POLITECNICO DI TORINO

Corso di Laurea Magistrale in Engineering and Management Tesi

Di Laurea Magistrale

Determinants of Foreign Direct Investments in Egypt

Relatori:

Prof. Anna D'ambrosio

Candidata:

Mohamed Ali Morsy

November 2022

Table of Contents

1 INTRODUCTION 4

1.1 OVERVIEW 4

1.2 FDI and MNE 6

1.3 ARGUMENTATION 9

2 FDI TRENDS 9

2.1 Trends in Foreign Direct Investment (FDI) Around the World 10

2.2 Trends in Foreign Direct Investment (FDI) at african continent 11

2.2.1 The sources of foreign direct investment in Africa 11

2.2.2 Trends and patterns of foreign direct investment inflows into Africa 12

2.2.3 Egyptian foreign Direct Investment in International Business 16

3 DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN EGYPT 29

3.1 POLITICS, STABILITY AND ECONOMY 29

3.2 Education 31

3.2.1 The Importance of Education in Economic Development 32

3.2.2 Education and Productivity 34

3.2.3 Education and Income 36

3.3 ECONOMIES OF SCALE AND EGYPT MARKET POTENTIAL 37

3.4 Egypt GDP per capita 38

3.5 Infrastructure 41

3.5.1 Roads 41

3.5.2 Railways 43

3.5.3 Waterways 45

3.5.4 Airports 45

3.5.5 Sea Ports 54

3.5.6 Energy 62

3.5.7 Renewable Energy: 64

3.6 Oil&Gas and Mining 75

3.6.1 Oil 78

3.6.2 Natural Gas 82

3.6.3 Mining 85

3.7 Doing Business in Egypt 88

3.8 Investment opportunities across Egyptian industries 90

3.9 Fiscal and Monetary factors 92

3.9.1 Gross Domestic Product Growth (%) 93
3.9.2 Inflation Rate 94
3.9.3 The Rate of Unemployment: 95
3.10 Tax System and Incentive Programs for Investment Taxes 96
3.10.1 Tax Structure 97
3.11 Corruption 98
3.12 Exchange rate 100
3.12.1 1st Floating: 101
3.12.2 2nd Floating: 102
4 CONCLUSION 104

1 INTRODUCTION

1.1 OVERVIEW

One of the most important means by which countries integrate into the global economy is via foreign direct investment (FDI). FDI is not just a significant conduit for the transfer of cash between nations; it is also a significant channel for the transfer of products, services, and knowledge/technologies between countries, and it helps to connect and coordinate production across borders. Foreign direct investment (FDI) is a method of establishing solid and long-lasting partnerships between economies, and it may be a significant vehicle for the growth of local enterprises. Foreign direct investment (FDI) has increased dramatically in recent decades, and both the destinations and the sources of FDI have expanded as a result of globalization. Internationally harmonized, timely, and trustworthy foreign direct investment data are required to analyze the trends and changes in foreign direct investment activity at the global, regional, and national levels.

Ref: https://www.investopedia.com/terms/f/fdi.asp

An ongoing argument among writers in recent literature reviews has focused on the influence of foreign direct investment on the growth of nations' economy. Because countries can benefit from FDI repercussions and improve their technologies, infrastructure, and overcome their financial constraints, as well as improve their position in global competitiveness, the majority of people agree with the statement that foreign direct investment (FDI) is essential for economic development, particularly for developing countries. Some scholars, on the other hand, believe that foreign direct investment has undesirable consequences, such as the displacement of local businesses and the creation of large amounts of unemployment. As a result, the study examines the influence of foreign direct investment (FDI) on economic growth in a host nation, with Egypt serving as an example of a host country. The study is based on secondary data from the World Trade Organization, the World Investment Report, the United Nations Conference on Trade and Development, and the Central Bank of Egypt, as well as journal publications and white papers. The information is used to detect trends and patterns in foreign direct investment at the global, African, and Egyptian levels, as well as to illustrate and analyze the link between FDI and job creation, technology transfer, and infrastructure development. Conclusions reveal that foreign direct investment (FDI) in Egypt's economic sectors

follows a fluctuating upward pattern, and that there is an imbalance in the allocation of FDI amongst the sectors. Furthermore, the study of FDI repercussions reveals that FDI contributes to the establishment of a significant number of employment opportunities and the development of a variety of infrastructure, particularly in the power and energy sectors. However, there is little statistical evidence to support the notion that foreign direct investment plays a role in the transfer of technology to Egyptian enterprises. Although foreign direct investment (FDI) in Egypt has been helpful to certain sectors, it is inadequate to spur economic growth and development in the country. For this reason, government should first and foremost consider all necessary conditions by creating a framework for FDI to produce its results; infrastructure should be developed, research and development should be enhanced, and educational systems should be strengthened, while also empowering anti-corruption laws to work

Ref: World Trade Organization

World Investment Report

United Nations Conference

Central Bank of Egypt

The Africa Report

FDI is one of the most important drivers of economic growth and an essential component of an open and functional international economic system. However, the benefits of foreign direct investment do not immediately and uniformly flow across nations, industries, and local communities. When it comes to attracting foreign direct investment (FDI) to a greater number of poor nations and obtaining the full advantages of FDI for development, national policies as well as the international investment architecture are important factors to consider.

The obstacles largely affect the host nations, which are required to construct a transparent, wide, and efficient policy environment that is conducive to investment and to build the human and institutional resources necessary to put these policies into reality.

Because the majority of foreign direct investment (FDI) flows originate from OECD nations (The Organization for Economic Cooperation and Development), developed countries have the potential to contribute to the advancement of this agenda. They can encourage non-OECD countries to integrate further into rules-based

international frameworks for investment; actively promote the OECD Guidelines for Multinational Enterprises, together with other elements of the OECD Declaration on International Investment; use overseas development assistance (ODA) to leverage public/private investment projects; use ODA to facilitate developing countries' access to international markets and technology; use ODA to ensure policy coherence for development more generally; use ODA to leverage public/private investment projects; use ODA to leverage public/private investment

Ref: The Organization for Economic Cooperation and Development

In addition to these benefits, which, in principle, are applicable to all different types of private capital inflows, Feldstein (2000) and Razin and Sadka (forthcoming) remark that the gains to host nations from FDI can take on a variety of additional forms, including the following:

- Foreign direct investment (FDI) enables the transmission of technology, particularly in the form of novel types of capital inputs. This is something that cannot be accomplished through trade in products and services or through financial investments. Foreign direct investment can also increase competitiveness in domestic input markets.
- Foreign direct investment (FDI) recipients frequently acquire staff training as part of the process of operating newly established enterprises, which helps to the growth of human capital in the nation that is the host.
- Foreign direct investment (FDI) typically results in a profit, which then contributes to a country's overall corporate tax income.

Ref: International Monetary Fund

1.2 FDI and MNE

A foreign direct investment (FDI) is created when a company or a person from one nation makes an investment in another country on the grounds that there are commercial interests of the home country situated in the host country.

Historically, foreign direct investment (FDI) happened between industrialized nations. More lately, foreign direct investments (FDI) have begun to target developing nations

as well. This is in addition to the fact that developing and emerging countries have become the source countries for a significant amount of FDI.

It is believed that foreign direct investments will give the economy of the host nation with prospects for revenue, employment, new technology, know-how, managerial skills, marketing contribution, and exporting of goods (Baniak et al., 2005; Pavlinek, 2004). The majority of developing countries have made adjustments to their economic and physical infrastructures in order to entice international investors and reap the benefits of doing business with them. The result of these kinds of alignments was that in the 1990s there was a significant rise in the proportion of nations that were still in the process of developing their economies (Erdal & Tatoglu, 2002).

Even though collecting financial capital is the most prominent result of foreign direct investment (FDI), acquiring organizational, intellectual, and technological capital is also an essential asset that may be obtained through FDI influx. In addition, MNEs would be capable of penetrating new markets in new regions by bringing new managerial competencies, delivering new technology, and human resources, which would ultimately result in the host market experiencing growth. A multinational enterprise, abbreviated as MNE and sometimes referred to as a Multinational Corporation (MNC) and Multinational Firm (MNF), is an enterprise that is either international or multinational and has commercial activities in more than one country. The allocation of international revenue and output between developing nations and industrialized countries is referred to as foreign direct investments, or FDI for short. (Akinlo, 2004; Girma, 2005; Li & Liu, 2005).

Developing about economic development is the primary objective of economic policy in countries on the path to becoming developed. Accumulating a significant amount of capital is necessary for an economy to mature to the point where it can support further development. On the other hand, one of the most significant challenges faced by developing nations is a deficiency in the accumulation of sufficient capital.

Consequently, developing nations such as Egypt are striving to address this deficit in the amount of capital by bringing in money from beyond their borders.

It is possible for foreign money to enter the nation in the form of short-term and long-term portfolio investments, as well as direct investments. This type of investment is seen as an alternate path in the process of economic growth. According to Yibozkurt (1985), portfolio investments consist of the acquisition of debt instruments, bonds, and stocks issued by foreign corporations from international capital markets in

exchange for an interest payment or dividend payment. On the other side, investments made by foreign direct investors give the investors the ability to exercise control over their own investment, in addition to providing them with technological, brand, and managerial expertise (Karluk, 2001). The difference between direct investments and portfolio investments may be seen in this regard.

Foreign direct investment (FDI) is beneficial to developing nations since it not only brings in cash but also brings with it more modern technology, particularly in the industrial sector, as well as know-how transfer and managerial expertise. Furthermore, foreign direct investment does in fact have a good influence on employment, as evidenced by a rise in the employment rate as well as the creation of new work possibilities, as well as an increase in entrepreneurialism and competitiveness. (Batten and Vo 2009; Reiter and Steensma 2010; Fernandes and Paunov 2012; Lee 2013).

According to Pavlinek (2004) and Deichmann (2003), foreign direct investment has a tendency to be concentrated in the main cities of the country that is receiving it. A circumstance of this kind generates regional instability due to the uneven distribution of resources across the country.

The majority of developing nations lack the financial resources necessary for investment, which is why foreign direct investment (FDI) is so important to the economic development of these nations. In addition, foreign direct investment (FDI) clearly has a positive effect on employment, as evidenced by an increase in the employment rate as well as the creation of new job opportunities. Furthermore, FDI increases competition and entrepreneurialism, both of which are essential factors in the expansion of developing nations. (Batten and Vo 2009; Reiter and Steensma 2010; Fernandes and Paunov 2012; Lee 2013); (Mallampally and Sauvant 1999); (Hermes and Lensink 2003); (Batten and Vo 2009); The "home country" of multinational corporations (MNCs) might be located in a single nation or, more rarely, in many nations. These businesses also have a presence in the other nations that are hosting them.

The accumulation of capital is another additional benefit of foreign direct investment (FDI), particularly for nations that struggle with low rates of saving and low volumes of investment. Because foreign direct investment is a consistent kind of flow, it is generally favored by nations who are suffering from a shortage of either capital or savings. However, there are situations when the nation that is hosting the MNC also

loses as a result of the return of earnings. This occurs when many MNCs opt to repatriate their profits back to the country in which they are headquartered. Therefore, the produced capital would no longer be able to remain inside the borders in which it was initially formed. (Duttaray et al., 2008; Thangavelu et al., 2009; Tang et al., 2008; Vadlamannati & Tamazian, 2009).

Because foreign direct investment (FDI) is such a significant component of an economy in a host nation, attracting more of it would need that nation's financial system be robust and effective in terms of resource allocation, risk management, and the accumulation of savings.

On the other hand, there is also the other side of the coin to consider. MNCs possess better resources in comparison to the nations in which they are investing, and this may lead to a distortion of the local competition as a result of the companies' abuse of the rules and the protective or restrictive measures that governments have constructed. Additionally, relying on foreign resources such as technology, labour, money, and raw materials can be detrimental to the domestic market. This can happen when businesses are dependent on these resources from other countries. It's possible that this will give multinational corporations a monopoly position in certain areas by having unfavourable consequences there. It is possible for multinational corporations (MNCs) to lessen or eliminate the competitive advantage held by home markets and countries because to the worldwide ownership advantage and enormous authority held by these corporations. In the long run, domestic businesses could be compelled to compete in more crowded markets (Duttaray et al., 2008; Tang et al., 2008; Thangavelu et al., 2009).

1.3 ARGUMENTATION

FDI consequences that occur in Egypt, patterns and trends in foreign direct investment (FDI) inflows into Egypt, and if FDI contributed to the expansion of the Egyptian economy, which kind of foreign direct investment (FDI) is more prevalent in Egypt: greenfield or brownfield and which economic sectors stand to gain the most as a result of this?

2 FDI TRENDS

The developments in foreign direct investment (FDI) throughout the world and in Egypt are the focus of this chapter. Additionally, descriptive analysis will be used to

investigate the subregional distribution of investments in Egypt and the most popular sectors.

2.1 TRENDS IN FOREIGN DIRECT INVESTMENT (FDI) AROUND THE WORLD

Globalization has played a significant role in the economy over the last three decades, thanks to the liberalization of trade, the development of capital markets, the dismantling of trade barriers, technological advancements, and the increasing internationalization of goods and services, among other factors. The result is that emerging nations have a huge effect on the global economy because of the vast local market and cheap labour costs in their respective areas of origin. When looking at the trends in global foreign direct investment, it is clear that emerging nations have made their presence known by getting a disproportionately significant percentage of total FDI inflows (Table 2.1 and Figure 2.1). The percentage of developing countries in overall FDI inflows increased from 45.5 percent in 2013 to 54.4 percent in 2018, according to the World Bank.

Table 2.1: Foreign Direct Investment (FDI) inflows at the global level

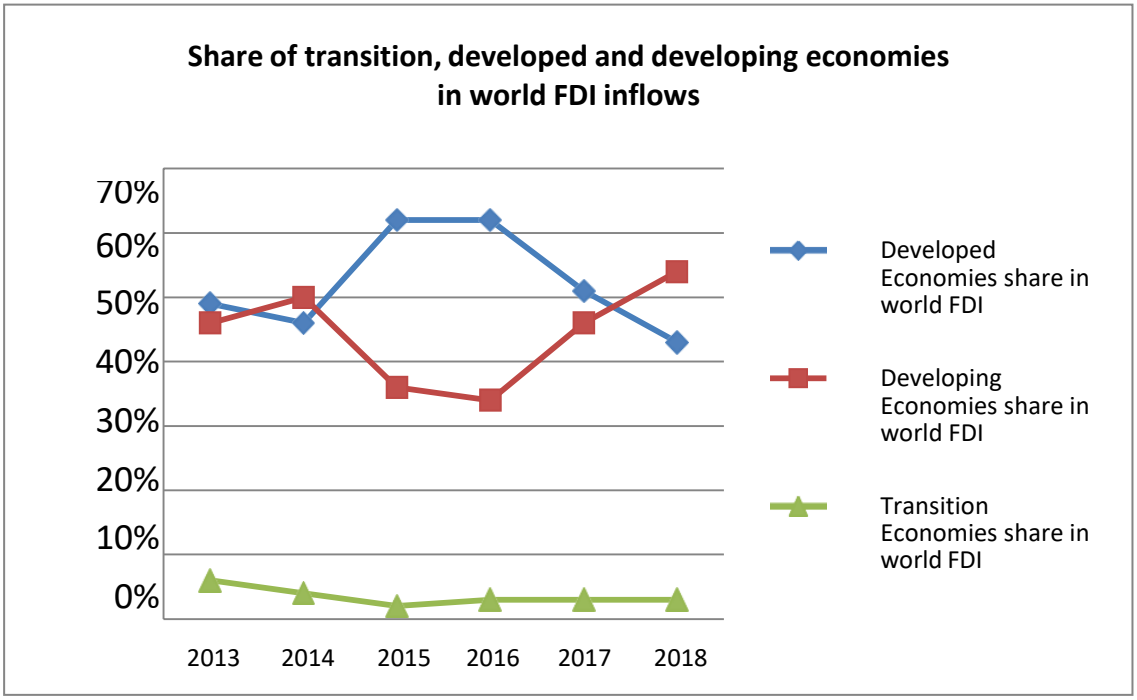
Economies/Years	2013	2014	2015	2016	2017	2018
World FDI	1,431,164	1,357,240	2,033,803	1,918,679	1,497,371	1,297,153
Developed Economies share in world FDI	694,848	623,078	1,268,595	1,197,735	759,256	556,892
Developing Economies share in world FDI	652,551 (45.5%)	677,400 (50%)	728,814 (35.8%)	656,290 (34.2%)	690,576 (46%)	706,043 (54.4%)
Transition Economies share in world FDI	83,764	56,762	36,394	64,654	47,538	34,218

Source: compiled and computed from UNCTAD, World Bank

From 2014 to 2016, the percentage of foreign direct investment (FDI) in emerging countries declined significantly. Following that, the emerging countries experience a growing upward trend in FDI inflows, whilst the developed economies experience a decreasing upward trend in FDI inflows. By 2018, emerging countries had surpassed

developed economies in terms of proportion of overall FDI inflows, accounting for 54.4 percent of total FDI inflows worldwide.

Figure 2.1: The proportion of FDI inflows from various countries in the world



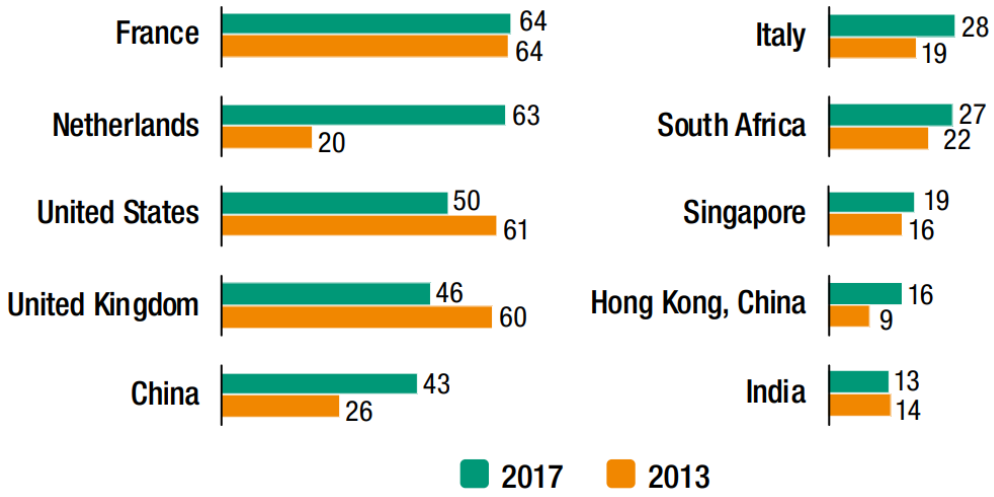
Source: compiled and computed from UNCTAD, World Bank

2.2 TRENDS IN FOREIGN DIRECT INVESTMENT (FDI) AT AFRICAN CONTINENT

2.2.1 The sources of foreign direct investment in Africa

According to the World Investment Report (2019), France continues to be the most popular home nation for foreign direct investment in Africa. In addition, the Netherlands has greatly boosted its investments in Africa, which are expected to reach US$ 63 billion by the end of 2018. Similarly, other home nations' contributions, such as those from China, Italy, and South Africa, have steadily expanded over the course of many decades. Investments in the United States and the United Kingdom, on the other hand, have decreased from US$ 61 billion and US$ 60 billion in 2013, respectively, to US$ 50 billion and US$ 46 billion in 2017.

Figure 2.2.1: The top ten home countries in Africa in terms of foreign direct investment (FDI) stock



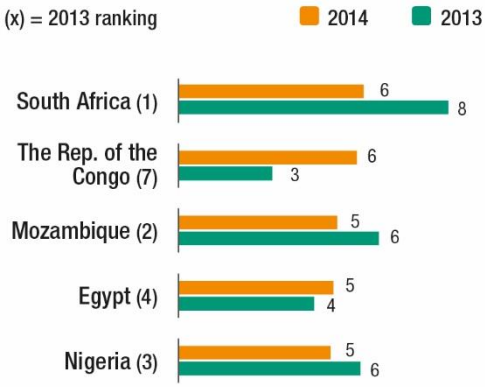
Top ten investors economies by FDI stock, 2013 and 2017 (Billions of dollars). World investment report 2019 – Special Economics Zones (page 2/50)

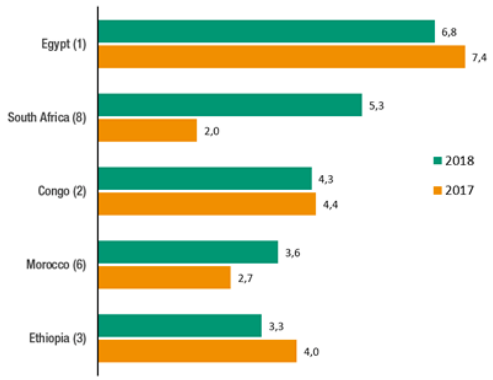
2.2.2 Trends and patterns of foreign direct investment inflows into Africa

Africa's share of total global foreign direct investment (FDI) has fluctuated during the years 2013-2018. Africa's share of the world's population decreased from 3.49 percent in 2013 to 2.4 percent in 2016. In the following years, however, the proportion slowly grew, eventually reaching 3.5 percent in 2018. According to the World Bank, Africa received foreign direct investment (FDI) of US$ 45.6 billion in 2018. This represents an increase of 11 percent in FDI inflows to Africa from 2017, when it got around US$ 41.3 billion, defying the recent worldwide negative trend in FDI inflows. Despite the growing trend in foreign direct investment (FDI) inflows into Africa, the continent remains in third position among emerging countries in terms of FDI inflows (UNCTAD, 2019). Egypt, South Africa, the Democratic Republic of the Congo, Ethiopia, and Morocco are the top five African host economies for foreign direct investment. It has been discovered that rising demand for some commodities, as well as persistent non-resource-seeking investments in a select nations, were the primary drivers of greater foreign direct investment (FDI) inflows to Africa. UNCTAD (United Nations Conference on Trade and Development, 2019).

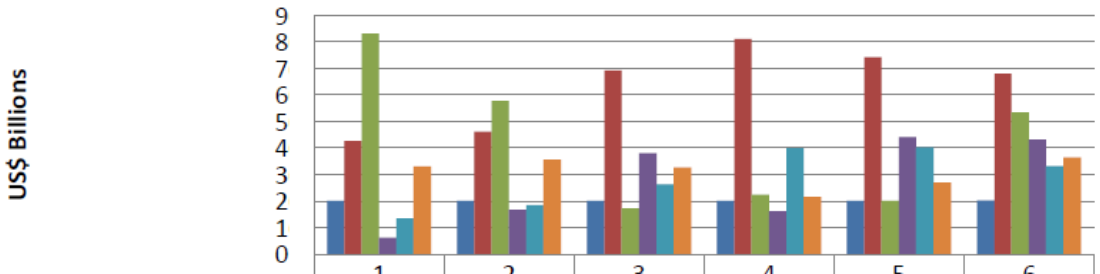
Despite the fact that Egypt's share of FDI inflows in Africa has decreased from 17.9 percent in 2017 to 14.8 percent in 2018, the nation continues to be the top host country for FDI in Africa. For the five-year period 2013-2018, Egypt received an average of 12.93 percent of total FDI inflows into Africa. It should be noted that the decrease in FDI inflows to Egypt and other large economies in 2018 was more than compensated by huge gains in other countries, the most notable of which was South Africa. According to the World Bank, South Africa is the second-highest host nation in Africa for foreign direct investment, accounting for an average of 8.61 percent of total FDI inflows during a five-year period. UNCTAD (United Nations Conference on Trade and Development, 2019).

Table 2.2.2: The most popular African host nations



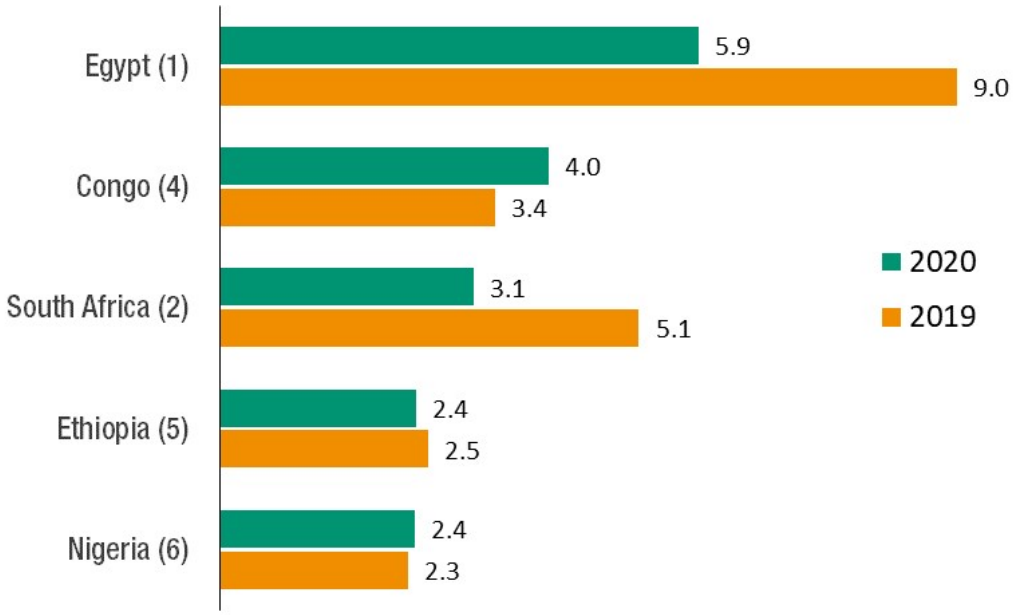


FDI inflows to Top Host Countries in Africa

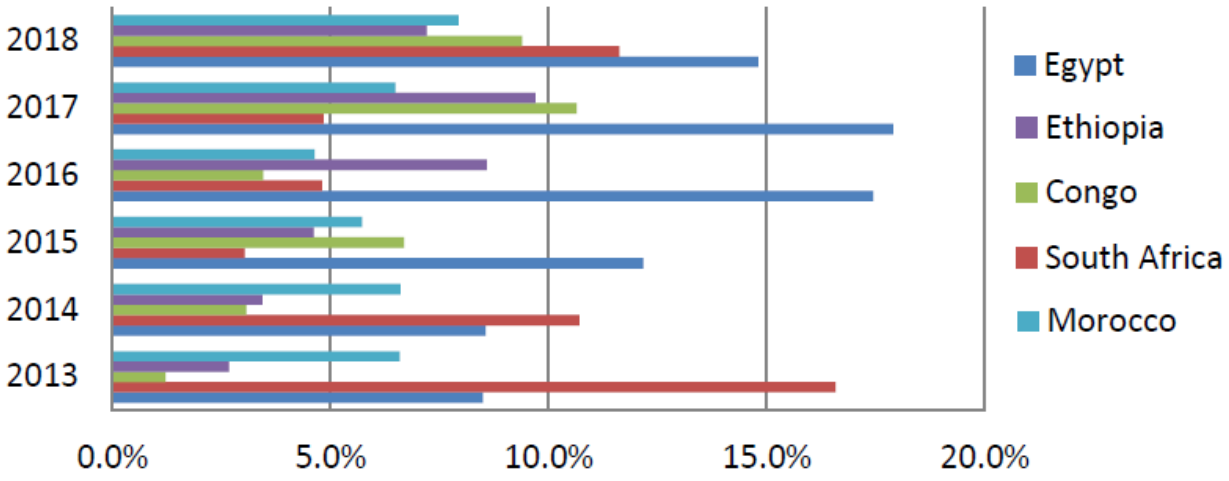


Countries/Years	2013	2014	2015	2016	2017	2018
Egypt FDI inflows	4,256	4,612	6,925	8,107	7,409	6,798
South Africa FDI inflows	8300	5771	1729	2235	2007	5334
Congo FDI Inflows	609	1659	3803	1611	4406	4313
Ethiopia FDI Inflows	1344	1855	2627	3989	4017	3310
Morocco FDI Inflows	3298	3561	3255	2157	2686	3640

The above consolidation evidence that Egypt is the highest attractive country in Africa that receives FDI, in 2013 and 2014 Egypt was healing from 2011 revolution that caused a heavy impact on economy, and the "*Disturbed Regime*" that held the power in Egypt from 2011 to 2013 (fundamental regime). We can observe as well starting from 2014 after the corrective revolution (in June 2013) and the subsequent stability of the current regime, FDI inflows are dramatically increased from 4.2 B$ in 2013 to 4.6 B$ in 2014; so, Egypt became number #1 among African countries, then FDI inflows increased more in 2015 and 2016 and reached 8.1 B$. Tangible declining has occurred in 2017 and 2019 but Egypt retained the highest African county that attracts FDI.



