

**Reality of electric power in Iraq**

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**Abstract :** Electrical energy is one of the important sources in the Demoma and continues the various activities necessary for the disabilities of community members. Most states have worked to ensure their continuity and rather than their resources, to invest that energy from various traditional and renewed sources and work Stations for production, transportation, distribution, improvement of their work and keep abreast of continuous rise in demand for energy and gap between production, consumption, Iraq one of those countries suffering from the service provided by this energy despite the high rise in production (22) thousand megawatts, because there are many obstacles, including the frequent wastes and override on transport lines, which increased pressure on power transmission stations. Hence, this research has been completed by focusing on the problem that disparity and demand for electricity leads to repeated problems in the distribution of such energy, it is necessary to estimate the volume of production and appropriate with the growing demand for electricity and identify future needs, The research assumed that demand for electric power in Iraq is affected by multiple factors, including economic growth, population, income level, and prices. Economic growth and population increase are expected to have the greatest impact on electricity demand during the period 2005-2022, and research reached a range of conclusions, a reverse impact of increasing fees on the consumption of electric power on demand, and impairment is the obstacle The main to fill the gap between supply and energy demand, and this is a blur from the recommendations to raise all abuses of energy lines and improve energy lines, as well as work to exploit renewable energy sources and make them a basic For traditional production station.

**INTRODUCTION:** The electric power sector is an essential Neon for the life of contemporary communities and an indispensable substrate in supporting economic and social development in different countries, both developed and developing, and Iraq is one of those countries where electricity is normal in various fields of life, and despite its importance The increasingly faces many constraints that prevented the increasing demand for electricity, resulting in long and repeated interruptions and a negative Impact on industrial, commercial and domestic sectors. With high growth rates and urbanization, as well as increased investments in industry and agriculture sectors, the State has worked for various sectors and in order to achieve this to establish many parts of electricity In different parts of Iraq, which is a major increase in production Five times have been twenty years ago, despite that increase, the demand for electricity has increased unprecedented this growing demand has not been accompanied by a similar expansion of energy or radical improvements in infrastructure, despite significantly high power output It was before 2003, but this did not fill the gap between supply and demand. This problem has increased enormous impairments in the transport and distribution network, and the adoption of Iraq on the imported gas to operate power plants.

**The importance of research:**

The research is gaining their importance as it contributes to understanding the nature of the demand for electricity in Iraq, which helps to support the concerned stakeholders to develop the challenges. This can also help to make recommendations to improve the efficiency of electricity distribution and minimize impairments.

**The problem of research:**

The disparity and demand for electric power leads to repeated problems in distributing that energy, it is necessary to estimate the volume of production and appropriate with the growing demand for electricity and identify future needs

**The research hypothesis:**

The research from the premise is that demand for electric power in Iraq is affected by multiple factors, including economic growth, population, income level, and prices. Economic growth and population increase are expected to have the greatest impact on electricity demand during the period 2005-2022. Search Objectives – Analysis of economic and demographic factors affecting demand for electricity. – Provide recommendations to improve the efficiency of the power sector and meet growing demand.

### **Research Method:**

The research depends on analytical descriptive style, based on the description of current facts related to electricity consumption and associated economic factors for the period 2005 to 2022.

### **First: The concept of electric power:**

electric power is one of the energy sources and can be generated in several ways of kinetic and imaging has been used in several areas of daily life, whether domestic, industrial or commercial and reflects electrical energy as energy stored in the maize particles Which generates an electric field surrounding them accordingly, electricity is a secondary source derived from primary energy sources in other words that they are unreliable energy are released through connectors that operate on the engines of all devices and produce the magnetic field move to what leads to Create difference in the effort on the sides of Mosul (Morris,2012,42). Electricity is characterized by the foundation engine for all the world's life. It is easily used, efficient transport and transmission to several other energy images and the beginning of energy by the English world "Thomassy Sevari", who invented the steam engine and has developed (Jiots) By making important improvements to make it vital to him an assistant task in the start of the industrial revolution, and the engine intensifies the steam drained to the cylinder, which creates partially completing the air pressure to push the piston into the roller and was the first process The steam benefits to produce mechanical filling and has been used in light stations, steam locomotives and ships as well used in power generation through the use of steam turbines (Morris,2012,43), and the energy that can be obtained by converting different energy types into electricity; Or by converting motor energy into electricity; Through generators and stations for this and this energy; It can be found in nature, but in an unjustified image such as paper and lightning (Ali,2007,223). The use of electricity is due to the year (1876). When an invention (Thomas Edison) is the electrical lighting using AC and in 1882, Adison created; The first station to generate electricity in New York City and the electricity can be used; Of the power generated by steamers (Hatem,2010,22). In addition, electric power is becoming one of the most important tools to operate economic sectors. It is possible to produce electricity in several ways and various energy sources through power plants from thermal stations by using heat resulting from fuel combustion in heating boilers To generate water vapor with high temperature and high pressure or through nuclear power or from renewable energy (International Energy Agency Statistics Electricity Information,2017,3). Electrical power is usually generated from nearby sources and electricity generated; In electric wires by large towers and then be converted to an electric power with low voltage 220 volts or 110 volts and the

