

EGYPT OIL&GAS RESEARCH & ANALYSIS

EMPOWERING CHANGE:

ANALYZING EGYPT'S EFFORTS TO END BLACKOUTS

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The Team

CEO
MOHAMED FOUAD

GENERAL MANAGER
AYMAN RADY

CONTENT DIRECTOR
DR. MAHINAZ EL BAZ

SENIOR RESEARCH ANALYST
MARIAM AHMED

RESEARCH ANALYSTS
NERMEEN KAMAL
MAHMOUD YASSER
ABDALLAH MOSTAFA

SENIOR STATISTICIAN
NADA ABBAS

DATA ANALYST
MAZEN YOUSSERY

MANAGING EDITOR
SHERINE SAMIR

SENIOR EDITOR
RANA AL KADY

EDITOR
REEM HOSSAM EL-DIN

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STAFF WRITERS
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DOAA ASHRAF

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PROJECTS MANAGERS
SUZAN MAGDI ALATTAR
REHAM GAMAL

SENIOR MARKETING EXECUTIVE
AMIRA ESSAM

ACCOUNT MANAGERS
NOUR YASSER
MENNA KAMEL

CREATIVE DIRECTOR
OMAR GHAZAL

GRAPHIC DESIGNER/ MOTION DESIGNER
AMIRA HASSAN

GRAPHIC DESIGNER
AYA SOLIMAN

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Overview

BY MARIAM AHMED & MAHMOUD YASSER

Egypt's electricity consumption has followed a significant upward trend, increasing 24% since 2020. The electricity sector is the primary consumer of natural gas, receiving an average of 60% of Egypt's natural gas supplies. This percentage increases during the summer months due to higher temperatures. Over the past two years, Egypt's electricity sector has faced numerous challenges, including surging domestic demand, particularly during summer heatwaves, and fluctuations in the dynamics of the natural gas market. These factors have led to load shedding and power cuts, with durations increasing.

Despite these challenges, Egypt has been working to secure its energy needs, diversify its energy sources, increase renewable energy capacity, and improve energy efficiency.

It is worth noting that geopolitical events have led to price increases and supply chain disruptions, which have impacted Egypt.

Furthermore, the expansion of roads and new cities reflects economic growth, but also results in increased costs for raw materials and energy consumption. The cost of energy provision has increased due to the complexities of deep-water production, which requires advanced technologies and greater investments, as stated by the Ministry of Petroleum and Mineral Resources (MoPMR) in May 2024.

This hike in subsidies can be attributed to the increase in the proportion of imported natural gas in the used natural gas mixture in power plants, in addition to the recent adjustment in natural gas prices I in light of the exchange rate fluctuations.

The Egyptian petroleum sector bears a substantial cost difference of about EGP 240 billion annually in providing fuel for electricity generation. This includes EGP 70 to 80 billion in the cost difference for natural gas supplied to power plants below its actual cost. The cost difference for fuel oil also amounts to approximately EGP 40 to 45 billion. The electricity sector faces challenges selling electricity at a price lower than its cost, which hampers its ability to cover two-thirds of the fuel bill, amounting to about EGP 120 billion annually, as announced by the MoPMR in May 2024.

It is noteworthy that electricity subsidies in the budget of the fiscal year (FY) 2025/26 surged by 2,900% to EGP 75 billion, compared to EGP 2.5 billion in the budget of FY 2024/25. This significant increase follows a period in which subsidies were reduced to zero in FY 2021/22, within the framework of the government's directives to secure the energy sector, according to the Ministry of Finance (MoF).

Another key factor behind this surge is the 19.6% decline in domestic natural gas production between FY 2021/22 and FY 2023/24, coupled with the sharp devaluation of the Egyptian pound against the US dollar.

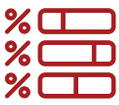
The recent escalating tensions in the Middle East have resulted in the suspension of natural gas imports to Egypt from Israel fields, thus Egyptian Ministry of Electricity and Renewable Energy (MoEE) have announced a plan to rationalize electricity consumption to avoid resorting to blackouts.

