

Annual report

Ministry of Energy and Mineral Resources

2022

Foreword by the Minister of Energy & Mineral Resources

Accumulated achievements are witnessed in the energy and mineral resources sectors over the years, aligned with the Royal vision and the economic modernisation vision which is centred on the slogan “A Better Future”. The energy sector plays a significant role in achieving the Sustainable Resources growth driver outlined in the economic modernisation vision, through which we are transitioning to green energy sources and developing the energy sector infrastructure, considering the development of the necessary legislation and the promotion of investment opportunities for the sector, while working to reduce the costs of energy supply.

The year 2022 is full of achievements, presented in this annual report, such as petroleum derivatives in Jordan have been secured and sustained at 100% and the share of renewable energy in the electricity generation mix increased to 27%. Jordan has achieved first place in the percentage of installed capacity of renewable energy sources (excluding hydropower) according to the 2022 Arab Future Energy Index (AFEX) report prepared by the Regional Center for Renewable Energy and Energy Efficiency (RCREEE). Analyses, along with smart grid transformation, are being conducted to accommodate additional renewable sources, with an emphasis on the importance of improving the efficient use of energy in various sectors. The ministry has launched numerous programs to support various sectors in the field of energy efficiency.

Strengthening existing electrical interconnections and establishing new interconnection are considered important to reinforce the electrical system, in addition to developing the energy system in Jordan to make it a regional centre for the exchange of energy in all its forms.

In the mineral resources sector, which clearly appears within the high-value industries driver of the economic modernisation vision because of the sector’s major role in the Jordanian economy, seven memorandums of understanding were signed with several companies. These memorandums aim at exploring and mining for strategic minerals to evaluate their reserves and the economic feasibility of exploiting them. Furthermore, the Ministry is marketing a number of other investment opportunities while removing obstacles and challenges to streamline procedures for investors.

At the Ministry of Energy and Mineral Resources, we always believe in the importance of a participatory approach between various sectors and partnership between the public and private sectors, academics, donors and all institutions to reach our vision of securing sustainable energy supply and optimal exploitation of natural resources.

Contents

Institutional framework of the ministry of energy and mineral resources

The primary mission of the Ministry of Energy and Mineral Resources, as an umbrella for energy sector institutions, is to prepare and develop suitable policies and legislation to achieve a sustainable energy supply security and optimal use of natural resources according to global best practices, executed through comprehensive planning for the sector, setting general policies and following up on their implementation to ensure the fulfilment of its mandated tasks

Since the establishment of the Ministry of Energy and Mineral Resources in 1984 until now, the organizational framework of the Ministry has developed as follows:

- 1984
Late 1984, the ministry was established to manage and organize the energy sector by bylaw no. 26 for the year 1985. The ministry was responsible for the overall planning of the sector.
- 2011
In 2011: The Rural Electrification Project was integrated as a unit in the Ministry. The ministry's organizational structure was updated accordingly.
- 2014
The Natural Resources Authority was abolished in accordance with article 3 of law no. 17 for the year 2014 which was established based on law 12 for the year 1968 that regulates natural resources affairs. The Ministry of Energy and Mineral Resources became responsible of the authority's rights and assets except for organizational tasks.
Since then, the ministry has been working on preparing and developing appropriate policies and legislation to achieve sustainable energy supply security and optimal use of natural resources in accordance with best practices.
- 2017
The Energy and Minerals Regulatory Commission was established following law no. 8 of the year 2017. Subsequently, the ministry's authority of granting licenses and issuing permits was transferred to the commission in accordance with article 4/b of the same law.
- 2019
The Ministry of Energy and Mineral Resources was restructured upon bylaw no. 123 for the year 2019. The new structure of the ministry's organizational units aims to achieve the entrusted tasks efficiently and effectively.
- 2021
Pursuant to paragraph A of article 7 of the Administrative Regulation of the Ministry of Energy and Mineral Resources no. 123 of 2019, directive no. 1 of the year 2021 was issued which specifies the functions of the ministry's directorates, units and departments.
- 2022
Administrative directive no. 1 of the year 2022 was issued establishing the tender section, responsible to manage all tender procedures conducted by the ministry

Organizational structure of the ministry of energy and mineral resources

About the Ministry of Energy and Mineral Resources

Vision

To achieve a sustainable supply of energy and optimal use of natural resources

Mission

Preparing and developing suitable policies and legislation to achieve a sustainable supply of energy and optimal use of natural resources according to global best practices.

Core values

- Teamwork spirit
- Knowledge dissemination & use
- Integrity & transparency
- Excellence & Entrepreneurship
- Loyalty & Affiliation

National objectives:

1. Achieving sustainable growth rates to ensure good living conditions for all citizens.
2. Creating an attractive investment environment capable of attracting foreign capital and encourage local investments.
3. Reducing poverty and unemployment levels and build an effective social protection system
4. Improving quality and equity of the provided services to citizens.

Sectoral objectives

1. Diversification of energy sources and forms.
2. Increase the contribution of indigenous resources to the overall energy mix.
3. Increase energy efficiency use in all sectors.
4. Reduce the cost of energy in the national economy.
5. Develop the energy sector system in Jordan to make it a regional centre for energy exchange by all energy forms.
6. Maximizing the added value of exploiting existing mineral ores

Strategic objectives

1. Establishing and reinforcing strategic thinking and governance practices.
2. Diversifying energy sources and its forms.
3. Developing and utilizing local energy sources.
4. Rationalizing energy consumption and improving its efficiency.
5. Increasing investment in the mineral resources sector.
6. Boosting the institutional performance efficiency.

Programmes that contribute to achieving the strategic objectives of the Ministry of Energy and Mineral Resources

Strategic objective	Programmes which contribute to achieving the strategic goals of the Ministry
Establishing and reinforcing strategic thinking and governance practices	<ul style="list-style-type: none"> • Developing the Ministry’s strategies and decision-making mechanisms • Stimulating international cooperation
Diversifying energy sources	<ul style="list-style-type: none"> • Developing the oil sector and opening the oil derivative market for competition • Preserving the security of the natural gas supply • Preserving the security of the electrical energy supply
Developing and utilizing natural energy sources	<ul style="list-style-type: none"> • Expanding the use of renewable energy sources • Expanding the use of oil shale to produce oil and generate electricity. • Development of exploration areas for conventional and unconventional oil and gas exploration
Rationalize energy consumption and improving its efficiency	<ul style="list-style-type: none"> • Residential sector programme • Lighting units • Industrial sector programme • Government buildings sector programme • Tourism sector programme • Exemption programme • Energy training programme • Awareness and educational programme
Increasing investment in the mineral resources sector	<ul style="list-style-type: none"> • Exploration for mineral resources • Geological surveys of the Kingdom • Geophysical studies and surveys • Geochemical surveys “geochemical studies” • Increasing the accuracy and quality of laboratory tests • Updating the seismic observatory
Boosting the institutional performance efficiency	<ul style="list-style-type: none"> • Institutional development • Information and communication technologies • Improving the efficiency of financial performance • Internal monitoring • Human resource development, building and stimulating capacities. • Public relations • Administrative services

