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## Egyptian Natural Gas Uses bet. Global and Domestic Prices

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According to Egypt's energy consumption distribution during the past year, the natural gas came at the top with 54.5%; followed by oil, 38.6%; then hydropower, 3.1%; coal, 2.1%, and renewable energy (from the sun and wind) 1.5%.

The relative distribution of energy consumption in Egypt ten years ago, i.e. in 2009, showed that the consumption of natural gas came first by 50%, oil by 45%, hydropower by 3.8%, coal by 0.8%, and renewable energy by 0.3%.

This means that there has been an increase in consumption of natural gas in Egypt during the past ten years as a friend to environment, at the expense of petroleum products that are more harmful to environment, such as diesel and gasoline, in addition to availability of locally produced natural gas with a surplus after covering local consumption before 2014 and after 2018, unlike petroleum products, where over a third of the needs are imported from abroad, which requires provision of dollar resources to obtain them.

The relative share of hydroelectric has also declined during the past ten years, while the share of renewable energy has increased due to the private sector's expansion of solar and wind power.

The relative distribution of natural gas consumption according to activity sectors until the end of June 2019 indicates that the electricity production stations came first with 62.3%, mostly owned by the State, the industrial sector 22.5%, the petroleum and gas derivatives sector 10.1%, the house sector 4.3% and the auto gas supply sector 0.8 % of the total consumption.

### Electricity surpasses industry in gas consumption

While the annual domestic consumption of natural gas during FY2018/2019 reached 2,182 billion cubic feet, an average of 5,977 million cft per day, the electricity sector's annual share reached 1,359 billion cft, an average of 3,723 million cft per day.

The industrial sector's annual share reached 490 billion cft, an average of 1,343 million cft. The most prominent industries consuming natural gas were fertilizers with an annual share of 224.5 billion cft,

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iron and steel 73.5 billion cft, and cement 600 million cft – the share of cement sector then declined after obliging factories to switch to using other types of energy in the period when the domestic production of natural gas was unable to meet needs, which led to the import of liquefied natural gas from 2015 to 2018.

The annual consumption of natural gas by other industries amounted to 191.5 billion cft, as follows: the petroleum and gas derivatives sector 221 billion cft, a daily average of 605 million cft to be used in refineries, petrochemicals, methanol and gas derivatives production; the household sector 95 billion cft, a daily average of 261 million cubic feet; and the car sector 16.5 billion cft, a daily average of 45 million cft.

Due to the import of more than half of the butane gas needs, which requires provision of foreign currency, amid the continuous decline in domestic production over the last five years from 1.452 million tons in FY2014/2015 to 1.218 million tons, the natural gas delivery to homes has been expanded to restrict consumption of the butane gas and reduce its imports.

### Many years to install gas to homes

In FY2019/2020, the number of housing units to which natural gas was piped and gas meters installed reached 1 million and 70 thousand, compared to 1 million and 230 thousand housing units in FY2018/2019, due to the coronavirus partial lockdown in the second half of the fiscal year, as natural gas installation to housing units during the first half of the fiscal year reached 630 thousand units compared to 440 thousand in the second half.

Household and commercial gas represent regular revenues for the Egyptian Natural Gas Holding Company - EGAS - especially after the trend to install prepaid gas meters to homes, unlike the fluctuating gas export prices.

The total cumulative number of housing units to which natural gas was installed amounted to 11.1 million, where the latest census of facilities to which natural gas was installed in 2017 indicated that there are 43 million housing units, 25% of which were void, which means the need for more than ten years to deliver natural gas to all housing units, in light of the annual installation rate of one million housing units, which was indicated by the Minister of Petroleum as a target number for natural gas delivery for the current FY2020-2021, where the project of gas piping and installation to homes is

financed through a \$300-million loan from the World Bank, a 70-million-euro loan from the French Development Agency, and a 37-million-Kuwaiti dinar loan from the Kuwaiti Development Fund, and a 68-million-euro grant from the European Union.

## 2,531 plants operating by natural gas

As for the rest of sectors consuming natural gas, the number of gas installations are not many. In FY2018/2019, 40 plants shifted to operation through natural gas, bringing the total number of natural gas factories operating on natural gas to 2,531 plants, including 417 brick factories. The industrial sector complains of the high cost of gas installation procedures compared to the international prices that export market competitors obtain.

Natural gas was piped and installed to the commercial sector during the same fiscal year to 1,841 customers, including 507 bakeries, bringing the total number of commercial gas customers to less than 21,000, including about eight thousand bakeries.

Also, there is a project to convert cars to natural gas fuel operation instead of gasoline and diesel, for environmental factors in light of the intense exhaust of cars, especially within cities, as well as the import of part of the needs of both gasoline and diesel, which increases the problem of foreign exchange shortages before and after the coronavirus repercussions.