This initiative came within a package of measures aimed at maintaining the stability of the national electricity grid and ensuring the availability of energy for all vital uses.

Moreover, the MoPMR has activated a pre-prepared emergency plan for natural gas supply priorities.

This plan includes halting natural gas supplies to some industrial activities, increasing diesel fuel consumption at power plants to the maximum available amount, and coordinating the operation of some stations with diesel fuel.

The government works to ensure an adequate fuel supply for electricity generation, in addition to investing heavily in importing liquefied natural gas (LNG), fuel oil, and natural gas. Also, there is a need to exploit fuel oil as an alternative fuel source in power plants to handle any temporary emergencies in gas production.



Throughout this report, we have conducted a series of polls tailored to gauge public opinion and gather insights relevant to our findings.

These polls, designed and executed by our team, serve as a vital tool for understanding trends and preferences within our target audience.

We integrate these insights to present a comprehensive view that aligns with the needs and expectations of our stakeholders.

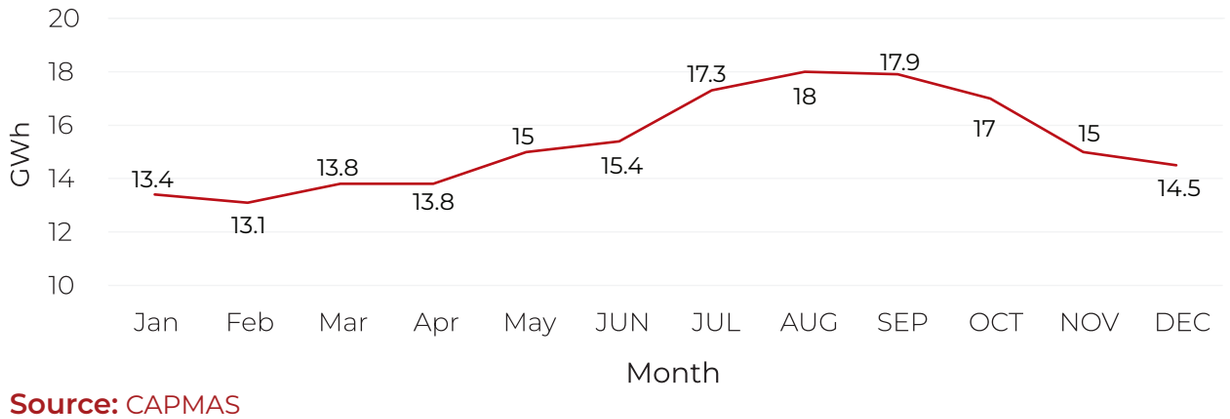
Key Trends in Egypt

Electricity Consumption during Summer

Electricity demand peaks in summer. The declining natural gas supply, together with high temperatures and increasing consumption, has caused power outages and load shedding in the past two years. Following 2022, which witnessed the maximum electricity consumption level since 2012, reaching 215.8 gigawatt-hours (GWh), the government resorted to the load-shedding program starting in July 2023.

The summer of 2023 marked the onset of blackouts, following nearly a decade of a reliable electricity supply, largely due to the sustainable natural gas production and heavy investments in Egypt's power network. The government introduced rolling blackouts to cut costs. June, July, and August are considered the hottest months in Egypt, with average electricity consumption approaching 50.7 GWh in 2024, according to the Central Agency for Public Mobilization and Statistics (CAPMAS).

Electricity Consumption by Month in 2024



Source: CAPMAS

Electricity Generation Capacity

Egypt's electricity sector continues to strengthen its generation capacity, driven by strategic investments and ongoing modernization efforts. According to the Ministry of Electricity and Renewable Energy (MOEE), generated electricity rose from 215.8 billion kilowatt-hours (kWh) in 2022 to 221.7 billion kWh in 2023 and 236.5 billion kWh in 2024.

Electricity Capacity Growth



The YoY Growth in Generated Electricity in 2024 compared to 2023

6.7%

However, despite this steady output growth, the country experienced recurring summer power outages also in 2024 due to fuel shortages and peak consumption pressures. This highlights an existing gap between installed capacity and actual supply reliability during high-demand periods.