### **Constraints to the production of electrical energy:-**

Constraints to the production of electrical energy are vital issues facing many countries, especially those that rely on old Infrastructure or face economic, technical, and environmental challenges. Economic challenges Include the high costs of investing in building power plants, especially renewable energy plants, and the difficulty of obtaining long-term financing. Fluctuations in fossil fuel prices also affect production costs and increase reliance on unsustainable sources. They also include efficiency problems in the transmission and distribution of energy due to old infrastructure or lack of modern technology. This is due to the large energy losses that occur during transmission, as well as the difficulty of achieving network stability due to excessive reliance on intermittent energy sources such as solar and wind energy. Pollution resulting from the use of fossil fuels and climate change also represent a major challenge to energy production. In addition, regulatory restrictions related to reducing carbon emissions are forcing many countries to reduce reliance on traditional plants and increase investment in renewable energy, which often requires additional financing. The obstacles can be summarized In several points, the most important of which are: - (Ahmed,2016,65)

1-The increase in demand for electrical energy compared to Its supply may lead to a decrease In voltage, which usually occurs for minutes, but can continue for several hours, and the decrease In voltage may cause equipment failure.

2-Electrical energy cannot be transferred to distances exceeding (1000) kilometers because this limits the extent of Its use.

3-The insufficiency of the fuel required to produce electrical energy continuously in terms of quantity and quality.

4-The high rate of loss or loss in networks, which may reach (7)% in developed countries.

5-Water shortage, which affects the process of generating electrical energy in some hydroelectric stations, as it Is necessary for countries to work on diversifying energy sources, improving water resource management, and adopting modern technologies to ensure the sustainability of electricity production and achieve energy security.

6-The absence of new programs for perlodic maintenance of all stages of electrical energy production, as well as the lack of trained manpower and lack of experience.

7-Lack of Investments to implement necessary electrical projects and failure to fulfill financial obligations that hinder the implementation of investment plans.

**8-**Subsidized tariffs that create unconsciousness In the consumption of electrical energy, lack of trained manpower and lack of experience, as countries need strategies to enhance awareness of the importance of energy efficiency and provide intensive training for the local workforce, in addition to improving policies to support the sustainable development of electrical infrastructure.

**9-**The impact of the unstable security and political situation on electrical energy, as well as the spread of the scourge of corruption, as the impact of the unstable security and political situation, along with corruption, appears on the production of electrical energy through disrupting investments, deteriorating infrastructure and weak planning and management, which leads to a shortage of electrical energy and the deterioration of basic services.

**Electric power is characterized by several features:**

(can be transferred efficiently and is also easy to use and can be conveniently constructed From one format to another quickly and very easy without causing environmental pollution) and global developments have a role in increasing power generation capabilities and demand for electric power constantly growing; Due to economic growth and population growth as electricity production in the world between 1974 to 2015 rose; the production of electricity from 6.287TW was reached 24.345TW or an annual growth rate of 3.4% in 2015; The share of non-ECO countries in the world is increasingly growing at a high growth rate; Whether in non-Economic countries have been increased by an overall production rate 4.6% in non-member countries with countries of organizational cooperation and economic development in 3.0% and this growth continued until 2015 with non-member countries. Economic properties of the power sector:

The electric power output sector is characterized by many economic characteristics than the most important:

**1\_** Density of the capital, investment in the electricity sector needs huge financial resources and therefore investments for this sector are characterized by the capital, and the latter is the capital investment to annual income The total investment is a huge capital is from five to 12 years in advance, which may be required to build a normal generation plant and this is a significant change in inflation or capital cost will have serious results on electric power prices(Ahmed, Mohammed,2016,55) .