In 2019 Egypt received FDI inflows 9 Billion $ which is the highest figure ever, whole predictions were supporting increment of FDI inflows during the subsequent years of 2020 and 2021 because of political and security stability. But during 2020 the FDI is significantly declined to 5.9 Billion $, but Egypt continued number #1 among African countries, this declining shows the negative effect of Covid-19

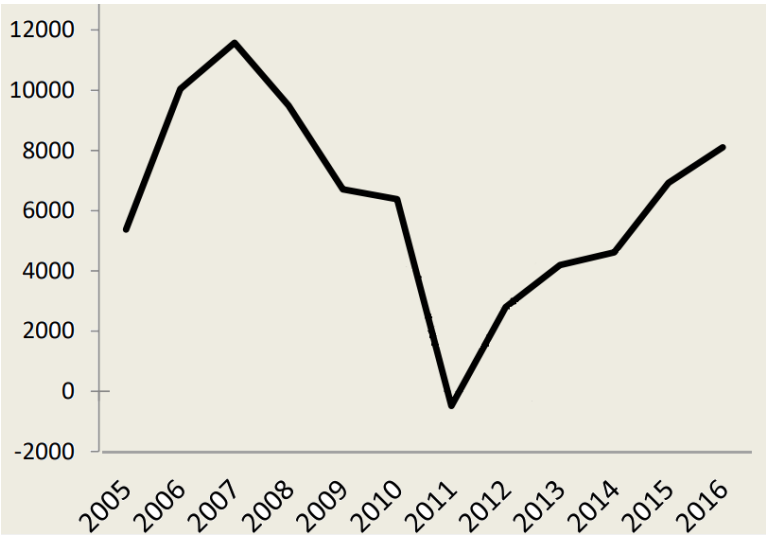


- We can observe the same concept from the average share of top Host Countries of Africa's FDI Inflows

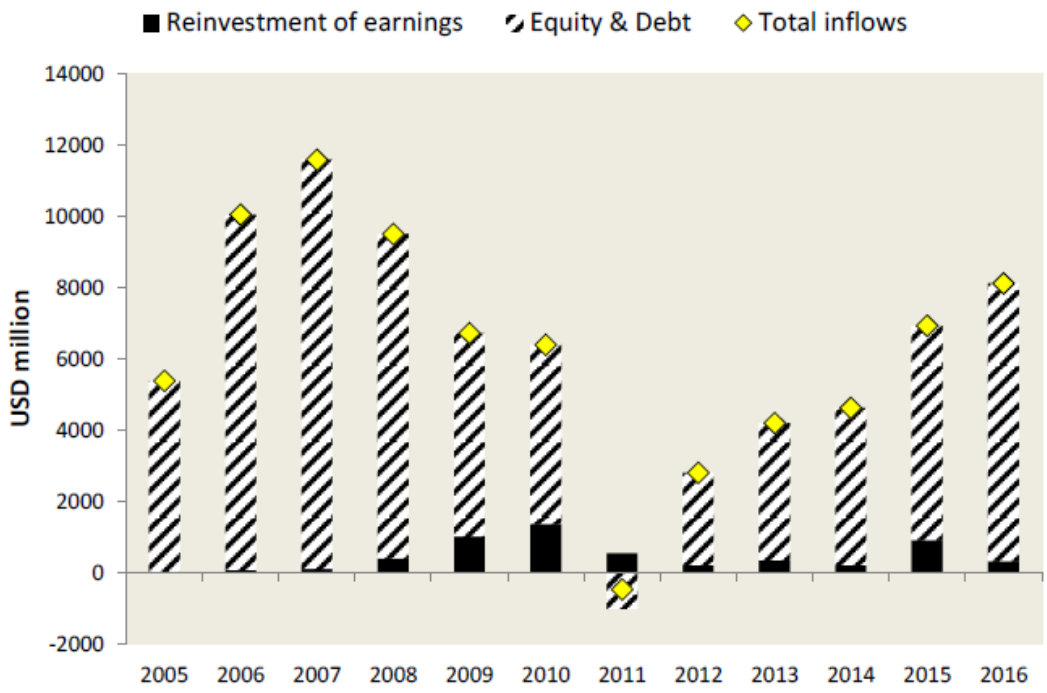
2.2.3 Egyptian foreign Direct Investment in International Business

2.2.3.1 The sources of foreign direct investment in Egypt

In July 2007, the Egyptian government has signed and agreed to the Organization for Economic Cooperation and Development's (OECD) "Declaration of International Investment and Multinational Corporations" The proclamation is an attempt to demonstrate the government's commitment to improving the business environment by providing equal treatment to both international and domestic investors, as well as encouraging the constructive contribution of multinational enterprises (MNEs) to economic growth. As a result, Egypt has diversified the sources of foreign direct investment (FDI) between 2005 and 2019, and the number of home nations investing in Egypt has risen since the signing of the Declaration of Principles. According to the World Bank, around 50 home countries invested in Egypt in 2019, compared to 29 home countries in 2005. Despite the fact that countries such as China, the Netherlands, Luxembourg, Malta, and many other countries have begun to appear on the list of foreign investors, they still account for a small proportion of total FDI inflows, with the exception of Belgium, and are located far away from the United Kingdom, the United States, the United Arab Emirates, and France, which continue to dominate the primary investor list. National Bureau of Economic Research (CBE), Net Foreign Direct Investment By Country, 2019.

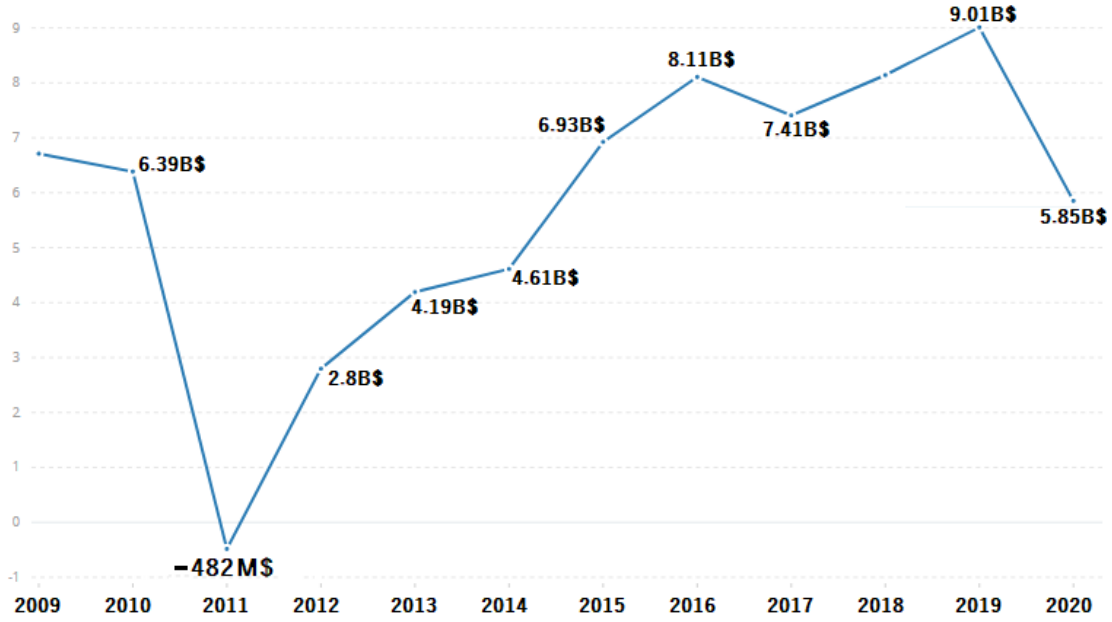


Source is OECD page 8/52



Source is OECD page 10/52

In 2011, FDI inflows recorded a sharp decline to negative levels (at -0.485B$), the reason behind was the 2011 revolution and the fundamental regime that controlled the country.



Source: [WorldBank Egypt Foreign Direct Investment, net inflows]

Note: It is clear, January 2011 revolution had damaged the FDI inflows

On the other hand, and to focus on the period between 2013 and 2017, to show the healing after 2011 revolution and the two different regimes governed Egypt. Greenfield investment monitor FDI Markets demonstrates that foreign direct investment (FDI) into Egypt has been growing at a consistent rate from 2013 to 2017. In 2013, Egypt registered a total of 49 investments, which resulted in a capital expenditure of $4.37 billion and the creation of 7,453 new jobs. During the year 2014, the number of investments rose by 20.41 percent to 59, and both the amount of money spent on capital expenditures saw dramatic increases, rising from $4.37 billion to $17.63 billion.

Between the years 2014 and 2015, an additional seven projects were recorded as having been invested in Egypt, bringing the total number of such investments to an all-time high. On the other hand, there was a decrease in both the amount of money spent on capital expenditures and the number of jobs created during the same time period, with respective drops of 16.61 percent and 42.72 percent. The increase in the number of projects from 2015 to 2016 was from 66 to 79, the increase in jobs created was from 13,107 to 19,181, and the increase in capital expenditure was from $14.7 billion to $40.91 billion, which was the highest level of capex recorded since FDI Markets began recording data in 2003. In 2017, Egypt was able to record 92 foreign direct investment projects, which were carried out by 73 different investing companies and resulted in a total capital expenditure of $37.62 billion as well as the creation of 17,524 new jobs.

The United Arab Emirates was the country that invested the most money in Egypt between January 2013 and December 2017 (After the corrective revolution in June 2013) with a total of 52 investments, followed by the United States with 45 investments and Saudi Arabia with 29 investments. Cairo, the nation's capital, attracted the lion's share of the total 345 investments made during this timeframe, accounting for 23.48 percent of the total investment. The most important sectors for investment were the financial services industry, followed by the alternative/renewable energy sector, and then the transportation sector, which together accounted for 28.12 percent of all investment activity recorded over the course of the previous five years.

Egypt's coal, oil, and natural gas sector contributed the highest amount of capital expenditure with $51.07 billion, despite the fact that the sector only ranked sixth in terms of industry investment. This was primarily the result of a project that was

announced in December 2017 by the energy company Rosatom, which is based in Russia and will see the company build a power plant in El Dabaa (الضبعة) as part of a joint venture with Egyptian authorities. The project is estimated to cost 30 billion dollars. It will be composed of four water-based reactors, each of which will have a capacity of 1200 megawatts (Egypt network is about 30 GigaWatt). The first of the plant's 4800-megawatt units is scheduled to go online in 2026, and it will be dedicated to serving the local market. *Source: https://www.fdiintelligence.com/*

2.2.3.2 FDI stocks and Income

Egypt's stock of inbound foreign direct investment (FDI) at the end of 2017 was USD 110 Billion, compared to USD 29 Billion in 2005, representing 33 percent of the country's GDP. In terms of the Middle East and North Africa Area (MENA) as a whole, inbound foreign direct investment (FDI) stocks account for 35 percent of MENA GDP, a ratio that is equivalent to the one reported in the OECD and higher than the one recorded for the G20 (29 percent). Egyptian inbound foreign direct investment (FDI) was the second highest in the MENA region at the end of 2016, accounting for 20 percent of the total, behind Saudi Arabia (45 percent).

Egypt's stock of outbound foreign direct investment (FDI) at the end of 2017 was USD 7.4 Billion, compared to USD 1 billion in 2005, representing 2 percent of the country's GDP. On an aggregated basis, outward foreign direct investment stocks in the MENA area account for 9 percent of total MENA nations' GDP, while overall outward foreign direct investment stocks from the OECD and G20 account for 43 percent and 28 percent of total OECD and G20 GDP, respectively. Egypt was the fourth largest investor from the MENA area at the end of 2016, accounting for 5.4 percent of total external FDI stock, behind Saudi Arabia (55 percent), Kuwait (23 percent), and Bahrain (11 percent).

According to GAFI's estimates of bilateral inward FDI positions at the end of 2013, which were derived from their recently developed compilation system and presented to the OECD WGIIS in October 2016, the United Kingdom, the United States, Italy, the Netherlands, the United Arab Emirates, Saudi Arabia, Qatar, Kuwait, Germany, and Belgium were the top foreign investors in Egypt at the end of 2013. According to estimates of inward foreign direct investment positions by industry sectors, the manufacturing and oil and gas sectors were the most important economic sectors at

the end of 2013, followed by the financial sector, construction, communication and information technology, tourism, and agriculture.

However, Due to the weakness of data on the sources of foreign direct investment by FDI stock in Egypt, the research will focus on the most important sources of FDI inflows. During the period 2012-2016, the following table lists the FDI flows in Egypt by major investors. As seen, the United Kingdom was the greatest foreign investor in Egypt from 2012 to 2016. The average FDI inflows from the United Kingdom account for around 44 percent of the overall average FDI in Egypt. The United States is Egypt's second-largest investing home nation, accounting for 14.7 percent of the country's total average foreign direct investment. Compared to other recently home nations, Belgium has been a very substantial investor in Egypt, accounting for around 8.5 percent of the total average foreign direct investment (FDI) in the country. The other main nations include the United Arab Emirates, which has a relative proportion of 7 percent, followed by France, Saudi Arabia, Korea and the Netherlands. Consequently, an examination of FDI inflows over the mentioned period reveals that just four home nations represented for 74.2 percent of the total average FDI inflows in Egypt.

(Calendar year basis)	**2012**	**2013**	**2014**	**2015**	**2016**
United Kingdom	47.10%	45.60%	43.80%	37.20%	47.40%
United States	12.30%	19.60%	20.70%	10.80%	10.00%
Belgium	16.30%	6.00%	6.20%	4.50%	9.70%
United Arab Emirates	3.30%	4.30%	5.50%	12.10%	9.50%
France	2.40%	2.20%	3.00%	2.20%	4.20%
Saudi Arabia	1.60%	1.90%	3.30%	4.70%	2.10%
Korea	0.00%	0.30%	0.90%	1.60%	1.50%
The Netherlands	3.70%	1.30%	1.30%	2.80%	1.50%

FDI flows in Egypt by major investors, as a share of total inflows

2.2.3.3 Different Types of Foreign Direct Investment in Egypt

Greenfield foreign direct investment and FDI related with mergers and acquisitions (Brownfield) are two distinctions that policymakers often seek to understand. If the

acquired business does not undergo major restructuring, it is widely believed that mergers and acquisitions will have little influence on the economy in terms of new output, employment, turnover, and so on. New investments, on the other hand, also known as greenfield investments, are typically seen to be beneficial in terms of expanding capacity and creating new employment opportunities. However, although this may not be the case since a firm bought by a foreign MNE might reap significant advantages in terms of access to expertise, supplier networks, and distribution channels, it is still of great relevance to know the different types of FDI that are being invested in. There are four categories of foreign direct investment (FDI): merger and acquisitions, greenfield investments, capital expansion, and financial restructuring. Fresh companies were defined as greenfield investments (also known as "ex nihilo investments"), while extensions of capital were defined as further new investments in already-existing affiliates. There is a good chance that the host economy will benefit from both forms of FDI.

With the use of General Authority for Investments (GAFI's) compilation system, they are able to detect the paid-in capital of newly founded direct investment firms, often known as "greenfield investments," as well as the extension of capital to already established affiliates. In order to better comprehend the role that foreign direct investment plays in the development of new firms and the growth of capacity in Egypt, data users should consider these metrics. If other economic factors are available for these new establishments, it would be beneficial to disclose these as well in order to better evaluate the effect of greenfield FDI. The information on employment generated or capital expenditures incurred as a result of foreign direct investment (FDI) is not strictly speaking data on FDI. It is common for such information to be offered by direct investors in the form of forecasts; if this is the case, it should be made clear that these estimates do not represent actual job creation or capital expenditures.

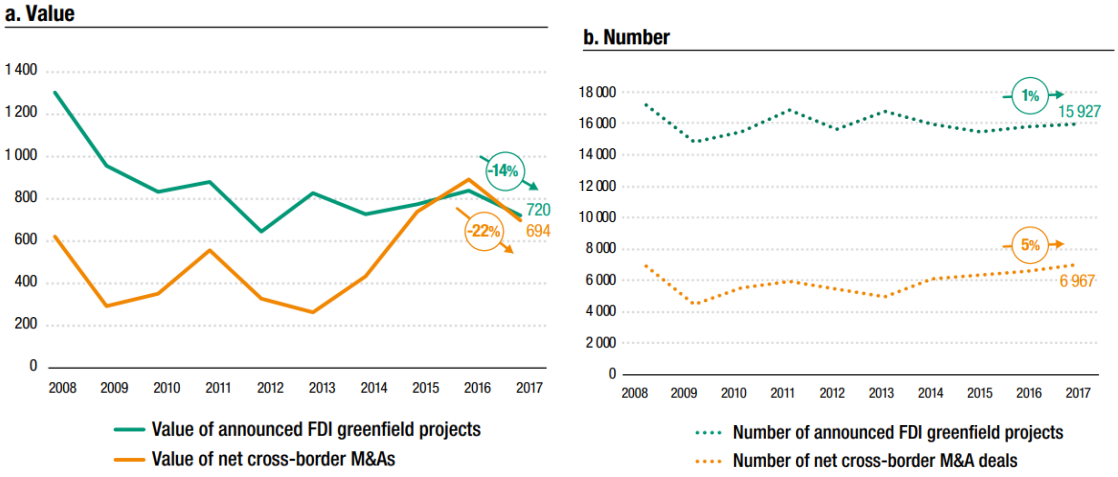
If you are interested in measuring the effect of foreign direct investment on the host economy, economic indicators connected with FDI businesses in general might be highly valuable. The information on turnover, employment, employee remuneration, and value added may be highly relevant in determining the role that FDI firms play in the economy, even if they are not considered to be FDI data. Many economic factors may not be identifiable using the financial accounts utilized in GAFI's methodology, but the organization is urged to investigate what elements could be accessible. It may be feasible to get information on turnover or sales, capital

expenditures, and staff pay. It may also be feasible to develop methods to estimate value added from the different cost elements presented, such as employee pay, depreciation, and taxes, as well as profits, in order to better understand the value contributed.

Examples of Greenfield and Brownfield in Egypt:

Greenfield example: The Russian State-owned nuclear energy company Rosatom started a nuclear plant mega-investment of $30 billion, to be carried out over several years. The first reactor of the Dabaa plant is projected to come online in 2020

Brownfield example: The Russian Rosneft company acquired a 30 per cent stake in the offshore Zohr gas field from the Italian firm Eni for $1.1 billion

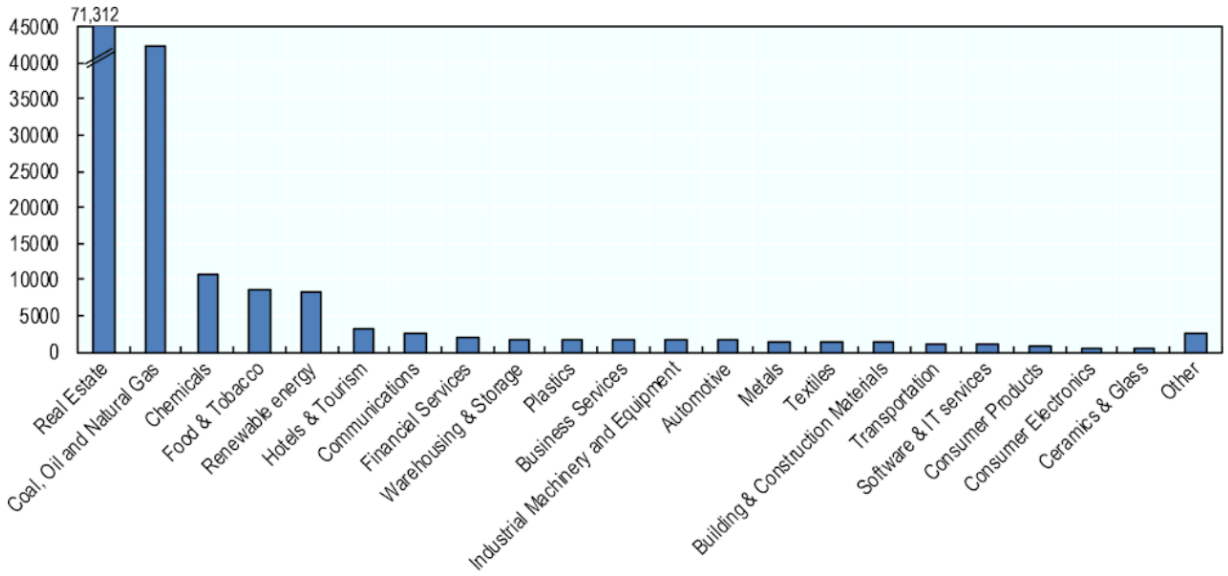


Value and number of net cross-border M&As and announced greenfield FDI projects

Source: UNCTAD, cross-border M&A database (www.unctad.org/fdistatistics) and information from the Financial Times Ltd, FDI Markets (www.fDimarkets.com) for announced greenfield FDI projects

Additional information on cross-border investment in Egypt may be gained from international statistics on announced greenfield foreign direct investment projects. Simply said, investments in real estate and natural resources accounted for 70 percent of all greenfield FDI capital declared between 2006 and 2017. Other very appealing areas for foreign direct investment included the production of chemicals and foodstuffs as well as renewable energy (16 percent of total greenfield FDI). Even though foreign direct investment projects in the textile industry were some of the most frequent in the world, manufacturing activities such as automobiles and textiles drew a significantly lower level of FDI. This provides further support for the

contention that foreign investment in the textile and garment industries was restricted to those parts of the supply chain that relied heavily on human labor (Nugent and Abdel-Latif, 2010). Beyond the realms of real estate and tourism, foreign direct investment in the services sector was broken down into three categories: communication and logistics; financial and business services; and tourism.



Cumulative greenfield FDI capital between January 2006 and September 2017 in USD million

Source: OECD based on FDI Markets Database.

2.2.3.4 Foreign investment trends in Egypt by economic activity

Foreign direct investment is heavily concentrated in Egypt's natural resources, real estate, construction, and light industry, as it is throughout the majority of the MENA area (e.g. textiles). Because they require a relatively modest amount of labor, the majority of these industries don't have much potential to provide new jobs. Since 2010, the volatility in the area has further skewed the sectoral mix of FDI towards the natural resources sector, which has been more resistant to political shocks than other sectors (OECD, 2014). Inflows of foreign direct investment (FDI) into non-oil manufacturing and service sectors have remained stagnant, despite the fact that these sectors have a higher propensity to create jobs and promote transfers of technology and managerial knowledge. This makes it more difficult for Egypt to participate in global value chains.

According to the foreign direct investment flow statistics that were published by the CBE, the oil sector was responsible for the majority of Egypt's FDI receipts over the past few years. This was followed by the real estate and construction industries, which include the purchase of land and homes by non-residents. Less than ten percent of the incoming funds came from the manufacturing industry. In addition to the real estate industry, banking activities were the primary driver of foreign direct investment in the services sector. Communication and information technology, on the other hand, accounted for less than 4 percent of overall inflows.

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Oil	71.7	58.4	53.5	61.3	67.3	70.6
Manufacturing	2.0	2.3	3.4	5.8	10	7.1
Agriculture	0.2	0.0	0.0	0.2	0.1	0.6
Construction	2.2	6.0	1.5	0.9	4.5	2.3
Services	4	10.0	10.4	9.4	11.2	15.7
Real estate	1.4	6.2	3.6	3.1	2.7	8.8
Finance	1	2.0	3.8	1.6	1.9	1.9
Tourism	0.1	0.0	0.3	0.4	0.3	0.5
Communications	0.0	0.0	0.5	0.3	3.4	1.1
Other services	1.5	1.8	2.2	4.0	2.9	3.4
Unallocated	19.9	23.3	31.2	22.4	6.9	3.7

***Source*: Central Bank of Egypt, Annual reports of 2014/15; 2015/16; 2016/17; 2017/18 and Monthly Update of the External Position of the Egyptian Economy on July/December 2018/19.**

2.2.3.4.1 Economic activity of “Oil”

By the year 2018, the industry has seen steady expansion, with a growth rate of 3.4 percent, and it is anticipated that this expansion would continue for the next two years (IIF, 2018). In 2018, the sector contributes 12.1% of GDP, which is an increase over the 11.7% contribution it made in 2017. To this day, the oil and gas industry remains the sector in the nation with the largest level of foreign direct investment (FDI). Over the course of the previous five years, the industry as a whole brought in

around US$ 46.41 billion on average, accounting for close to 64 percent of Egypt's total foreign direct investment (CBE, 2013-2018). Since the discovery of offshore gas reserves in 2016, which drew investments from MNEs, foreign direct investment (FDI) in the oil and gas industry has been expanding, and it still accounts for the lion's share of all FDI inflows.