Renewable Generation Capacity

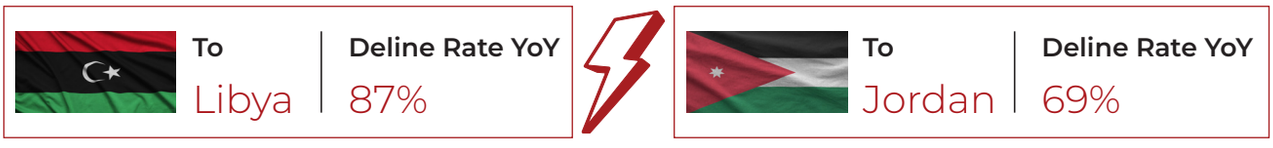
Egypt is accelerating its renewable energy transition, aiming for renewable sources to contribute over 42% of total generation capacity by 2030. By the end of 2026, renewable energy capacity is expected to reach approximately 12,000 Megawatt (MW), alongside 3,350 MW of storage batteries. Looking ahead to 2029, the country targets 20,000 MW of renewables, 3,600 MW of clean nuclear energy, and 2,400 MW from pumped storage, according to the Ministry of Planning, Economic Development, and International Cooperation.

Electricity Exports

Egypt has been reducing its electricity exports in 2024 as part of efforts to ease pressure on the domestic grid amid fuel shortages and rising consumption. While electricity exports—mainly to Libya and Jordan, according to CAPMAS—have contributed to foreign currency inflows, they might have strained local supply during periods of peak demand.

To address the electricity supply challenge, Egypt opted to rebalance its energy priorities. Despite its commitment to long-term export agreements with neighboring countries, the government avoided a complete suspension of electricity exports to preserve regional partnerships. Instead, it significantly limited outbound flows to safeguard domestic needs, according to CAPMAS.

Electricity Exported in 2024 Compared to 2023



Interconnection Projects

The interconnection aims to capitalize on the difference in peak electricity demand times between the two countries, enabling a more efficient exchange of electricity. This will help balance supply and demand across both grids and reduce reliance on fuel-based power generation.

The electricity interconnection project between Egypt and Saudi Arabia has garnered strong political and technical backing, with both governments reaffirming their commitment to completing the project and connecting the two national grids. The initiative is seen as a cornerstone of regional energy integration and a model for cross-border cooperation.

The project, with a total transmission capacity of 3,000 MW, connects the two largest electricity grids in the region through three high-voltage converter stations—located in East Madinah, Tabuk, and Badr. With total investments in the project reaching $1.8 billion, Egypt's contribution amounts to $550 million, according to the Egyptian Cabinet.

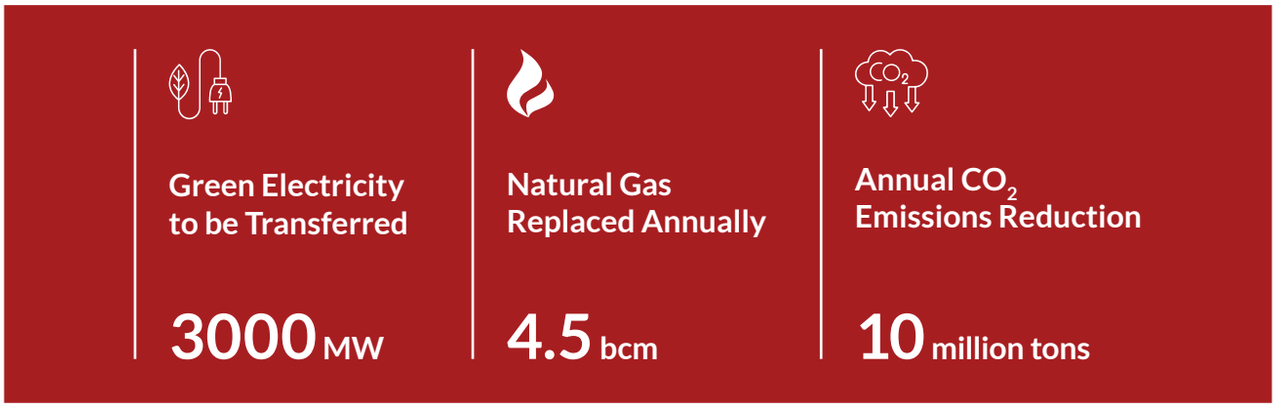
Project Capacity (MW)