**2\_** The over all costs that massive investment to the money in electricity institutions carries significant financial burden institutions and therefore those institutions seek to continue the work of their units as much as possible until reduced the cost of producing unit (Iman,2009,117).

**3\_** Government monopoly known monopoly as a vendor or one product for its specific goods without being nearby alternatives to those riva(Abu al qasim, and others,2008,155).

This type of monopoly stands in industries with public products, including electricity production and establish monopoly conditions in dominant costs structures within the sector which differs from different technology patterns used; It is by nature with heavy technology (Maha,2005,34). It is also known as natural monopolism and occurs when the average cost is down as in electricity. In power generation, which displays sharply average cost and poses clear difficulties to maintain competition work as an inefficient for multiple competition companies and takes a maker Government decision is an active and direct role in organizing natural monopoly. (William,2012,332)

**4\_**Shabad needs of consumers fall on electricity is an important power to provide electricity for consumers continuously and therefore the energy sector is directly affecting every house or school or hospital for this sector performance and its ability to save energy Depending on which every citizen, alongsside the energy sector, is a vital role in supporting economic and social development, and consumer consumes consumer to the electrical institution as a systematic system of consumer needs of electricity (South Helwan Electricity Project,2013,21)

**Second: Uses of electrical energy:**

**Electric energy is used In the following fields (14):**

**1\_ Health field:**

Electricity is one of the components of the health field, as it Is necessary for lighting hospitals, medical devices, and most of these devices operate on electricity, such as X-ray imaging devices, ultrasound imaging, etc., in addition to respirators in all the following departments, which are considered necessary for the life of the square, as electricity represents the main operation, and there are transformers and backup generators in hospitals to generate electricity in the event of a power outage.

**2\_ Industrial field:**

Electricity is considered one of the basic elements in the production process of factories, as power outages in these factories will cost them a lot of money due to decreased production.

**3\_ Domestic field:**

The domestic sector Is considered one of the largest consumers of electrical energy due to the many uses of electricity in household appliances that electricity cannot do without, such as freezers, refrigerators, air conditioners and their cooling devices in the summer and heaters In the winter.

**4\_ Agricultural field:**

Energy consumption in this field can be divided into direct use such as fuel, machinery, space and lighting, and indirect use, which is represented in everything necessary to produce materials used in various industries (15).

#### 5\_ Other fields:

There are other fields In which electricity is considered a necessity to operate and run their work, such as the field of communications and the field of animal farms, in which the presence of electricity is considered a necessity.

#### Third: - Sources of electrical energy production:

The electrical energy production sector in Iraq is diverse, as it depends on a number of stations of different sizes and production capacities. These stations vary in their design and production capabilities, as well as in the capacities of their producing units.

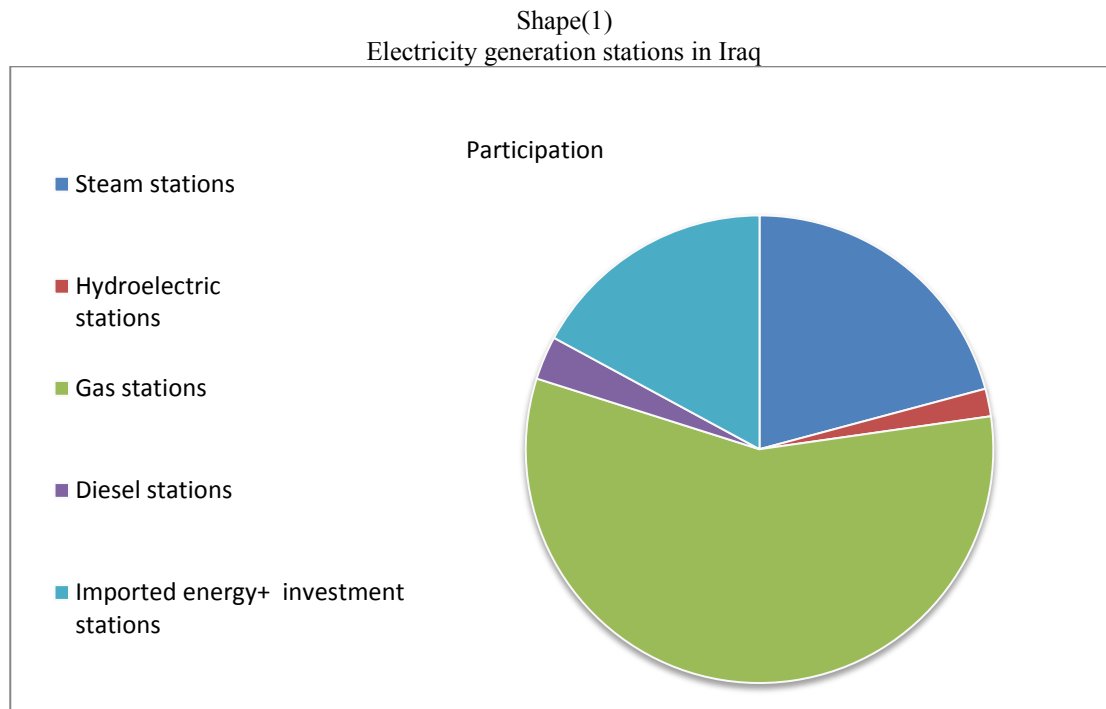
In addition, each type of these stations is characterized by different production rates, which affects their contribution to the total national electricity. Each station contributes in different proportions to meeting the demand for electrical energy in the country, which distinguishes the stations with the largest contribution as receiving special attention from the concerned authorities, due to their decisive role in facing the challenges of meeting the needs of electrical energy in Iraq. The characteristics of