Institutions of energy and mineral resources sectors

Oil Sector Institutions

Petroleum and Gas Sector Institutions

Electricity Sector Institutions

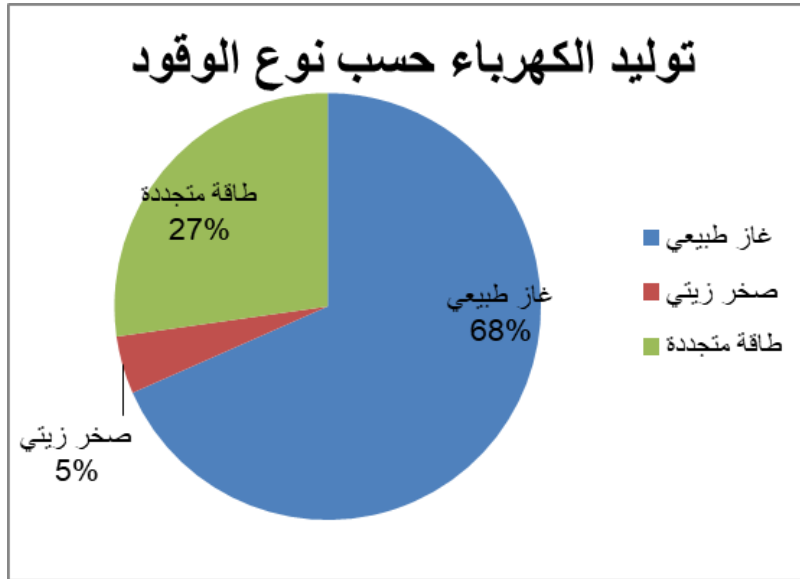
Mining Sector Institutions

Accomplishments of the Ministry of Energy and Mineral Resources

In 2022, notable achievements were realized in the energy and mineral resources sectors, despite facing a multitude of challenges. This report presents these accomplishments in each respective field as follows:

1. Electrical Energy

In 2022, the sources of electricity generation was derived from natural gas, renewable energy, and oil shale. Natural gas dominates the sector, comprising 68%, followed by renewable energy at 27%, with oil shale contributing 5%. This represents a significant shift from 2021 figures, where natural gas constituted 73%, and renewable energy accounted for 26%.



1.1. Natural gas in electricity generation

The average daily natural gas consumption for electric power generation amounted to 340 million cubic feet from the four available sources.

1.2. Renewable energy in electricity generation

The total installed capacity of renewable energy sources reached 2,577 MW, including:

- 1,498 MW: Total installed capacity operational under a power purchase agreement with electricity companies:
 - 614 MW, wind projects
 - 884 MW, PV projects
- 1079 MW: Total installed capacity operational under net-metering or wheeling schemes:
 - 696 MW, net-metering
 - 383 MW, wheeling

Electrical energy generating projects by using renewable energy -direct offers and grants-

2015	2016	2017	2018	2019	2020	2021
1. Solar (2.5 MW) Azraq project / Spanish loan	1. Wind (66 MW) Hussein wind project / Gulf grant	1. Wind (14 MW) Hussein wind project / Gulf grant	1. Solar (50 MW) FRV Solar project	1. Solar (40 MW) AM Solar company project	1. Wind (100 MW) Mass Jordan Renewable Energy Company project	1. Wind (51.75 MW) Abour Energy Company project in Tafilah
2. Solar (2 MW) Azraq project / Spanish debt swap loan	2. Solar (204 MW) 12 energy projects / direct offers		2. Solar (50 MW) Empire Solar project	2. Solar (50 MW) Risha solar project	2. Solar (200 MW) Baynouna solar project	2. Wind (51.75 MW) Daehan wind power company in Tafilah
3. Solar (13 MW) Al Badia Power Generation Company project			3. Solar (51 MW) Local water company project	3. Solar (51 MW) Safawi Green Energy company project	3. Wind (45 MW) Shobak Wind Energy PSC project	3. Solar (50 MW) Philadelphia project (Al-Husainya)
4. Wind (117 MW) Jordan wind company project			4. Solar (92 MW) Sheikh Zayed Solar Energy Complex project/ Gulf grant	4. Solar (5 MW) Azraq solar project / European Union grant		
			5. Solar (10MW) Air force project	5. Wind (89 MWac) Al-Fujeij Wind Energy project		
			6. Wind (86.1 MW) Green Energy company for renewable energy			
Total 134.5 (MWac)	Total 270 (MWac)	Total 14 (MWac)	Total 339.1 (MWac)	Total 235.1 (MWac)	Total 345 (MWac)	Total 153.5 (MWac)

The capacity of operational renewable energy systems, measured in megawatts, under net-meter or wheeling schemes from 2015 to 2022 for each electricity distribution company

MW	2015		2016		2017		2018		2019		2020		2021		2022	
	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter
JEPCO	5.06	24.06	1.14	30.13	24.20	30.21	32.60	70.61	41.6	57	23.235	39.854	34	65	17	49
IDECO	0.00	1.90	1.05	5.96	1.38	33.54	20.37	21.96	6	31.2	5.923	41.14785	1.5	45.6	1.7	37
EDCO	1.00	6.70	8.00	4.00	5.12	12.00	11.78	7.05	13.7	4.8	5.085	9.5646	19.8	38.22	1	14.2
NEPCO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74	15.00	0	0	15	0	12	0

The number of operational renewable energy systems under net-meter or wheeling schemes from 2015 to 2022 for each electric company

MW	2015		2016		2017		2018		2019		2020		2021		2022	
	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter
JEPCO	10	1026	11	862	28	1244	47	1821	79	2812	49	2941	57	6246	50	6038
IDECO	2	234	1	353	2	390	4	936	8	2395	14	4505	5	8692	14	6035
EDCO	1	46	2	951	4	1460	6	280	5	329	5	1512	18	4045	7	2199
NEPCO	0	0	0	0	0	0	0	0	2	1	1	0	1	0	2	0
Total	13	1306	14	2166	34	3094	57	3037	94	5537	69	8958	81	18983	73	14272

The total capacity of operational renewable energy systems, measured in megawatts, under net-meter or wheeling schemes from 2015 to 2022

MW	2015		2016		2017		2018		2019		2020		2021		2022	
	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter	Wheeling	Net meter
Total	6.06	32.65	16.25	72.75	46.95	148.5	111.7	248.12	246.9	356	281.4	446.6	351.6	595.4	382.7	695.9

In 2022, the Council of Ministers granted approval for the establishment of renewable energy projects exceeding 1 MW for new investors or those seeking to expand existing investments. These projects, whether operating under Net-meter or Wheeling schemes, are estimated to match the anticipated consumption of the new or expanded investment. Additionally, the projects adhere to the technical specifications of the electrical grid. The criteria for the new or expanded investment are as follows:

1. The investment should either be a new industrial investment or an expansion of an existing industrial enterprise.
2. Prior to commencing construction of the new investment or expansion, an energy performance evaluation study must be submitted.
3. A minimum of 70% of the workforce employed in the project must be local.
4. The product manufactured must adhere to clauses of local origin, ensuring that the percentage of sales in the local market does not exceed 50%, unless it is a new product.
5. The facility must strictly adhere to the guidelines for net-metering or wheeling schemes, as well as any additional instructions issued by the Energy and Minerals Regulatory Commission.

1.3. Oil shale in electricity generation

Electricity generation from the direct combustion of oil shale is implemented by Attarat Power Company, with a total capacity of 470 MW. The first unit of 235 MW capacity commenced operations on 25/10/2022. Anticipated plans indicate that the second unit is scheduled for operation in the second quarter of 2023.

1.4. Electrical interconnection:

The Jordanian-Iraqi interconnection

- A 400 kV high-voltage transmission interconnector is currently under implementation to establish a link between two countries. This transmission line will connect the Al-Risha station in Jordan to the Al-Qaim station in Iraq, facilitating the export of 150 MW from Jordan to Iraq.
- The agreement for the sale of electricity to Iraq was formally signed on 27/09/2020. The anticipated timeline for the project's operation is set for the fourth quarter of 2024.
- Simultaneously, a 132 kV high-voltage transmission interconnector is being implemented, connecting the Al-Risha station in Jordan to the Rudabah station in Iraq. This transmission line is designed to supply loads in the Rudabah area, estimated at around 40 MW, from the Jordanian grid. The operational commencement for this project is projected for the third quarter of 2023.
- Future plans involve expanding the interconnection's capacity to reach 1000 MW. Achieving this will necessitate the reinforcement of the eastern part of the Jordanian grid through the establishment of 400 kV transmission lines spanning 320 km between Al-Risha and Al-Azraq. Comprehensive studies on the synchronous connection will be conducted following the completion of the initial phase.