Building on the Egypt-Saudi Arabia interconnection, Egypt is expanding its electricity exchange network with both regional and international partners. In addition to existing links with Libya, Jordan, and Sudan, Egypt is advancing feasibility studies for interconnection projects with Greece, Cyprus, Jordan (with the Gulf Cooperation Council Interconnection Authority (GCCIA), and Italy, according to the Egyptian Cabinet.

The planned Greece link is strategic as the first direct clean energy route from North Africa to Europe, supporting the European Union (EU) energy diversification. It allows Egypt to export surplus renewables and complements regional cooperation under the East Mediterranean Gas Forum (EMGF).

GREGY Highlights



Collectively, these initiatives reflect Egypt's long-term vision to become a regional power hub bridging Arab, African, and European electricity markets, according to the Spokesman for the Egyptian Presidency.

Actions to Tackle the Issue

The Egyptian government has launched a comprehensive strategy to ensure a stable and uninterrupted power supply. Egypt has commenced several initiatives seeking to counter the challenges in previous hot seasons. It works to sustain previous exploration successes, alongside an intensified focus on exploration and production with major global investors. The government is also expanding renewable energy projects to reduce reliance on traditional fuels.

Egypt has announced an ambitious plan to establish 10 GW of renewable energy capacity by 2028 as part of its National Platform for the Nexus of Water, Food, and Energy (NWFE) Program. The plan represents a major milestone in Egypt's journey toward a sustainable energy future. The program aims to boost renewable energy production, reduce reliance on thermal power plants, and support Egypt's National Climate Change Strategy (NCCS) 2050.

Public Investments

As part of Egypt's first year of its Medium-Term Development Plan (FY 2025/26–2028/29), the government is prioritizing energy infrastructure by significantly expanding public investment in the electricity and renewable energy sector. This strategic push comes in the wake of recurring summer blackouts in 2024, which exposed vulnerabilities in grid reliability and fuel supply despite record-high generation figures.

The plan aligns with national efforts to enhance energy security, promote sustainability, and support mega-development projects across the country. Public investments in the electricity and renewable energy sector will remain almost unchanged in FY 2025/26, reaching EGP 100 billion, according to the Ministry of Planning and Economic Development & International Cooperation.

The Share of Electricity & Renewable Energy of Total Public Investments in FY 2025/26

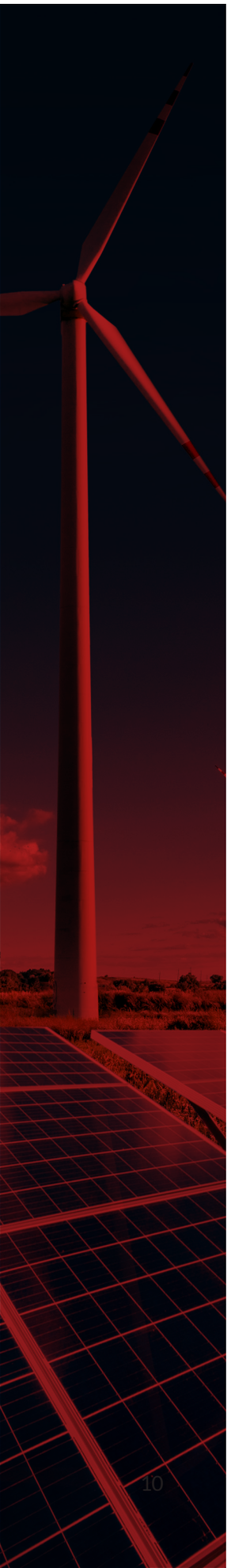


16.4%

The plan targets an increase in the renewable energy share to 16% in FY 2025/26, up from 11.5% in FY 2023/24. The government also aims to generate 235 billion kWh of electricity and reduce loss rates to 13% in FY 2025/26, down from 19.4% in 2023/24, as high loss rates were a contributing factor to the electricity shortages experienced.

