Figure 2 shows the variation among low-, medium- and high-energy consumption countries. First in low-consuming countries (<35 kWh/capita/day); HDI values attained a range between 0.3<HDI<0.7. Second, the middle category (35<X<100 kWh/capita/day), HDI ranges between 0.7<HDI<0.9 where energy consumption increases representing the possibility of increasing benefits that tentatively leads to a positive economic development contribution. Third, countries whose energy consumption is (>120 kWh/capita/day), i.e. HDI ≥ 0.9; here the relationship between energy consumption and HDI becomes a flat line representation. This representation, shows that at some extent energy consumption does not contribute to human development and energy usage or consumption becomes non useful; henceforth, rich and developed nations have to balance down their energy use significantly so as to maintain their resources and reduce environmental degradation (UN-DESA, 2009a). Nonetheless, it is needless to say that countries that need to achieve an HDI of 0.9 cannot reach that level without having free access to electricity i.e. energy source.

Al-Iriani (2006) in his work on the association between energy consumption and economic growth indicated that in recent years, increased attention has been given to energy economics. This attention has been aroused by the unparalleled oil price rise that begun in 1970s that significantly boosted the energy bill in oil-importing countries. Furthermore, empirical investigations of the energy–GDP connection in oil importing countries have had diverse outcomes. The inconsistency in outcomes most of the times have been the result of methodological and data variances. France on the other-hand, a developed country also suffered from 1970 crisis; its economy was seriously affected by the oil problems that took place in the 1970s. As a repercussion of the oil fluctuations, several significant actions to rearrange the country's energy policy were taken by the French government. These actions were done in order to decrease its vast dependence on imported oil supplies and to realize energy impartiality (Ang, 2007).

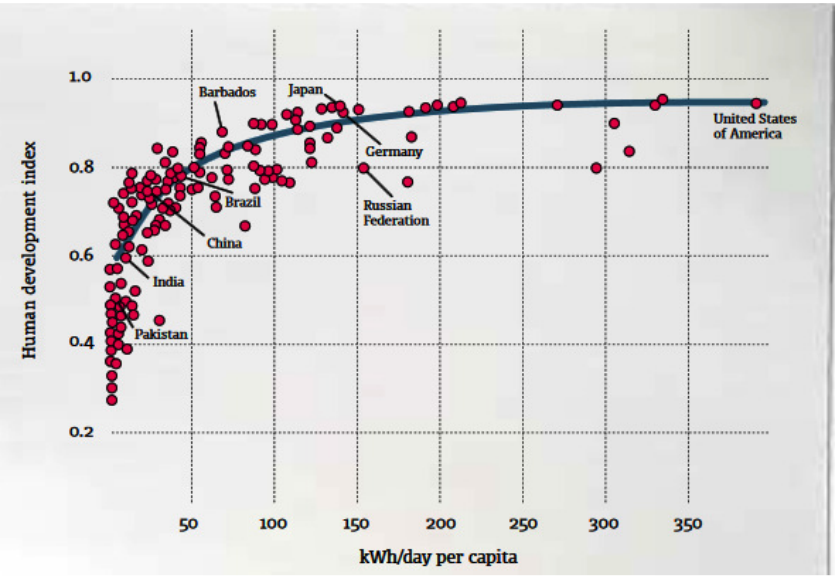

Figure 2: Correlation between energy use and human wellbeing using HDI (Banuri, T. and Hällström, N. 2012)

Mehrara (2007) have tested the causality affiliation between the energy utilization per capita and the GDP per capita in 11 selected oil-exporting states from 1971–2002. Outcomes from this study have revealed the existence of a unidirectional causality running from economic growth (GDP) to energy utilization for the oil exporting states; which should lead to hands-on policy suggestions for decision makers specifically in macroeconomic development. These outcomes have been consistent with those of Kraft and Kraft (1978) and Al-Iriani (2006), who have stated that causality in the USA and Gulf Cooperation Council states (GCC) has been moving from GDP to energy utilization. Moreover, it has been noticed that most of the governments of the major oil exporting states, resort to policies that has kept oil local prices beneath free market level; this generally have led to consequential high levels of local energy utilization. Consequently, such outcomes have indicated that energy management actions or conservation policies if done through amending energy price policies have no harmful ramifications on economic growth for these states (Mehrara, 2007).