In 2018, the industry was the recipient of around two-thirds or 67.3 percent of the total foreign direct investment (FDI) that was made. During the same year, Egypt with several oil multinational corporations inked at least 12 exploration and production agreements. For example, during the past two years, British Petroleum has raised the amount of money it has invested in Greenfield projects in the nation, increasing the total amount of money the corporation has invested in the country to more than $30 billion. (UNCTAD, 2019)

2.2.3.4.2 Economic activity of “Manufacturing”

The manufacturing industry has been showing signs of expansion throughout the course of the past two years. The industry is responsible for 73 percent of the total number of businesses operating in the private sector as well as 40 percent of the overall GDP produced by the private sector. In 2017, the industry saw a growth rate of 2.1 percent, but that rate increased to 4.8 percent in 2018. (Audi, 2019). From 2013 to 2018, the industry is expected to account for around 15.3 percent of total GDP by the end of the period, which is 1.2 percentage points lower than its peak in 2014. (IIF, 2018). Over the course of the previous three years, the industry has been successful in luring additional foreign direct investment (FDI), bringing the total amount of investment up from 282.6 million US dollars in 2015 to 1.3 billion US dollars in 2018.

As a direct consequence of this, the proportion of total foreign direct investment (FDI) flowing into the nation that is invested in this industry has consistently climbed from 2.2 percent in 2015 to 10.0 percent in 2018. (Commonwealth of the Bahamas, Annual Report, 2013-2018). China is now one of the top economies in terms of foreign direct investment.

For example, the Chinese textile producer "Shandong Ruyi Technology" has announced plans to invest around $830 million in a proposal to establish a new

textile industrial zone in the Suez Canal Economic Zone. This zone will be located in the Suez Canal Economic Zone. (UNCTAD, 2019)

2.2.3.4.3 Economic activity of “Agricultural”

Egypt's agricultural industry is one of the country's key industries and is responsible for the employment of nearly 24.87 percent of the total work force in the country (Statista, 2018). Additionally, it is responsible for around 11 percent of the entire gross domestic product (IIF, 2018). However, during the course of the past two years, it has witnessed a fall in the amount of investments. After reaching a high point in 2016 of US$ 2.03 billion, which was equal to 4.2 percent of total investments in Egypt, total investments in the sector have continued to fall and have now reached a low point of US$ 1.39 billion, which is equal to 3.4 percent of total investments in Egypt.

In 2018 this figure was lower than it was in 2018. Therefore, the growth of the industry has slowed down to 3.1 percent, and it contributed around 11.5 percent to the GDP (Audi, 2019). According to CBE, foreign direct investment (FDI) in the agricultural sector reached US$ 13 million in 2018, representing around 0.1 percent of the overall FDI inflows. Therefore, foreign direct investment (FDI) had a little impact on the agriculture industry as it only made-up 0.93 percent of overall investments made in the industry. (Commonwealth of the Bahamas, Annual Report, 2013-2018).

2.2.3.4.4 Economic activity of “Construction”

Housing, commercial structures, resorts, educational institutions, leisure facilities, and infrastructure are all examples of the types of construction development projects that fall under the purview of the construction industry. During the five-year period from 2013 to 2018, foreign direct investment (FDI) in the construction industry amounted to almost US$ 1.9 billion. This figure represents approximately 2.5 percent of the total FDI inflows. FDI inflows show a fluctuating rise in the construction sector, growing from US$ 20.7 mm in 2013 to reach its peak of US$ 745.7 mm in 2015, but then it declined to US$ 120 mm accounting for 0.9 percent of the total FDI inflow in 2017. In 2017 the construction sector accounted for 0.9 percent of the total FDI inflow. (CBE, 2013-2018)

The construction industry had a successful year in 2018, contributing around 5.2 percent of GDP to the overall economy (IIF, 2018). According to Bank Audi, the industry expanded by 10 percent in 2018, which is an increase over the 9.5 percent growth it had in 2017. In addition, investments in Egypt's construction industry amount over 695 million dollars United States dollars, which represents 1.7 percent of the country's total investments. Additionally, the private sector holds the greatest stake in the industry, accounting for roughly 90.4% of the total investments made in building (Audi, 2019). In 2018, foreign direct investment (FDI) in the construction industry was anticipated to be worth $585 million US dollars and accounted for 4.5 percent of overall FDI inflows. As a result, foreign direct investment (FDI) has the biggest part of the private sector, accounting for roughly 93.1 percent of all investments in the private sector. (Commonwealth of the Bahamas, Annual Report, 2013-2018)

2.2.3.4.5 Economic activity of “Services”

One of the primary contributors to Egypt's ongoing economic expansion and development is the country's service industry. It accounts for around 48.55 percent of the overall workforce and provides approximately 56.4 percent to Egypt's gross domestic product (Statista, 2018). The real estate industry, the banking sector, the tourist industry, the communication and information technology industry, and other service-oriented industries make up the bulk of this sector. In addition, research has shown that there is a general upward trend of foreign direct investment (FDI) inflows into the service sector, with a fluctuating rise in those inflows beginning in 2013 and continuing ahead. (Commonwealth of the Bahamas, Annual Report, 2013-2018)

The entire amount of foreign direct investment (FDI) that was brought into the service sector in 2013 was 739.8 million dollars US, which represents 7.2 percent of the overall FDI inflows. The overall amount of FDI inflows climbed to $1.45 billion in 2018, representing 11.2 percent of the total FDI inflows. The number of foreign investments has grown. Real estate is the subsector of the service industries that has the largest potential to attract foreign direct investment (FDI), with an average contribution of 2.9 percent of the total FDI inflows for the period of 2013-2018. Investments in the real estate industry reached their apex in 2015 at 776.2 million dollars US, accounting for 6% of overall FDI inflows.

This is a significant increase from 2013 when they stood at 44.2 million dollars US.

On the other hand, investments in real estate in the years that followed saw a minor decline, with total investments reaching 351 million dollars US in 2018 and accounting for 2.7 percent of overall FDI inflows. This was the lowest level since 2008. The Financial Services industry is the second greatest recipient of foreign direct investment (FDI) inflows, despite the fact that FDI inflows are subject to changes. The financial industry has been successful in attracting foreign direct investment (FDI) to the tune of US$ 281 million on average, which corresponds to around 2.3 percent of the overall average FDI inflows.

In addition, foreign direct investment (FDI) came into the communication and information technology industry an average of 24.42 million dollars US during the period of 2013-2017. This figure represents 0.2 percent of the total average FDI inflows. At the level of the sector, it is regarded as having the smallest contribution from FDI.

Despite this, it attracted substantial investments in 2018, totaling $442 million dollars US and accounting for 3.4 percent of Egypt's overall foreign direct investment (FDI) inflows. (CBE, 2013-2018)

The tourist industry, which is mostly controlled by the private sector, is regarded as one of the primary contributors to Egypt's economic expansion and accounts for 2.4 percent of the country's overall gross domestic product (GDP). The market expanded by 16.5 percent in 2018, far above the average growth rate of 3.9 percent seen throughout the globe in that year. This is because the industry places a significant emphasis on political stability and a secure environment, and relies largely on these factors. Additionally, the industry was responsible for the creation of more than 2.4 million employment in 2018, employing around 9.8 percent of the overall workforce. When all of the direct and indirect consequences of tourist operations are considered in 2018, the tourism industry, much like the agricultural sector, contributed around 11.9 percent to the overall GDP (WTTC, 2019). In addition, the industry has been the recipient of foreign direct investment (FDI) amounting to a total of 168.4 million US dollars throughout the period of 2013-2018, which represents roughly 0.23 percent of the overall FDI inflows into Egypt over the same time period. (Commonwealth of the Bahamas, Annual Report, 2013-2018)

3 DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN EGYPT

The phrase "FDI determinants" refers to the factors that influence multinational corporations' decisions on the placement of their investments. In this section of the dissertation, a literature review, an examination of the external variables that have an impact on foreign direct investment (FDI), and lastly, a descriptive study of how these factors play out at the subregional and Egypt level will be presented separately.

It is well acknowledged that Foreign Direct Investment in Egypt is one of the most important factors that contribute to economic development and progress. In order to get to a conclusion and provide some recommendations about the allure of foreign direct investment (FDI) in Egypt, this study employed a qualitative technique that was based on observations and an analysis of the facts included within the observations. Accordingly, there are several factors that influence the attractiveness of foreign direct investment. Some of these factors include the size of the target market, the interest rate, the inflation rate, the exchange rate, the infrastructure, the energy, and the level of transparency; on the other hand, politic and economic instability, lack of confidence and insecurity in the society may affect FDI inflows, This study is an effort to bring to light the real developments that have taken place in Egypt with relation to these criteria in an effort to entice a greater amount of FDI.

In light of the FDI literature, the following criteria have been selected as the most important ones that influence the locational decisions made by businesses. Education, gross domestic product per capita, the kind of industry, transportation, harbors, and structured industrial zones in the subregions are the factors that determine it.

3.1 POLITICS, STABILITY AND ECONOMY

After the Egyptian revolution in January 2011, Egypt lived through a period of political and security confusion, and unorganized demonstrations in the streets became a fashion that young people especially loved to imitate and repeat on a daily basis, in addition to labor strikes that struck all parts of the country to demand an increase in wages, which led to the suspension of the wheel of the economy, and destroyed almost all foreign direct investment, as shown in the previous literature

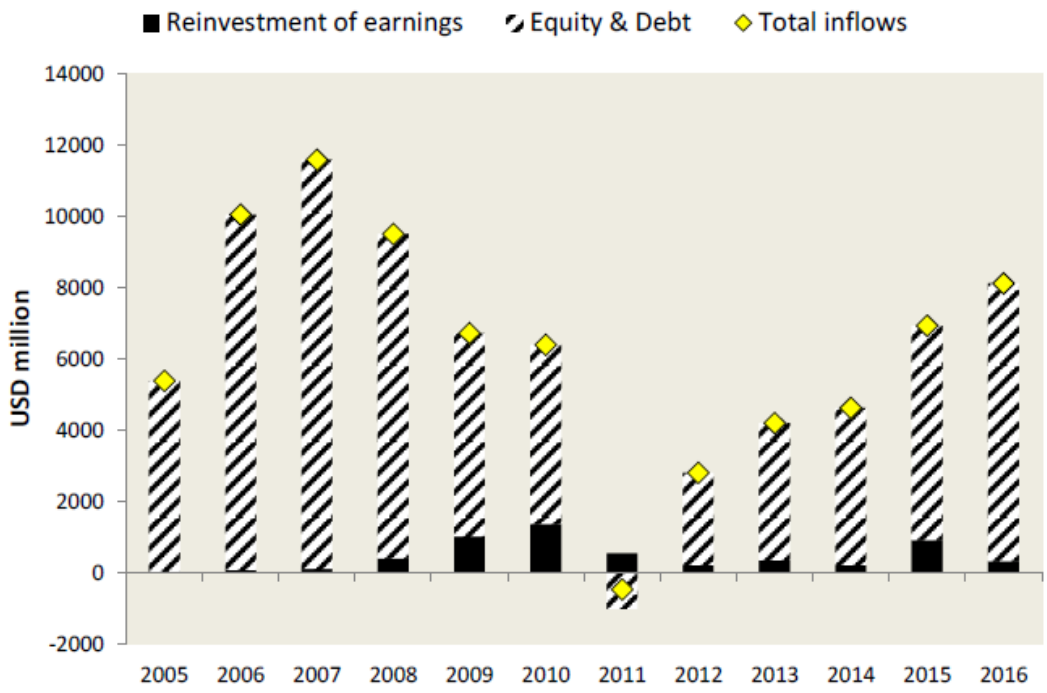
(negative in 2011) in a developing country that does not have political and security stability.

In that difficult time, the extremist political religious movement represented in the Muslim Brotherhood was able to control the government and the group's candidate won the June 2012 elections by a margin of only 1% against a liberal candidate affiliated with the old regime ruling before 2011. The 2012 elections suffered from religious polarization severe has reached the point of atonement for the opponents of the religious movement, and illegal means were used in electoral propaganda, such as using houses of worship, playing on sectarian strife, and using money to buy votes, especially in a country half of whose population is poor. In addition, some civilized people have elected the extremist religious movement as a candidate against the liberal candidate because he was part of the ruling regime before the 2011 revolution.

This polarization, which was previously explained, and the use of illegal means in the elections, resulted in a result that appears democratic, but it's not democratic at all, because the steps taken towards democracy were wrong in their entirety, and the result was definitely wrong, and as a result other waves of demonstrations began as soon as the new president was inaugurated in June 2012, crises multiplied, security collapsed, and the state became unable to provide fuel and electricity to people, and the June 2013 revolution was the inevitable result.

On June 30, 2013, the Egyptian people rose up again against the radical and extremist rule, and it was an uprising much larger than the revolution of 2011, and it almost broke out in a civil war between the components of the Egyptian people, and extremist religious groups were on the verge of destroying the defenseless people, had it not been for the intervention of the army that protected the revolution and the appointment of the head of the Constitutional Court as interim president. And a transitional year began up to June 2014, during that period, direct foreign investments began to gradually return, and the support of the Arab Gulf countries was essential and crucial in that period.

And with the wise leadership of President Sisi, Egypt was able to restore confidence in country institutions, reach security and political stability very quickly, and start giant national projects.

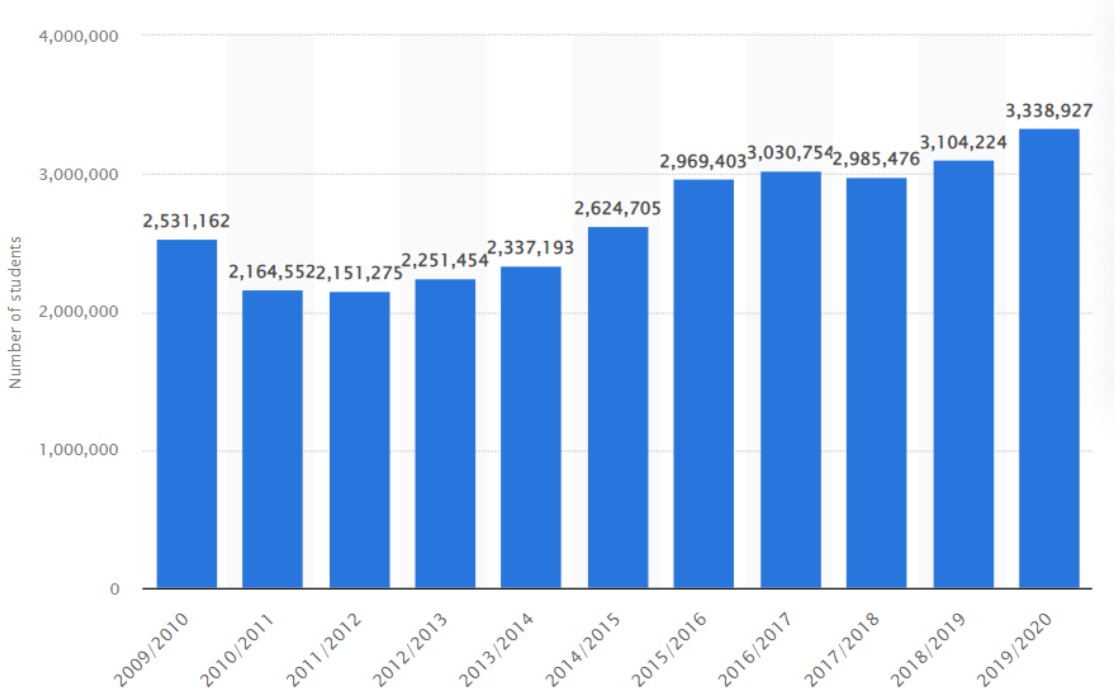


FDI in Egypt

3.2 EDUCATION

One of the most important aspects of human progress is educational attainment in every possible form. No nation can accomplish long-term economic progress without first making significant investments in its population's human capital.

People's awareness of themselves and the world may both benefit with education. It leads to wide societal advantages that are of value to both people and society as a whole, and it enhances the quality of their lives. Education helps people become more productive and creative, and it also encourages business innovation and the development of new technologies. In addition to this, it plays a very important part in ensuring both economic and social development as well as increasing the distribution of wealth.



Total Number of Students Enrolled in Higher Education in Egypt From 2009 To 2020

Source: https://www.statista.com/statistics/1193251/number-of-students-in-higher-education-in-egypt/

3.2.1 The Importance of Education in Economic Development

Before the nineteenth century, systematic investment in human capital was not seen as very significant in any of the countries that existed on the planet. The amount of money spent on things like education, becoming trained on the job, and other types of investment were quite low. This began to drastically alter throughout this century with the application of science to the invention of new items and techniques of production that were more efficient, initially in Great Britain, and then progressively in other nations. These changes were brought about by the scientific revolution.

Since the beginning of the 20th century, education, the development of one's abilities, and the accumulation of information have emerged as three of the most important factors that influence a person's and a nation's level of output. One could even go so far as to call the 20th century the "Age of Human Capital." This is because the primary factor that determines a nation's standard of living is how well it is able to cultivate and apply its skills and knowledge, as well as improve the health and education of the majority of its population.

Over the course of the past several decades, the Middle East has witnessed unprecedented growth in terms of the number of people who have access to basic education. There are now a lot of nations that are on the verge of achieving extraordinary advances in the quality of education that is provided at all levels, as well as a further growth in access to higher education and secondary education. The demand for education at higher levels is rising in tandem with the proportion of students who have finished their primary and secondary schooling. Regardless of whether or not women hold paid employment outside the house, a developing nation's primary focus should be on the education of its female population, particularly its young girls and women. It results in a wide variety of beneficial outcomes for families, including as improved family health and nutrition, increased time between births, decreased rates of newborn and child mortality, and higher educational achievement among children. The economies of several nations in the Middle East are becoming more intertwined with those of other countries across the world. Their capacity to compete in these markets, as well as in the globalizing service markets, will be directly proportional to the quality of the human capital they bring to the table during the competition. In order to ensure that all citizens are educated and literate, that many citizens possess a wide range of problem solving skills that go beyond the basic level, and that some citizens have professional skills that are on par with the best in the world, it will be necessary to implement new curricula, improved teacher training programs, and academic methods that encourage higher order cognitive skills.

Without significant investments in their populations' human capital, no nation has ever maintained its economic growth over time. Previous research has demonstrated that investing in many types of human capital, such as basic education, research, training, learning-by-doing, and aptitude building, may result in handsome financial returns. It is important to consider how education is distributed. In most nations, educational disparities have a tendency to have a negative effect on the average national income per capita. In addition, controlling for human capital distribution and using appropriate functional form specifications that are consistent with the asset allocation model make a difference for the effects of average education on per capita income, whereas failing to do so leads to insignificant and even negative effects of average education on per capita income.

If people are unable to put their education to use in free and competitive marketplaces, investments in human capital are unlikely to have much of an

influence on economic growth. The potential for making use of one's education and talents increases in proportion to the size and degree of competition within these marketplaces.

Education was not considered an important input for production in earlier neoclassical models, and as a result, education was not incorporated in models of economic growth (Harberger, 1998: 1-2). Growing amounts of empirical information in the 1960s sparked what has been called the "human investment revolution in economic philosophy" (Bowman, 1960). The pioneering works of Schultz (1961) and Denison (1962: 67) led to a series of growth accounting studies that pointed to education's contribution to the unexplained residuals in the economic development of western economies. These studies were conducted in response to Schultz and Denison's findings. Other research investigated the relationship between education and incomes or evaluated the rate of return on private investments (Becker 1964, Mincer 1974). Estimates of education's contribution to economic growth ranged from less than one percent in Mexico to as high as twenty-three percent in Ghana, according to a review of growth accounting studies that was conducted in 1984 and covered 29 developing nations (Psacharopoulos, 1984).

3.2.2 Education and Productivity

Clearly, the educational provisions inside any particular nation are one of the primary factors of the composition and growth of that country's production and exports. Furthermore, educational provisions are a key component in a system's ability to efficiently borrow foreign technology. For instance, health and nutrition, as well as primary and secondary education, all contribute to an increase in the productivity of workers, both in rural and urban settings; secondary education, including vocational education, makes it easier to acquire skills and the capacity to manage them; tertiary education helps to foster the development of fundamental science, as well as the appropriate selection of technology imports and the domestic adaptation and development of technologies; secondary and tertiary education are also essential components in the development of the nation's technological infrastructure; and finally, These links are shed even more light on by empirical information gathered at both the micro and the macro levels. Numerous studies demonstrate that a rise in wages is connected with extra years of education, with the rate of return fluctuating depending on the high degree of education. This association is seen at the micro level (Behrman 1990, Psacharopoulos 1994). Returns on investments made in

primary education are often higher than returns on investments made in secondary and tertiary education (Psacharopoulos, 1994: 1325-45).

In the field of agriculture, there is evidence to imply that education positively affects the productivity of farmers who use contemporary technology, but there is less of an influence, as is to be expected, among farmers who use old methods. Farmers in Thailand who had completed at least four years of schooling were three times more likely to use fertilizer and other modern agricultural inputs than farmers with a lower level of education (Birdsall, 1993: 75-79). In a similar vein, the completion of at least seven years of schooling in Nepal was associated with an increase in wheat production of over a quarter and rice productivity of over thirteen percent (Jamison and Moock, 1994:13).

Education is another significant factor that contributes to technological aptitude as well as the evolution of technical practices within business. To give just one illustration, a statistical examination of the textile and engineering sectors in Sri Lanka revealed that the amount of education and expertise of workers and business owners was strongly correlated with the rate of technological change experienced by the firm (Deraniyagala, 1995).

Education by itself cannot, of course, revolutionize a country's economy. Other major factors that determine economic performance include the level of local and international investment, both in terms of quantity and quality, as well as the general policy environment. However, the degree of human development also has an effect on the aforementioned aspects. The education level of those responsible for making policies as well as those in charge of making investment decisions is certain to have an effect on the quality of those policies and decisions. In addition, the quantity of both domestic and international investment is likely to increase when there is a greater supply of human capital in a system.

The 'new growth theories' attempt to endogenize technical development by including some of these similar impacts, with an emphasis on education as well as learning and R&D. This is a macro perspective goal of the 'new growth theories'. According to Lucas (1998), for instance, the overall productivity of capital increases in direct proportion to the level of education of the labor force. This is due to the fact that individuals with higher levels of education have a greater propensity to innovate, which in turn affects the productivity of everyone else. In other models, a similar externality is generated when an individual's increased education raises not only

their own productivity but also that of others with whom they interact, leading to an increase in total productivity as the average level of education rises. This results in a higher standard of living for the population as a whole (Perotti, 1993). Another manner in which human development may influence macro performance is through the impact that education has on the character and growth of exports, which in turn affects the aggregate growth rate. The level of education and expertise of a developing nation's labor population has a direct impact on the characteristics of the country's factor endowment and, as a result, the nature of its commerce. Literacy, numeracy, and discipline are all skills that are often learned in primary and lower secondary school. It has been suggested that even 'unskilled' workers in a contemporary workplace need to have these abilities (Wood ,1994).

3.2.3 Education and Income

Better education leads to better wealth equality, which, in turn, is likely to support higher rates of economic growth. There is also a positive feedback loop from this improvement, which favors higher growth rates. People with lower incomes are better equipped to seek out economic prospects when education becomes more accessible on a wider scale. For instance, one study that looked at the relationship between schooling, income inequality, and poverty in 18 countries of Latin America in the 1980s found that variations in workers' schooling attainment accounted for one quarter of the variation in workers' incomes; the study came to the conclusion that "clearly education is the variable with the strongest impact on income equality." [Clearly education is the variable with the strongest impact on income equality] (Psacharopoulos, 1992). According to the findings of another study, an increase of just one percent in the proportion of the labor force that possessed a secondary education or higher would result in an increase of between six and fifteen percent in the proportion of the bottom forty and sixty percent's shares of the total income (Bourguignon and Morrison, 1990). Secondary enrolment rates were shown to be a major factor in a research of the factors that determine the distribution of income in 36 nations (Bourguignon, 1995:53-86).

Education may influence the increase of income per capita through its effect on the growth of the denominator, which is population growth. For instance, a study that was conducted in the middle of the 1980s on fourteen African countries found that there was a negative correlation between female schooling and fertility in almost all

of the countries. Primary education had a negative impact in approximately half of the countries, but there were no significant effects in the other half of the countries. Secondary education, on the other hand, invariably reduced fertility (Birdsall 1995, Behraman and Wolfe 1987). The three nations that have been the most successful in terms of lowering fertility rates are Kenya, Botswana, and Zimbabwe. These countries also have the greatest levels of female education and the lowest child death rates (Ainsworth, 1995).

Therefore, we can say the expansion of the economy cannot occur without adequate educational opportunities. Without quality education, there can be no progress made in economic terms. Not only does a well-rounded educational system foster economic growth, but it also boosts levels of productivity and raises the average individual income per person. At the most local scale, an individual family is able to perceive the effects of its impact. Egypt has been striving during the past years to develop education in a way that serves the economy and industry, and to develop technical education and higher education at the same time, Egypt is trying to open ways of communication with the largest universities in the world to benefit from their educational quality by building new universities in partnership with the best universities in the world.

3.3 ECONOMIES OF SCALE AND EGYPT MARKET POTENTIAL

In the field of microeconomics, "economies of scale" refer to the cost benefits that businesses gain as a result of their size of production/operations. These advantages are often assessed by the quantity of output generated in a given length of time. An expansion in scale is made possible by a reduction in the cost incurred per unit of production. There may be technological, statistical, organizational, or other reasons connected to the degree of market control that are at the basis of economies of scale.