In the renewable energy domain, the government will finalize the construction of a 20 MW photovoltaic power station in Hurghada in partnership with the Japan International Cooperation Agency (JICA). Moreover, six land preparation projects will be executed to accommodate future renewable energy projects in areas such as Benban, Jabal El-Zeit, Ras Shukeir, Nagaa Hammadi, East Nile, and South Hurghada, according to the Ministry of Planning, Economic Development & International Cooperation.

These efforts are part of a broader strategy to reduce reliance on fossil fuels, whose limited availability was a key driver of the summer blackouts. By expanding solar and wind capacity, Egypt aims to build a more resilient and diversified energy mix capable of withstanding seasonal consumption spikes and supply disruptions.



Recent Renewable Projects & Agreements

Egypt is actively pursuing several new renewable energy projects and agreements, focusing on both solar and wind power, as well as battery storage and green hydrogen production to increase its renewable energy share in the energy mix.

Abydos Solar Power Plant

December 2024 marked the inauguration of Africa's largest grid-connected photovoltaic (PV) project, Abydos 1 Solar Power Plant, with a capacity of 500 MW in the Kom Ombo Desert in Aswan. According to AMEA Power, the Abydos Solar PV power plant will generate 1,500 GWh of clean energy, powering approximately 300,000 households, and will offset 782,300 tons (t) of CO2 emissions.

On January 14, JA Solar signed a 1.25GW module procurement agreement with China Energy Engineering Corporation (CEEC). The agreement secures JA Solar as the exclusive supplier of high-efficiency n-type PV modules for the Abydos Phase II 1GW+600MWh PV-Storage Project, the largest of its kind in Africa, developed by AMEA Power and constructed by CEEC, according to JA Solar.

Developing the 1st Standalone BESS

In February 2025, the Egyptian Electricity Transmission Company (EETC) signed an agreement with UAE-based AMEA Power to develop two standalone battery energy storage stations (BESS). A 500 MWh station in Zafarana and a 1,000 MWh station in Benban, totaling 1,500 MWh, according to AMEA Power.

The agreement supports Egypt's strategy to expand renewable energy integration and reduce dependence on fossil fuels. The project also includes substations and grid connections to integrate stored energy efficiently into the national electricity network.

Establishing Solar & BESS Projects

EETC, Hassan Allam Utilities, alongside Masdar and Infinity Power, signed two Power Purchase Agreements (PPAs) for the construction of solar projects with a combined capacity of 1.2 GW and 720 MWh BESS. The projects include a 900 MW solar plant with BESS in Wahat and a 300 MW solar plant with BESS in Benban.

Increasing Natural Gas Imports

To meet domestic energy demand, Egypt has also tended to increase gas imports, both piped imports from Israel and LNG imports on the spot market. It is worth noting that LNG import amounts have hiked by 97% in the first nine months of FY 2024/25 compared to the same period of FY 2023/24, according to CAPMAS data.

Furthermore, Egypt and Qatar signed long-term contracts for natural gas supply to secure Egypt's domestic energy needs, particularly during summer peak periods, according to the MoPMR.

Egypt has entered several agreements to lease infrastructure to alleviate seasonal demand surges through the regasification of LNG imports. In May 2024, the Egyptian Natural Gas Holding Company (EGAS) agreed with the Norwegian Höegh EviHoegh LNG for the deployment of the floating storage and regasification unit (FSRU) Hoegh Galleon at the Ain Sokhna port.

Moreover, EGAS partnered with US New Fortress Energy in December 2024 to lease the second FSRU at Ain Sokhna in the latter half of 2025. The unit is equipped with cutting-edge technology, boasting a storage capacity of 160,000 m3 of LNG and a regasification capacity of up to 750 (mmcf/d), according to the MoPMR.

Egypt is also strengthening regional partnerships to secure more diverse natural gas sources. A key agreement signed with Cyprus in February 2025 allows importing natural gas from the Kronos and Aphrodite fields to be processed in existing Zohr facilities and then liquefied in the Damietta LNG plant for export to European markets, as stated on Eni's website.