these stations can be explained in detail through the table

Table (1)  
Electricity generation stations in Iraq

Production stations	Number of units	Larger capacity design unit MW	Total capacities of design unit MW	Total capacities of operating unit MW	Production rate MW	Participation %
Steam stations	27	630	7245	6765	3301	20.72
Hydroelectric stations	29	188	1864	1612	303	1.90
Gas stations	219	292	17924	16044	9056	56.82
Diesel stations	353	24	2398	2037	533	3
+Imported energy investment stations	51	320	9325	-	2745	17
The total	679	1454	38756	26458	15937	99.44

Source: Republic of Iraq, Ministry of Electricity, Annual Report 2022.



Source: prepared by the researcher based on the table data(1)

From the previous table and figure, it can be noted that the power generation stations in Iraq consist of four main types, which are:

Gas stations are considered the most contributing to the production of electric power. The total design capacities of the units in these stations reached 17924 megawatts, while the capacities of the operating units reached 16044 megawatts. Their productivity reached 9056 megawatts, which constitutes about 56.82% of the total energy production in Iraq.

Steam stations come in second place in terms of importance. The design capacities of their units reached 7245 megawatts, while the operating units reached 6765 megawatts. Their production reached 3301 megawatts, or 20.72% of the total production. Hydroelectric stations have design capacities of up to 1864 megawatts, and their operating units reach 1612 megawatts, but they only contribute 303 megawatts to production, which constitutes 1.90% of the total energy produced.

Diesel stations have a design capacity of 2398 megawatts, and the operating units are 2037 megawatts. Their production contributes 3% of the total energy produced. The Ministry of Electricity has also resorted to filling the deficit by importing electrical energy and adding investment stations. The design capacities of the importer and investor reached 9325 megawatts, with an actual production of 2745 megawatts, representing 17% of the total production.

This percentage greatly affects the federal budget due to the large sums it bears to pay the dues resulting from imports. In addition, these dues are paid in foreign currencies, which negatively affects the Iraqi economy. In addition to the lack of confidence in the continuity of energy transfer from producing countries, whether from the political aspect of the countries or from the sabotage operations. Based on these figures, it is clear that gas stations receive the greatest priority and attention from decision-makers in Iraq, given that they constitute the largest percentage of electrical energy production compared to the rest of the stations.