The concept of economies of scale may be used to a wide variety of organizational and corporate settings, as well as at a number of different levels, such as a production, plant, or an entire enterprise. The phenomenon known as economies of scale takes place when previously constant expenses begin to decrease as output grows.

The size of the local market may be determined not only by the population of the area but also by the amount of goods that are manufactured there. When there are more buyers and sellers in a market, there are also more chances for investors to profit from economies of scale. As a result, international businesses frequently focus their operations on regions that have a sizable population and adequate income so that residents there can afford to buy the goods that are created as a result of foreign direct investment initiatives. Many of the standard studies have demonstrated, on the basis of market size and therefore factors that are likely to affect the inflow of foreign direct investment, that the estimated coefficient of GDP as a market proxy is statistically significant and indicates a relationship between FDI and GDP. This relationship is indicated by the fact that the estimated coefficient of GDP is statistically significant. Size of the population and its pace of expansion The Central Agency for Public Mobilization and Statistics (CAPMAS) estimates that the population of Egypt in November 2019 was 100 million people, which is a significant increase from the entire population of Egypt in November 2006, which was 72 million people. Over the past decade, Egypt's total population has grown by more than 30 million individuals, representing a significant and rapid growth.

The following examples can help demonstrate our point:

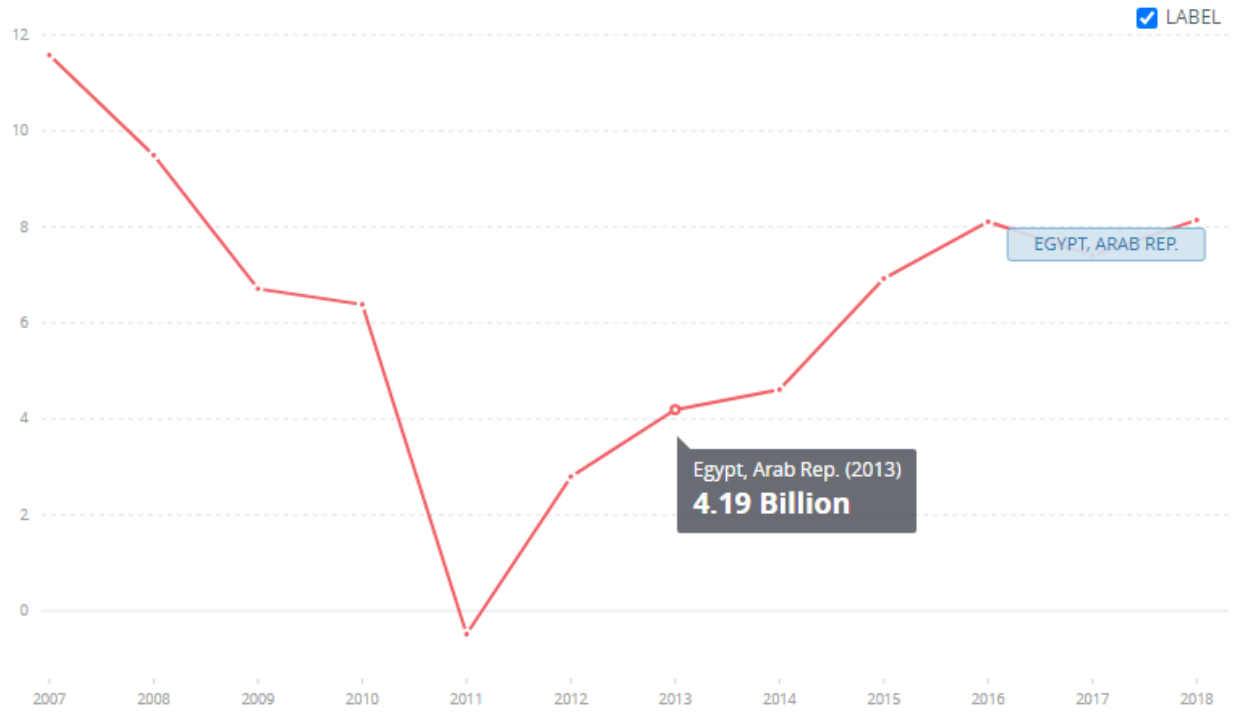
Egypt currently has a population of 100 million people, which is equivalent to 1.4% of the total population of the world. As a result, Egypt is ranked number 14 on the list of countries based on population. Approximately 43.10% of the population resides in urban areas, and the median age in Egypt is 24 years old.

Because of the enormous current and expected demand from the Egyptian market, which will lead to the generation of a high return on investment for both foreign and national investors, all of these facts about the Egyptian population are considered to be motivational factors for foreign direct investment (FDI) inflow in Egypt across a variety of sectors, including the food and beverage industry, mobile communication, investment projects related to power generation, real estate and the pharmaceutical industry.

3.4 EGYPT GDP PER CAPITA

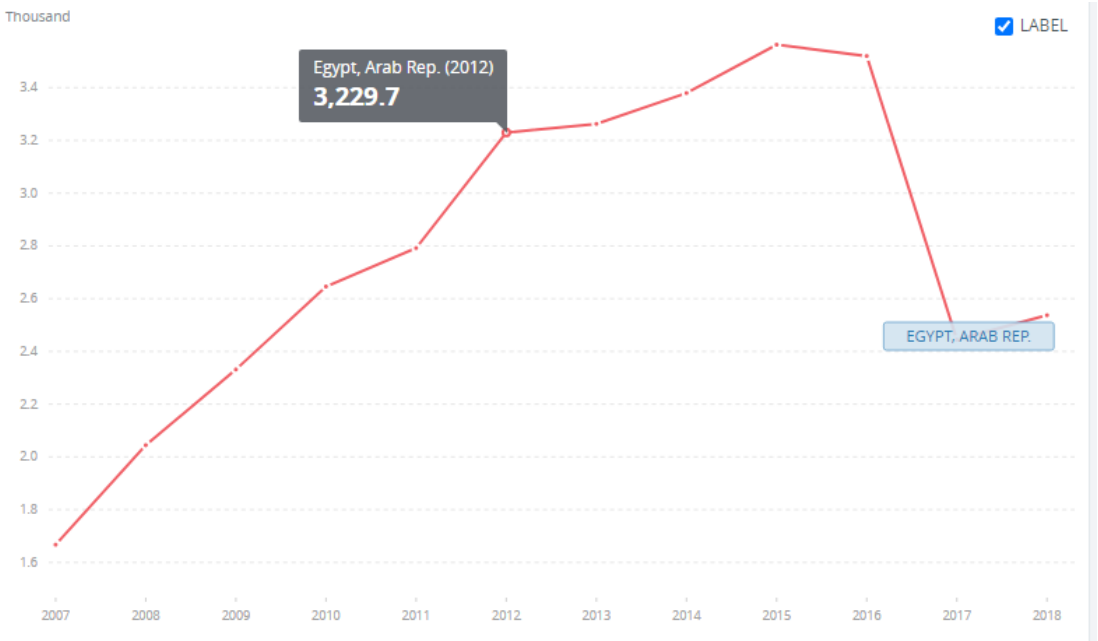
Gross domestic product (GDP) per capita is a financial term that breaks down a country's economic production per person. It is computed by dividing the GDP of a

nation by its population. This is a measure of a country's overall economic performance. It is clear from the following graph that the GDP per capita is progressive, but Egypt still has a big area of improvement to catch the average of the world, as the average world GDP per capita is 11.3k$ in 2018, but the same year in Egypt it's 2.5k$ (or one fourth of the world average), this gap reflects in the living standard



Foreign direct investment, net inflows

Source: https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?end=2018&locations=EG&start=2007&view=chart



The Gross Domestic Product per capita in Egypt

Source: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2018&locations=EG&start=2007&view=chart

Year	FDI inflows Billion $	GDP Billion $	Population Million	GDP Per Capita Thousand $	GDP per capita increment
2007	11.58	130.4	78.23	1.667	
2008	9.5	162.8	79.64	2.044	22%
2009	6.7	189.1	81.13	2.331	14%
2010	6.39	219	82.76	2.645	13%
2011	-0.5	236	84.53	2.791	5.5%
2012	2.8	279.1	86.42	3.229	15.6%
2013	4.2	288.4	88.4	3.263	1%
2014	4.6	305.6	90.42	3.38	3.5%
2015	7	329.4	92.44	3.563	5.4%
2016	8.1	332.4	94.45	3.519	-1%
2017	7.4	235.7	96.44	2.444	-30.5%
2018	8.14	249.7	98.42	2.537	3.8%

Although FDI inflows and GDP Per Capita should be linked, but in the case of Egypt, I could not find any link between them, so it looks like FDI inflows does not directly affect the people income in Egypt case.

3.5 INFRASTRUCTURE

Egypt has a highly developed infrastructure and continues to make investments in the development of this structure. These investments total over 15 billion US dollars and include road, power generating, and irrigation project investments. Investment is contingent on a number of factors, one of the most fundamental of which is infrastructure. The government is now making efforts to guarantee that adequate infrastructure is made available. It is vital for investors to have access to ports and highways, as well as the provision of utilities such as power, gas, and water connections. Infrastructure is one of the most important requirements for economic development. It is also one of the most important factors in attracting foreign direct investment. Infrastructure is not only a measurement of how successful a country is, but it is also a key to achieving more successes and achievements. For instance, the United Arab Emirates (UAE) has become one of the most desirable places in the world to invest due to the country's ongoing efforts to improve its infrastructure.

3.5.1 Roads

The total length of Egypt's road network is 65,050 kilometers (of which 48,000km paved and 17,050km unpaved). Egypt has constructed a nationwide highway system that spans around 18,000 kilometers and connects all of the country's major cities. Cairo and Alex are connected by two different highways. El Fayoum, Port Said, and Suez may all be reached from Cairo by one of the other routes. The entire distance covered by roadways is 18,000 kilometers.

Additionally, Egypt is home to a vast network of bridges, which helps to make the country's transportation system more efficient. There are now 181 bridges operational in the nation, 36 of which cross the Nile River and 85 of which are suspended. In recent years, Egypt has seen a surge in interest in expanding and modernizing its highway and main road networks to ensure that they reach every corner of the nation. Their distance reached a total of 48,000 kilometers.

Distances from Capital City to Major Towns (km)													
	Alex	Aswan	Cairo	El Fayoum	El Minya	Edfu	Ismailia	Luxor	Port Said	Sharm El Sheikh	Hurghada	Nuweiba	Rafah
Alex		1133	216	295	459	1,025	250	915	273	716	761	567	494
Aswan			926	838	674	112	1,038	229	1,118	1,492	580	1373	1280
Cairo				105	252	818	112	708	192	503	548	447	354
El Fayoum					164	730	217	620	297	608	581	552	459
El Minya						565	314	335	444	755	452	693	806
Edfu							930	112	1,010	1,321	392	1265	1172
Ismailia								550	80	456	501	387	242
Luxor									300	1212	282	1155	1062
Port Said										536	581	467	254
Sharm El Sheikh											781	165	528
Hurghada												226	464
Nuweiba													674
Rafah													
Safaga													

Road development is one of the essential tools for maintaining the efficiency of the transportation sector, as it influences, either directly or indirectly, the social lives of individuals through the process of communication and change in their social and cultural behaviour. This is one of the reasons why road development is one of the essential tools for maintaining the efficiency of the transportation sector.

Any scarcity in the roads will have a negative impact on the transportation sector, which in turn will have an impact on the process of commodity and production movement between the centers of production and consumption, which in turn impacts the plans for national development. As a result, Egypt has placed a distinct and considerable emphasis on this sector due to the fact that it plays a role in accelerating the overall development process and bringing attention to the significance of transportation. At the level of the national economy, via the direct connectivity between the various productive sectors, and the provision of those productive sectors with raw materials and fundamental components in the manufacturing process. Without well-functioning roads and transportation networks, foreign direct investment (FDI) cannot come into the country. Egypt is working to improve its transportation infrastructure by constructing new roads totaling 5,500 kilometers in length. These new roads will connect a variety of regions and will provide service to a number of important projects and investment locations. The Survey Authority is a participant in a number of important national programs, including the National Roads Project (2030), which is regarded as one of the most important of them. The Commission's activity includes evaluating the overlapping qualities of various highways and axes and determining the value of fair compensation. In addition, the Commission works to determine the value of just compensation. This project is to develop and increase the efficiency of the existing roads and construct new ones to work on the management and ease of movement of the current roadways. In addition to this, it is a method for expanding opportunities for investment, enhancing infrastructure, connecting the governorates of the Republic, and developing urban areas. The project would involve the construction of about 40 highways and will require expenditures totaling 37 billion Egyptian pounds to finish. In 2019 the General Authority for Roads and Bridges began the process of constructing 14 new roads as part of the national road project plan. These new roads range in length from 500 to 1150 kilometers and have an initial cost of 12.5 billion Egyptian pounds

3.5.2 Railways

The Egyptian National Railway is not only the most established provider of transportation services but also one of the most important economic organizations in Egypt and the whole Arab world (passengers and goods). It is regarded to be the

backbone of the passenger transport system in Egypt, where the volume of people and cargo transported by railway is:

Passengers transport: 500 million passengers yearly (about 1.4 million passengers a day).

Transportation of goods equals 6 million tons each year.

The entire distance covered by the network is 9,570 kilometers.

Paths of quadripartite lines - 20 km

1466 kilometers are covered by paths of double lines.

Routes of a single line totaling 3667 kilometers

Yards, workshops, and warehouses belonging to the railway

In order to reach the necessary levels of safety for the heavy lines of travel, there is a signaling system in place.

15% of lines that are controlled by electrical signals

85% of lines are still operating by mechanical signal.

There are a total of 705 stations, including major, sub, and medium stations, making up the total. These stations include:

Small stations number 564, Main stations number 22, Central stations number 59, and medium stations number 60.

885 is the total number of bridges and tunnels.

The construction of railway bridges on the Nile and other rivers, 511 Bridges over the Railway for automobiles, 58 Tunnels for automobiles and pedestrians, 137 Bridges over the Railway for pedestrians, 137 Tunnels for automobiles and pedestrians

342 German locomotive with a power output of 2475 horsepower

45 Canadian locomotives, each one with a capacity of 2475 horsepower

30 American locomotives with a total capacity of 1850 horsepower

253 Canadian locomotive with a maximum output of 1650 horsepower

30 Spanish-maneuverable locomotives with a total capacity of 1200 horsepower

80 newly-built locomotives made in the United States GE, with a power output of 4000 HP

40 brand-new locomotives manufactured by EMD in the United States, each of which is capable of producing 3245 horsepower

The passenger transport service on the ENR is provided by a fleet of 3500 coaches, including 850 air-conditioned coaches. The speeds of these coaches range from 90 to 120 kilometers per hour. Luxury sleeping cars with first and second-class air conditioning on fast trains Extraordinary trains Remodeled railroad cars Subway trains, which go at an average of 90 kilometers per hour.

The Egyptian Ministry of Transportation (MOT) has recently amended the railway law to permit participation and operation of railway projects by private sector entities. On the Egyptian market, there is a substantial amount of demand for railway components from the local community.

3.5.3 Waterways

The section of the Nile River that runs through Egypt is considered to be the primary river, and its overall length is around 3,500 kilometers. This measurement covers the length of the Nile River, Lake Nasser, the Alexandria-Cairo Waterway, and a number of other minor canals in the delta. It also includes the length of the Suez Canal (193.5 km including approaches)

Barges and passenger cruises are both possible modes of transportation on the Nile River in some regions of Egypt. These regions are mostly comprised of Abu Sambel, Aswan, and Luxor. In addition to certain areas in the north, including Asyout, Minya, and Cairo.

3.5.4 Airports

This determinant seeks to provide new insights into the economic impact of this mode of transport by examining the influence of non-stop air services on flows of foreign direct investment (FDI). The role of air transportation as an engine of economic growth for regions and cities has been the subject of extensive research.

Since the transition from "not having" to "having" non-stop flights can reduce travel times by as much as thirty percent or more, this facilitates a substantial improvement

in the ease of communication between the regions that are involved. Concurrently, this facilitates a reduction in the costs associated with conducting business, since the transition from "not having" to "having" non-stop flights can reduce travel times. The primary hypothesis that will be investigated in this section is that there will be a rise in the total amount of FDI as a result of an increase in the amount of information that can be transmitted more quickly as a result of the shorter travel times made possible by the availability of non-stop flights that are provided at a sufficient frequency.

There are over 21 airports in Egypt, and these airports serve tourist areas, industrial sites, and mining sites. A new terminal at Cairo International Airport was opened in 2016 with an annual capacity of 7.5 million passengers, bringing the total capacity of the airport to 26 million passengers. Additionally, in October 2016, two new international airports, the Capital International Airport in Kattamia and the Sphinx International Airport, were opened to serve the growing number of travelers to Egypt and relieve pressure on Cairo International Airport. Both of the airports were constructed at locations that were initially air bases for the military.

1- Cairo International Airport

Heliopolis is home to Cairo International Airport, which is situated 18.3 kilometers (11.37 miles) to the northeast of the city center of Cairo and 40 kilometers (24.9 miles) from the Giza Pyramids.

Cairo International Airport was built in 1963 to take the place of an older airport that was located in the Heliopolis neighborhood. The new airport included improved facilities that allowed it to accommodate 5 million people per year.

A number of halls were built at the airport in the 1970s, which allowed for an increase in the airport's maximum capacity for passengers. A second terminal was constructed in the 1980s in order to accommodate an additional 3.5 million passengers on an annual basis.

A plan is now being developed to extend the passenger capacity of the airport to 22 million people while also modernizing the existing facilities. At the moment, Cairo International Airport is made up of three terminals, each of which was constructed to the very best standards and outfitted with the very latest modern gear in order to provide its customers with high-quality aviation services.

Indicator of Performance Regarding Passengers and Cargo:

Performance for 2017			
	Per Year	Per Month	Per Day
Total Aircraft Movements	19,619		
Total Passengers	30,000,000		
Total Capacity of the Airport *(MT)*	120,000		
Current Activity of the Airport *(MT)*			
Current use by Humanitarian Flights (UNHAS)	N/A		

2- Alexandria Borg El Arab International Airport

Alexandria, Egypt is served by Borg El Arab Airport, which is an airport in Egypt. It is situated near Borg El Arab, around 25 miles (40 kilometers) to the southwest of Alexandria. In addition, the airport provides service to the neighboring parts of the Nile Delta. The airport handled 371,605 passengers in 2009, which is a +96.5% increase over 2008. The most important airport in Alexandria is known as Borg El Arab.

Because of increased demand, Borg El Arab Airport had a significant expansion that significantly increased the airport's ability to handle both passengers and cargo. Both a new passenger facility and an administration building make up the airport. The shape of a boat is used as the inspiration for the design of the passenger terminal, which has three levels. The check-in desk and the area that handles luggage are located on the ground floor.

Location Details			
Country	Egypt	Latitude	30°5504N
Province / District	Alexandria Governorate	Longitude	29°4147E
Town or City (Closest)	Alexandria	Elevation (ft and m)	177 ft
Airfield Name	Borg El Arab Airport	IATA and ICAO Codes	HBE & HEBA
Open From (hours)		Open To (hours)	

3- Sharm El-Sheikh International Airport

On May 14, 1968, the airport first opened its doors as a base for the Israeli Air Force. It was reopened as a civilian airport in 1979, following the signing of a

peace deal between Egypt and Israel the same year, and subsequent Israeli departure from the Sinai Peninsula.

The Boeing 747-400, which was flown by Transaero Airlines, was the largest aircraft that used the airport on a regular basis. When Transaero discontinued operations in October 2015, several flights that transited through Moscow were no longer available. The only airline that ran a regularly scheduled Boeing 777-200ER service was British Airways (from Gatwick Airport). However, because to the concerns raised by the crash of Metrojet Flight 9268 on October 31, 2015, this service, along with others, has been discontinued.

The Egyptian Airports Holding Company (EAHC) revealed their intentions to construct a third new terminal at the airport in the year 2008. The Egyptian Holding Company for Airports and Air Navigation (EHCAAN) secured a contract with the Spanish construction designers Pointec in July 2009 for the development of the third terminal. It was intended for the terminal to increase the airport's capacity from 7.5 million passengers per year to 15 million passengers per year. The principal expenses of the project were expected to be 420 million dollars. It was anticipated that the design phase would be finished by the beginning of 2010. After that, open bids from international contractors were solicited for the construction of the terminal, which was planned to be finished in 2015.

On October 31, 2015, Metrojet Flight 9268, which was traveling from Sharm el Sheikh to St. Petersburg, Russia, was involved in an accident in the Sinai Peninsula between the towns of Nekhel and Housna. All 224 people on board were killed in the accident, with the majority of them being Russian tourists. The jihadist organization known as ISIL, which is now engaged in a conflict with Russian forces in the neighboring country of Syria, swiftly claimed responsibility for the accident, which western nations speculated was caused by a terrorist explosion. Midway through November, Russian investigators provided confirmation that the jet had been attacked; nevertheless, the probe is still ongoing. As a direct response to these incidents, a number of nations issued directives that all flights to Sharm El Sheikh be halted until further notice.

The crash of Metrojet Flight 9268 on October 31, 2015 led to a considerable drop in the number of passengers traveling by air in November of the same year. Because of this, airlines were forced to cancel their departures from the airport

and organize rescue planes for customers who were stuck there. Concerns about passenger and crew safety were brought to light in the aftermath of the catastrophe, and as a result, several nations' governments, including those of Russia and European nations like the United Kingdom, issued bans on aircraft operations to the airport. The government of the United Kingdom, sometimes known as HM Government, issued a travel warning advising citizens not to go to or come from Sharm El Sheikh.

In January of 2018, EgyptAir Express made the announcement that it will be opening a facility at the airport to accommodate its upcoming fleet of Airbus A220s. This would result in the airline being able to provide service to a greater number of destinations departing from that airport, including the prospect of non-stop flights to cities in Italy, Germany, Morocco, and India.

On October 22, 2019, the United Kingdom removed the flight restriction that had been placed on flights between airports in the United Kingdom and Sharm El Sheikh.

The parent company of TUI Airways and TUI UK, TUI AG, made the announcement on November 1st, 2019, that they will resume flying to the airport beginning in February of the following year.

The first flight between Russia and Sharm El Sheikh was performed by Rossiya Airlines on August 9, 2021. This was the first flight of its kind between the two countries in the five years since flights between the resort and Russia were suspended following the crash of Metrojet Flight 9268.

Location Details			
Country	Egypt	Latitude	27°5838N
Province / District	South Sinai	Longitude	34°2341E
Town or City (Closest)	Sharm El Sheikh	Elevation (ft and m)	150 ft
Airfield Name	Sharm El Sheikh International Airport	IATA and ICAO Codes	SSH & HESH

Open From (hours)	n/a	Open To (hours)	n/a

4- Hurghada international Airport

The city of Hurghada's central business sector is located around 5 kilometers (3.1 miles) to the southwest of the airport (El Dahar district). It provides service to Hurghada, which is the administrative center of Egypt's Red Sea Governorate, the city of Safaga, which is a seaport, and a number of beach resorts along the Red Sea, including Al Quseir, Sharm El Naga, El Gouna, Al-Mahmya, Soma Bay, and Makadi Bay.

Hurghada's transportation infrastructure includes both regularly scheduled passenger services to Cairo as well as direct links to a number of locations around Europe. There are around 40 airlines that provide seasonal charter flights to various locations in Western and Eastern Europe, Scandinavia, Russia, and the nations that make up the Commonwealth of Independent States (CIS). In order to meet the sharp increase in the amount of leisure travel, the airport has recently undergone extensive improvements.

The Hurghada airport consists of just a single terminal, and parking lots may be found just adjacent to the building that houses the terminal. It is feasible to go to the city or to the hotels via taxi or public transit (minibuses) (minibuses).

5- Luxor International Airport

The primary airport servicing the city of Luxor, which is located in Egypt, is known as Luxor International Airport. It is situated six kilometers (four miles) to the east of the city. The airport is used by a great number of charter flights because it is such a popular tourist destination for those who are going to the Valley of the Kings and the River Nile. Facilities for passengers include 48 check-in desks, 8 gates, 5 baggage claim belts, a post office, a bank, a Bureau de Change, an auto exchange machine (CIB), restaurants, cafeterias, a VIP Lounge, a duty free shop, a newsagent/tobacconist, a chemist shop, a gift shop, a travel agent, a tourist help desk, car rental, first aid, a baby/parent Room, disabled access and facilities, The cargo facilities include X-Ray and fumigation technology, as well as refrigerated storage, animal quarantine, livestock handling, and health authorities.

6- Marsa Alam International Airport

Egypt's Marsa Alam International Airport is the world's first airport to use a fully integrated BOT system, and it serves as the country's primary gateway to the

rest of the world. A subsidiary of the M.A. Al-Kharafi Group of Kuwait, EMAK Marsa Alam for Management and Operation of Airports SAE, has successfully negotiated the 40-year BOT concession deal with the Egyptian Civil Aviation Authority. Under the terms of a separate agreement, Aeroports de Paris is in charge of operating the new airport. The runway has a length of 3,240 meters, which is sufficient for accommodating jets such as Boeing 737s, 757s, and 767s as well as Airbus 320s, 310s, and 300s. Additionally, the taxiways provide convenient and speedy access to the terminal building.

Rescue services, a fully equipped control tower, navigational aids, and support facilities are all included as part of the design of this facility, as are all of the other services and aids essential for safe operation. The terminal was designed in a modular fashion, making it simple to accept more passengers up to the maximum capacity of 4 million per year. Passengers have access to a variety of restaurants, duty-free stores, and other retail outlets, and the entire facility is fully air-conditioned, including the security room that serves as the "check-in" hall.

7- Sphinx International Airport

Public transportation is provided by the airport, which is located on the western outskirts of Cairo, Egypt, and serves the city of Giza. The Cairo West Air Base is located near to the airport, and the two facilities share some infrastructure.

The single runway is located two kilometers (1.2 miles) to the west of the complex of runways at Cairo West. On the western side of the runway, you'll find the parking ramp for airplanes as well as the terminal buildings.

And other airports such as, Sohag International Airport, Arish International Airport, El Alamien International Airport, Taba International Airport, St. Catherine International Airport, Abu Simple Airport, Assuit Airport, El Gouna Airport, Wadi Al Jandali Airport, Aswan Airport and Dakhala Oasis.