Recently, in May, EGAS signed a 10-year charter agreement with Höegh Evi for the deployment of Hoegh Gandria as an FSRU to Ain Sokhna's Sumed Port. Hoegh Gandria will be deployed in Q4 2026 and will supply up to 1,000 million standard cubic feet per day (mmscf/d) of peak LNG regasification capacity.

Furthermore, May marked the Arrival of Energos Power FSRU at the southern berth at the Tahya Misr station in Alexandria Seaport, with a storage capacity of 174,000 m3. This marks Egypt's second leased FSRU, in addition to the one at SUMED. Efforts are underway to lease two more vessels, which will arrive in succession, raising the total to four ships, according to the MoPMR.

Turning to Fuel Oil

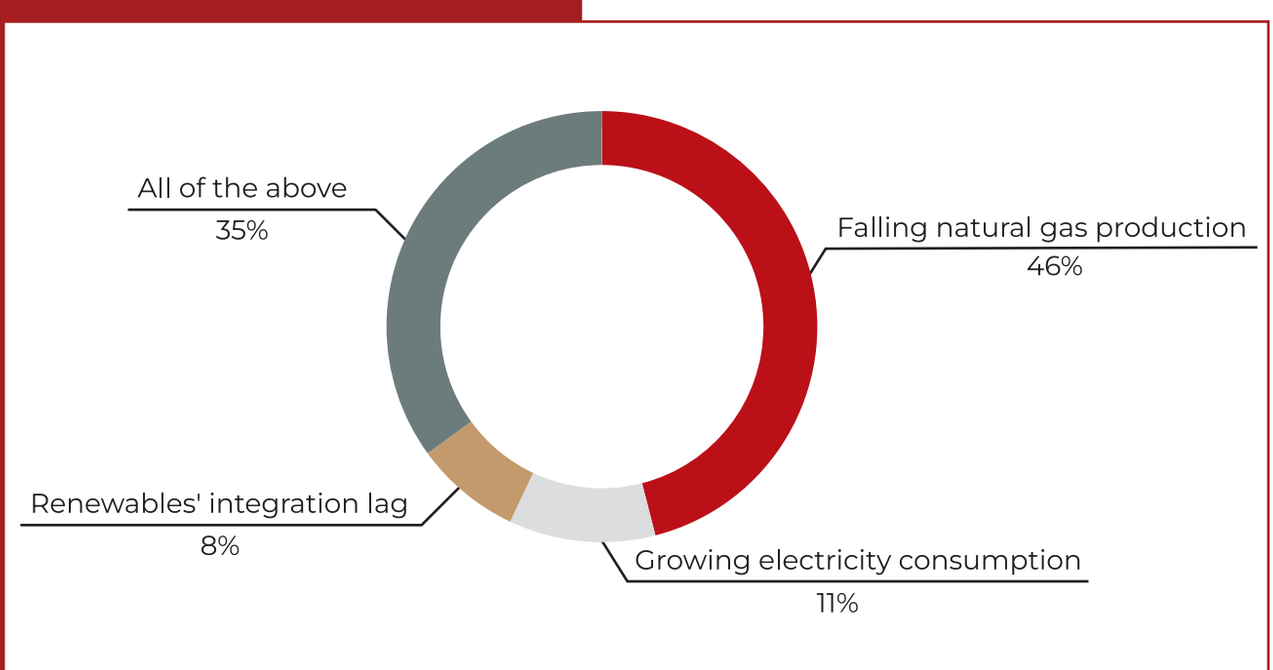
Recent giant discoveries have paved the way for natural gas to become a reliable source of power generation in Egypt. Since FY 2015/16, there has been a reduction in reliance on fuel oil (mazut) usage in power generation. Fuel oil consumption in Egypt hit bottom in FY 2020/21 to record only 1.02 million tons (mmt), according to the Egyptian General Petroleum Corporation (EGPC) annual report.

Starting from FY 2021/22, fuel oil consumption has rebounded by around 500% to reach 6.11 mmt in FY 2023/24 compared to FY 2020/21, as Egypt has witnessed a noticeable increase in reliance on fuel oil to generate electricity, as a result of several factors, including a decline in natural gas supplies and the high cost of imported natural gas.