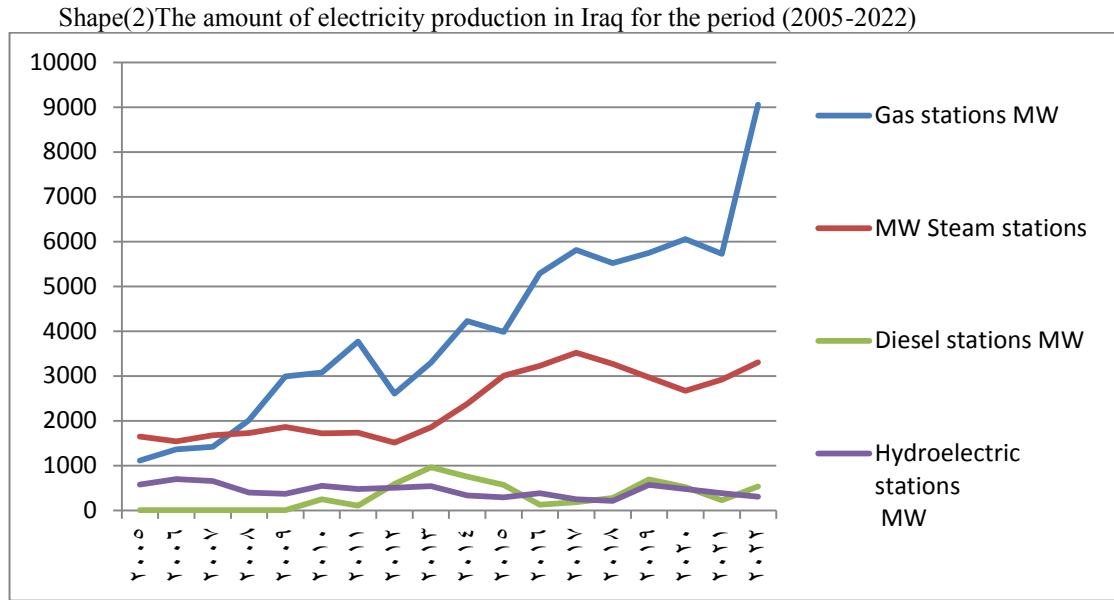
#### **Fourth: Total electricity production in Iraq:**

The total electricity production in Iraq represents one of the main pillars of economic growth and sustainable development. With the increasing demand for electricity as a result of population and economic growth, Iraq seeks to increase its production capacity to meet the needs of various vital sectors. However, the electricity production sector faces major challenges, such as aging infrastructure and lack of investment. Enhancing production capacity and adopting renewable energy sources can contribute to improving the stability of electricity supplies, supporting the national economy, and achieving sustainable development in the future.

Table (2)  
The amount of electricity production in Iraq for the period (2005-2022)

the year	Gas stations MW	Steam stations MW	Diesel stations MW	Hydroelectric Stations MW
2005	1115	1644	2	575
2006	1364	1540	6	696
2007	1415	1673	2	655
2008	2010	1723	7	397
2009	2987	1864	5	367
2010	3073	1722	244	544
2011	3765	1730	103	473
2012	2602	1514	590	501
2013	3296	1853	960	543
2014	4229	2379	756	335
2015	3981	3002	566	291
2016	5293	3227	126	385
2017	5810	3518	182	248
2018	5521	3270	274	208
2019	5745	2968	687	567
2020	6055	2669	521	474
2021	5726	2922	226	382
2022	9056	3301	533	303

Source: Republic of Iraq, Ministry of Electricity, Annual Report for the Years2005- 2022.



Source: prepared by the researcher based on the table data(1)

From the previous table and figure, it can be noted that there are four main stations that contribute to the production of electrical energy in Iraq, which are steam, gas, hydroelectric, and diesel stations. Gas stations stand out as the most important contributor to electricity production, as their production in 2005 reached about (1115) megawatts, and increased significantly over the years of the study to reach (9056) megawatts in 2022. As for steam stations, they ranked second in electricity production, as their production in 2005 reached about (1644) megawatts, and continued to gradually increase to reach (3301) megawatts in 2022. However, the productivity of these stations was fluctuating during the study period, as it decreased to its lowest levels in 2012 at (1514) megawatts, while it recorded its highest productivity in 2017 at a rate of (3518) megawatts. In third place come hydroelectric stations, whose peak production in 2006 reached a rate of (696) megawatts, but witnessed fluctuations in production during the following years, as it reached (303) megawatts in 2022. This decline is mainly attributed to the decline in the water levels of the Tigris and Euphrates rivers. As for diesel stations, they contributed the least to the production of electric power, as they recorded their lowest productivity in 2005 at a rate of (2) megawatts. Despite a slight improvement in 2009, when they reached (5) megawatts, their productivity witnessed a noticeable improvement in 2013, when they recorded (960) megawatts. After that, it returned to fluctuation until it stabilized in 2022 at (533) megawatts.