According to Shahateet (2014) in his study to investigate the relation between energy consumption and economic growth in 17 different Arab countries extending from 1980 till 2011 using Autoregressive-Distributed Lag model (ARDL); results attained show that there are no causality from energy consumption to real GDP and vice versa in all Arab countries except in Kuwait. Such results indicate that policies targeting at energy conservation in Arab countries has no effect on economic growth. Furthermore, it indicates that variations in economic growth also will have no significance on energy consumption. Nevertheless, there exist variations between this study and other studies that involved other Arab countries using other methodologies, which leads to the recommendation for more analysis to judge the relationship between economic growth and energy use (Shahateet, 2014).

Oil-exporting countries of the Gulf Cooperation Council (GCC) have been less responsiveness to the subject of energy conservation. The GCC countries have several common features, the most important of which are; first, they experience a rather high per capita income; second, practically all of them are oil export-dependent with the exception of Bahrain (has a minute oil reserve); and third, is that their economic launch has begun by the significant rise in world crude oil prices in the 1970s. The increased revenues from oil exports have led to an enhanced economic growth in the GCC countries, with the exemption of Kuwait that indulged in a destructive war in the 1990s.

As a result of the above, energy has been cheap in the GCC and this has made the subject of energy conservation of a lower importance and priority than the case in oil-importing countries (Al-Iriani, 2006).

Population growth rates vary extensively throughout the Arab countries, showing different economic, social and cultural aspects. It has been witnessed that in the last three decades the population increase has been highest in the oil-producing Gulf countries. This has occurred because of the huge entry of foreign workforces and amplified expenditure on health services, which reduced child mortality and improved fertility rates sharply (Saab, 2012).

Moreover, there are differences between the Arab countries on the quantities of energy intensity consumed; where seven countries have energy intensity above the world average. Nevertheless, the widespread of subsidies have led to an increasing demand on energy in the Arab countries since 1990. Data collected showed that the average energy consumption per $1,000 GDP has increased by 10% between 1990 and 2003. However, Arab countries have witnessed different growth levels of energy consumption among them over the same period; for instance, the Arab Maghreb countries sustained the same average energy level, the Mashreq and the Arab least developed countries has observed declines of 5% and 22%, energy levels respectively; while GCC countries energy consumption level increased by 23% (Abdel Gelil, 2008).

According to Shahbaz et al. (2014) Tunisia for example, has enjoyed a diverse economy extending from agriculture to mining to tourism. However, by applying the trade liberalization policy in Tunisia, economic growth and energy consumption has risen progressively; thus, this has led to the amplification of the costs of energy supply and emissions of greenhouse gases (GHG) in the country. In addition,

Tunisian energy costs – energy utilization was about 12% of GDP in 2006, and this level has been high when compared to other Mediterranean industrialized countries (Greece 7%). In recent years and as a result of the increase of domestic consumption, Tunisia has not exported crude oil any more. Tunisia has been importing petroleum products since its refinery capabilities are low and has not met the demanded requirements.

In 2007, the carbon intensity of Tunisia's economy at the purchasing power parity (PPP) interchange rates for transforming GDP into US dollars was 0.309 kg CO2 emissions per unit of $GDP (World Bank, 2012). When comparing Tunisia to other Arab countries, Tunisia ranks first in having the lowest level of carbon intensity (Algeria 0.532, Egypt 0.455, Lebanon 0.31, Morocco 0.364, Saudi Arabia 0.733 and Syria 0.775). This ratio difference among countries reveals that there exist factors that lead to that disparity, these factors include; first if the countries are oil producing or not; second each economy has its own structural characteristics; third, energy efficiency of specific sectors of the economy; and the fourth difference was in fuel mixes (Shahbaz et al., 2014).

RESEARCH METHOD

To shed the light on the Arab countries and their relationship with oil as a source of energy, preliminary data has been collected from CIA World Factbook. To do so countries were divided into producing and non-producing countries, exporting, non-exporting and importing countries; furthermore, energy consumption in terms of electricity (kWh per capita) has been collected for each of the Arab countries; as well as, the estimated population number for each of these countries. Additionally, the countries ranking with respect to energy consumption out of 217 countries has been done. It is to be noted that Sudan & South Sudan has been considered as one country in terms of oil production (table 2). Data attained will be analyzed and studied among the different Arab countries oil usage type.