What's the Gap

Egypt's electricity sector faces a significant challenge, as it struggles to meet the increasing demand from a rapidly growing population and industrialization. This gap is exacerbated by factors like climate change, reliance on natural gas, and inadequate infrastructure. The below pie chart shows that most opinions suggest that the declining natural gas production in Egypt was the main cause behind the electricity cuts in the last two years.

What do you think is the most influential factor behind the electricity shortage in Egypt during the summer?

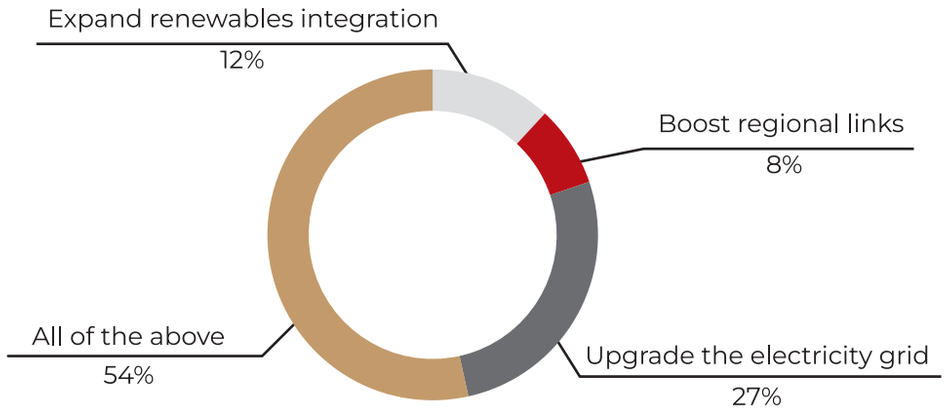


Egypt's natural gas output has been gradually decreasing in recent years, resulting in supply shortages and a greater dependence on imports. In FY 2023/24, domestic production dropped by approximately 13% compared to 2022/23, following a 7% decline in 2022/23 relative to 2021/22.

Recommendations

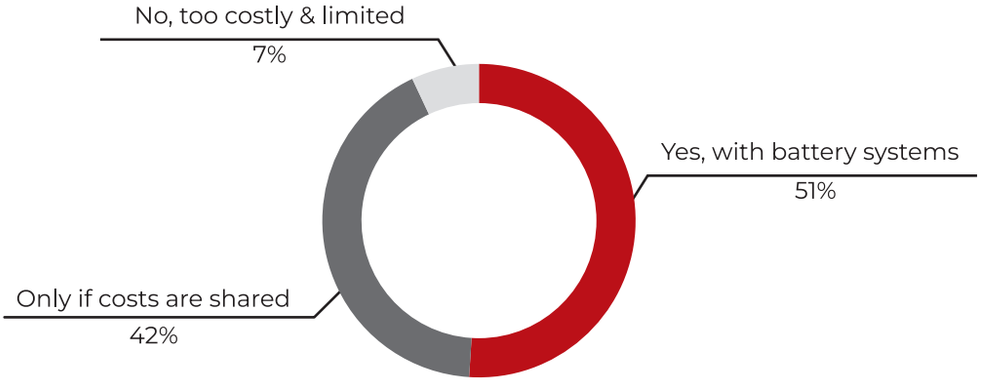
As Egypt grapples with recurring summer power shortages, long-term planning becomes essential. Respondents highlight the need for a multi-pronged approach to address the crisis. While some emphasize upgrading the electricity grid and increasing renewable energy adoption, more than half believe that a combination of all available solutions—including regional power interconnections—is the most effective path forward to ensure future energy security.

Which long-term solution should Egypt prioritize to prevent future summer power shortages?