#### **Fifth: - The percentage of electric power's contribution to GDP:**

Electricity plays a vital role in supporting economic growth and achieving sustainable development, as it is considered one of the most important factors influencing industrial, agricultural, and service production. The percentage of electric power's contribution to the gross domestic product expresses the relationship between the efficiency of electricity supplies and the level of economic production. Also, increasing the production capacity of electricity improves the efficiency of resource use, which contributes to raising productivity, reducing costs, and increasing economic growth rates. Therefore, the high contribution of electricity to GDP reflects the efficiency of the energy infrastructure and its ability to support diverse economic activities.

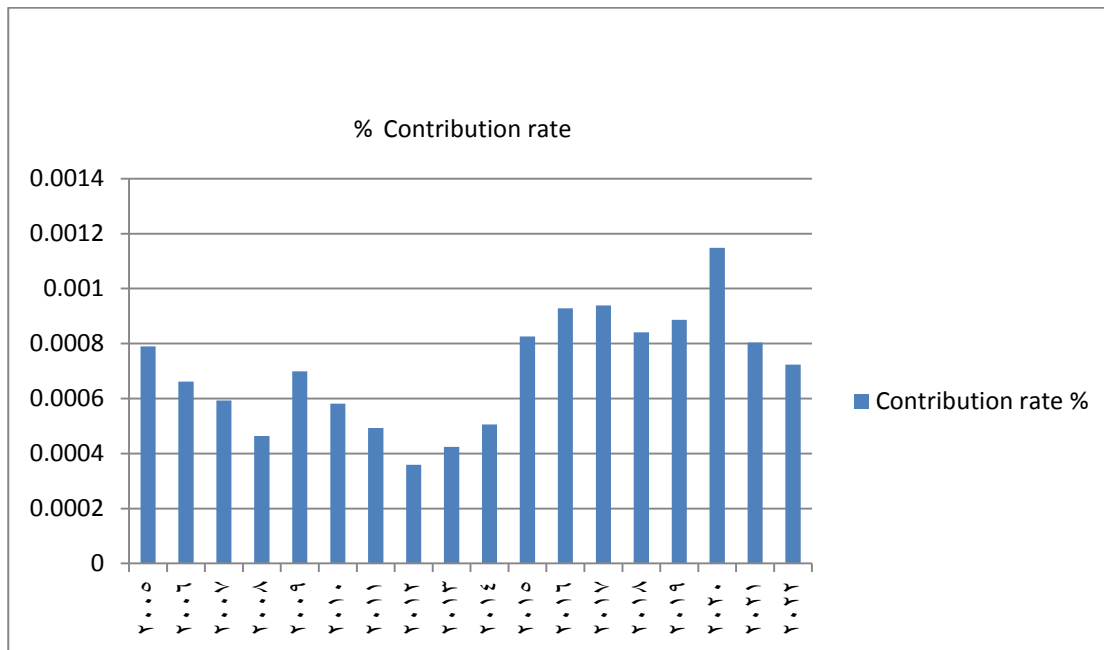
Table (3)

Percentage of contribution of electrical energy to the gross domestic product in Iraq (2005-2022) Million dinars.

the year	GDP at current prices	Added value of electricity	Contribution rate %
2005	73,533.5	580.29	0.78
2006	95,587.9	633.01	0.66
2007	111,455.8	661.37	0.59
2008	157,026.0	728.01	0.46
2009	130,643.2	913.5	0.69
2010	167,093.2	971.44	0.58

2011	217,327.1	1070.6	0.49
2012	254,225.4	914.02	0.35
2013	273,587.5	1160.4	0.42
2014	266,332.6	1346.06	0.50
2015	194,680.9	1607.58	0.82
2016	196,924.1	1827.3	0.92
2017	221,665.7	2081.3	0.93
2018	268,918.8	2262.3	0.84
2019	276,157.8	2447.1	0.88
2020	215,661.5	2477.06	1.14
2021	302,691.9	2434.26	0.80
2022	383,455.2	2773.03	0.72

Source: Republic of Iraq, Central Bank of Iraq, Department of Statistics and Research, Annual Reports for the period (2005-2022).