3.5.5 Sea Ports

From Logistics Capacity Assessment Org, https://dlca.logcluster.org, the following is a list of the main seaports that the producers and traders

utilize to access the Mediterranean Sea and the Suez Canal:

1- **Port Said:** Because of its location on the eastern entrance of the Suez Canal, on the entrance of the largest global navigational channel (the Suez Canal), and at the midpoint of the largest commercial navigational channel linking Europe and the East, the port of Port Said is considered the largest crossing traffic port in the world. This is one of the reasons why it is regarded as one of the most important Egyptian ports on the Mediterranean Sea. It is an artificial harbor that is provided with enough protection by breakwaters.

The following details contains information on the port's anchorage, pilotage, radio frequencies used by the port management, and the current weather conditions at the port.

The goal of the Suez Tunnel Project is to create a direct link between the eastern and western sides of the canal and to provide support for the development strategy in Sinai. The project involves the construction of a tunnel under the Port Said section of the Suez Canal and consists of three separate tunnels for automobiles and trains.

The preliminary designs for the project take into account the needs of the region in terms of development, transportation, and logistics for a period of at least twenty years. These needs include establishing a linkage with international roads and developing an integrated development scheme for the axis of the Suez Canal.

The Sinai Peninsula will be connected to the rest of Egypt by means of seven additional tunnels, according to a recent announcement made by the Suez Canal Authority. In Port Said, there will be three tunnels excavated (two for automobiles and one for trains), while in Ismailia, there will be four tunnels excavated (two for cars, one for railways, and one for other special uses). The price tag for the tunnels is estimated to be 4.2 billion dollars (approximately about 30 billion Egyptian pounds). The first three tunnels will cost 18 billion Egyptian pounds, and the primary significant stakeholders in the implementation are the military forces, Arab Contractors Company, and Orascom.

The Al-Nasr floating bridge, which allows people to commute between Port Said and Port Fouad in an easy and convenient manner, was successfully constructed and opened in late 2016. To create a bridge that is wide enough for automobiles to travel across, the bridge is constructed by extending from two different banks with the assistance of tugboats that tie the two halves together. 420 meters is the length of it. This was a significant step towards the goal of achieving efficient transportation of both personnel and equipment.

Port Location and Contacts	
Country	Egypt
Province or District	n/a
Town or City (Closest location) with Distance (km)	Name: Port Said Distance: 8km
Port's Complete Name	Port Said Port
Latitude	31° 15' N
Longitude	32° 18' E
Managing Company or Port Authority (If more than one	Port Said Port Authority

operator, break down by area of operation)	
Management Contact Person	n/a
Closest Airport and Frequent Airlines to / from International Destinations	Airport Name: El Arish International Airport (92.7 miles / 149.2 km) Cairo International Airport (94.3 miles / 151.7 km) El Nouzha Airport (138.2 miles / 222.5 km) Borg El Arab Airport (155.1 miles / 249.6 km)

Port Performance

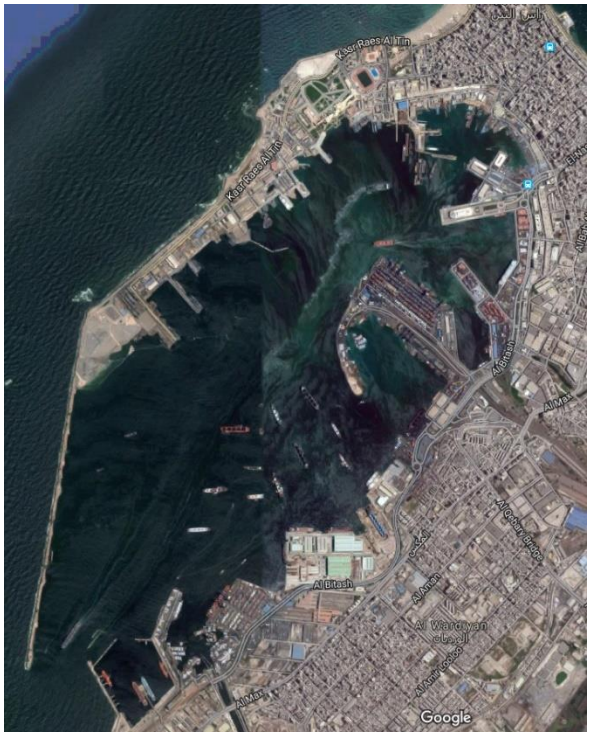
Weather	Mild
Water Density	1.025 g/cm^3
Raining Season	winter
Tidal range and flow	0.3 m
Total Area	72.10 km^2 (72.100.000 m^2)
Water Area	1.5 km^2(1.500.000 m^2)
Land Area	70.6 km^2 (70.600.000 m^2)
Total Customs Zone	33.5 km^2 (33.500.000 m^2)
Total Yards Area	0.6 km^2 (600.000 m^2)
Maximum Port Length	10 km (western port boundary)

Maximum Port Width	8 km (southern boundary)

Seasonal Constraints		
	Occurs	Time Frame
Rainy Season	No	
Major Import Campaigns	No	
Other Comments		

Handling Figures for 2017	
Vessel Calls	1233
Container Traffic *(TEUs)*	800,000

2- **Port of Alexandria**; The Port of Alexandria is really comprised of two different harbors that are geographically separated by a peninsula. The water depth in the East Harbour is insufficient for safe navigation, whereas the West Harbour is the one that is utilized for commercial ships and business. There are two different navigation channels at the Port of Alexandria. All vessels that enter or exit the Port of Alexandria are obliged to have a pilot on board at all times. The overall land area of the Port of Alexandria is 2.2 square kilometers, while the amount covered by water is 8.5 square kilometers.



Alexandria Terminal, the container terminal in Alexandria now has a throughput capacity of 500,000 TEU, but the capacity that was designed for it was just 160,000 TEU.

The Alexandria Terminal includes the following:

A Special Yard for Packing Cargo to Be Shipped Abroad In Containers and a Special Depot for Stripping L.C.L.

Terminal Area	163,000 m^2
Storage Capacity	15,500 TEU
Container Quay Length	531m
Water Depth	12m
Ro / Ro Quay Length	164m
Ro / Ro Slide Width	50m

Reefer Connections	1000 Connection

El-Dekheilla Terminal; has the ability to process one million TEU worth of cargo.

There is a depot at the EL Dekheilla Terminal that is used for the storage of cargo that has been received in L.C.L. and Hazardous Cargo Containers.

Terminal Area	406,000 m2
Storage Capacity	27,000 TEU
Container Quay Length	1040m
Water Depth	12-14m
Ro / Ro Quay Length	Part of the Main Quay
Ro / Ro Slide Width	50m
Reefer Connections	1000 Connection

3- Port of Damietta; Damietta Port geographical position:

The port of Damietta may be found 10 kilometers to the west of the Damietta Branch of the Nile River, 70 kilometers to the west of port stated, and 200 kilometers from Alexandria Port.

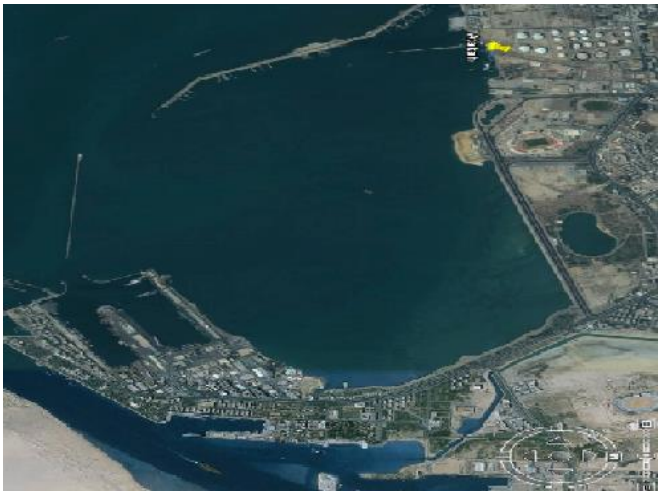
Total port area: 11.8 million m2

The current water area, which is 3.9 million square meters, will be enlarged to 4.3 million square meters.

Approximately 7.9 million square meters of land space, which will be expanded to 8.6 million square meters.

The ratio of water area to total port area is one to three.

4- **Port of Suez**; The port may be found near the southern entrance of the Suez Canal, which lies in the northern section of the Gulf of Suez. It is bounded on the other side by a made-up line that runs from Ras Masala all the way to Ras El-Sadat. It encompasses the northern shore all the way up to the mouth of the Suez Canal.



Bounded by a line in the mind's eye that makes a turn of 140 degrees from the most eastern point of the breakwater to the most western point of the breakwater. It is divided into the following three parts:

Suez Port, Adabya Port and Petroleum dock

5- In addition to many other sea ports such as; Port of Dekheila, Port of Abu Qir, Port of Sidi Kerir, Port of Abu Zenima, Port of Al Sokhna, Port of Adabiya, Port of Hurghada, Port of Ras Gharib, Ras Shukheir Port, Safaga Port, Port of El-Arish, Port of Al Tour, Port of Sharm El Sheikh, Port of Nuweibah, Petroleum Dock Port, Suez Canal and Port of East - Port Said

3.5.6 Energy

Siemens signed a series of contracts with the Egyptian government in June 2015 to build the world's largest-ever gas-fired combined cycle power plants as well as 12 wind parks with approximately 600 turbines. This to increase Egypt's generation capacity for electricity by 45 percent and add 16.4 gigawatts to the grid.

Together with local partners Elsewedy Electric and Orascom Construction, Siemens is constructing three natural gas-fired combined cycle power plants as part of the megaproject. Each of these power plants has a capacity of 4.8 gigawatts, and the construction is being done on a turnkey basis. The 24 Siemens H-Class gas turbines will provide the power for the three power plants that will be located at Beni Suef, Borollos, and the New Capital. In addition, the scope of supply includes twelve steam turbines, thirty-six generators, twenty-four heat recovery steam generators, and three gas-insulated switchgear systems operating at a voltage of five hundred kilovolts.

Siemens has established a new global standard for the implementation of fast-track power projects after only 18 months from the day that the contract was signed. The first stage of the megaproject in Egypt has been finished, and the projected target of adding new capacity to the national power system of 4.4 gigawatts has even been exceeded, with 4.8 gigawatts already being connected to the grid.

One the other hand; 2015 saw the publication of Egypt's unified Electricity Law no. (87), which paved the way for market liberalization of Egypt's power generating and distribution sectors.

The Power Law has made a commitment to simplifying the licensing process in order to facilitate market reform, which will make it possible for private companies, both domestic and international, to participate in the electricity industry. It is anticipated that the Egyptian Electricity Transmission Company (EETC), which presently maintains a market monopoly on power transmission and the operation of the grid, will restructure in order to adapt to an environment that is significantly more competitive if a transitional timeframe of eight years is granted. The government has mandated that EETC must ensure that all third parties have equal access to the national grid, but it will continue to maintain control over network fees.

Two unique electricity markets have been established as a result of the reforms: one is a competitive market that consists of wholesale and competitive retail, and the other is a regulated retail market. Although complete market liberalization is not predicted at this time, it is projected that the government would gradually reduce the extent of the regulated market in order to achieve complete market liberalization at some point in the future. Additionally, in order to broaden the scope of the private sector's potential contributions to Egypt's electricity market, the law has decoupled the various links in the electricity supply chain, including generation, distribution, grid operator, market operator, authorized suppliers, and qualified consumers.

In accordance with the recently changed law, the Egyptian Electric Utility and Consumer Protection Agency (ERA) will now play a more active role in the control of prices. The ERA is now tasked with defining the appropriate rules and economic basis for the calculation of power tariffs to non-qualified consumers, calculating power exchange prices in the regulated market, and determining consideration for the use of transmission and distribution networks. In the past, the ERA was tasked solely with monitoring functions, but this has changed.

The Egyptian Electricity Holding Company (EEHC) has seen its control over the country's primary electricity provider, the Egyptian Electricity Transmission and Distribution Corporation (EETC), decrease as a direct result of the passage of the Electricity Law, which gave EETC additional powers and autonomy. It is presently required by law that EETC be the sole entity responsible for grid operation and the

provision of energy transmission services. Additionally, EETC is charged with the duty of defining commerce and settlement in conjunction with other utility partners. Notably, EETC has been given the responsibility of ensuring that no preferential agreements are made between any of the power producers or consumers, as well as promoting efficiency and competition in the process of selling and buying electricity. EETC will be expected to play a more active part in guaranteeing the necessary power supply for the regulated market by increasing the amount of electricity that it purchases from producing firms.

EETC has a total of 9 years to reorganize itself and bring itself into compliance with the legislation, in addition to having 3 years to carry out the essential grid capacity and growth studies. The Egyptian Power Holding Company (EEHC) will need to adjust to a more liberalized market in the future as a result of the EETC playing a more active and independent role in the future of Egypt's electricity market. It is currently unknown if EEHC will choose to function as a private sector business or whether existing state-owned generating assets will be privatized in the near future.

Nuclear Energy:

Despite the fact that the nuclear research reactor at Inshas has been shut down, Egypt continues to conduct research using nuclear power and runs two nuclear reactors specifically for research purposes.

Egypt is looking to add nuclear power to its energy mix but does not currently have any commercial nuclear power.

El-Dabaa will be the location of Egypt's first commercial nuclear power station, and the Egyptian government has just signed a preliminary agreement with Rosatom, the state nuclear corporation of Russia, to build and manage the facility. However, there has been a delay in the building of the 4.8 GW facility.

3.5.7 Renewable Energy:

Based on IRENA (International Renewable Energy Agency) in 2018 "*RENEWABLE ENERGY OUTLOOK EGYPT*" Report.

H.E. Dr Mohamed Shaker (Minister of Electricity and Renewable Energy) of Arab Republic of Egypt says:

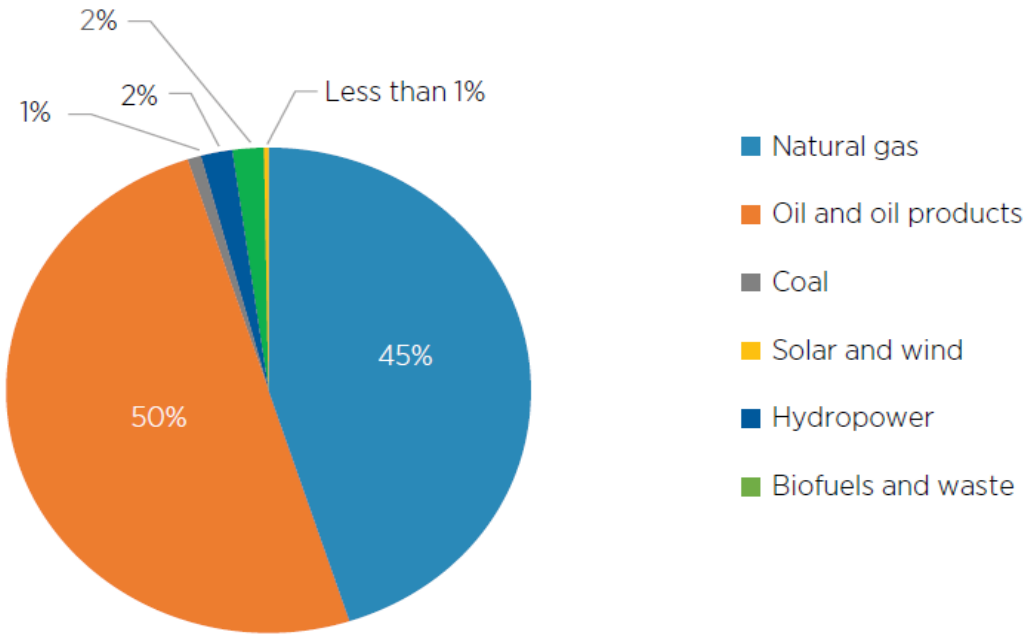
The goal of Egypt's Vision 2030 is to build a sustainable economy that is diverse, balanced, and competitive within the context of the plan for long-term sustainable development. The Integrated Sustainable Energy Strategy to 2035, which was published in 2015 by the Ministry of Electricity and Renewable Energy, outlines the fundamental role that renewable energy should play and provides specifics on how it should play that function.

Integrated Sustainable Energy Strategy of 2035 “ISES 2035” guarantees continual diversification of energy security and develops the essential circumstances to enable further growth of renewables via the participation of all sectors of society. This is accomplished by ensuring that energy security is continuous. In addition, the plan validates Egypt's goal of becoming an energy center between Europe, Asia, and Africa by increasing grid interconnections throughout the Arab region and beyond.

According to the ISES 2035, Egypt is home to a vast variety of undeveloped solar and wind resources, and by the year 2035, electricity capacity from renewable energy sources should account for 42 percent of the total.

Egypt will have a much easier time accomplishing these goals with the assistance of the Renewables Readiness Assessment and the REmap national analysis, which are both components of this Renewable Energy Outlook research. These assessments indicate ways to expand on the measures that Egypt has previously done to boost the deployment of renewable energy technologies. These technologies include solar, wind, and geothermal power. The Egyptian energy industry, for example, has implemented a localization program and has been successful in attaining a local content target of 30 percent for entire wind farm needs. They want to increase this objective to 70 percent by the year 2020. By the same year, concentrated solar power plants (CSP) shall contain a local content of at least 50 percent.

Let us start from the primary energy supply in Egypt in 2014/2015:



Based on: EU (2015a), "Integrated Sustainable Energy Strategy"; EU (2015b), "TIMES-EG Model Input and Analysis" IEA (2017), IEA Energy Balances for 2015, Egypt.

We can see how much the usage of renewable energy is poor, and the ambition of the Egyptian government to improve the significance of the renewable energy.

3.5.7.1 Hydroelectric energy

The Nile River is Egypt's primary source of hydropower, with the greatest potential being found near Aswan, which is home to a number of power plants with a combined capacity of 2,800 megawatts, which results in an annual production of 13,545 gigawatt hours of electricity. In Egypt throughout the 1960s and 1970s, hydroelectricity accounted for approximately half of the country's total electrical generation. Nevertheless, as a result of a rise in the proportion of energy generated by thermal power stations, the proportion of total electricity generated that came from hydro resources was only 7.2% in 2015/16. (EEHC, 2016a).

Hydropower is the most developed of Egypt's renewable energy technologies, as evidenced by the country's steady 1.2% annual rise in the amount of electricity produced by its hydroelectric facilities during the course of the five years spanning 2011/12 to 2015/16. In this context, a number of projects have been completed.

Upper Egypt's Assiut is the site of the construction of four new hydroelectric facilities, each with a capacity of 32 megawatts (MW), which are scheduled to begin producing electricity by the end of 2018.

Initiated in 2015, the construction of a pumped storage hydroelectric project with a capacity of 2,400 megawatts (MW) is scheduled to be finished in the year 2022. (Andritz, 2016). The operation of this project is anticipated to take place during peak hours on the basis of water moving from a higher reservoir to a lower reservoir that is separated by a height difference of 28 meters. During the off-peak hours, the flow is turned around, and the generators and turbines are switched places to function as pumps and motors, respectively, so that the top reservoir may refill properly.

The extra power capacity that is available during off-peak hours is used to generate the electricity that is required to keep the motor generators operating. In China, a conditional contract for the construction of the plant was agreed upon and signed with Sanyo. This contract is contingent to the approval of the technical and financial bids by the MOERE and EEHC. Late in 2022 is when it is anticipated that the project will begin operations.

3.5.7.2 Wind energy

According to Egypt's Wind Atlas (Wind Atlas for Egypt Measurement and Modelling 1991-2005), the nation possesses a wealth of wind energy resources, notably in the region surrounding the Gulf of Suez. Due to the high and consistent wind speeds that reach on average between 8 and 10 meters per second at a height of 100 meters, this is one of the best locations in the world for harnessing wind energy. Large, uninhabited desert areas are readily available here, making it one of the best locations overall.

In addition, potential new locations have been found both east and west of the Nile River in the governorates of Beni Suef and Menya, as well as in the oasis of El Kharga, which is located in the governorate of New Valley. They provide wind speeds that range anywhere from 5 to 8 meters per second and are appropriate for the generation of power from wind as well as other purposes like as the pumping of water.

Figure 3.5.7.2 is an illustration of the brand-new wind atlas that was released by IRENA in 2016 on their Global Atlas platform. The atlas was created with a resolution of 1 kilometer and a height of 200 meters.

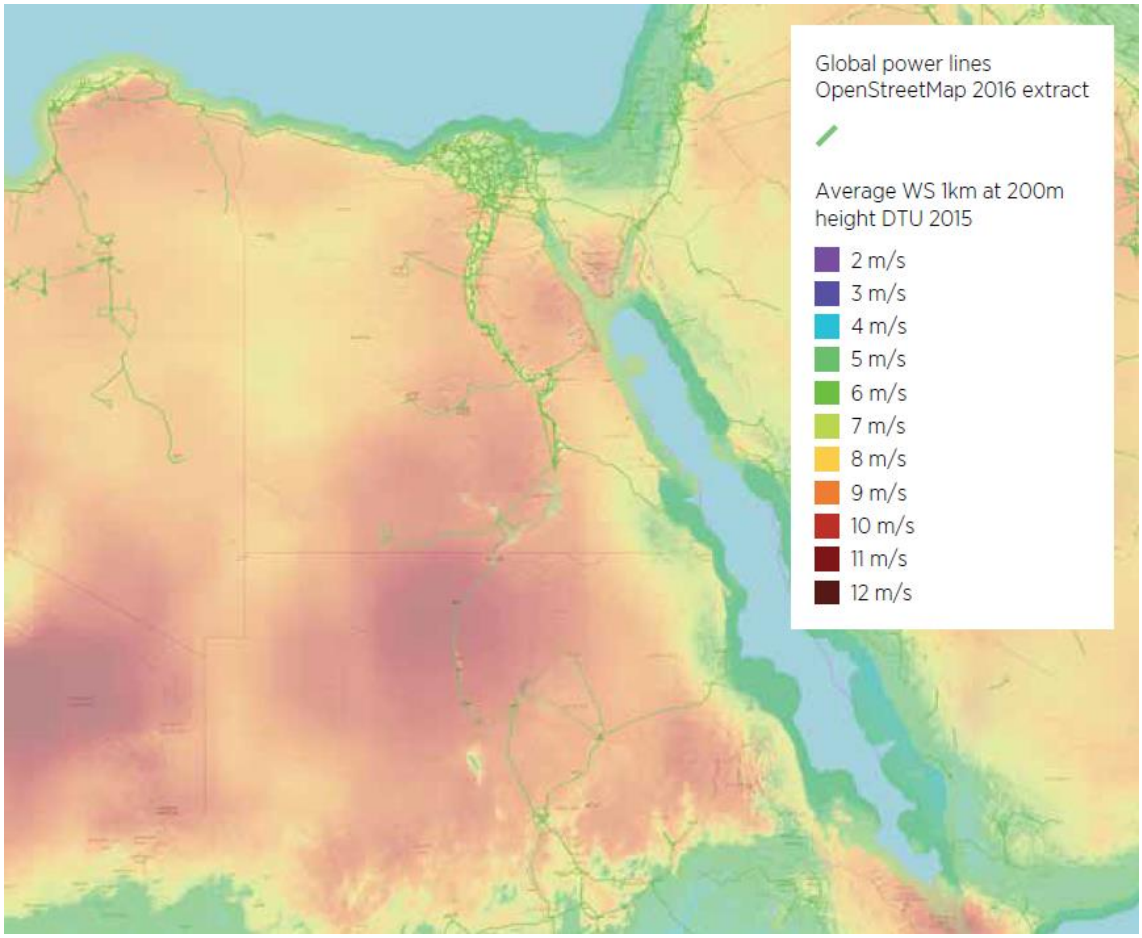


Figure 3.5.7.2 IRENA (n.d.) Global Atlas for Renewable Energy, DTU Global Wind Dataset 1 km onshore wind speed at 200 metres height.

Disclaimer: The designations employed, and the material presented in this map do not imply any opinion on the part of IRENA concerning the legal status of any region, country, territory or area, or concerning the delimitation of frontiers or boundaries

First wind farm in Egypt was built near Hurghada in 1993 with 42 units and 5.2 MW. Since 2001, the NREA has developed a succession of large-scale wind farms at Zaafarana (545 MW) and Gulf of El Zayt (750 MW) in cooperation with Germany, Spain, Japan, and Denmark (200 MW). This installed capacity produced 260 GWh in 2001/02 and 2,058 GWh in 2015/16. Wind energy raised conventional fuel savings from 58 Mtoe

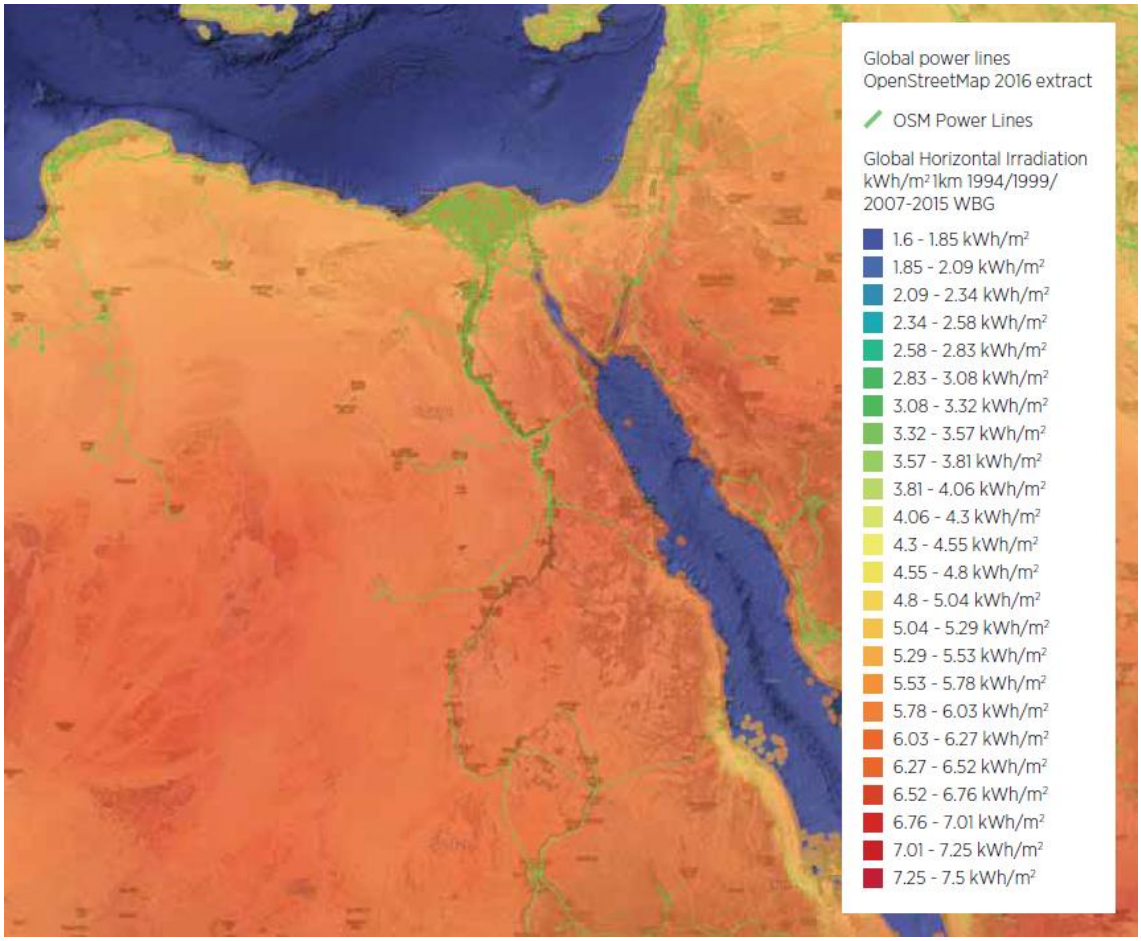
in 2001/02 to 432 Mtoe in 2015/16. In 2001/02, 143 000 tonnes of CO2 were saved, and 1.131 million in 2015/16. (EEHC, 2016a).