In FY2018/2019, about 32 thousand cars were converted to natural gas operation, bringing the total number of cars operating with natural gas to 276 thousand in about 12 years, while the number of vehicles in 2018 reached about 11 million, including about five million private vehicles.

## Global gas prices falling

In light of the correlation between oil prices and natural gas prices up and down, as well as the price difference between gas directly transported through pipelines, which is cheaper, than liquefied gas that is transported by tankers, after adding the costs of liquefaction, transportation, and regasification again at the destination port.

The average price of gas in Europe has declined since 2013 up to the current year, from \$11.79 per million British thermal units in 2013 to \$10.05 in 2014, to \$6.82 in 2015, and to \$4.56 in 2016, but started to rise again in 2017 and 2018 as happened to the price of oil, reaching \$5.72 in 2017 and

\$7.68 in 2018, after which the price of natural gas declined again in 2019, down to \$4.8 per million British thermal units.

In the same way, the price of natural gas in the United States fell from \$4.37 per million British thermal units in 2014, to \$2.61 in 2015, and continued to decline to \$2.49 in 2016, but started to rise again in 2017 and 2018, in line with the trend of oil prices during the two years, to reach \$2.96 in 2017 and to \$3.16 in 2018. But the price of natural gas in the United States declined again, to \$2.57 per million British thermal units in 2019, similar to the trend of oil price.

In the first half of this year, the price of natural gas in Europe fell by 62% from the prices in December last year, down from \$4.62 in December to \$1.75 in June, where the average price in January decreased to \$3.63, to \$2.91 in February, to \$2.72 in March, and continued to fall in April to \$2.12 and in May to \$1.58, before the price partly improved in late May to \$1.75.

Thus, the average European gas price decreased from \$3.09 per million British thermal units in the first quarter of this year to \$1.82 in the second quarter of this year as a result of the negative repercussions of the coronavirus on the economies of European countries, which reflected negatively on the price of oil, which is also linked to the price of gas.

During the first half of this year, the price of natural gas in the United States fell by 28%, from \$2.24 in December to \$1.61 in June, where the average price fell from \$1.91 in the first quarter of the year to \$1.7 per million British thermal units in the second quarter, and the natural gas price index declined by 38% during the first half of this year.

### Domestic gas price cuts limited to industry

In this context, what about the extent to which the prices of selling natural gas inside Egypt have been affected by these global prices for in recent years.

In view of the multiplied natural gas prices in Egypt according to the type of use, it is necessary to review the pricing of natural gas for each type of uses, as these prices are imposed by the Ministry of Petroleum, given the fact that there is no competitiveness in gas consumption prices in Egypt so far. The price of using natural gas for cement production increased from \$ 6 per million British thermal

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units to \$ 8 in July 2014, in coincidence with the first price hike of petroleum products carried out by the ruling regime.

However, the price remained stable for five years, until it was reduced to \$6 for million British thermal units in October 2019, a reduction that did not benefit the cement industry much as cement factories had been forced years before to switch to using another mixture of fuel, including waste, reducing their use of natural gas. Moreover, the cement industry in Egypt has suffered in recent years from low demand after the army started to compete with private sector companies in production, as well as the difficulties of exporting cement to the Arab region due to the existence of competitive Arab producers with respect to prices, which prompted the national and foreign private sector factories operating in Egypt to suspend production at full capacity.

As for energy-intensive industries such as iron, aluminum, copper, ceramics, porcelain and flat glass industries, the price of gas was raised from \$4 per million British thermal units to \$7 in July 2014, where the price remained constant for five years until it was reduced to \$5.5 in October 2019 after the famous September protests.

However, industrialists were not convinced of this price reduction, as they see that the appropriate price of gas is \$3 per million British thermal units, especially the ceramics industry, which suffers from poor sales and export difficulties, stating that the Egyptian Ministry of Petroleum announced a reduction in its export quantities in the last months of 2019 due to a decrease in prices in European markets than the export target price of \$5 per million British thermal units.

### Gas export price lower than the domestic price for industry

The decline in global prices also prompted the government to allow foreign companies operating in Egypt, such as Italy's Eni and Britain's BP, to export a portion of their natural gas production that was used to be purchased by the government to cover the shortfall in meeting the domestic consumption needs.

Gas experts say that the cost of producing Egyptian gas reaches 7 dollars per million British thermal units, including a production cost of about 2.65 dollars per million British thermal units, in addition to the cost of liquefaction and shipping of gas from the Edko liquefaction plant, ranging between 3 to 4 dollars per million British thermal units .