Jordanian-Egyptian interconnection

- Since 1999, the electrical grids of Jordan and Egypt have been seamlessly interconnected through a 400 kV submarine power cable spanning the Gulf of Aqaba, with a length of 13 km and a capacity of 550 MW.
- The agreement for the exchange of electricity between Jordan and Egypt undergoes an annual renewal, ensuring the sustained flow of energy across borders.
- To further enhance this cross-border collaboration, plans are underway to increase the interconnection capacity to 1100 MW. The anticipated operation for this expansion is by the end of 2026. Both nations are actively engaged in the necessary preparations and measures to implement this significant increase.

Jordanian – Syrian interconnection to supply Lebanon

- In 2021, an agreement was formalized for the supply of electricity from Jordan to Lebanon, with the transmission route passing through the Syrian grid. Despite being signed, the agreement has not been implemented.

Jordanian-Saudi interconnection

- Comprehensive technical and economic studies, along with the necessary agreements (interconnection agreement, operation agreement, and commercial agreement), have been prepared for the project.
- Ongoing collaboration is in progress between the respective electricity companies of the two countries to finalize the interconnection agreements. The project implementation will start once the agreements are finalised and signed.

Jordanian-Palestinian interconnection

- In July 2022, the Al-Rama 33/132 kV substation was commissioned, enabling the provision of 80 megawatts to the Palestinian side.
- Collaborative efforts are in progress between the two parties to enhance the interconnection's capacity, with plans to double it to reach 160 MW.

2. Energy conservation and efficiency

The Ministry implements various energy conservation and efficiency programs across multiple governorates and sectors. These initiatives are executed in collaboration with the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) and the Department of Electricity and Rural Electrification, and in cooperation with key stakeholders. The programmes encompass:

2.1. Residential sector programme

2.1.1. Several agreements have been established with both Islamic and commercial banks, including Cairo Amman Bank, Capital Bank, Safwa Islamic Bank, and Jordan Islamic Bank. Additionally, collaborations with civil society institutions and local associations, such as cooperatives and charitable organizations, have been formed. These agreements play a pivotal role in facilitating the implementation of residential sector programs, specifically the installation of solar water heaters and photovoltaic (PV) systems. JREEEF extends a 30% subsidy towards the system cost. The programme achievements from the inception of this program in 2020 to 2022 include:

1. Collaborative efforts were undertaken to assess the qualifications of companies specializing in two distinct types of solar heater systems: those utilizing solar pipes and mirror-based technologies. This assessment was conducted in partnership with the Jordan Standards and Metrology Organization (JSMO) and the Royal Scientific Society (RSS).
2. Criteria for selecting beneficiaries and a standardised operating procedure were formulated and officially approved for the installation of solar water heaters and PV systems under this program.
3. An electronic platform was launched, in cooperation with the Ministry of Digital Economy and Entrepreneurship, to receive citizens' inquiries about their compatibility with the programme selection criteria. after designing the program based on adopting specific criteria for the target groups.
4. Since the program's inception until 2022, a total of 4570 PV systems have been installed, with 750 systems added in the year 2022.
5. Since the launch of the program until 2022, 1625 solar water heaters have been installed, including 520 systems that were added in 2022.

2.1.2. A collaborative agreement has been formalised with the Ministry of Planning and International Cooperation (MoPIC) to facilitate the installation of solar water heaters for vulnerable families. This initiative, encompassing a total of 235 systems, is conducted in partnership with the Ministry of Social Development (MoSD). The MoSD is responsible for providing lists of the families targeted by this programme, with the entire cost of the systems being covered through a grant.

- 50% grant from JREEEF at the Ministry of Energy and Mineral Resources
- 50% grant from MoPIC

- 2.1.3. A draft co-financing agreement has been finalized with the United States Agency for International Development (USAID) to fund the installation of 1,200 solar water heaters for vulnerable families. This collaborative effort involves MoSD, with the entire system cost covered by a grant.
- 2.1.4. 150,000 energy-efficient LED lighting units have been replaced and distributed across all governorates through the three electricity distribution companies. In the year 2022 alone, 12,000 lighting units were distributed.
- 2.1.5. Grid-connected PV system installation programme covered by the Rural Electrification Project
- The Rural Electrification Project launched the installation program for grid-connected PV systems in 2019. Each selected beneficiary, drawn from recipients of the National Aid Fund and vulnerable families, received a 2 kW peak capacity photovoltaic system. The program's objectives include expanding the use of renewable energy sources and mitigating electricity costs for the most economically disadvantaged families, achieving the Government's priorities within the “solidarity country”. Key accomplishments in 2022 include:
 1. Successful conclusion of the third phase, encompassing the installation of 1,040 photovoltaic systems across various governorates.
 2. The tender for the fourth phase has been segmented into three tenders, fostering competitiveness in the private sector. The fourth phase will be initiated in 2023, involving the deployment of 800 photovoltaic systems across the governorates of Irbid, Jarash, and Ajloun..

The number of the programme beneficiaries from its launch until the end of 2022 was 6,582.

- In 2023, tenders will be issued for the installation of grid-connected PV systems, each with a peak capacity of (3) kW. This initiative aims to benefit 2000 families of injured military personnel or widows of military personnel.

- 2.1.6. Off-grid PV system installation programme covered by the Rural Electrification Project:

A total of (61) households across the governorates have received an off-grid PV system. The scope of the project encompasses the entire process, from design and supply to installation, operation, and maintenance of the off-grid PV systems. This includes the provision of all auxiliary devices such as storage batteries, inverters, and charge controllers.

- A tender has been initiated for the implementation of off-grid PV systems at Wadi Al-Ghuweir - Wadi Araba Camp in Aqaba governorate. The project, set for execution in 2023, covers the design, supply, installation, operation, testing, and maintenance.
- Initiated the formulation of technical specifications for off-grid PV systems designed for external patrol stations and civil defence centres. These specifications encompass the supply, installation, operation, and maintenance of the off-grid photovoltaic systems, with a comprehensive approach that includes auxiliary devices like storage batteries, inverters, and charge controllers.

2.2. Industrial sector programme

In 2022, the third phase of the Energy Efficiency Technology Support Programme for Small and Medium Industrial enterprises was launched in collaboration with the Jordan Chamber of Industry (JCI). Under this initiative, JREEEF extends support by covering 50% of the energy audit costs for selected factories. Furthermore, the program facilitates financial support for the implementation of energy efficiency measures identified in the audits. Agreements with local Jordanian banks have been established for this purpose, including support for loan guarantees to beneficiary factories. The overarching goal is to reduce production costs within the industrial sector, enhancing its competitiveness. In 2023, the program will initiate energy auditing studies for the beneficiary factories.

Since the inception of the program in 2016 until the end of 2022, JREEEF has achieved the following milestones:

- 92, Industrial facilities actively engaged in the program.
- 39, Industrial facilities underwent comprehensive energy audits.
- 8, Industrial facilities successfully implemented energy efficiency improvement measures according to the findings in the energy audits.
- 8, Industrial facilities secured loans, supported by JREEEF, from commercial banks.

The following achievements were accomplished in 2022:

- 24, Factories submitted applications to enrol in the industrial sector program.
- 10 trilateral cooperation agreements were successfully executed between JREEEF, the participating factories in the program, and JCI.