Moreover, in order to attain the objectives of this study, a sample data from 19 out of 22 Arab countries has been used. The 19 countries in the data set include Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen.

The three Arab countries that has been exempted from the study are Mauritania, Palestine and Somalia; because of the unavailability of the Energy use (kg of oil equivalent/capita) (ECPC) data for these countries. The data set has included yearly observations from 1995–2013 for the 19 Arab countries. This has resulted in a considerable number of observations (317 observations). The source of the data is the World Bank World Development Indicators (WBWDI).

The data that has been extracted included Average GDP/capita and Energy use (kg of oil equivalent/capita) (ECPC) (World Bank, 2016). The 19 Arab countries have been segregated into oil exporting and oil importing countries so as to shed the light on how these two categories consume energy and to what level. It is to be noted that any country that produce oil yet imports it as well, will be assigned to the oil importing category.

Data attained from the above sample has been exhibited into graphical representation; so as to be able to interpret it.

RESULTS AND DISCUSSION

Following the collection of the Arab countries segregated data from the CIA-World Factbook; the following has been observed (table 2).

Energy Consumption and Oil Production
Oil Producing vs. Non-Producing Arab Countries

a) There are 16 oil producing Arab countries, 12 countries out of the 16-export oil and 4 of these 12 countries import oil over and above what they produce and export (Bahrain, Egypt, Tunisia and Algeria). Furthermore, the remaining 4 out of the 16 oil-producing countries do not export oil (Jordan, Morocco, Sudan and Yemen) and 2 of them import oil over and above what they produce (Jordan and Morocco). Hence, a total of 6 countries out of the 16 oil producing ones import oil over and above their oil production capability.

b) The remaining 6 Arab countries are non-oil producing countries, and thus the 6 countries do not export oil, but on the contrary all 6 countries import their entire oil requirement

from other oil producing nations (Lebanon, Palestine, Djibouti, Mauritania, Comoros and Somalia).

Table 2: Segregation of Arab countries according to the different oil usage types

Country	Producing Countries	Not Producing Countries	Exporting Countries	Not Exporting Countries	Importing Countries	Energy: Electricity consumption per capita (kWh per person)	World Rank with Respect to Consumption out of 217 Countries	Population Number
Kuwait	1		1			17030.6	4	4,161,000
United Arab Emirates	1		1			15131.1	6	8,933,000
Bahrain	1		1		1	9869.96	14	1,781,000
Qatar	1		1			9660.13	15	2,113,000
Saudi Arabia	1		1			6980.92	32	31,521,000
Oman	1		1			4758.1	62	4,181,000
Libya	1		1			4042.17	66	6,278,000
Lebanon		1		1	1	2412.21	94	4,288,000
Syria	1		1			1983.66	105	23,270,000
Jordan	1			1	1	1707.33	114	6,837,000
Palestine (West bank)		1		1	1	1674.45	116	4,683,000
Iraq	1		1			1639.06	117	36,575,000
Egypt	1		1		1	1408.59	123	88,523,000
Tunisia	1		1		1	1215.08	131	11,118,000
Algeria	1		1		1	867.73	143	39,903,000
Morocco	1			1	1	715.73	146	33,680,000
Djibouti		1		1	1	373.13	163	961,000
Yemen	1			1		211.68	171	26,745,000
Mauritania		1		1	1	185.37	174	3,632,000
Sudan	1			1		159.66	178	38,435,000
South Sudan						60.03	199	
Comoros		1		1	1	48.51	202	783,000
Somalia		1		1	1	27.65	210	10,972,000
TOTAL	16	6	12	10	12			389,373,000

X = YES

Source: CIA World Factbook - Official Estimate

Sudan & South Sudan are considered one country in terms of oil production

16 producing, 12 / 16 exporting out of which 4 import oil
16 producing, 4 / 16 not exporting out of which 2 import oil
16 producing, out f which 6/16 import oil
6 not producing, 6 not exporting & 6 importing
10 not exporting, 2/10 producing, 6/10 not producting and 8/10 importing
12 importing, 8/12 not exporting, 4/12 exporting, 6/12 not producing and 6/12 producing

Oil Exporting vs. Non-Exporting Arab Countries

a) There are 12 oil exporting Arab countries and they all produce oil and 4 of these 12 countries import oil over and above what they produce and export (Bahrain, Egypt, Tunisia and Algeria).

b) The remaining 10 countries are non-oil exporting countries, 4 countries out of the 10 produce oil (Jordan, Morocco, Sudan and Yemen), and the remaining 6 are non-producers (Lebanon, Palestine, Djibouti, Mauritania, Comoros and Somalia); in addition, 8 out of the ten countries import oil (Lebanon, Jordan, Palestine, Morocco, Djibouti, Mauritania, Comoros and Somalia). Hence, there are two Arab counties namely Sudan and Yemen who produce oil but do not export it or import any oil from other countries.