By 2023, four wind farms with a total installed capacity of 2,610 MW will be operational. They are being developed by the NREA and EETC and will be built by foreign and Egyptian private-sector businesses under BOO or EPC programs.

Siemens is also advancing 2000 MW of wind energy projects through an EPC and finance plan, which involves creating a blade manufacturing facility, according to a memorandum of agreement signed by the NREA and Siemens in April 2015.

3.5.7.3 Solar energy

Egypt gets plenty of sun. In 1991, the solar atlas for Egypt showed that the nation gets between 2900 and 3200 hours of sunlight yearly, with annual direct normal intensity of 1970-3200 kWh/m2 and total radiation intensity range between 2000 and 3200 kWh/m2/year from north to south. IRENA's Global Atlas platform contains a 2016 solar atlas that shows Egypt's significant solar potential. Egypt is one of the world's best places to use solar energy for power and warmth.



Since the 1980s, Egypt has used solar PV for pumping, illumination, advertising, cold storage, and desalination. Commercial uses included emergency road and navigation illumination in distant places.

In 2013, 6 MW of small-scale PV systems were deployed, while 30 MW of off-grid power plants were operating.

MOERE (*Ministry of Electricity and Renewable Energy*) began developing bigger PV installations after adopting the FIT program in 2014. With the energy scarcity in Egypt worsening in 2014 and the cost of PV panels falling, various Egyptian administrations have turned to rooftop and street lighting PV systems. The next section summarizes Egypt's important achievements (IETA, 2017).

3.5.7.4 Centralised grid-connected solar PV

The NREA (*New and Renewable Energy Authority*) has completed the feasibility studies for two large-scale photovoltaic (PV) facilities that will have an installed capacity of 20 MW and 26 MW, respectively. These plants are planned to be built in Hurghada and Kom Ombo, and their completion is anticipated for the latter half of 2019. The first one is going to be funded by JICA (Japan), while the second one is going to be funded by AFD (France).

It is anticipated that they will each produce around 32 GWh and 42 GWh yearly, respectively, which will result in a total savings of approximately 40,000 tonnes of CO2.

3.5.7.5 Distributed solar PV

In mid-2014, two government programs for rooftop PV systems on public buildings began installing and connecting 3 MW of PV systems to the grid. After the first phase of FIT (*feed-in tariff*), this increased by 10 MW.

In 2015/16, the NREA built various off-grid PV projects for rural communities with a total capacity of 32 MW, including 6942 stand-alone systems totalling 2 MW, eight centralised systems totalling roughly 30 MW, plus street lighting systems and hybrid PV-diesel systems.

Several small-scale PV efforts were proposed to contribute to the 6 MW deployed by 2013. Many distributed solar PV projects are in the works. As power subsidies are eliminated and rates rise, industrial and commercial sectors can combine small-scale PV systems to satisfy energy demand and reduce utility expenses.

3.5.7.6 Concentrated solar power

The first solar thermal integrated combined-cycle power plant was built in the Kuraymat area with a total capacity of 140 megawatts (MW), including 20 MW as a solar component and 120 MW as a gas-fired combined-cycle plant. The construction of this plant was funded in large part by the Global Environment Facility (GEF).

The integrated solar field has a total area of roughly 644,000 square meters (m2), with a total solar collector area of 1,920 m2 incorporating 53,760 mirrors. The overall size of the solar field is measured in square meters.

During the 2015/2016 fiscal year, the power plant was responsible for producing a total of 164 gigawatt hours (GWh) of energy. As a result, the total annual reduction in conventional fuels that has occurred as a result of the utilization of solar energy in the Kuraymat power plant is estimated to be approximately 10,000 tons per year, and as a consequence, the amount of CO2 emissions that have been avoided is approximately 20,000 tons.

2015 saw the launch of a request for proposals (RFP) by both the EETC (*Egyptian Electricity Transmission Company*) and the NREA (*New and Renewable Energy Authority*) for the construction of a new 100 MW *concentrated solar power* (CSP) facility using the BOO (*build-own-operate*) system. However, we have not yet received any proposals at this time. In a separate report published in November 2013, the German development organization “GIZ” recommended increasing Egypt's power generation capacity by installing *concentrated solar power* (CSP) facilities at already operational power plants.

This would increase the supply from plants that are primarily powered by gas and oil, and it would also mark the beginning of the hybridization process for such plants (EGHLJC and EgyptERA, 2013).

3.5.7.7 Solar Water Heating

At the beginning of the 1980s, a number of people in the business world started working on developing applications for SWH (*solar water heater*). As a first step, the Ministry of Environment and Renewable Energy (MOERE) imported one thousand solar water heaters (SWHs) with capacities ranging from one hundred to five hundred litters per day. They then put a number of selected samples through various kinds of tests and rented out the remaining SWHs to the general public.

As a direct result of this initiative, a number of private-sector businesses in Egypt that are responsible for the assembly and production of SWHs have been established. In

addition, in 1986, the Ministry of Housing and Urban Communities issued a regulation requiring the mandatory use of SWHs in new towns. This decision led to the construction of solar water heaters that were comparable to a coverage area of 800,000 m2.

Nevertheless, the market continued to face a downward trend until 2013, mostly as a consequence of the heavily subsidized costs of energy as well as the poor management of the distribution process brought on by a lack of skilled employees and awareness.

By the end of the year 2013, the New Urban Communities Authority (NUCA) has begun implementing SWHs in new cities in conjunction with countries inside the EU. There are now 22 firms that are listed in the registry of the Federation of Egyptian Industries (FEI) with a scope of activity that includes the manufacture of solar thermal technology or the importation of solar thermal technology from other countries. The remaining enterprises are importers, which results in a total installed capacity of around 750,000 m2 despite the fact that approximately 12 to 14 of these businesses are now engaged in production.

Because of the numerous demonstration projects that were carried out in Egypt's food and textile sectors in the early 1990s, the country's potential for the industrial use of solar water heaters (SWHs) in process heat and solar thermal systems has been established. As a result, at the tail end of 2014, the Ministry of Trade and Industry initiated a project with a budget of 5 million United States dollars intended for small and medium-sized businesses (SMEs), with the goal of promoting low-carbon technologies, primarily solar thermal, for cooling and heating in industrial applications (UNEP, 2014).

3.5.7.8 Biomass

Egypt possesses significant amounts of biomass resources, including agricultural waste, animal manure, and municipal solid waste. Roughly 35 million tons of agricultural waste are produced every year; of this amount, about 40 percent is used to feed animals, and the remaining 60 million tons are suitable for use as a source of energy (equal to 5 million tons of oil equivalent per year). On a daily basis, urban residents generate an average of 0.5 kg of solid garbage, which adds up to roughly 10,000 tonnes in the greater Cairo area alone (GIZ, 2014).

Egypt has been a pioneer in the development of a variety of methods for the utilization of biomass, in particular for the generation of biogas from animal waste in rural regions, as well as for the collecting and briquetting of waste from agricultural produce. These

technologies not only prevent young people from leaving their hometowns for the larger cities, but they also create jobs there.

The Ministry of Environment, in conjunction with the Ministry of Local Development, is now in charge of directing a program that is intended to handle the municipal solid trash that is produced in major cities (GIZ, 2014).

In 2009, the Egyptian Environmental Affairs Agency (EEAA) took the lead in launching the Bioenergy for Sustainable Rural Development Project (BSRD) (EEAA et al., 2013), which was funded by the United Nations Development Programme and the Global Environmental Facility. The project is referred to as "BSRD." The project intends to provide specific assistance to women and take into consideration the needs of rural regions while simultaneously encouraging recent college graduates to start their own businesses.

The project has made significant headway in terms of creating and spreading biogas digesters and establishing Bioenergy Service Providers (BSPs), both of which are intended to help the market penetration of bioenergy inside the country. The ensuing businesses, known as BSPs, are organizations that are established with the intention of offering work possibilities to recent college grads through the provision of on-site training in the building, curing, and feeding of biodigesters in rural regions.

During the course of its existence, the BSRD (*Bioenergy for Sustainable Rural Development*) was responsible for the development and operation of 960 biogas units in 18 governorates in Egypt, each of which was of a different size. Over one thousand Egyptian households have benefited from the efforts of twenty different registered BSPs that have been dispersed throughout the country's communities. A FIT legislation for biomass systems, comparable to the ones announced by the Prime Minister in October 2014 for wind and solar power, is now under consideration by the BSRD (EEHC, 2016a).

3.6 OIL&GAS AND MINING

History:

When oil was discovered for the first time in 1886, it marked a major turning point in Egyptian petroleum history.

The foundation of the Egyptian oil industry dates back to 1883. In quest of oil, M. de Bay, a Belgian expert, and the Egyptian government explored Ras Jesma in the Eastern Deseret in 1885, although operations did not begin until 1885. M. de Bay and his team were working on the drilling of five wells based on a Schlumberger book detailing the history and importance of oil and gas in Egypt and its progression. The drilling activities resulted in a daily output of 1,300 kg of oil and gas from the first well. Unfortunately, the second and third well drilling operations were unsuccessful, so the government decided to find a successor and appointed an American, H.T., and a fresh team of drillers to continue M. de Bay's hunt.

The Egyptian Government was able to extract oil from Ras Jesma in 1886, marking the commencement of the nation's oil industry. In the same year, an American team was tasked with conducting a reconnaissance of the region; based on their findings, the team suggested beginning drilling operations not just in Ras Jesma, but also in Ras Dhib to the north and Abu Durba to the east of the Gulf. By 1888, however, the government no longer supported drilling in these regions.

Beginning in 1904, when the Egyptian government permitted the Cairo Syndicate to explore for oil in Sinai and Quena, international corporations commenced operations.

The Egyptian Oil Trust Ltd was established in 1907 for the purposes of acquiring concessions, developing, drilling, purifying, providing, reserving, distributing, and managing petroleum products. A year later, Egyptian Oil Trust Ltd. began drilling operations. And in 1909, the Egyptian business was able to extract a huge quantity of oil from Ras Jesma, which was located at a depth of 388 meters. Two barrels of oil were being extracted from the well per minute. Ras Jesma became a significant source of oil, and the first oil refinery was erected in 1911. In 1912, the refinery began operations; the

first tank ship transporting 3,000 tons of oil left Ras Jesma for the Far East, which was considered the only source of oil production for many years.

Twenty-three wells were drilled in total during this year. By 1927, oil production had decreased to the point that it was discontinued.

Prior to then, another significant investigation of the Hurghada field was conducted in 1911, roughly 380 kilometers south of Suez. Anglo Egyptian Oilfields Ltd (50% Shell and 50% BP) found oil in 1913. It is noteworthy that Shell was the largest oil business in Egypt in terms of marketing and distribution. In 1915, Anglo Egyptian Oilfields Ltd. relocated to the Hurghada field. Due to World War I, exploratory operations were suspended for some period. The extraordinarily prolific Hurghada field marked a turning point for Egypt. In 1931, the annual output of the field reached 1.8 million barrels.

The expanding petroleum industry necessitated a corresponding expansion of production facilities. The Royal Governmental Oil Refinery, a second refinery located in Suez, was founded in 1922, although activities did not begin until 1923.

During the 1920s, operations were extremely sluggish, and various drilling efforts were made on the coast, Sinai, and several Egyptian islands. Eventually, however, corporations ceased operations and began researching new technologies that may be useful during these unproductive periods.

Anglo Egyptian Ltd. was a pioneer and developed a new technique called the Eotvos torsion balance, which had never been utilized outside of Europe. This innovative technique was utilized to collect data, particularly from the Ras Jesma and Hurghada areas.

Egypt founded the Cooperative Petroleum Association Company in 1934 to facilitate the interchange of commodities and services between cooperatives and to promote cooperation in Egypt. In 1937, the Egyptian government initiated the establishment of new mining legislation and rules. It began issuing one-year permits covering areas of at least four square kilometers; these licenses were subject to renewal. This government move prompted corporations from the United Kingdom and the United States to bid on

these licenses. Anglo Iranian Oil, Royal Dutch /Shell including Anglo Egyptian, Socony-Vacuum Oil Co., Inc., Standard Oil Co. of California, and Standard Oil Co. of New Jersey were the five permitted foreign firms. The government could only issue forty permits, therefore these five firms, through their subsidiaries, competed for the available blocks, resulting in the presence of around 23 oil exploration businesses.

The discovery of the first commercial oilfield in 1938 marked the beginning of a new era in Egypt's oil output. Between Hurghada and Suez, the Anglo Egyptian Oilfields was able to identify an oil field at Ras Gharib. The well produced 150 tons of oil per day, which represented an increase in oil output. Containers were constructed in order to transport oil from Ras Gharib. In 1939, the output rate reached its highest point of 5,1 million barrels.

After this finding in Ras Gharib, other discoveries were made. In 1946, the Anglo Egyptian Oilfields and Socony-Vacuum Oil Co. discovered oil on the Sinai Peninsula's eastern coast near Sudr. The well was producing around 3.5 million barrels, which boosted the nation's overall oil output. This year, Sinai became an important geographic exploration site for the firms. Two years later, the Egyptian government issued a legislation prohibiting crude oil exports. This decision impacted the foreign firms working in Egypt, and the country's oil output declined until 1953. The government permitted the sale of only refined Egyptian items.

The Government formed The General Petroleum Authority (GPA) in 1956, which was tasked with managing government refineries and major organizations dealing with petroleum-related concerns. The next year, the GPA founded the General Petroleum Firm, the first national company to operate with 63 licenses in the Gulf of Suez and Eastern Desert. In the 1960s, oil was discovered in Ras Bakr, Khreim, and Ras Gharib, and a total of 90 wells were drilled in the new fields. In North Balayim, the first offshore oifield was found in 1961. The Egyptian General Petroleum Corporation was established in 1962, managing and functioning as joint ventures with international firms.

American Co. (Recently Amoco) and Philips Petroleum Co were created in 1964 to focus on growing and exploring new places. Gulf of Suez Petroleum Company (GUPCO) was

founded as the Egyptian American Corporation in 1965. It uncovered the oldest and largest oilfield in the history of Egyptian petroleum. GUPCO operated and drilled around 12 oil wells and one dry well, although production did not begin until 1967. "***It was my honor that I was a part of this great company, as I worked in GUPCO as 1st Electrical Engineer from 2002 to 2007***"

The oil business was damaged by the conflict of 1967, and operations were sluggish. Egypt joined the Arab Petroleum Exporting Countries in 1972, and the first Ministry of Petroleum was established in 1973 to handle all oil industry-related tasks.

In 1977, the October field, the third biggest oilfield in Egypt, was discovered. Since its discovery and up to 1991, more than 420 million barrels of oil were extracted. Egypt has become a significant strategic oil producer from four regions: the Gulf of Suez, the Western Desert, the Eastern Desert, and the Sinai Peninsula. In 1997, Apache and Seagull discovered a second find in the Western Desert with around 100 barrels of crude oil. In 1998, Egypt produced an average of 866,000 barrels of crude oil per day.

The petroleum business has been changed from 1999 to 2010. To enhance and increase the country's petroleum output, more than 176 agreements and legislation were enacted. The overall number of discoveries in the Mediterranean, Gulf of Suez, Eastern and Western Deserts, Sinai, Delta, and Upper Egypt reached 489, with 311 of those finds being crude Oil. **Reference:** https://egyptoil-gas.com/

3.6.1 Oil

Reference: OIL&GAS Journal https://www.ogj.com/

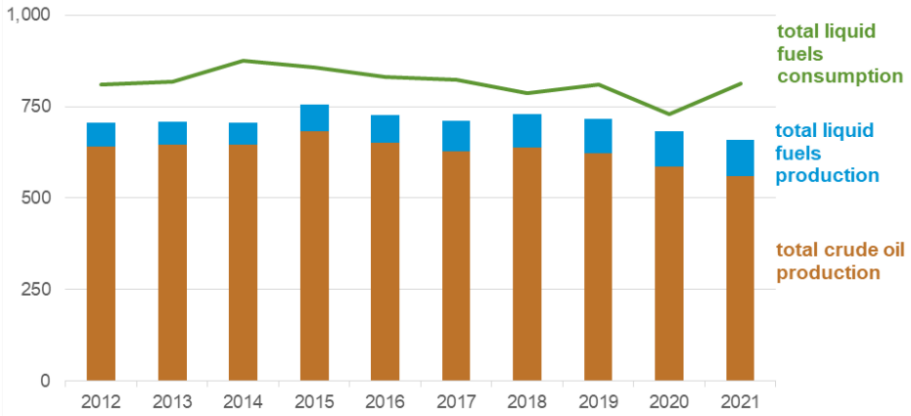
As of January 2021, Egypt was estimated to have proven oil reserves amounting to 3.3 billion barrels, as stated by the Oil and Gas Journal (OGJ).

There are three primary types of crude oil mixes in Egypt. The crude oil used in Suez and Belayim blends originates from depleted offshore sources in the Gulf of Suez. The oil is processed in Egypt, and only very tiny volumes are sent elsewhere. Both the Suez and the Belayim blends are considered to be grades of medium, sour crude oil. The

Western Desert blend is a light, sweet crude oil that originates from the more recently developed onshore resources in the Western Desert.

The output of all liquid fuels in 2021 was anticipated to be 660,000 barrels per day (b/d), with crude oil and lease condensate accounting for approximately 561,000 b/d of that total (*half a million barrel is very less production compared with Gulf countries such as 10 million of Saudi Arabia or 4 million of UAE, especially the oil consumption of Egypt is near to 1 million barrel*)

Egypt's overall liquid fuels consumption presently outpaces its oil output. Because of an increase in natural gas liquids production from big offshore natural gas sources that came online in the middle of the 2010s, Egypt's overall output of liquid fuels has benefitted from this development. However, because there haven't been many large crude oil discoveries in recent years, the overall production of liquid fuels of all kinds has been going down.



Total annual liquid fuels production and consumption in Egypt

Transportation as well as storage:

Egypt plays a key role in the international trade of crude oil and natural gas as a result of the Suez Canal and the Suez-Mediterranean (SUMED) Pipeline, which are two main routes and transit chokepoints for the transportation of LNG and crude oil respectively.

Egypt has crude oil storage facilities located at the Ain Sukhna and Sidi Kerir terminals, which are located at the beginning and the end of the SUMED pipeline. In the event that both the Suez Canal and the SUMED Pipeline were to close at the same time, tankers would be forced to take a detour around the southern tip of Africa. This would add

approximately 8–15 days of transit time to reach the United States or Europe and would result in increased shipping costs. In comparison, the Ain Sukhna port, which is located on the Red Sea, has 15 floating storage tanks with a total capacity of 10 million barrels. The Sidi Kerir terminal, which is located on the Mediterranean, has 27 storage tanks with a total capacity of 20 million barrels.

Refining and refined oil products:

The Egyptian General Petroleum Corporation (EGPC) reports that Egypt is home to eight refineries with a combined nameplate capacity of roughly 762,000 barrels per day (b/d).

The Egyptian Minister of Petroleum and Mineral Resources has stated that the MIDOR refinery intends to increase capacity by 60,000 barrels per day (b/d) while also undergoing a process of modernization. In the first quarter of 2022, it is anticipated that this project will be finished, which will result in the installation of a vacuum distillation unit, an extra crude oil distillation unit, a diesel hydrotreater, and a hydrogen unit. This initiative, which is estimated to cost around $2.3 billion, will also boost both operational efficiency and production capacity by modernizing and integrating additional already existing units. 2018 was the year that TechnipFMC was awarded the contract for engineering, procurement, and construction.

The Assiut refinery has ambitious ambitions to expand and upgrade existing facilities, with the addition of both a new naphtha complex and a hydrocracking complex. NS Energy Business reports that the completion of this project is anticipated for the year 2022 and estimates that it will require an investment of around $2.5 billion.

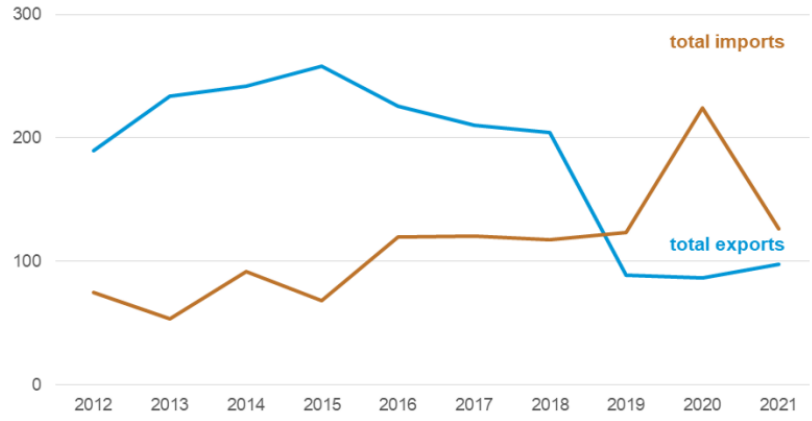
The Mostorod refinery commenced commercial operations in 2019, and in September of 2020, it was formally opened to the public for business. The refinery is equipped with a variety of processing equipment, such as a delayed coker unit, a hydrocracker, a hydrotreating unit for naphtha and diesel, and a sulfur recovery unit. The refinery had been expected to commence operations in 2017, but this timeline was pushed back due to difficulties that occurred during the building phase.

A deal to construct an integrated refining and petrochemicals complex in the Suez Canal Economic Zone in Ain Sukhna was signed in April 2021 between the Egyptian government and the state-owned Red Sea National Refining and Petrochemicals Company. When it is finished, the refining and petrochemicals complex will be the first and largest integrated facility in Africa. It will be used to produce a wide range of

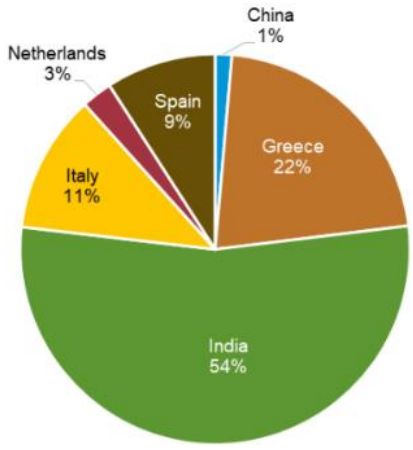
petroleum and chemical products, such as polyethylene, polyesters, and bunker fuel, among others, and when it is finished, it will be the first integrated facility in Africa. The proposed refining and petrochemicals project calls for a total investment of $7.5 billion, and the Egyptian Ministry of Petroleum and Mineral Resources estimates that construction will be completed by the end of 2024 at the latest.

Exports of petroleum and several other liquids:

In 2021, Egypt exported around 98,000 barrels per day of crude oil and condensate while it imported approximately 127,000 barrels per day. India received more than half of Egypt's crude oil exports, while China and European nations split up the rest of the country's shipments.



Egypt’s total annual Exports & Imports for crude oil and condensation



Total crude oil and condensation exports from Egypt by country

Based on the above; Egypt is the biggest oil producing country in Africa that is not a member of the Organization of the Petroleum Exporting Countries (OPEC).

3.6.2 Natural Gas

The activities of exploration and production:

As of the beginning of the year 2021, Egypt was estimated to have proven natural gas reserves amounting to 63 trillion cubic feet (Tcf).

Egypt's production of dry natural gas in 2019 was around 2.3 Tcf, while the country's consumption of dry natural gas in that same year was approximately 2.1 Tcf. Natural gas output in Egypt increased substantially as a direct result of big natural gas discoveries made in the middle of the 2010s. These discoveries included the Zohr, Atoll, and West Nile Delta projects, all of which were prioritized for rapid development. Consumption of natural gas, on the other hand, has stayed essentially unchanged, which has made it possible for Egypt to export part of its natural gas surplus through pipelines and as LNG.

The Zohr field in Egypt achieved its peak production of 1.1 Tcf per year in February and March 2021; but, technical problems have caused its production to fall; concerns with water breakthrough have caused the field's output to decrease to around 876 Bcf–912 Bcf per year. The operator, Eni, and its concession partners, Rosneft, BP, and Mubadala Petroleum, want to drill new wells in an effort to expand capacity; however, the conclusion is yet unknown. The Raven project, which was brought online in April 2021 as part of the West Nile Delta expansion, has likewise not met its claimed capacity of 329 Bcf per year. As of June 2021, the project was producing around 219 Bcf per year. The latest natural gas finds in Egypt have a potential to impede the increase of natural gas production as a result of their lower-than-expected output.