2.3. Agricultural sector programme

JREEEF is actively implementing the Agricultural Sector Support Programme, facilitating the installation of PV systems in small farms in partnership with the Agricultural Credit Corporation. Under this initiative, farmers are provided with interest-free loans for the installation of PV systems, a cost borne by JREEEF. A total of 164 farms have availed of this initiative since the project's inception until the end of 2022, with 25 farms benefiting in the year 2022.

2.4. Public and governmental buildings

2.4.1. Places of worship

The implementation of the PV systems installation program for religious institutions persists in collaboration with the Ministry of Awqaf and Islamic Affairs and local committees of worship places. A total of 602 worship places, including 16 in 2022, spanning all governorates, have benefitted from the installation of PV systems.

2.4.2. Institutions of public interest

Within the framework of the support project for installing photovoltaic systems in civil society institutions and associations that offer shelter services for persons with disabilities or public benefit, JREEEF successfully completed the installation of PV systems for the following associations in 2022:

- 1- King Hussein Charitable Society.
- 2- Disabled Children's Welfare Charity.
- 3- Royal Society for the Conservation of Nature - the Royal Academy for Nature Conservation building
- 4- The house of the virgin Mary association.
- 5- Al-Dhiaa charity association.

A comprehensive agreement has been formally signed to fully support the installation costs of PV systems for key entities including the Mujib Biosphere Reserve, Azraq Wetland Reserve, the Dana Biosphere Reserve, Dibein Forest Reserve, Friends of Jordan Association, and Jordan Media Institute. This initiative is scheduled for implementation in 2023.

2.4.3. Main municipal buildings

A collaboration agreement has been officially established with the Italian Ministry of Environment and Energy Security to finance the installation of PV systems for the primary buildings of all municipalities. The project will unfold in two phases: the first phase, involving the installation of PV systems for 30 municipalities, commenced in 2022 and is expected to conclude in the first half of 2023. The subsequent second phase entails the installation of PV systems for an additional 70 municipalities. JREEEF is set to undertake the necessary studies for the second phase in the first half of 2023, aiming to complete the implementation of this phase within the next two years.

2.4.4. Health Centres

Efforts are in progress to execute a project involving the installation of PV systems in 17 health centres. This initiative is being carried out in collaboration with the Ministry of Health, with full financial backing from JREEEF. The anticipated timeline for the completion and start of operations for this project is set for the first half of 2023.

3. Rural electrification

The commitment to enhancing electricity access continues through the Rural Electrification Project (Rural Fills). This initiative has played a crucial role in fostering the development of local communities and providing support across various sectors. Key highlights from the project in 2022 include:

3.1. 3.1. The criteria for selecting beneficiaries under the Rural Electrification Project have received approval from the Council of Ministers. These criteria undergo continuous review and assessment, leading to the recent approval of modifications aimed at better addressing the evolving needs of the beneficiaries:

The following points have been added to the criteria:

- Supplying electrical power to clusters comprised of five households.
- Enhancing the capacities of transformer stations established through the Rural Electrification Project over the last decade to address current weaknesses and minimise electrical losses.
- Installing grid-connected PV systems with a peak capacity of 3 kW for the residences of injured military personnel or widows, irrespective of the cause of injury (work-related or due to a chronic illness).
- Modifying the provision for supplying electrical power to cemeteries to include street lighting leading to the cemeteries, regardless of the regulatory authority.

3.2. In 2022, the Rural Electrification Project received a total of 2,792 applications, as follows:

- The Rural Electrification Project has approved the implementation of 2057 sites, incurring a financial cost of 7,830,395 JOD.
- Power delivery has been completed and commissioned for 1024 sites, involving a financial cost of 7,448,072 JOD.

Company	Number of Sites	Financial Cost
JEPCO	360	3,717,190
IDECO	355	1,813,689
EDCO	309	1,917,190
Total	1024	7,448,072

3.3. Project for replacing street lighting units with energy-efficient LED units

The initiative to replace conventional street lighting units with energy-efficient LED units in municipalities stands out as one of the Ministry of Energy and Mineral Resources' pivotal initiatives. Executed in partnership with the Ministry of Local Administration and the Cities and Villages Development Bank, the Rural Electrification Project contributes a substantial five million JOD to be disbursed on annual basis for a duration of seven years. The remaining funds required for the project will be sourced from the municipalities selected for implementation.

The replacement of lighting units has commenced as follows:

- Tender No. 17/R/Works/2019 for Irbid governorate, excluding the Northern Jordan Valley: The total number of installed lighting units is 85,000 units, with an expected project completion date by mid-2023.
- Tender No. 15/R/Works/2019 for the Southern, Northern Jordan Valley, Central, Southern, and Eastern regions: The total number of installed lighting units is 10,000 units, with an expected project completion date by the end of 2023.
- Tender No. 16/R/Works/2019 for the Central region, excluding the Central Jordan Valley and the Azraq area: Replacement of traditional lighting units is scheduled to commence at the beginning of 2023.
- Tender No. 18/R/Works/2019 for the Mafraq, Jerash, and Ajloun governorates: replacement of traditional lighting units is scheduled to commence at the beginning of 2023.

It is expected that the replacement of lighting units will be completed by the end of 2024

4. Oil sector

4.1. Diversifying crude oil sources

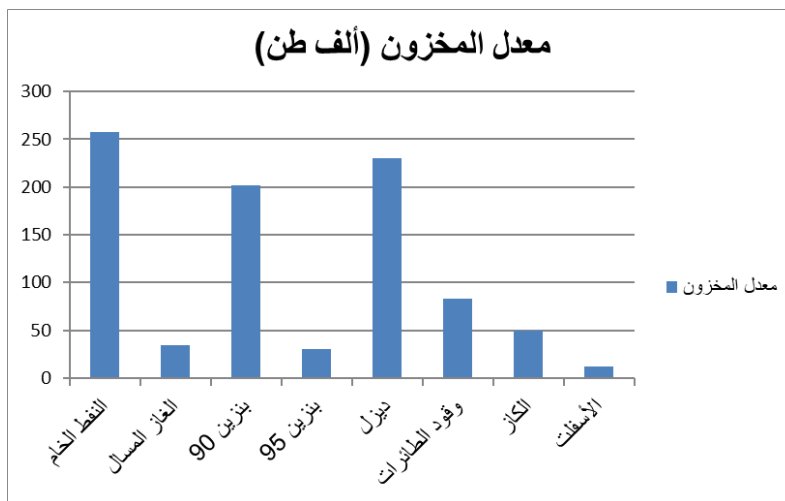
- In 2022, Jordan received a total of approximately 2.45 million barrels of Iraqi crude oil, meeting around 7% of the Jordanian market's demand. This oil was transported through 9543 tanker trucks, in adherence to the memorandum of understanding inked between the Ministry of Energy and Mineral Resources and the Iraqi Ministry of Oil on 28 January 2021.
- The Council of Ministers issued a resolution, on 17 April 2022, endorsing a framework agreement between the Republic of Iraq, represented by the Ministry of Oil, and the Hashemite Kingdom of Jordan, represented by the Ministry of Energy and Mineral Resources. The agreement concerns to the extension of an oil export pipeline through Jordanian territory from the Port of Aqaba. Both the Jordanian and Iraqi sides have jointly reviewed the latest developments associated with the project.

4.2. Petroleum Product Prices in 2022:

- The continuous application of the Petroleum Products Pricing System and the commissions of licensed companies, as defined by Law no. 122 for the year 2019 to regulate the pricing of petroleum products. The Petroleum Products Pricing Committee announces these prices on a monthly basis.
- A Royal decree was issued approving the "Amended Regulation for Petroleum Products Pricing and **the commissions of licensed companies** for the year 2022," as per council of ministers decision No. 9863 dated 28 December 2022. This amendment expanded the reference markets for pricing petroleum products to include the markets of the Arabian Gulf, in addition to Singapore and the Mediterranean Sea. This modification enhances the flexibility in determining petroleum product prices, which will positively affect the final consumer.