Oil Importing Arab Countries

There are 12 oil importing countries out of which 6 countries produce oil (Bahrain, Jordan, Egypt, Tunisia, Algeria and Morocco) and 6 do not produce oil. Furthermore, 4 out of these 12 countries export oil (Bahrain, Egypt, Tunisia and Algeria) and 8 do not export oil.

This analysis regarding Arab countries and their relationship with oil for production, export /import has been done so as to determine what type of relationship exist among the Arab countries with respect to the type of oil production in each country; as well as, knowing what oil operation each country has been involved in whether it is producing, non-producing, importing, exporting or any other combination (table 2). Additionally, analysis has been done so as to determine the relationship between each category and energy consumption per capita. Figure 3 showed that there were variations in average energy consumption per capita (in terms of electricity) among the different classes studied in table 2; where according to figure 3 exporting countries ranked highest followed by oil producing ones. Furthermore, figure 3 showed the effect of oil availability on energy consumption when comparing producing vs. non-producing countries; as well as, exporting vs. non-exporting ones.

Moreover, when comparing world country ranking with population size; values have shown that there has been no relation between the two; since Kuwait for example, which ranked highest has a small population number as compared to other countries whose ranking is lower but with a larger population number such as Egypt that has a 123 ranking. However, it has been observed that the highest ranking Arab countries are oil producing ones and oil exporting ones; with the exception of Bahrain which import oil over and above (table 2).

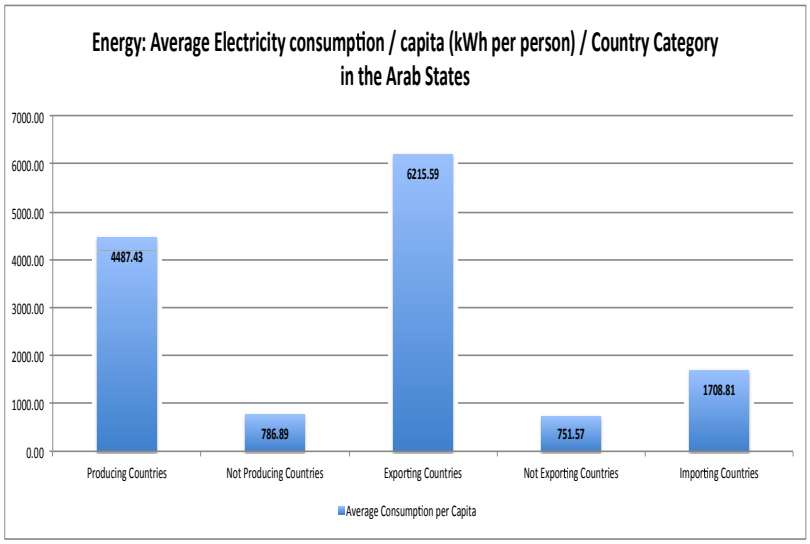

Figure 3: Average electricity consumption / capita (kWh per person) / Country Category in the Arab Countries

Energy Consumption and GDP Per Capita

The sample data collected has been analyzed for the 19 Arab countries; the following has been recorded with respect to GDP /capita and ECPC.

GDP/Capita

Among the 19 countries, the highest ranking country curve with respect to GDP per capita was Qatar; while the lowest was that of Comoros. Moreover, the lowest and the highest values that have been recorded among all 19 countries have ranged from (279 US$) for Yemen in 1995 to (96,077 US$) for Qatar in 2013 (figure 4).

Furthermore, 8 out of the 19 countries have not recorded data for certain years; so when these countries have been removed, the highest ranking country curve with respect to GDP per capita was Qatar; while the lowest was that of Egypt. Additionally, the lowest and the highest values that have been recorded among all 11 countries have ranged from (964 US$) for Egypt in 1995 to (96,077 US$) for Qatar in 2013 (figure 4).