An announcement on a new natural gas finding was made by Eni in July 2020. The discovery was made at the Bashrush well in the North El Hammad concession in the Greater Nooros area, which is located offshore in the Mediterranean. The well's first testing established production projections at around 11.7 billion cubic feet per year. Eni intends to work in conjunction with its concession partners, which include TotalEnergies, BP, and EGAS, in order to rapidly develop the field and bring its production online. The Bashrush find is the most recent and major addition to some of the offshore discoveries

made in the Mediterranean over the past decade. These discoveries have contributed to an increase in Egypt's overall output of natural gas.

Transport and Storage:

Pipelines:

Natural gas is transported by a pipeline called the Arab Gas Pipeline (AGP), which begins its journey in Arish, Egypt, and continues on to link many countries, including Israel, Jordan, Syria, and Lebanon. Since the pipeline's construction, the flow of natural gas via the AGP has been regularly hampered, either by acts of sabotage or by assaults carried out by terrorist organizations. Natural gas is being transported from Egypt to Jordan via the AGP at a rate that ranges between 26 and 44 billion cubic feet per year. The AGP is said to have the ability to transport 234 billion cubic feet of gas annually. The nation of Lebanon is now in the process of restoring its connection to the pipeline in order to resume natural gas imports from the country of Egypt. The country hopes to have all of the repairs finished by the month of March in the year 2022.

According to recent reports, both Israel and Egypt have plans to construct an onshore natural gas pipeline that has the potential to supply an additional 177 billion cubic feet of gas per year. The Eastern Mediterranean Gas (EMG) Pipeline, which connects Ashkelon in Israel and Arish in Egypt, is the first pipeline of its kind to travel between the two countries. The planned natural gas pipeline would be the second pipeline of its kind to run between the two countries. Natural gas is transported from offshore reserves in Israel to Egypt via the EMG pipeline, which has a nameplate capacity of around 318 billion cubic feet per year. The natural gas may either be consumed domestically in Egypt or exported.

Liquefied Natural Gas:

The Egyptian LNG plant and the Spanish-Egyptian Gas Company (SEGAS) LNG facility are Egypt's two LNG export facilities at the moment (ELNG). One LNG train may be found in the SEGAS LNG facility in Damietta, which is located on the Mediterranean coast.

Egypt's SEGAS LNG project has been underused ever since it began commercial operations in 2004, which led to the plant's shutdown in December 2012 as a result of

increasing needs for energy inside the country. After Eni, Naturgy, the government of Egypt, and its state-owned enterprises came to an agreement over the plant's reactivation, LNG shipments were resumed at the facility in February 2021. Idku is the location of 28 ELNG, which possesses two LNG trains. ELNG started production in May of 2005; however, similar to SEGAS LNG, the plant was temporarily shut down in 2015 due to excessive local demand for natural gas and an insufficient supply of feedstock for the facility to export. Both of these factors contributed to the temporary shut-down.

Egypt has one floating storage and regasification unit (FSRU), which is located at the SUMED port. This FSRU is provided by BW Gas. September 2015 marked the beginning of BW Gas FSRU's commercial operations.

After Egypt decided to cancel its charter in October 2018, the other FSRU that Egypt had, which was provided by Hoegh, left the country. According to reports, Egypt keeps one FSRU in operation to safeguard the safety of its natural gas supply.

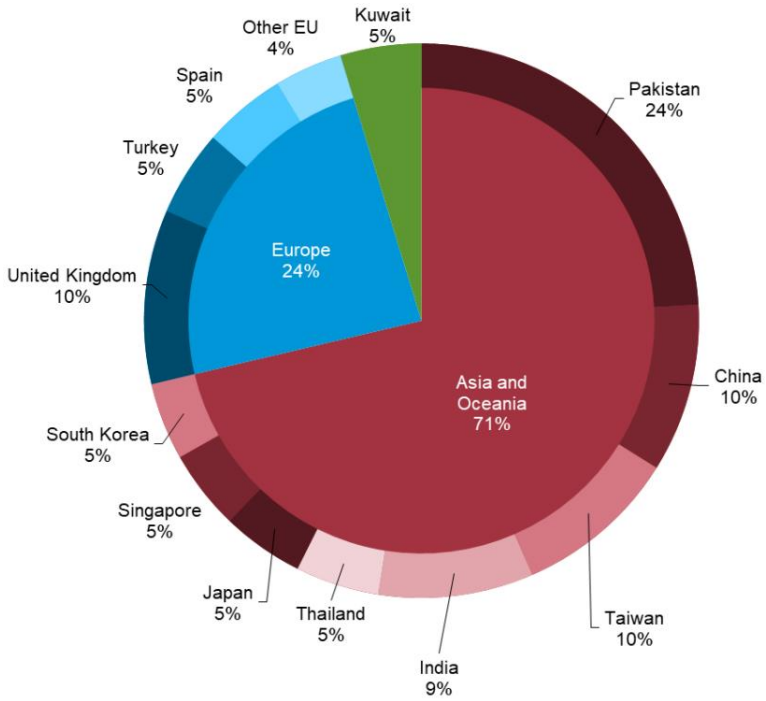
Exportation Of Natural Gas:

However, in 2018, Egypt started exporting natural gas to Jordan via the AGP. The vast majority of Egypt's natural gas is exported in the form of LNG. In the past, Egypt has been a net exporter of natural gas; but, by the middle of the 2010s, Egypt was forced to import natural gas in order to satisfy its growing need for the fuel at home.

Egypt's total natural gas exports have been steadily increasing since 2016, after some of the country's most recent natural gas discoveries began producing, which resulted in a surplus of natural gas for the country to export. Since then, Egypt's total natural gas exports have been increasing year over year. Egypt is projected to export around 177 Bcf of natural gas in 2019, according to the most recent projections from the US Energy Information Administration (EIA). Egypt's natural gas imports reached a record high of 294 Bcf in 2016 but have since dropped practically to zero.

According to the most recent estimates that were published by BP's 2021 Statistical Review of World Energy, Egypt exported around 64 Bcf worth of LNG in the year 2020. The majority of Egypt's liquefied natural gas (LNG) was exported to nations in the Asia Pacific area; the three main importers were Pakistan, China, and Taiwan. Additionally,

in 2020, around 6 billion cubic feet, or 10%, of Egypt's total exports were purchased by the United Kingdom.



Egypt’s Liquefied Natural Gas “LNG” Exports by destination in 2020

3.6.3 Mining

Gold, copper, silver, zinc, platinum, and a variety of other precious and base metals may all be found in plenty in Egypt, which is one of the world's most mineral-rich countries. All of these resources are buried deep within Egypt's Eastern desert and the Sinai Peninsula, which are both a component of the Arabian-Nubian shield, a geological formation. Egypt has the potential to become one of the leading mining jurisdictions in the world. It is believed that Egypt possesses 6.7 million ounces of gold, 48 million tons of tantalite (the fourth greatest deposits in the world), and 50 million tons of coal.

Despite the fact that Egypt's mineral richness is unparalleled on a global scale, the country does not have a mining strategy that is competitive on the worldwide stage and offers the optimal proportion of economic returns to both the government and the investor. Law No. 198 of 2014, also known as the "Mining Law," was passed by the government in December of that year to replace a previous law concerning mines and quarries that had been passed in 1956 (referred to as "the Old Law"). This was done in an effort to address the problem and to entice foreign investment.

The mining sector in Egypt has a long history of underdevelopment, and there are now just three major international companies in the market: Centamin, Aton Resources, and Thani Stratex. Under a production-sharing arrangement, the Egyptian Mineral Resources Authority (EMRA) held an international tender in January 2017 to explore and extract gold from five locations in the Eastern Desert and Sinai, including Umm el-Russ, Bokari, Umm Samra, Umm Ud, and Hangaliya. These locations include Umm el-Russ, Bokari, Umm Samra, and Umm Ud. A concession was awarded to Veritas Mining Limited of the United Kingdom, Ghassan Spain Investment of Spain, and the East Gas Company of Egypt, respectively. The Australian business Resolute was successful in its bids for the "Bukari" and "Um Samra" contracts.

In 2018, the Egyptian government retained the services of independent consultants by the name of Wood Mackenzie to conduct an audit of the existing legislation and make recommendations for policies that would encourage global investment in the mining industry. This was done with the intention of further developing the market. The audit conducted an analysis of the challenges and drawbacks present in the mining industry and outlined the primary needs necessary to transform Egypt into a desirable location for mineral development. As a consequence of this, on January 14, 2020, the government formally announced the new mining executive rules No. 108 year 2020, which involved switching the system from one based on production sharing agreements to one that was based on rent, royalties, and taxes. The goal is to realize the full potential of the country's natural resources, with the gold mining industry serving as the principal area of concentration.

Opportunities:

Challenges in both operations and the environment in Egypt present potential for creative solutions offered by Australian businesses that operate in circumstances comparable to those found in Australia and elsewhere in the world. In order to expand mineral-based manufacturing, the Egyptian mining sector requires advanced technology, machinery, and tried and tested competence in mineral processing. There are additional chances for businesses that specialize in the manufacturing and supplying of equipment, as well as businesses that offer services like as engineering consultation, drilling, and chemical testing. In addition to this, the sector needs ongoing training and retraining in order to cover supply chain gaps throughout the mining lifespan.

Egypt is now in the process of creating a big gold mining metropolis near the Suez Canal in the aim of bolstering the mining sector and attracting international investment worth billions of dollars. The 'Gold City' will be the first of its type anywhere in the world, and it will be constructed in the Suez Canal Economic Zone on a total area of 130,000 square meters. Early in 2017, the Zone was formed with the purpose of luring international investors in the mining industry.

There is a specific demand for businesses that specialize in gold exploration, drilling technology, mineral processing technology and equipment, engineering, processing and construction turnkey, as well as consultancies, in order to assist in the establishment of the significant infrastructure that is required for the mining industry in Egypt. The building of the new Gold City will result in the creation of significant infrastructure projects to support mining activities. These projects should give possibilities for Australian firms operating in the fields of power generation, transportation, communications, and construction.

The Egyptian Mineral Resources Authority (EMRA) is getting ready to hold the largest international bid round in the country's history for gold exploration in the eastern desert. This round will include most of the major known prospects, the majority of which were previously operating mines at one point in time. It is anticipated that the bid round will be revealed around the beginning of March 2020.

Egypt has become a new mining destination for enterprises as a result of the efforts made by the Egyptian government to promote investors, the low cost of energy for output processing, and the highly trained and inexpensive labor force.

Conditions of Competitiveness:

Egypt has a populace that is active and relatively youthful, a sizable domestic market, and a strategic position that hosts the Arabian Nubian Shied. A significant gas field has only just been uncovered, which is another hopeful development. The real GDP is expected to grow by roughly 5.9% per year by the year 2020. The Egyptian Ministry of Planning has initiated a number of labor-intensive infrastructure projects in an effort to lower the country's unemployment rate and speed up the rate of productivity growth. Among these are the building of housing for people with low incomes, the completion of a new regional airport, the expansion of the public transport system, and the increase in the number of homes that are linked to the national gas grid of the country. The recently

completed construction of the parallel Suez Canal may possibly provide some advantages. However, the growth of a sizable commercial and manufacturing district in the area surrounding the canal is necessary before any meaningful economic benefits can be realized.

In addition, the administration has introduced a variety of brand new policies and programs. For instance, it has implemented a value-added tax, set a limit on the amount that salaries may grow in the public sector, and enabled the Egyptian pound to float. In 2017, consumers faced price increases of up to 42% for electricity and up to 50% for gasoline depending on the kind of fuel. As part of an agreement with the International Monetary Fund (IMF), more changes have been implemented. These reforms include an increase in taxes as well as new regulations governing investment and industrial licensing.

The Egyptian government has just enacted a new investment law in an effort to make conducting business in the country easier. Additionally, Egypt's first bankruptcy law has been given the go light. Egyptian economists estimate that the informal sector, which is a part of the economy that is neither taxed nor monitored by any form of government and of which the activities of the informal economy are not included in a country's gross national product (GNP) or gross domestic product (GDP), includes up to 18 million establishments, 40,000 of which are factories. The activities of the informal economy are not included in a country's gross national product (GNP) or gross domestic product (GDP). It is possible that the size of the informal sector, when taken as a whole, might be equal to between 65 and 70 percent of the size of the official sector.

3.7 DOING BUSINESS IN EGYPT

"*Doing Business*" highlights various significant aspects of the regulatory environment that affects local enterprises. It includes quantitative indications on regulation for launching a firm, dealing with building permits, obtaining electricity, registering property, obtaining loans, safeguarding minority investors, paying taxes, trading across borders, enforcing contracts, and resolving bankruptcy issues. Additionally, characteristics of employing people and contracting with the government (public procurement), which are not included in the ranking, are measured by Doing Business.

According to THE WORLD BANK and the most recent yearly assessments published, Egypt came in at position 114 out of 190 economies in terms of the ease with which

businesses might operate with DB (Doing Business) score 60.1, in 2019, Egypt moved up to the 114th position, up from the 120th position in 2018.

Starting a Business:

The Arab Republic of Egypt has made it simpler to launch a new company by doing away with the need of obtaining a certificate of non-confusion and enhancing its "one-stop shop" system.

Obtaining Access to Electric Power:

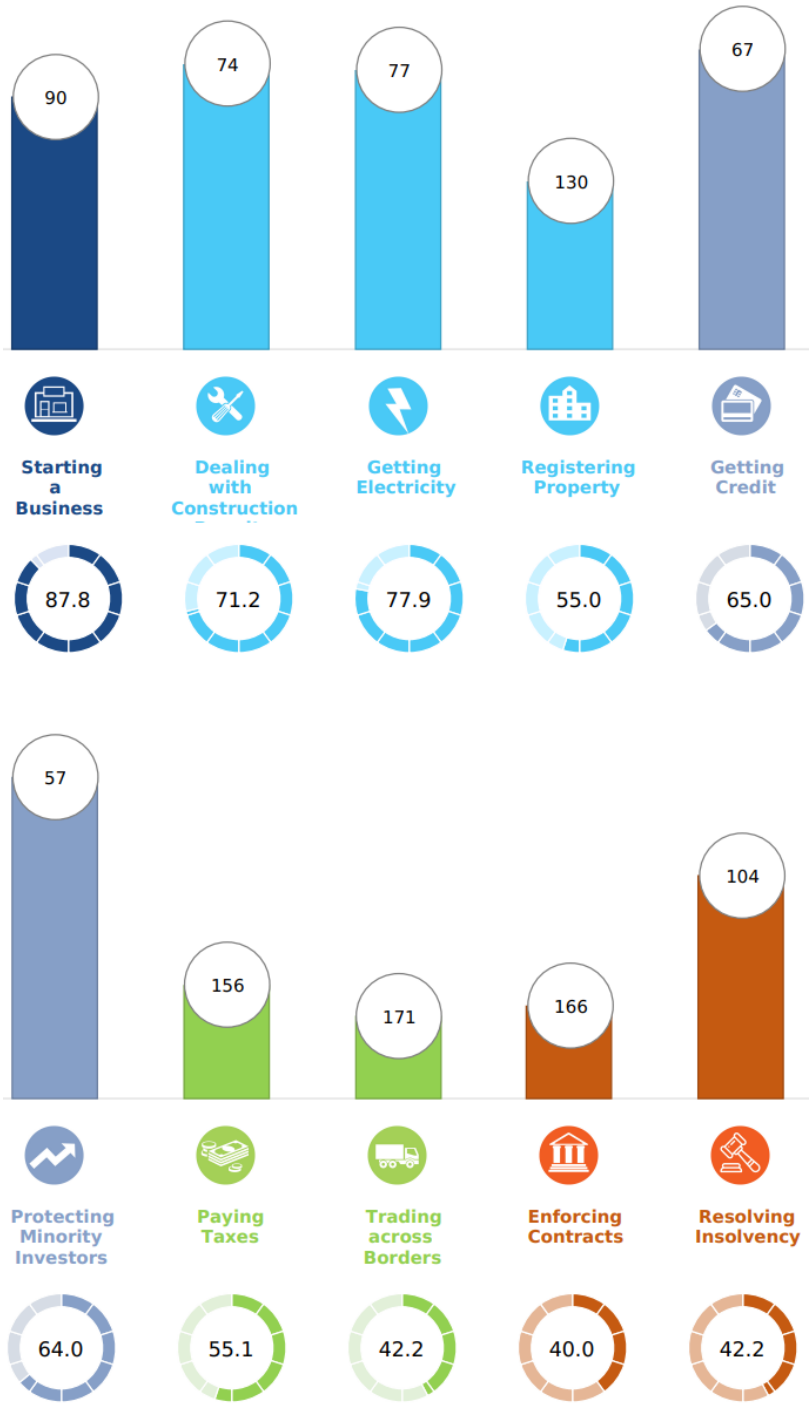
By putting in place automated systems to monitor and report power failures, Egypt was able to increase the reliability of the country's electrical supply.

Protecting Minority Investors:

Egypt increased the safeguards afforded to minority investors by mandating that shareholders provide their consent before listed firms can issue additional shares.

Paying taxes:

Egypt simplified the process of paying taxes by introducing a digital platform that allows for the filing and payment of value-added tax as well as corporate income tax.



Rankings on Doing Business topics - Egypt

3.8 INVESTMENT OPPORTUNITIES ACROSS EGYPTIAN INDUSTRIES

As part of the Egyptian state's commitment to developing the national economy through the expansion of the industrial sector and the formation of strategic partnerships between

the state and investors operating in a variety of fields, the Egyptian government initiated the creation of an industrial investment map in order to promote Egyptian industry and pave the way for Egypt to assume a position of preeminence as an industrial powerhouse in both the Middle East and Africa. In order to accomplish this goal, local industrialisation must be strengthened, value-added industries must be expanded, high-tech components must be promoted, and an environment favorable to Egyptian and international investment must be cultivated.

The investment map, which is based on this vision, has the goal of assisting investors in making informed decisions by providing them with a clear view of the available competitive elements and potentials, as well as the venues in which investments may be carried out. This is accomplished by developing lands for industrial purposes and making them available to investors through Egypt's online investment website. This website works to facilitate the procedures of land reservation and helps investors communicate electronically with the Industrial Development Authority. This makes it easier for investors to become familiar with the terms and conditions that govern the exploitation and development of the lands of the industrial zones.

The investment map makes a contribution toward the realization of transparency and the promotion of equitable opportunities for investors in all sectors, including the industrial sector.

Ref: General Authority for Investment & Free Zone

The map details 4,136 genuine investment possibilities spread across eight different industries. The map contains 4,136 real investment opportunities in eight different industrial sectors. These opportunities can be found as follows: 1,265 opportunities in the engineering industries, 861 opportunities in the chemical industries, 649 opportunities in the food products industry, 605 opportunities in the textiles industry, 395 opportunities in the mining industries, 183 opportunities in the pharmaceutical industry, 122 opportunities in the metal industries, and 56 opportunities in the leather manufacturing industry.

According to the new map, Alexandria has the most investment chances accessible out of all 27 governorates in Egypt, with 205. This is followed by Minufiya and Beni Suef, which both have 196 opportunities, and Minya, which has 190.

For the purpose of the industrial map, the geographical investment potential were distributed among 27 governorates. Alexandria was in first place with 205 opportunities, followed by Menoufiya with 196 opportunities, Beni Suef with 196 opportunities, Miniya with 190 opportunities, Assiut with 187 opportunities, Sharqiya with 179 opportunities, and Sohag with 179 opportunities. Cairo came in second place with 170 opportunities, followed by Kafr Sheikh with 168 opportunities, Giza with 167 opportunities, Qena with 169 opportunities, Suez with 159 opportunities.

Sector	Available Opportunities
Industries	1,265
Chemical Industries	861
Food Industries	649
Textile Industries	605
Mining Industries	395
Pharmaceutical Industries	183
Mineral Industries	122
Leather Industries	56

Ref: Ministry of Trade and Industry

3.9 FISCAL AND MONETARY FACTORS

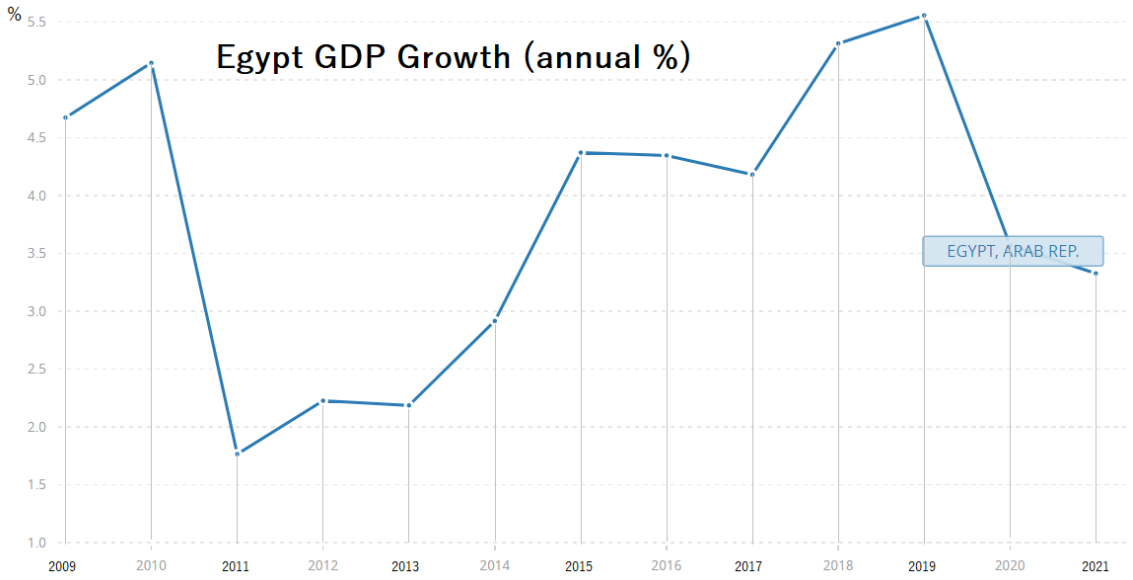
A macroeconomic factor is a pattern, trait, or situation that derives from or connects to a bigger component of an economy, as opposed to a specific population. The characteristic may be a large economic, environmental, or geopolitical event that has far-reaching effects on the national economy.

A macroeconomic factor might be anything that impacts the path or direction of a particular large-scale economy. Monetary policies and other rules, for instance, can have an impact on national and state economies, as well as potentially significant worldwide implications.

Macroeconomic factors include inflation, gross domestic product (GDP), national income, and unemployment rates. These economic performance indicators are extensively monitored by states, businesses, and consumers. The area of macroeconomics conducts substantial study on the association between numerous macroeconomic phenomena.

3.9.1 Gross Domestic Product Growth (%)

Egypt's economy is often considered to be among the most advanced and diverse in the whole Middle Eastern region. Up to the year 2010, the Egyptian economy was expanding at an average rate of 5 percent per quarter as a direct result of many economic reforms that attracted international investments. During that historical period, improvements were made to the economy as well as the living conditions of the majority of the population. However, living circumstances for the typical Egyptian remained dismal, and significant economic gaps continued to widen, all of which contributed to the growing dissatisfaction of the general population. The revolution that took place in 2011 and brought down the dictatorship of President Hosni Mubarak has created a slowdown in the economy, as political and institutional unpredictability, as well as increased insecurity, continue to impact tourism, manufacturing, and construction. Pertaining to the below graph, the economic growth rate was around 5% in 2009 and 2010, but in 2011 GDP growth rate collapsed dramatically to 1.8%, approximately there was no improvement until after the 2013 revolution and the removal of the Brotherhood from power, by 2014, GDP growth rate improved slightly to 2.9%, then in 2018 and 2019 reached approx. 5.5% (same as before 2011), then slowdown due to Covid-19 in 2020 and 2021.



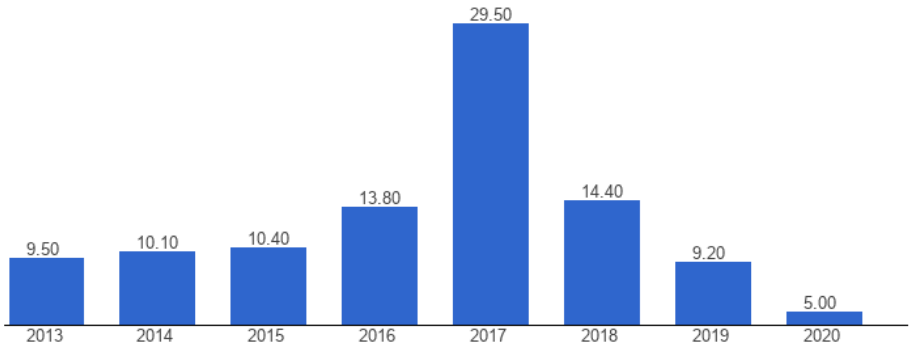
Source: [WorldBank - Egypt GDP Growth (Annual %)]

3.9.2 Inflation Rate

Inflation is a price rise that reduces buying power. The rate of buying power decline is represented in the average price increase of chosen products and services over time. A unit of currency buys less due to a percentage-based price increase. Deflation, when prices fall and buying power rises, contrasts with inflation.

Typically, the percentage change from one year to the next in the Consumer Price Index (CPI) is used to determine the level of inflation experienced in Egypt. The Consumer Price Index is a measure of the costs that are paid by the typical urban consumer in each nation's metropolitan areas. Other pricing indices, such as the Produce Price Index or the so-called GDP deflator, can also be used to determine inflation. These indices are also examples of price measures.

The majority of nations strive to maintain an annual inflation rate of between 2 : 3%. That is much too low to be a reason for concern for businesses and households. While doing so, it maintains a safe distance from negative inflation. However, the case of Egypt is much far from the safe inflation, as the inflation rate is varying and jumping harshly as clarified in the following figure:



Historical inflation rate in Egypt from 2013 to 2020

3.9.3 The Rate of Unemployment:

The historical unemployment rate in Egypt since 1990s till 2011 was usually stable from 8% to 11% of the total labor force, but in 2011 and because of the political uprising of 2011; Egypt's economic development has worsened since the revolt that overthrew long-time President Hosni Mubarak drove tourists and international investors away, drying up foreign reserves, the upheaval also resulted in the removal of Mubarak from office.

Therefore, in **2011** unemployment has risen from **8.8% in 2010** to **11.9%**, which was an unexpected deterioration.