Source: prepared by the researcher based on the table data(3)

Through the data mentioned in the table and figure above, we can show the gross domestic product in Iraq in addition to stating the value of what was added through electricity to the gross domestic product and the percentage of contribution of this value to the gross domestic product in Iraq during the study period. Whereas the period from 2005 to 2010 represents the gross domestic product, as it starts with 73.5 billion dinars in 2005 and reaches 217.3 billion dinars in 2010. Whereas this period came after the American invasion of Iraq in 2003 and the fall of the former regime. During these years, Iraq began the process of rebuilding the infrastructure and the economy. As for the period from 2011 to 2014, the gross domestic product reaches its peak at 276.1 billion dinars in 2014. This is due to the rise in oil prices to record levels during this period, which contributed significantly to increasing oil revenues and then the gross domestic product. There was also a relative improvement in the security situation, which contributed to enhancing economic and investment activity. We note that the period from 2015 to 2017 saw a significant decline in GDP to 215.7 billion dinars in 2015. This is due to the fact that this period was characterized by a significant decline in global oil prices, which negatively affected Iraq's oil revenues and thus GDP. In addition, the wars against ISIS and the armed conflict in large areas of Iraq caused widespread destruction of infrastructure and halted economic activities in those areas. Public debts and financial inflation also increased, which were factors affecting the country's economic performance. The period from 2018 to 2019 witnessed a recovery with GDP rising to 302.7 billion dinars in 2018. This recovery is attributed to the restoration of control over areas that were under ISIS control and the recovery of some economic sectors. The improvement in global oil prices also contributed to improving revenues. The GDP took a fluctuating path during the period from 2020 to 2022, reaching a peak in 2022 at 383.4 billion dinars. This is due to the Corona pandemic (COVID-19) crisis in 2020, which had significant negative effects, as it led to the closure of many economic activities and a decrease in demand for oil, which led to a decline in revenues. In 2021 and



2022, the recovery of the global economy and the rise in oil prices again contributed to the recovery of the Iraqi economy.

From the above, it can be said that Iraq's GDP during the period from 2005 to 2022 fluctuated significantly depending on fluctuations in oil prices and security and political situations.

The value added of the electricity sector to the GDP in Iraq during the period 2005-2022 reflects the gradual development of the sector and its impact on the national economy. We note that the period from 2005 to 2010 reflects the value added of electricity, as it started from 580.29 billion dinars in 2005 and rose to 1070.6 billion dinars in 2010. The electricity infrastructure deteriorated significantly after the US invasion of Iraq in 2003 as a result of bombing and wars. During this period, the Iraqi government began supporting the electricity sector by rebuilding power stations and modernizing distribution networks. This gradual improvement in electricity production and the increase in demand for energy as a result of economic recovery and increased industrial activities contributed to increasing the value added of the sector. As for the period from 2011 to 2014, the value added increased significantly to reach 1607.58 billion dinars in 2014. This increase was the result of increased investments in electrical infrastructure and improving the distribution network, which contributed to increasing production capacity. It also led to an increase in demand for electricity due to population growth and increased industrial and commercial activity. However, Iraq witnessed an escalation in security tensions in 2014 due to the emergence of ISIS, which affected the stability of some areas and the infrastructure in general.

This was reflected later and during the period from 2015 to 2017, the value added fluctuated from 1607.58 billion dinars in 2014 to 2477.06 billion dinars in 2017. This fluctuation was a result of the war against ISIS, as the electrical infrastructure was damaged in many areas, leading to a decline in electricity production. The period from 2018 to 2022 witnessed a significant increase in value added, reaching 2773.03 billion dinars in 2022. This was a result of security stability, which led to financing new projects and expanding production capacities in the electricity sector.

It is also noted that the value added from the electricity sector to the gross domestic product in Iraq witnessed continuous growth despite the many challenges. This significant improvement was supported by increased investments and higher demand, but the sector still needs further reforms and diversification of energy sources to improve its performance sustainably and reduce dependence on oil revenues.

As for the percentage of the electricity sector's contribution to the GDP in Iraq for the period from 2005 to 2022, it reflects the relationship between the value added from electricity and the total GDP

This was reflected later, during the period from 2015 to 2017, in a fluctuation in the added value from 1607.58 billion dinars in 2014 to 2477.06 billion dinars in 2017. This fluctuation was a result of the war against ISIS, where the electrical infrastructure was damaged in many areas, leading to a decline in electricity production. The period from 2018 to 2022 witnessed a significant increase in the added value, reaching 2773.03 billion dinars in 2022. This was a result of security stability, which led to financing new projects and expanding production capacities in the electricity sector.