However, when comparing the above results with the average GDP per capita per country 1995-2013 (figure 5); the following has been observed; the highest average GDP per capita value that has been recorded has been for Qatar (49,509.20 US$) and the least has been for Comoros (500.75 US$), which is consistent with the ranking results of the 19 Arab countries curves mentioned above (figure 4).

Finally, it has been observed that the first seven Arab countries that have the highest average GDP/capita values and the highest GDP ranking curves belong to the oil exporting Arab Countries (figures 4 and 5).

ECPC

The average energy use (ECPC) per capita per country 1995-2013 (figure 6) has shown the average ranking of each of the 19 countries with respect to average energy use per capita values across the years; additionally, it has shown that the highest average energy use per capita value that has been recorded for Qatar (18,707) and the least has been for Comoros (55).

Figure 7 has shown the different ECPC values per Arab country from 1995-2013. Results have shown that the highest and the lowest ranking countries curves have been Qatar and Comoros respectively. Furthermore, the highest energy use per capita value among all 19 countries has been recorded by Qatar (22,762) while the lowest has been recorded by Comoros (48) (figure 7).

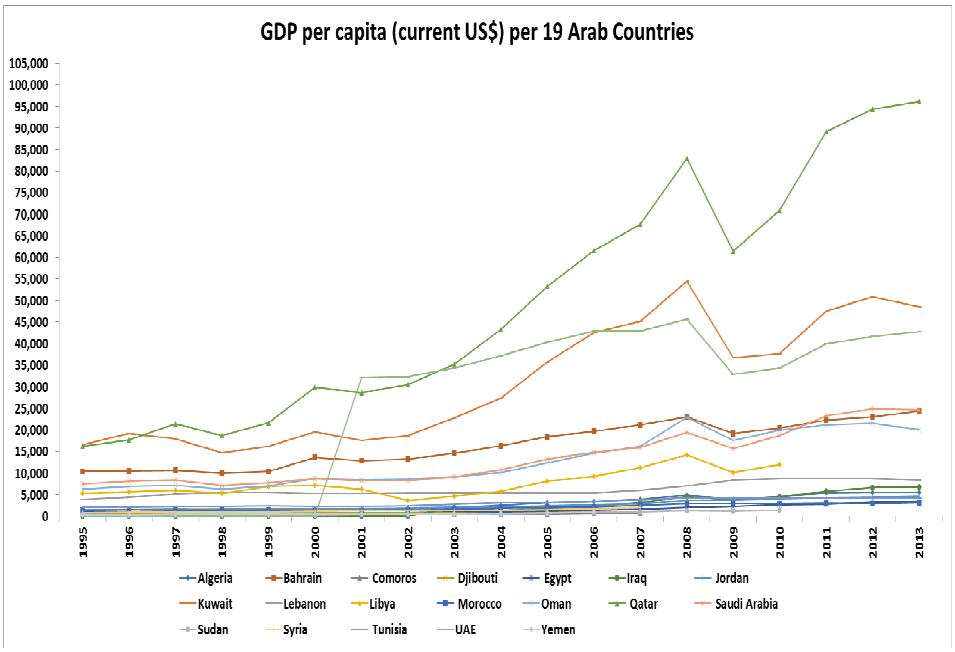

Figure 4: GDP per capita per 19 countries 1995-2013

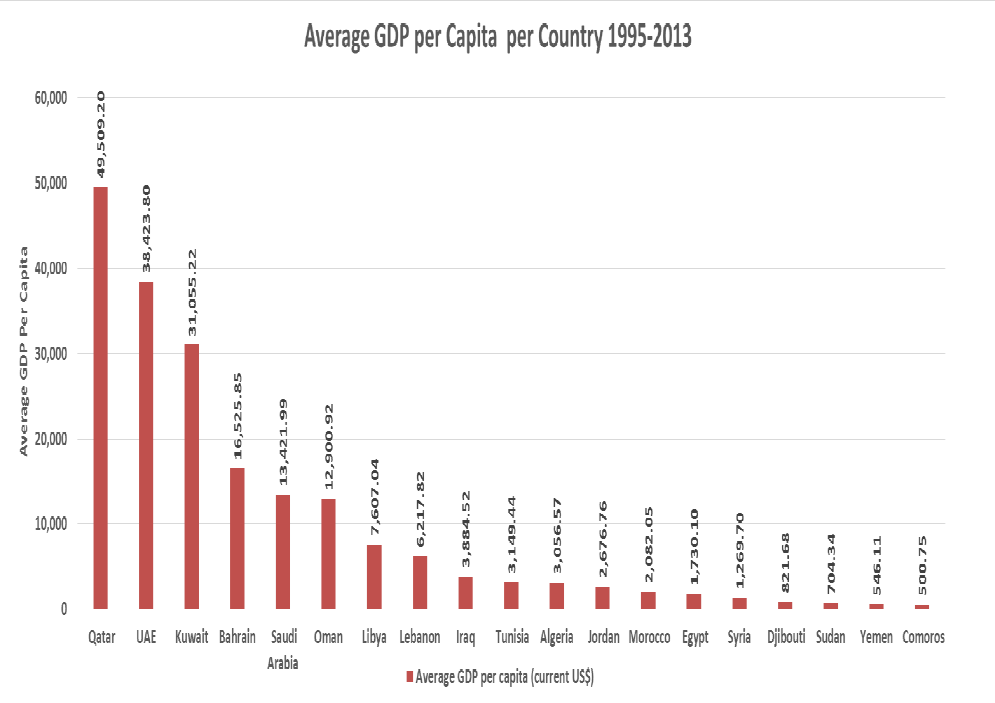

Figure 5: Average GDP per capita per country 1995-2013

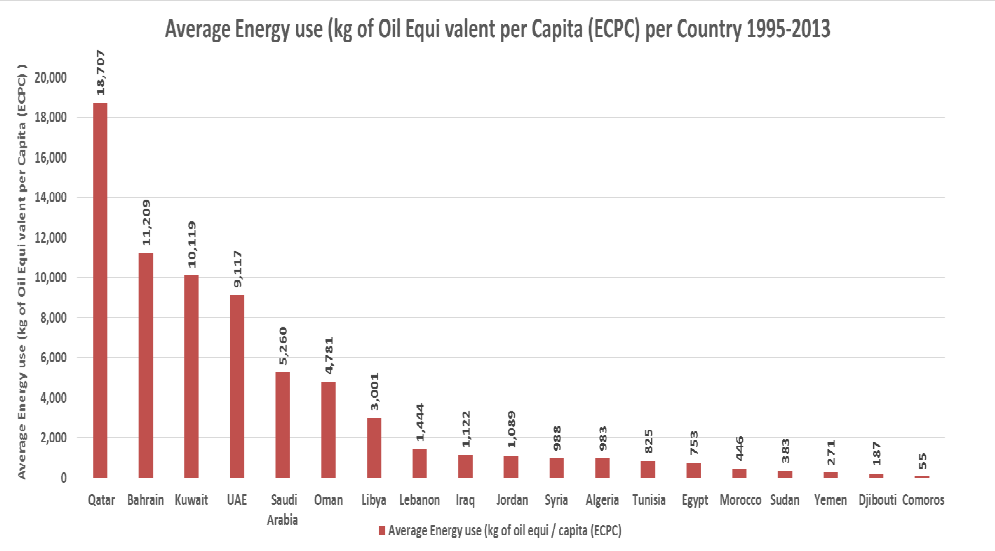

Figure 6: Average energy use (ECPC) per country 1995-2013

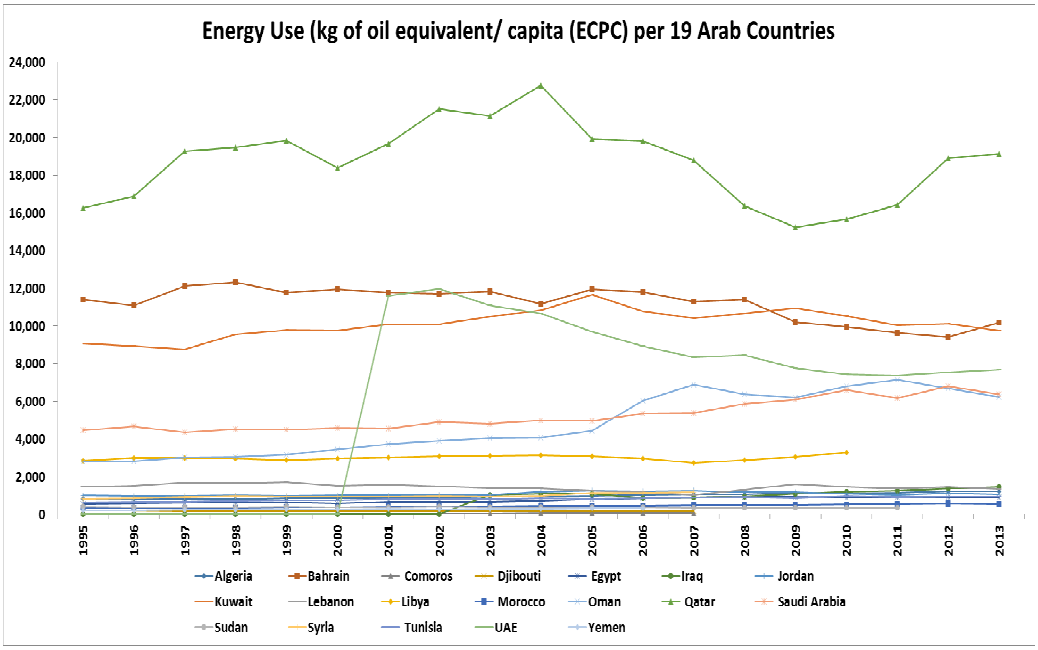

Figure 7: Energy use (ECPC) per 19 countries 1995-2013

Additionally, 8 out of the 19 countries have not recorded data for certain years; so when these countries have been removed, the highest ranking country curve with respect to energy use per capita curves was for Qatar; while the lowest was that of Morocco. Moreover, the lowest and the highest values that have been recorded among all 11 countries have ranged from (344) for Morocco in 1995 to (19,120) for Qatar in 2013.