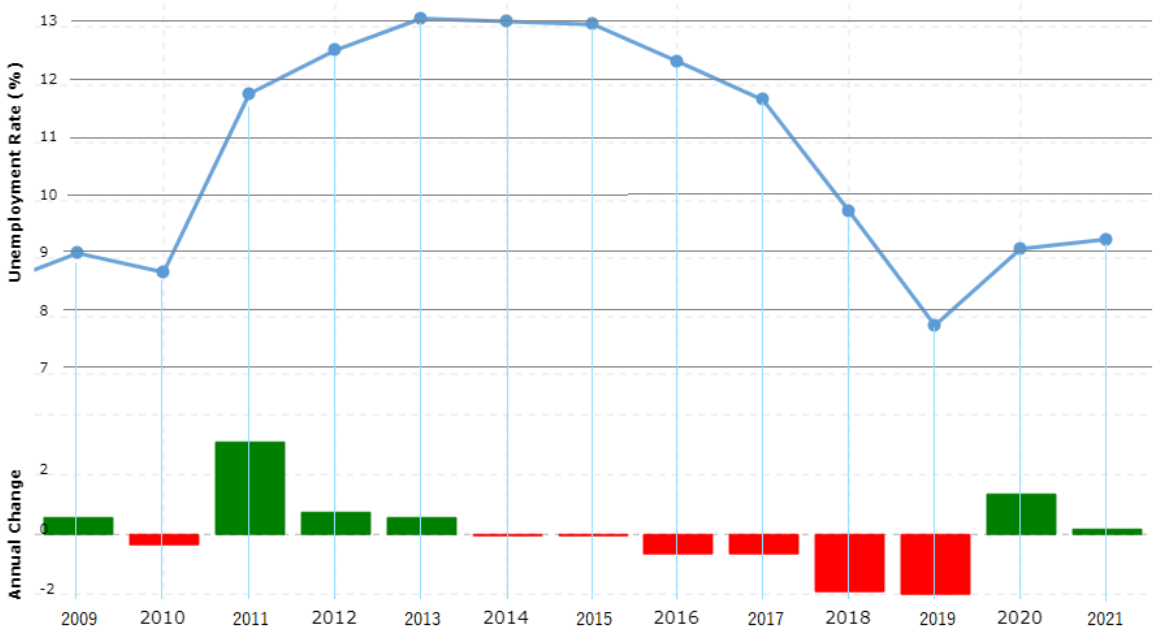
In the wake of the 2011 revolution, the country entered into complete chaos, and factional demonstrations became a regular thing that happens every day. What is greater than that is the infiltration of extremist religious currents into the political and social scene, where they presented themselves as an alternative to the ousted regime, and with no willingness to The Egyptian people to practice true democracy, the people fell prey to these criminal currents, which negatively affected the cessation of tourism and foreign direct investment, and thus unemployment rates rose to **12.6% in 2012**.

In 2013, the situation became absolutely worse in Egypt, as the fundamentalist Muslim Brotherhood was able to rule in June 2012 through elections, to say the least, that it was corrupt, and it depended mainly on religious and ideological polarization, inciting sectarian strife and public threats, in addition to buying votes with money.

In that year, the country was filled with economic problems and lack of energy, as the queues of citizens in front of fuel stations were terrifying, and the power cuts reached more than half of the day in some areas. This recklessness led to another revolution that was much larger than the first, as more than 30 million citizens gathered in the streets

and squares of Egypt to demand the president to step down and to hold early presidential elections in June 2013. On July 3, 2013, the Muslim Brotherhood was actually removed from power. An interim government and interim president were announced. And obviously, the unemployment rate has risen again **13.1% in 2013**.

In **mid-2014**, President El-Sisi was elected President of the Republic, and during that period the President promised to reduce the unemployment rate by 10% in the coming years, which requires a strong increase in economic growth to cover the huge population growth (Egypt's population increases by 2 million every year) and to create great job opportunities. We can observe in **2016** the improvement of the unemployment rate reduction to **12.4%**, then in **2017** reduced to **11.7%,** then in **2018 9.8%**, then in **2019 7.8%** (this figure in the best ever in Egypt since 1991 as no data is available before this year). In 2020 and 2021 the rate increased to 9.2% and this increment was because of Covid-19 effect.



Source: Egypt Unemployment Rate; WorldBank

3.10 TAX SYSTEM AND INCENTIVE PROGRAMS FOR INVESTMENT TAXES

The tax system of a nation has a considerable influence on the economic activities that are carried out inside the country and may play a role in either promoting or discouraging the carrying out of such economic activity. A number of nations' legal frameworks for collecting taxes serve as a vehicle for encouraging investment. Both domestic and international investment are encouraged in developing nations via the use of various tax

incentives, such as tax holidays, decreased tax rates, and other similar measures. These tax incentives may be provided in the form of a special tax treatment or in another form in the domestic tax legislation or in a statute that was established specifically for this purpose (e.g. investment laws)

Since 1971, Egypt has had rules in place that provide investors with a variety of tax benefits, regardless of the legal form that their commercial operations take.

The structure of the Egyptian tax system, including direct vs indirect taxes, as well as the tax incentives for investments, notably corporate tax benefits, are dissected and analyzed in this article.

3.10.1 Tax Structure

The tax system of a nation, which is the direct result of the tax policy of that nation, is an important component of the overall fiscal policy of that nation. The term "tax system" is used to refer to the many types of taxes that are levied in the nation during a certain time period. It is not a fixed structure but rather one that is adaptable and is continuously modified to meet the demands of the socio-economic situations in the surrounding area. The structure of the tax system is shaped by a variety of elements, including the historical context (e.g., cultural, religious, and other aspects), the political system (e.g., central or federal systems), and the economic system.

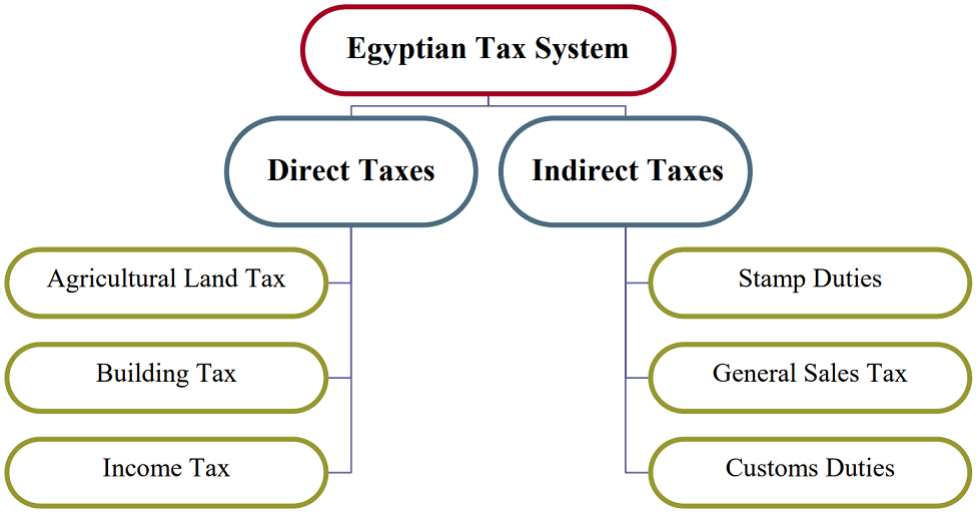
Legislation No. 14 of 1939 was Egypt's first tax law, and it was enacted in 1939. Under this law, Egypt began levying taxes not only on business and labor earnings, but also on agricultural land (i.e. Law No. 113 of 1939).

In the years that followed, further tax legislation was passed, including the following:

- A tax on the construction of urban buildings in 1954 (Law No. 56 of 1954);
- The establishment of a customs system in 1963 (Customs Law No. 66 of 1963);
- Stamp duties in 1980 (Law No. 111 of 1980 Concerning Stamp Duties);
- Consumption taxes in 1981 (Consumption Tax Law No. 133 of 1981), which were eventually repealed by the General Sales Tax Law No. 11 of 1991; and
- In 1981, a new income tax legislation was enacted, which was designated as Income Tax Law No. 157 of 1981. This Income Tax Law underwent revisions in

1993 as a result of amendments made by Law No. 187 of 1993. (Unified Income Tax).

Direct taxes and indirect taxes are both a part of Egypt's present tax structure in their respective appropriate places.



According to the IMF research, Egypt lags behind other nations, both regionally and globally, as a result of the dramatic decline in the ratio of taxes to GDP. In recent years, corporate tax receipts have decreased considerably. FDI inflows in Egypt can help increase the domestic tax base, but this requires the design of a prudent fiscal policy that reduces tax erosion through the implementation of effective tax avoidance policies, the negotiation of appropriate terms in double taxation agreements, and the elimination of inefficient, costly tax incentives. According to the facts, putting a 1 percent effective tax rate on corporations' cuts foreign direct investment by 3 percent. The Egyptian international tax system appears to attract foreign investors to engage in Egypt by imposing a tax rate of 22.5% on current corporate revenue, giving several tax advantages, and maintaining a vast network of double taxation agreements. (IMF,2017).

3.11 CORRUPTION

Many variables can influence FDI flows into emerging nations. The degree of rent-seeking (Rent seeking is an economic concept that occurs when an entity seeks to gain added wealth without any reciprocal contribution of productivity) and/or corruption in the

host economy has been recognized as a significant determinant of FDI destination choice.

Egypt is a developing economy with low per capita income, poor savings, high unemployment, inefficient financial intermediation, and significant foreign debt. Egypt, like many developing nations, suffers from inadequate public corporate governance, the absence of a well-structured public sector, and the perception of corruption, all of which are viewed as impeding the growth of private investment (Pfeifer, 2012).

Between 1974 and 1985, Egypt's economy grew by an average of 8 percent every year. This was made possible by a succession of windfall rents, including high oil prices, Israel's recovery of the Sinai oil resources, the reopening of the Suez Canal, and remittances from Egyptian workers in Arab nations. The Economic Reform and Structural Adjustment Program (ERSAP) was initiated in 1991 to resolve economic imbalances and revitalize economic development, with the goal of achieving 7 percent by the year 2000.

The ERSAP emphasized the crucial role of FDI in fostering economic growth. During the 1990s, foreign direct investment (FDI) accounted for barely 1% of gross domestic product (GDP), while domestic investment reached 20% of GDP. The relative decline in FDI inflows to Egypt during the first half of the decade may be attributed to the Gulf War crisis, macroeconomic imbalances, and a decline in windfall rents, which resulted in a decline in economic growth from 7.4% in 1983 to 5.7% in 1990.

From 2004 through 2008, Egypt's FDI inflows rose, reaching a peak of 9% of GDP in 2006. This remarkable achievement was attributable to the accomplishment of the economic reform program, the implementation of vigorous market reform policies by a newly constituted government of reformists, a declining inflation rate, stable currency and interest rates, and a brisk privatization process (Pfeifer, 2012). Nonetheless, the process of privatization non-competitive businesses (i.e., rent-generating sectors) between 2004 and 2010 was marked by the presence of rent-seeking possibilities (King, 2010).

In 2008, as a result of the global financial crisis, FDI inflows to Egypt began to decline, reversing the four-year upward trend. In 2009, the entire impact of the crisis was felt, as worldwide FDI decreased by 37%. (El-Shal, 2012)

FDI in Egypt decreased by 30%, but by a lesser degree. The political uncertainty, severe security concerns, and widespread labor demonstrations that preceded the 25th of

January Revolution in 2011 intensified the FDI trend. Egypt's FDI inflows were $483 million negative at the end of 2011. Ref: https://unctad.org/

However, I could NOT find a solid relationship between corruption and FDI in Egypt, and internationally there is no facts illustrates the negative impact of the corruption on the FDI, but conversely, some studies found that perceived corruption in Egypt is positively associated with total FDI and non-oil FDI inflows in both the short and long run!! Which is called “Greasing the Wheels Effect” (**UNCTAD The relationship between perceived corruption and FDI** - Issued by UNCTAD).

On the other hand, it is impossible to overlook the fact that Egypt was one of the first nations to adopt the United Nations Convention against Corruption. As it was a leader in helping law enforcement and anti-corruption organizations. Money laundering other than the Administrative Control Authority, which represents Egypt in the execution of the International Convention against Corruption. In Egypt, the efforts of law enforcement agencies and governmental and non-governmental institutions led to the implementation of Articles 5 and 6 of the United Nations Convention against Corruption on the policy and practice of combating corruption, as well as the launch of the National Strategy against Corruption 2014-2018, which was based on several objectives. Improving public services, establishing transparency and integrity in all elements of the administrative system, enacting and updating supporting legislation to combat corruption, and raising public awareness of the seriousness of corruption and combating it in order to create a climate conducive to Positive were able to accelerate the movement of development and improve the lives of individuals and communities.

In addition, a national anti-corruption academy has been established in Egypt to combat corruption and assert the ideal of integrity and transparency in accordance with the Administrative Control Authority Law, which was amended in 2017.

3.12 EXCHANGE RATE

Two major events occurred in 1997, one is domestic, and one is international, both harmed Egypt dramatically:

1- *1997 Asian financial crisis*

2- *1997 Luxor massacre*

3.12.1 1st Floating:

1997 Asian financial crisis:

The Asian financial crisis seized East Asia and Southeast Asia in July 1997, raising worries of a global economic disaster owing to financial contagion. In 1998–1999, the economy recovered quickly and crisis fears receded. The crisis began in Thailand (known as the Tom Yam Kung crisis) on 2 July, when the Thai government floated the baht owing to a lack of foreign money to sustain its currency peg to the U.S. dollar. Capital flight sparked a worldwide chain reaction. Thailand was then indebted. As the crisis expanded, most of Southeast Asia, South Korea, and Japan suffered falling currencies, depreciated stock markets, and rising individual debt.

Which led to the devaluation of the currencies of a number of these nations and prompted Egyptian importers to increase imports from these nations, thereby increasing the local demand for the dollar.

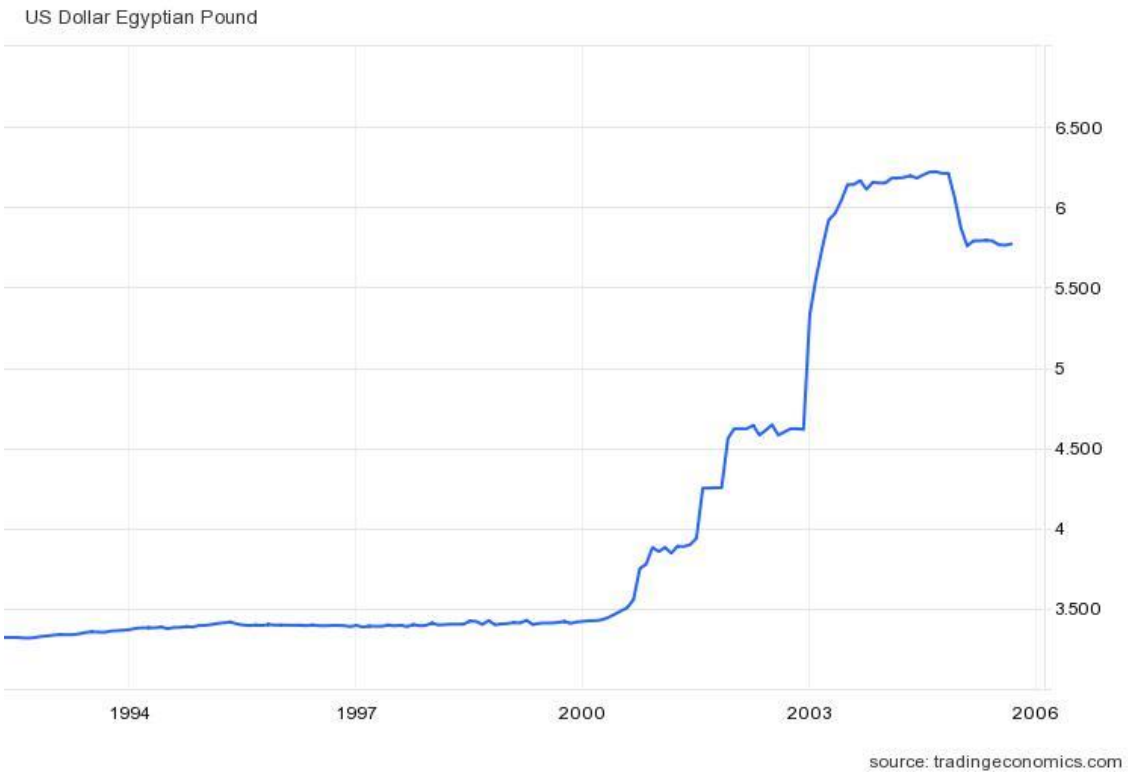
1997 Luxor massacre:

Deir El-Bahari is famous for the Mortuary Temple of 18th Dynasty pharaoh Hatshepsut. Also called Djoser-Djeseru. Six shooters killed 58 foreigners and four Egyptians midmorning. Assailants equipped with automatic weapons and knives posed as security personnel. They arrived at Hatshepsut's tomb around 8:45. Two guards were slain. With visitors confined within the temple, machetes were used to mutilate several bodies, notably ladies. Elderly Japanese guy discovered mutilated. A brochure that proclaimed, "no to visitors in Egypt" and was signed by "Omar Abdul Rahman's Squadron of Havoc and Destruction" was found in his corpse. 26 escaped. Attackers seized a bus but fled into Egyptian National Police and military personnel. In the following gunfight, one terrorist was injured, and the rest ran into the hills, where their remains were located in a cave.

Luxor massacre dealt a major damage to the tourism industry's cash resources. This corresponded with the withdrawal of $ 248 million worth of foreign investments from the Egyptian stock exchange during fiscal year 1997/98.

All these factors contributed to a rise in dollar demand. In consequence, the foreign exchange market went from surplus in 1991 to deficit in 1997/98. This gap has persisted thus far. The exchange rate began to fluctuate in exchange firms, and banks began to restrict the management of clients' dollar-based import financing demands. On January

29, 2003, the government stunned the market by announcing the release of banks' dollar-setting authority.



We can see from 1992 to 2000 the exchange rate is approximately constant (3.4 EGP/$ or 1 USD = 3.4 EGP), then because of both mentioned crisis in 1997 as explained and Egyptian pound devaluation had been started, until January 2003 float, so the dollar had jumped to 6.18 EGP (the Egyptian Pound has lost about 40% of its value).

3.12.2 2nd Floating:

The second major event damaged the Egyptian Pound was 2011 revolution:

The 2011 Egyptian revolution prompted foreign currency shortages as capital fled the nation owing to security concerns, labor instability, and societal upheaval. The repercussions are mostly due to Egypt's weak economy. Pre-revolution growth of 5% to 6% wasn't enough to develop a solid economic footing. On the eve of the revolution, the country had 9% unemployment and the government paid 12.2% to 8.5% of GDP in energy and food subsidies between 2008 and 2010.

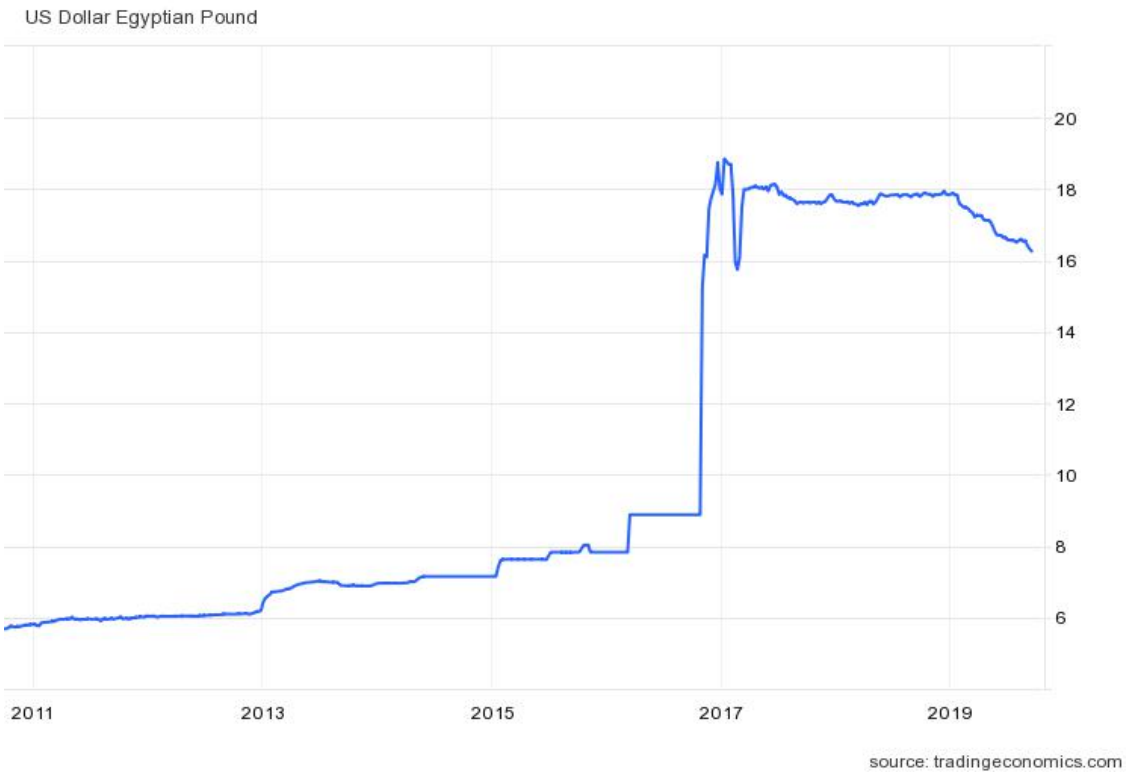
When Egypt's foreign money flow slowed, it caused economic problems. Exports, remittances (loans and grants), tourism, FDI, and Suez Canal fees are Egypt's key

foreign currency sources. All these sources have suffered from 2011's revolution. Tourism was one of the most hit industries (and may have started the domino effect). Once a major source of foreign cash and a considerable contributor to GDP (more than 10% pre-2011), the business fell during Arab spring security worries. When a Russian plane crashed on route from Sharm-El Sheikh to St. Petersburg, numerous European countries banned flights. In response, a secondary foreign currency market emerged (black market), and remittances began flowing out of traditional banking as people exploited it to acquire better exchange rates. Capital controls prohibited money transfers out of the country, making it difficult for multinationals to repatriate earnings, reducing FDI.

After the revolution of 2011, the extremist political Islam movement was able to control the reins of Egypt's rule in a period to say the least, that it was a well-deserved tragic period. This extremist rule has led to a complete destruction of the Egyptian economy, capital flight, tourism cessation, insecurity and political instability. Where the extremist Muslim Brotherhood was seeking to empower itself to rule Egypt forever, striking all forms of civil life and harmony with the international community, in addition to destroying relations with the brotherly Arab and Gulf countries. Until the other revolution took place in June 2013, it was able to eliminate the rule of the extremist religious movement, and the country entered a period of temporary rule until June 2014.

In June 2014, the Egyptian President Abdel Fattah Al-Sisi was elected as the Egyptian national hero who saved the country from the rule of the obscurantists, and his government tried hard to repair what was destroyed since January 2011, but the foreign exchange reserves were almost depleted as a result of the attempt to support the Egyptian pound against the dollar and continue to subsidize fuel and food.

This exacerbated the money scarcity. The dollar scarcity hampered trade and businesses' ability to import raw materials and machinery. Low oil prices hampered Arab neighbors' willingness to give financial aid. The substantial reduction in oil prices also led Europe-Asia shipping corporations to circumnavigate Africa rather than use the Suez Canal. All these causes intensified Egypt's foreign currency shortfall, and its current account deficit soared to 5.3% in July 2016.



We can see the value of the Egyptian Pound before 2011 revolution was less than 6 EGP/$, but because of the illustrated reasons, Egyptian government announced the Floating the Egyptian pound in October 2016, so, the rate changed from 8.8 EGP/$ to 18 EGP/$ (Egyptian pound had been lost more than 50% of its value)

4 CONCLUSION

In Egypt, foreign direct investment is the magic and quick source to compensate for the deficit in domestic savings and achieve an increase in GDP growth rates. This goal is the main goal of attracting foreign direct investment in the case of Egypt, although the general goals of attracting foreign direct investment exceed this narrow goal, and reach higher goals such as the transfer of modern Western technologies, the localization of complex industries, and the education and training of Egyptian teams on Modern technology, and this always happens in all emerging countries through new projects or the so-called green field, or through partnerships and merging of Egyptian companies with foreign companies, or through the acquisition of an Egyptian company by a foreign company. Foreign direct investment has clear and direct economic goals, but it can also have cultural and social goals, and it can play a major role in the development and advancement of society. But as we have seen in our literature, foreign direct investment

in the case of Egypt is focused on filling the budget deficit, while not denying its other importance of technology shifting, but with a lower weight.

We have noticed the strong correlation of the Egyptian economic situation in general and foreign direct investment in particular with the Egyptian political situation, and we have seen that there are many determinants that have been proven to be linked to the political conditions in Egypt, especially the 2011 and 2013 revolutions. From the history of Egypt, foreign direct investment inflows have been clearly linked to the political and security stability in Egypt. It turned from a good number of inflows in 2010 (6.39B$) to a negative number in 2011 (-0.485B$) (see clause 2.2.3.1), and with the same clarity we have proven that unemployment rates have increased for the same reason from 8.8% in 2010 to 11.9% in 2011 (see clause 3.9.3), as well as the value of the Egyptian currency negatively affected and foreign exchange reserves (see clause 3.12), and the rate of economic growth, which was acceptable until 2010 (5.1%) and collapsed in 2011 (1.8%). It became clear to what extent the political and security deterioration is linked to all the determinants of the economy in the case of Egypt

It is also worth mentioning, that the economy is the mirror of politics, and we have followed with accuracy and simplicity the Egyptian political changes that occurred after 2011 and the control of extremist religious currents on the reins of government and the direct negative impact on the economy with all its aspects, and we have also followed the second revolution in 2013 that ended the rule of the Muslim Brotherhood, through the transitional period and then to the election of Egyptian President Abdel Fattah al-Sisi in June 2014, and we have noticed that there is a clear improvement in economic indicators in general and an improvement in FDI inflows in particular, in addition to a significant improvement in reducing Unemployment rates, a higher rate of GDP growth rate, an increase in the number of foreign companies, a significant growth in energy resources, especially natural gas, growth of the electricity generation sector, and the construction of new roads and infrastructure.