It is also noted that the value added of the electricity sector to the GDP in Iraq has witnessed continuous growth despite many challenges. This significant improvement was supported by increased investments and higher demand, but the sector still needs more reforms and diversification of energy sources to improve its performance sustainably and reduce dependence on oil revenues.

The electricity sector's contribution to Iraq's GDP for the period from 2005 to 2022 reflects the relationship between the value added of electricity and the total GDP .

It can be noted that the percentage started at 0.78% in 2005 and gradually decreased to reach 0.46% in 2008 before rising slightly to 0.69% in 2009. The electricity sector faced major challenges during this period, in terms of reconstruction after the 2003 war, and therefore the value added was relatively low. This gradual decrease in the percentage reflects that GDP growth was faster than the growth of the electricity sector, as GDP increased significantly, as the electrical infrastructure was recovering slowly, with the continued heavy reliance on oil as a primary source of economic growth, which reduced the contribution of electricity to the economy. The electricity sector remained limited in its contribution even during the period from 2011 to 2014, then decreased again to reach 0.35% in 2012 and then increased again to 0.42% in 2013. The increase in the percentage in 2014 may be due to some improvements in infrastructure and increased demand for electricity with the expansion of industrial activity, but the worsening security crisis due to the emergence of ISIS affected the stability of the sector. It can be noted that the percentages continued to increase after that to reach 0.92% in 2016 and 0.93% in 2017. This is due to the fact that the increase in the electricity contribution percentage can be interpreted as a result of the gradual improvement in electricity production, while the overall GDP growth was lower compared to previous years. This is due to the focus on electricity infrastructure projects as part of post-war reconstruction efforts.

The period from 2018 to 2022 was characterized by fluctuations in the ratios, as it rose to 0.88% In 2019 and then decreased to 0.72% In 2022. This fluctuation is due to the recovery of oil prices after 2018, which contributed to the

growth of the overall GDP, while the electricity infrastructure witnessed a relatively slow improvement, which led to fluctuations in the percentage of electricity contribution. In addition, the Corona pandemic (COVID-19) in 2020 affected economic activity and the demand for electricity, which reduced the percentage in some periods. There was also a significant improvement in the global economy in 2021 and 2022 and the rise in oil prices, the GDP increased significantly, but the electricity sector was unable to keep pace with this growth at the same speed. From the above, it is clear that the percentage of the electricity sector's contribution to Iraq's GDP during the period 2005-2022 remained low and showed fluctuations that reflect the major challenges facing the sector. In addition, the poor performance of the electricity sector is a direct result of dependence on oil, security challenges, and corruption, and requires major reforms and greater investments to meet growing needs and achieve sustainable growth.

### **Conclusions:**

- 1-Energy demand growth: The demand for electricity in Iraq is constantly increasing, driven by population growth, Increasing urbanization, and expanding economic activity, which exacerbates the pressure on the energy infrastructure.
- 2-Effects of energy shortages: The lack of meeting demand has led to a deterioration in the stability of the electricity grid and a decline in the quality of services provided, which negatively affects the standard of living of citizens and the performance of various economic sectors.
- 3-High energy losses: Losses emerge as a factor affecting demand, as this aspect negatively affects the efficiency of energy use and increases the economic cost to the state.
- 4-Relationship between demand and GDP: The study showed a strong link between economic growth and increased demand for energy, reflecting the Iraqi economy's dependence on energy as a basic element for growth.
- 5-Other influential factors: There are other factors that affect the demand function, such as fluctuations in temperatures, the level of government support for electricity prices, and consumption rationalization policies.

### **:Recommendations**

- 1- Improving energy efficiency: It is necessary to develop strategies to reduce losses by modernizing the infrastructure, improving network performance, and reducing technical and commercial energy losses.
- 2- Diversifying energy sources: Encouraging investment in renewable energy sources such as solar and wind to reduce pressure on traditional energy sources and achieve greater sustainability.
- 3- Promoting rationalization policies: Launching awareness campaigns for efficient energy use and implementing policies to reduce electricity consumption, especially in residential sectors.
- 4- Reforming the support system: Reviewing electricity price support policies to encourage reasonable consumption without affecting citizens' purchasing power, while imposing gradual prices on high-consumer groups.
- 5- Encouraging private investment: Attracting local and foreign investments in the energy sector by providing facilities and guarantees to investors to stimulate participation in developing the energy infrastructure.

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