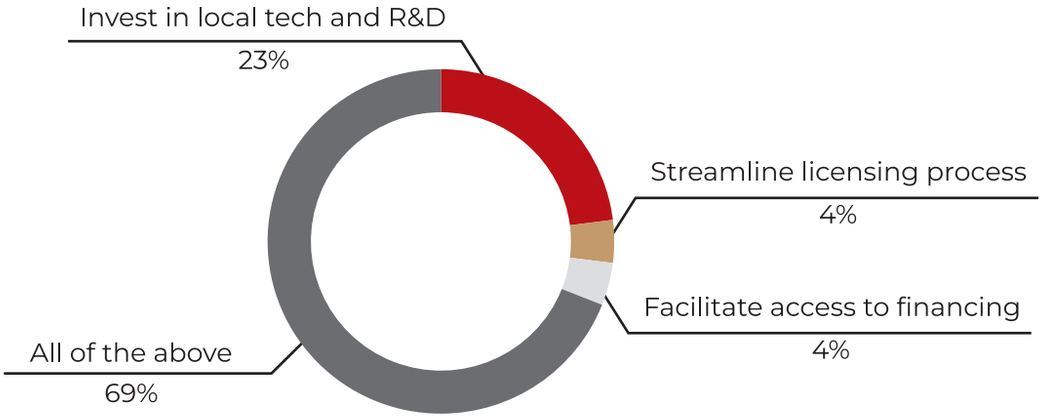
With growing concerns over electricity shortages during peak summer months, in Egypt, rooftop solar panels are emerging as a potential decentralized solution. Over half of the respondents support their adoption, particularly when coupled with battery storage to ensure reliability. A significant portion also agrees, but only if installation costs are fairly shared between the state, private sector, or consumers. Meanwhile, a small minority remains skeptical, citing concerns over cost-effectiveness and scalability.

Should Egypt support rooftop solar panels as an option for solving summer blackouts?



As Egypt seeks to expand its renewable energy capacity, most respondents believe that a combination of efforts is essential to ensure real progress. The majority supports a holistic strategy that includes investment in local technology and R&D, simplifying licensing procedures, and improving access to finance. This broad-based approach is seen as the most effective way to accelerate renewable adoption and enhance the country's long-term energy security.

What's the key to boosting renewables in Egypt and achieving real energy security?



Egypt's electricity sector stands at a critical juncture as it navigates mounting pressures from rising domestic consumption, declining natural gas production, and increasingly extreme summer temperatures. Despite significant strides in expanding generation capacity and investing in renewables, recent summers have exposed structural vulnerabilities in fuel availability, grid reliability, and energy efficiency. Power outages and load shedding have returned, challenging the sustainability of Egypt's energy model.

In response, the government has launched an ambitious strategy focused on diversifying the energy mix, accelerating renewable energy deployment, enhancing regional interconnections, and increasing natural gas imports. Landmark projects such as the Abydos Solar Plant, large-scale battery storage systems, and the Egypt-Saudi interconnection signal a long-term commitment to energy security and sustainability.

However, closing the electricity gap will require more than infrastructure. It demands integrated planning, timely fuel supply, improved grid management, and wider adoption of decentralized solutions like rooftop solar. Egypt's path forward lies in balancing short-term interventions with long-term investments to ensure reliable, affordable, and clean energy for a growing population and economy.

Expert Opinion

The main cause behind the electricity cuts in the last two summers in Egypt is the declining natural gas production, coupled with the inadequate foreign exchange reserves to import LNG.

To address this issue, the state has to accelerate the integration of renewables and green fuels into the national electricity generation grid. Egypt has a wealth of land, sunshine, and strong winds, making it an ideal site for renewable energy initiatives.

The Egyptian state has to prioritize the integration of wind and solar energy into its electricity generation capacities. The government should concentrate on providing a variety of facilities and incentives to attract investments in renewable sources in Egypt and then expand production. This is in addition to paving the way for the uptake of solar energy in residential areas.

The EU is considered a strategic partner to Egypt, and we have to intensify cooperation with it. European countries like Germany have a lot to achieve in the renewables in Egypt. It is considered the leader in Europe for green hydrogen development. Hence, Egypt possesses a great opportunity for partnerships and agreements with the EU, exchanging its competitive advantages, such as affordable labor and abundant renewable energy resources, for European capital and technology transfer.



Mohammed Elhusseiny

Energy Expert in the Mediterranean

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