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If the export price of Egyptian gas includes the cost of transferring the cost of liquefaction in addition to the cost of transportation, and the local gas is pumped directly through the national network of domestic gas pipelines to factories in its natural gas state, this means that it must be much cheaper than the export price to European countries such as France, Spain and Italy.

The quantities of Egyptian liquefied natural gas exported last year amounted to 4.5 billion cubic meters, compared to 2 billion cubic meters in 2018, where the quantities of exporting Egyptian liquefied gas last year went to more than 15 countries including: Pakistan 900 million cubic meters, Singapore 600 million, Turkey and Italy each 500 million meters, France 400 million, China and India 300 million, South Korea, Taiwan and Thailand 200 million meters each, and the UAE, Kuwait and Japan 100 million cubic meters during the past year.

For this reason, the industrial sector has demanded to be treated similarly to the prices of gas sold to European Union countries after excluding the liquefaction and transportation costs, especially after the repercussions of the coronavirus that required reducing the number of workers and increasing the cost of preventive measures, and the difficulties of marketing products locally due to the decline in the purchasing power of citizens and the export difficulties in light of declining global demand and the increasing unemployment rates, and many developed economies turned to deflation during the current year.

### Continued rise in gas prices for home consumption

The automatic pricing mechanism for petroleum products recommended by the International Monetary Fund to Egypt as one of the terms for obtaining the twelve-billion-dollar loan in 2016, which began in operation since July 2019, provided for a review of natural gas prices for the industry every six months.

Though the committee entrusted with automatic pricing of petroleum products, formed by both ministries of oil and finance, reduced the price of natural gas for industrial uses in October 2019, April of this year has passed without any change in gas prices despite the apparent decline in prices globally during that period, which increases speculation that the price reduction last October in light of the relatively high global prices, aimed to increase domestic gas consumption in light of export difficulties during that period.

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The price of selling natural gas to homes and commercial activity takes the form of price segments, as the price of a cubic meter for the first and lowest consumption segment whose monthly consumption reaches 30 cubic meters, increased from LE0.40 to LE1.0 per cubic meter in June 2017, to LE1. in June 2018, and then to LE2.35 per cubic meter in July 2019.

As for the consumption segment from over 30 cubic meters up to 60 cubic meters per month, the price per cubic meter of natural gas increased from LE0.75 per cubic meter up to LE1.75 in June 2017, then to LE2.50 in June 2018, and to LE3.10 per cubic meter in June 2019.

As for the domestic and commercial consumption segment of more than 60 cubic meters per month, the price of natural gas increased from LE2.00 per meter in November 2016 to LE2.25 in June 2017, then to LE3.00 per cubic meter in June 2018 and to LE3.60 in July 2019.

Thus, gas prices for both homes and commercial activity took an upward trend without applying any reduction, albeit limited, as happened to gasoline and diesel after the September 2019 demonstrations, especially after the decline in global gas prices during the first half of this year.

### Incentives required for converting cars to natural gas operation

The Egyptian government cannot justify the constant rise in the prices of natural gas locally compared to global prices, as it does with gasoline and diesel, part of which is imported from abroad, given the fact that there is self-sufficiency of natural gas, as the government claims, which is a fallacy, as the production quantities of foreign companies operating in Egypt are calculated within the quantities of total production, in addition to the falling global gas prices.

There is a third activity for the consumption of natural gas in Egypt, that is the use of compressed natural gas as fuel for cars, which also took an upward price trend from LE0.40 per cubic meter before the army took power in July 2013. to LE1.10 in July 2014, then to LE1.60 in November 2016, to LE2.00 in June 2017, to LE2.75 in June 2016, and to LE3.50 per cubic meter in July 2019, undergoing five consecutive increases.

Despite the falling natural gas prices globally and a slight decrease in the price of gasoline in October 2019 and then in April after the collapse of oil prices in light of the Russian-Saudi dispute, yet, the compressed natural gas used by cars has not undergone any reduction, despite the government call



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to convert minibuses to natural gas fuel operation, which requires a price incentive to attract the conversion process; but despite the introduction of the automatic pricing mechanism for petroleum products since July 2019 to re-consider prices of derivatives every three months, the price of compressed car gas has remained steady.

During the first four months of this year, despite the decrease in domestic production of natural gas to 14.65 million tons, by 12.6%, compared to the production of the same months last year, however, the quantities of domestic production are still higher than consumption needs, amounting to 14.468 million tons, a decrease by 2.1%, compared to the same months last year.

Natural gas remains a locally produced commodity, which requires a fair price to be commensurate with the economic conditions of masses of Egyptians, in light of the impact of the coronavirus pandemic, whether on the household, commercial or industrial sectors.