4.3. Strategic reserve of oil derivatives

The graph below shows the rate of oil derivatives strategic inventory in 2022/(thousand tons)



5. Natural gas

5.1. Diversifying natural gas sources

- The sources for natural gas supply include the following:
 - Egyptian natural gas (via pipelines).
 - Northern gas (via pipelines).
 - Liquefied natural gas (from the floating liquefied natural gas vessel in Aqaba).
 - Natural gas produced from the Risha gas field.
- The Aqaba Development Company, in partnership with the Ministry of Energy and Mineral Resources and the National Electric Power Company, is actively engaged in the development of the Sheikh Sabah liquefied natural gas terminal. Financed through a concessional loan from the Kuwait Fund for Arab Economic Development, this project entails the construction of a shore-based regasification unit. Additionally, it includes the replacement of the existing floating storage and regasification unit (FSRU) with a floating storage unit (FSU). A tender for the development of the liquefied natural gas port has been issued, and the procedures for issuing and awarding the tender for the floating regasification unit are underway.
- In 2022, the Risha Gas Field supplied approximately 5,382 million cubic feet of gas for electricity generation, averaging 14.7 million cubic feet per day. This accounted for 1.8% of the total electricity generation throughout the year.

5.2. Electricity Generation Using Natural Gas

The daily average consumption of natural gas for electricity generation reached around 344 million cubic feet in 2022. This consumption constituted 68% of the total electricity generation.

5.3. Encouraging the use of natural gas in all sectors

1. An agreement has been established with the JCI and the Jordanian Egyptian Fajr for Natural Gas company to facilitate the development of essential infrastructure for delivering natural gas to industries, extending from the main natural gas pipeline to the factory sites. This will be realized through direct contracts between end consumers and contractors. The agreed-upon mechanism outlines the necessary steps for factories interested in obtaining natural gas, beginning with the submission of their fuel consumption data and required gas quantities, and concluding with the completion of the project works.
2. The Ministry of Energy and Mineral Resources has been tasked by the Prime Minister's Office to initiate the essential procedures for delivering natural gas to cities and industrial zones. A budget of 27 million JOD has been allocated in the ministry's budget for the years 2023, 2024, and 2025 to fund the provision of natural gas to industrial zones. This program aims to take additional steps promoting the utilization of natural gas within the industrial sector and covering the associated expenses of delivering natural gas to industrial cities.
3. The consulting firm METAS ENERGY has successfully concluded the preliminary feasibility study for the project of establishing natural gas distribution networks in Amman and Zarqa. This initiative aims to deliver an economical energy source to consumers, alleviating energy cost pressures, establishing a comprehensive natural gas distribution network, fostering job opportunities for Jordanian labour, and enhancing environmental sustainability.
4. Decision no. 6304, dated March 20, 2022, was issued by the Council of Ministers, approving the transformation of the tax on natural gas, currently set at (3.5%), into a specific tax, with (3.5%) general tax applied on the value. This decision applies after a three-year period for companies that benefited from the exemption on natural gas, as per the Council of Ministers' decision no. 1931, dated 14 December 2018. The 1931 decision granted a three-year exemption from the special tax on natural gas for new companies transitioning from oil to natural gas.

6. Petroleum and oil shale

1. The development and operation of the Hamza Oil Field continue in accordance with the agreement signed with the National Petroleum Company on 27 May 2020. This agreement designed to improve the productivity of the wells in the Hamza Field.
2. Achieving an average daily production of 300 barrels of oil from the Hamza Field, as the amount oil sales valued 9,305,938 JOD to the Jordanian oil refinery.
3. Complete 3D seismic data processing for Hamza Field.
4. The ministry of Energy and Mineral Resources signed an agreement with the National Petroleum Company on 21 April 2022. The agreement intended for exploration and drilling of oil and gas in areas designated by the Ministry, as two wells already drilled in Al-Sarhan development area.
5. Signing a memorandum of understanding to qualify the direct offer submitted by Al-Majarra Company for Oil Shale and Natural Resources, aiming to exploit the oil shale resources in the Lajoun area.

7. Geology and mining fields

7.1. Geophysical studies

- Within the framework of the General Gravity Survey project, gravity values were measured at 138 gravity points across the Dubaydib, Batn Al-Ghoul, and Al-Mudawara regions in the southern part of Jordan. Employing earth gravity survey equipment to implement a precise geodetic measurements, corrections, and calculation of the Bouguer gravity anomaly, leading to database updates. This initiative supports geological surveys and facilitates studies of the Earth's crust and subsurface geological structures.
- In the phosphate exploration project within the Risha area in the northeast of Jordan, spectral gamma-ray logging was conducted for 29 exploration boreholes, a technical report detailing the results was issued.
- Employing the Electro magnetotellurics method; geophysical survey was conducted in the Sarhan oil field. The primary objective of the survey was to generate supportive geophysical maps for identifying optimal locations for new oil well drilling within the Sarhan oil field, successfully leading to the identification of suitable drilling sites.

Providing geophysical study services to applicants, where the following has been done:

1. A Magnetotellurics geophysical survey was conducted in response to a request from the Arab Potash Company within the company's operational areas in the Dead Sea region. The primary objective of this survey was to ascertain the depth of deep groundwater, specifically for the purpose of drilling water wells. A detailed technical report outlining the survey results was subsequently issued.
2. A Magnetotellurics geophysical survey was conducted at the request of the Sumer Geological and Hydrogeological Consulting Company in the Madaba region. The survey aimed to determine the depth of deep groundwater, essential for planning water well drilling. A comprehensive technical report presenting the survey outcomes was released.

7.2. General geological survey project

The geological map of Ras Al-Naqab, at a scale of 1:50,000, has been successfully printed and produced. With this, all geological maps at the same scale across Jordan has been produced. Additionally, comprehensive field geological survey and office activities have initiated for the Qasr Burqu' Plate at a scale of 1:100,000.

7.3. The General and Detailed Geochemical Survey Project for the Kingdom

- Preliminary geochemical analysis of rare and radioactive elements within the Tubayliyat Member in the southeast part of Jordan.
- Compilation of an initial report highlighting the outcomes of sample analysis from boreholes in the Hiswa Formation, indicating potential concentrations of gold, ruthenium (Ru), and osmium (Os) (platinum group) in the southern region of Jordan.
- Conducting geochemical studies aimed at identifying optimal methods for purifying silica sand ore to enhance its purity within the Disi Formation (Ras Al-Naqab region).
- Completion of an advanced report detailing the findings from comprehensive geochemical surveys of gold deposits in Jabal Al-Mubarak in the southern region of Jordan.
- Preparation of a detailed report assessing the impact of Loss on Ignition (L.I.O) on the purity of Jordanian silica sand, based on initial laboratory analysis by the Canadian company SGS for samples of Jordanian silica sand.
- Preparation of a detailed report on the impact of Loss on Ignition (L.O. I) on the purity of Jordanian silica sand based on the initial report of laboratory analysis by the Canadian company SGS for samples of Jordanian silica sand.

7.4. Jordanian Geological Museum

- The Jordanian Geological Museum welcomed two delegations of school students during an educational trip.
- In collaboration with educational institutions, the Ministry prepared rock and mineral samples, along with illustrative materials showcasing the geology of Jordan and geological maps. This initiative aimed to establish mini geological museums in three schools: Bushra mixed secondary school for girls, Tunis Garden preparatory school in Irbid, and Kamaliyah secondary school for girls.

7.5. Investment opportunities in the field of mineral resources

- Phase One of the Phosphate Exploration Project in Al Risha area of Northeast Jordan, initiated in December 2021 and concluded in September 2022, encompassed exploration activities over a targeted area of 90 km². A total of 55 exploration boreholes were drilled, accumulating a length of 1240 meters. The analyses of 1190 samples were carried out in the laboratories of the Ministry of Energy and Mineral Resources.