Finally, it has been observed that the first seven Arab countries that have the highest average energy use per capita values and the highest ECPC ranking curves belong to the oil exporting Arab Countries (figures 6 and 7).

Based on the above, it can be noted that in both GDP/capita and ECPC results the highest values has been recorded for oil exporting countries, showing that the higher the GDP/capita the higher was the ECPC and hence the higher was the energy consumption. Looking at figures (5 and 6), it can be seen that Qatar ranked first in both followed by UAE, Kuwait, Bahrain, Saudi Arabia, Oman and Libya which are all oil exporting countries. Only Iraq came after Lebanon, most probably because of the unstable security condition the country has been enduring since 1990.

CONCLUSION

Energy production and usage has been a vital requirement for societies to achieve their needs of goods and services. This has led to the escalation of environmental degradation because of the abuse of prevailing resources. As a consequence, developing economies are currently confronting two challenges, which are first, to provide energy to all those who do not have access to it yet; second to improve efficiency of energy resource used and reduce pollutant emissions. One of the major types of energy provider is petroleum, whose industry exists in the three different economy sectors and its availability is highly important in determining human development.

Arab countries differ from each other when it comes to energy consumption; some of them exhibit the highest energy consumption per capita in the world; as such Arab countries has been segregated into five categories (producing, not producing, exporting, not exporting and importing) (table 2). Results have shown that