The exploration studies unveiled highly promising concentrations and quantities of phosphate minerals in Al Risha area, boasting P₂O₅ levels reaching up to 36%. Additionally, the concentrations of impurities remained within internationally acceptable limits. This area proves to be of significant investment value, further enhanced by the presence of notable concentrations of rare earth elements such as uranium and thorium. The initial geological reserves for phosphate minerals, estimated at approximately 700 million metric tons, exhibit an average thickness of high-quality layers surpassing 6 meters. These deposits are situated at relatively shallow depths, averaging around 11 meters from the surface, thereby expanding investment prospects, particularly in downstream industries.

- The Project for Prospecting Metallic Elements and Their Ores in SUMR ET-TAIBA Mountains/Wadi Araba

The project has initiated fieldwork of exploration and survey activities in the designated project area. The focus is on the collection of surface geochemical samples from the anomaly ARAGEO-02. This step is crucial in evaluating the feasibility of formulating a prospecting plan to assess the quality and thickness of ores while estimating reserves in the identified areas. The ultimate objective is to showcase these valuable resources to potential investors in the mining sector.

7.6. Mineral Resources Exploration Regions Marketing Project:

Throughout 2022, the Ministry inked 7 MoUs with various companies, focusing on the exploration and surveying of strategic minerals. The primary objectives include assessing mineral reserves and evaluating the economic feasibility of their exploitation. The table below provides details on these significant MoUs:

	Company Name	Project	Signing Date	Region	Area	Duration
1	New Environmental Elements Company	Rare Earth Elements Exploration	12/1/2022	Dubaydib - Southern Jordan	2400 sq. km	10 years
2	Solvest Company	Copper Exploration	13/4/2022	Abu Khushaybah - Wadi Araba Ghor Fifa - South of the Dead Sea	Abu Khushaybah 20 sq. km Ghor Fifa 25 sq. km	12 months
3	Solvest Company	Gold Exploration	5/6/2022	Abu Khushaybah - Wadi Araba	155 sq. km	14 months
4	Jordan Integrated Mining and Exploration Company	Copper Exploration	5/6/2022	Dana	78 sq. km	16 months
5	Tajanus Company for Ownership and Business Projects	Preparation of Mineral Map	21/4/2022	-	-	24 months
6	Arab Mining Company	Lithium Exploration		Finan	35 sq. km	12 months
7	Arab Mining Company	Gold Exploration		Jabel Mubarak - Southeast of Aqaba	50 sq. km	12 months

The ministry is actively advancing various investment prospects within the mineral resources sector, with a specific focus on phosphate ores in Al Risha region, potash ores in the Lisan-Dead Sea region, and copper ore in the Wadi Malqa region. Anticipated developments include the signing of multiple memorandums of understanding for the exploration and mining of these ores and mineral resources throughout the year 2023.

7.7. Investment opportunities in the Mineral Resources Sector

- Engaged in the reclassification of mining industries, encompassing both extraction and processing sectors, in collaboration with the Energy and Minerals Regulatory Commission.
- Released the comprehensive 2021 performance report for the Jordanian mining sector, available in both Arabic and English languages.
- Launching an electronic platform dedicated to handling investment requests in petroleum, oil shale, and strategic minerals.

8. Presenting and maintaining information on petroleum, oil shale and mineral resources

The Ministry of Energy and Mineral Resources collects, presents, and preserves data on petroleum, oil shale, and mineral resources. This comprehensive effort spans numerous studies conducted in diverse regions of Jordan, dating back to the late 1940s to the present day. A dedicated data bank catalogues the wealth of information derived from projects and studies conducted by various Ministry directorates and affiliated companies in the natural resources. Additionally, Geographic Information System (GIS) software is employed to create detailed maps of mining projects.

The ministry extends its services to a diverse range of stakeholders, encompassing public and private institutions, companies, researchers, and university students. These services involve the provision of a rich array of technical reports and maps tailored to meet the distinct needs of these entities.

Number	Subject	Count
1	Paper geological maps	448
2	Digital geological maps	48
3	Geological reports	325
4	Petroleum reports	5,628

9. In the field of Laboratory Analyses

The laboratories of the Ministry provide their services by conducting all the chemicals and mineral analyzes and examinations of the various natural rock samples for the public and private sectors, where the following was done in 2022:

- Renewing the accreditation of the 15 laboratory tests carried out by the Ministry after the external evaluation process by the Jordanian Accreditation Unit according to ISO: 17025/2017.
- Updating equipment's of the Laboratory and Quality Directorate, as the Ministry's laboratories were provided with the following devices:
 - Ball Mill device for grinding samples to increase the productivity and efficiency of the grinding process and the number of samples prepared in the sample reception division
 - The fusion device of the XRF laboratory.
 - A device for determining element ratios (carbon, hydrogen, nitrogen, and sulfur) for solid and liquid organic samples.
 - Sieving device by suction (JET AIR) and device to determine the degree of whiteness and brightness of metals.

Number of samples and analyses that have been conducted by the divisions of the Laboratories and Quality Directorate until the end of 2022:

Field	Number of analyses	Number of samples
Concentration of Raw Materials and Sample Preparation	1826	Total number of samples
Organic geochemistry	64	2195
Rock and soil mechanics	653	Total number of analyses
Chemical and mineral analyses	1761	4046

10. Earthquake monitoring

- 100% coverage of seismic activity
- In 2022, a total of 965 seismic events were recorded, categorized as follows:
 - 138: Local seismic events.
 - 238: Regional seismic events.
 - 589: Global seismic events.
- The Civil Defense and Crisis Management received 365 daily reports on seismic activity, earthquake location maps for local earthquakes. In addition, special reports for felt earthquakes are prepared at the time of occurrence, detailing their magnitude, expected effects, and any subsequent aftershocks.
- 75% of the natural vibration points for the seismic hazard study area in the Petra region and its surroundings were successfully recorded by the end of 2022.

- The earthquake monitoring station in the Wadi Araba region, situated within the Wadi Araba Dam, was successfully established, installed, and operated. It has been integrated into the national network of monitoring stations. Additionally, efforts were directed towards maintaining and sustaining the entire national monitoring network. This involved ensuring the functionality of PV systems, data transmission systems, field monitoring devices, and upgrading components as needed, including the replacement of battery energy storage systems.

11. Planning and institutional development

11.1. Economic modernisation Vision

The Economic Modernisation Vision revolves around the slogan "A Better Future" and is underpinned by two strategic pillars: achieving accelerated growth by unlocking the full economic potential and enhancing the quality of life for all citizens. Central to this forward-looking vision is a commitment to sustainability, serving as a fundamental cornerstone for the nation's progress.

The Economic Modernisation Vision supports the energy sector's vision, which is to achieve a sustainable supply of energy and optimal use of natural resources.

The energy sector falls under the Sustainable Resources driver of the Economic Modernisation Vision. Under which relies 8 main initiatives and resulting in 39 identified priorities within this driver.

Main Initiatives for the Energy Sector:

1. Developing the legislative environment for the energy sector.
2. Transitioning towards clean energy usage.
3. Investment opportunities and enhancing partnerships with the private sector.
4. Reducing energy supply costs.
5. Promoting investment opportunities in the energy sector.
6. Advancing the infrastructure of the energy sector.
7. Enhancing environmental sustainability in the energy sector.
8. Improving the efficiency of the electrical system.

The mineral resources sector is part of the High-Value Industries driver of the Economic Modernisation Vision. Under which relies 2 main initiatives and resulting in 6 identified priorities within this driver.