there exist several types of relationships among the Arab countries with respect to the oil industry. For example, results attained indicated that there was 16 out of 22 Arab countries that are oil producing companies yet 4 of these countries import oil over and above what they produce. Furthermore, when segregated into exporting and not exporting countries, 12 countries were exporting countries and 12 countries were importing countries; this is because several countries export and import oil at the same time. This intermingled relationship have shown how much the oil availability affect the increase or decrease of energy consumption because of oil price fluctuation; as well as, the price at which oil has been purchased which dependence on the category to which the Arab country belongs to.

Furthermore, electricity consumption (kWh per capita) / country category data has been attained; results indicated that oil exporting countries ranked first with respect to electricity consumption which was mainly due to low oil prices; followed by oil producing countries because some of these countries not only produce oil but import it as well; and the last category has been the non-oil producing countries.

Similarly, sample data of 19 out of 22 Arab countries has been collected from World Bank data to compare the effect of oil exporting and oil importing countries on GDP/capita and ECPC. Results have shown that GDP/capita across all Arab countries and ECPC values were highest in oil exporting countries and lowest in importing countries.

In conclusion, although the effect of oil producing countries on energy consumption level has been clear in the conducted study; nonetheless, further research should be done on amending the energy price policies and on determining the effect of the fluctuation of oil prices on the implementation of other types of renewable energy methods in the different Arab countries.

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