Main Initiatives for the Mineral Resources Sector:

1. Establishing a regulatory framework for natural resources.
2. Encouraging investment in national mineral resources.

11.2. Energy Sector Planning:

- Establishing an electronic system to track the progress of projects funded by donor organizations in the energy sector. This system aims to monitor the advancement of each project, ensuring efficient project management and preventing duplication in project implementation.
- Publishing the Jordanian Energy Balance for the year 2021 in both Arabic and English.
- Issuing a progress report on the strategic projects of the energy sector, covering the progress in comprehensive strategic projects within the energy sector strategy (2020-2030). The report includes updates to the Action Plan of the Energy Strategy (2020-2030), aligning it with the latest developments in the sector.
- Updating emergency plans for sector institutions in collaboration with the Crisis Management Center.
- Contributing to the preparation of the coordinated national plan for dealing with hazardous materials in collaboration with the Crisis Management Center.
- Updating the coordinated national plan for dealing with unusual weather conditions.
- Collaborating with the National Security and Crisis Management Center in preparing the coordinated national plan for dealing with power outages.

11.3. Institutional planning

1. Developing the ministry's strategic plan, including the formulation of objectives at all levels and the associated performance indicators.
2. Preparing and evaluating the executive plans for the regulatory units according to the strategic plan monitoring and evaluation system.
3. Issuing quarterly executive plans assessment reports in collaboration with regulatory units through the Monitoring and Activation Team.
4. Monitoring the progress of initiatives related to the Economic Modernisation Vision for the energy sector.

11.4. Managing relations with partners

1. Implemented a study to assess partner happiness in 2022, achieving a partner happiness rate of 87.7%, with a slight increase from 87.4% in 2021.
2. Established and maintained 4 committees and councils for collaboration with the public and private sectors, as well as universities, in the areas of energy and mineral resources.

11.5. Managing relations with service recipients

1. Released the revised service guide for the years 2022-2023 along with updated service cards.
2. Executed a study to gauge the satisfaction of service recipients, resulting in a satisfaction rate of 92.8% for the year 2022, compared to 92.5% in 2021.

Visitors to the Customer Happiness Office

The Customer Happiness Office received 4,291 customers, categorized as follows:



- **Bekhedmetkom platform**

- The Ministry handled 2,032 requests through the Bekhedmetkom platform with a 100% response rate, distributed as follows:
 - ✓ 1666 Complaints
 - ✓ 325 Ask the government
 - ✓ 31 Suggestions
 - ✓ 9 Complements
 - ✓ 1 Report

The Ministry achieved a 78% satisfaction rate among users of the Bekhedmetkom platform.

11.6. Electronic services

Free of charge Services

Number	service	orders
1.	Requesting a PV system for the beneficiaries of the National Aid Fund	1520
2.	Requesting electricity access covered by the Rural Electrification Project	166
3.	Exempting energy saving systems, devices and equipment	925
4.	Exempting the inputs of solar water heating systems	14
5.	Exempting the inputs of PV systems	987
6.	Request form for university student internship for graduation requirements	3
7.	Request form for fresh-graduate engineers training	39
8.	Information requests	34
9.	Geological maps and reports	100
10.	Request for obtaining / renewing a license for practicing energy auditing activity.	6

Charged services.

Number	service	orders
1.	Laboratory tests	227
2.	Purchasing tender documents	108
3.	Digital maps	1

11.7. Knowledge management and innovation

- Launching the Ministry's Innovation Strategy for the years (2022-2024).
- Execution of two dedicated internal training programs titled "Innovative Administrator" engaging 30 Ministry employees. Supported by the Jordanian-German Energy Partnership, these teams are addressing 4 projects that represent challenges encountered by the Ministry. Their goal is to devise innovative solutions to these challenges, with an average success rate from the two training programs reaching 81.7%.
- Formalizing an agreement to establish Technology and Innovation Support Centers (TISCs) in collaboration with the Directorate of Industrial Property Protection under the Ministry of Industry, Trade, and Supply.
- Conducting 11 awareness lectures on various topics according to the lecture holding methodology, with the following achievements:
 - The knowledge impact rate of the lectures reached 97.4% during 2022, compared to 98.0% in 2021.
 - The average attendance rate of employees was 39 employees per lecture.
- Assessing the Morning Knowledge newsletter impact, including the extraction of the following key indicators
 - The employee satisfaction rate with the Morning Knowledge newsletter reached 95.8% during 2022, compared to 95.5% in 2021.
- The general awareness rate of the concept of knowledge reached 98.4% during 2022, compared to 94.4% in 2021.

11.8. **Right to Access Information Law**

- Responding to 38 electronic information requests, with an average response time of 1 day.
 - 97.6% the satisfaction rate with the service (Information Requests Follow-up) reached in 2022.
 - 100% percentage of requests accepted by the Ministry.
 - 100% percentage of responded requests.
- The Information Requests Follow-up Committee updated the frequently asked questions (FAQ) as per information requests on the Ministry's website. The FAQ shows a total of 17 questions, incorporating 5 new questions.
- The Information Requests Follow-up Committee organized the following activities:
 - The Information Coordinator conducted training sessions for employees of the Customer Happiness Office, receptionists, department staff, committee members, and officers of the activation and follow-up team within organizational units. The training covered the governance of the right to access information and guidelines on handling information requests.
 - Celebrating Right to Access Information Week in conjunction with the International Right to Know Day, including:
 - Disseminating awareness messages about the right to access information via email to employees.
 - Distributing informational brochures about the right to access information to Ministry employees and several surrounding official institutions and ministries.
 - Awarding the organizational units that received the most questions and responded the fastest, as well as awarding the committee members, by the Secretary-General.

11.9. International cooperation

The following memorandums of understanding and agreements have been signed: -

- Memorandum of Understanding in the field of Energy and Minerals between the Ministry of Energy and Mineral Resources in the Hashemite Kingdom of Jordan and the Ministry of Industry and Trade in the Czech Republic.
- Memorandum of Understanding with the Egyptian side to enhance cooperation in the areas of training and exchange of expertise in the field of mineral resources, petrochemical industries, oil, and natural gas.
- Memorandum of Understanding in the mining sector between the Ministry of Energy and Mineral Resources in the Hashemite Kingdom of Jordan and the Ministry of Energy and Minerals in the Sultanate of Oman.
- Memorandum of Understanding in the field of training between the Ministry of Energy and Mineral Resources and the Prince Hussein bin Abdullah II Academy for Civil Protection under the Public Security Directorate.
- Memorandum of Understanding in the areas of energy policies, renewable energy, and energy conservation between the Ministry of Energy and Mineral Resources and the German Jordanian University.

MENA-Europe Future Energy Dialogue (MEFED) regional conference:

Under the Royal Patronage, the MENA-Europe Future Energy Dialogue (MEFED) a regional conference was organized in cooperation with the Federal Government of Germany and the Jordanian Ministry of Energy and Mineral Resources.

The conference was attended by 18 ministers from various countries and more than 1000 experts from all energy sectors representing 40 countries.

The conference aimed to create a conducive environment for new initiatives in bilateral and regional cooperation, fostering the expansion of renewable energies, enhancing energy efficiency, mitigating climate impact, and advancing the development of green hydrogen.

At the conference, the "Dead Sea Declaration" was formalized to align the efforts of all participating nations toward the conference's goals. The declaration focuses on implementing projects aimed at reducing emissions and addressing the impacts of climate change, fostering cooperation among the involved countries. Serving as a cornerstone, the Dead Sea Declaration aims to facilitate knowledge exchange and encourage collaboration through initiatives such as electrical interconnection and green hydrogen projects in the Middle East and Europe.

Germany Visit:

A visit was made to "50 Hertz Company," one of the largest electricity transmission companies in Germany, which operates the electricity transmission system in northern and eastern Germany. The company is a pioneer in integrating renewable energy into the power grid.

Discussions took place to explore energy cooperation initiatives with the German government, focusing on the execution of an electrical interconnection project spanning the Middle East and North Africa. The goal is to foster integration among the participating nations and bolster energy security in the region.

A meeting with "Niiversity," the educational partner of the German Energy Academy in Jordan (GEA - Jordan), was held to discuss the development of the academy.

COP 27 Climate Conference:

The COP 27 Climate Conference included several meetings with the Minister of Energy and Mineral Resources, Dr. Saleh Al-Kharabsheh, as follows:

- Minister of Energy and Mineral Resources, Dr. Saleh Al-Kharabsheh, discussed with the Egyptian Minister of Electricity and Renewable Energy, Dr. Mohamed Shaker, the progress of the project of increasing the capacity of the Jordanian-Egyptian electricity interconnection line and ways to enhance cooperation between the two countries in the field of electricity.
- Minister of Energy and Mineral Resources, Dr. Saleh Al-Kharabsheh, discussed with the Egyptian Minister of Petroleum and Mineral Resources, Engineer Tarek El Molla, the procedures for studying the possibility of utilizing infrastructure in the natural gas sector between the two countries to reduce energy costs. They also discussed bilateral cooperation in the field of petroleum and mineral resources, especially the memorandum of understanding signed by the two parties during the Future Energy Dialogue Conference in the Dead Sea region last June.
- Minister of Energy and Mineral Resources, Dr. Saleh Al-Kharabsheh, met with Angela Wilkinson, the Secretary-General and CEO of the World Energy Council. Both parties emphasized the importance of joint work in the field of energy transition and the need to promote Jordan as a centre for green energy.
- A dialogue session titled "Economics of Green Hydrogen" was held as part of the COP 27 conference in Sharm El-Sheikh. Minister of Energy and Mineral Resources, Dr. Saleh Al-Kharabsheh, emphasized that green hydrogen is the fuel of the future and that work on green hydrogen projects should begin by utilizing the existing infrastructure.

- The Ministry of Energy and Mineral Resources signed a memorandum of understanding with the Danish company A.P. Moller-Maersk for cooperation in the production of green maritime fuel. This aligns with Jordan's direction to expand clean energy sources and enhance local energy sources in the overall energy mix.
- The governments of Jordan and the United Arab Emirates signed a memorandum of understanding for cooperation in the field of renewable energy on the sidelines of the United Nations Climate Change Conference 2022 (COP 27) held in Sharm El-Sheikh, Egypt.
- A Jordanian-Belgian meeting was held to enhance bilateral relations in the field of energy, especially concerning electricity interconnection projects and hydrogen projects.
- Participation in a panel discussion titled "Accelerating Action for Integration between Energy, Water, and Food Sectors in the Context of Climate Change," organized by the Food and Agriculture Organization (FAO) within the framework of the COP 27 conference. Eng. Shorouq Abdelghani, on behalf of the Minister of Energy and Mineral Resources, presented Jordan's position on the integration of the energy, water, and food sectors. She also highlighted Jordan's initiative, "Climate and Refugee nexus" and the importance of prioritising financing for refugee-hosting countries due to its impact on resource utilization.
- As part of the COP 27 conference, the Ministry of Energy and Mineral Resources participated in a panel discussion on the achievements of renewable energy and energy efficiency in Jordan, as well as future plans. Eng. Yacoub Marrar, the Director of the Renewable Energy Directorate, presented the continuous of Jordan pioneering in the field of renewable energy in 2021 at the regional level. Jordan ranked first among Arab countries in terms of the percentage contribution of renewable energy (excluding hydropower).

Norway Visit:

Jordan and Norway agreed to sign several memorandum of understanding for cooperation in the fields of green hydrogen, renewable energy, and exploration of oil and gas. During the Jordanian delegation's visit to the Kingdom of Norway, discussions were held with Norwegian officials to explore mechanisms for implementing cooperation programs to achieve the goals related to energy security, diversification of sources, sustainability, and to establish Jordan as a regional hub for exporting green energy.

Participation in the Seventh International Forum for Investment in Renewable Energy and Energy Efficiency:

During the conference, it was emphasized that, Jordan is currently looking to maximize the utilization of its available renewable energy sources by taking several steps that enhance the ability to harness these sources without conflicting with the technical limitations of generating more electricity from fluctuating renewable energy sources. This is achieved through the necessary supporting technologies to enhance their stability and store excess electricity.

12. Electronic readiness

- Providing 92% of the staff with modern computers and 98% of these devices with internet and e-mail services
- Number of electronic systems: 18 electronic systems and as follows:

External systems

1. The Unified Financial System (GFMIS)
2. General Inventory Management System (GIMS)
3. Ebanking System
4. Jordanian Unified Procurement System
5. Messaging System
6. Unified Human Resources System
7. Unified Human Resources Archiving System

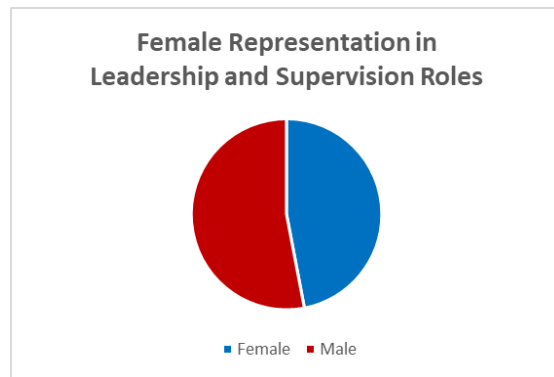
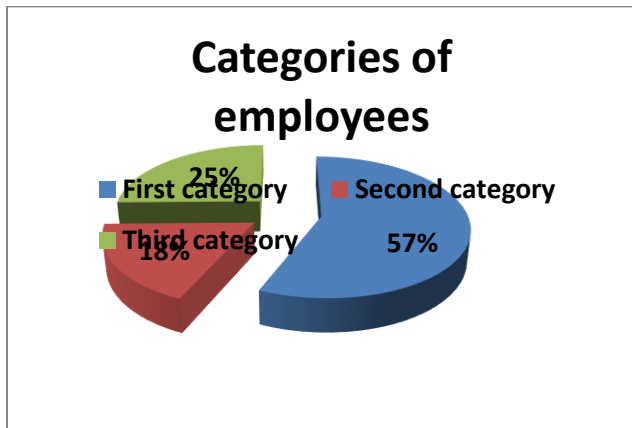
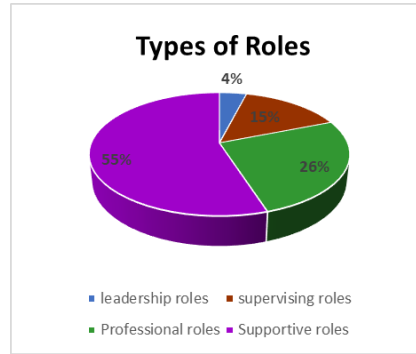
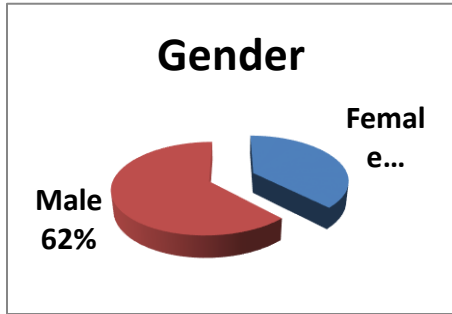
Internal systems

1. Salaries System
2. Employee Affairs System Oracle
3. Employee Affairs System VB
4. External Ministry website
5. Internal gate
6. General Court System
7. Shift Monitoring System
8. Comprehensive Computer System
9. System of Tracking and Evaluating the Strategic Plan
10. Government Accelerators System
11. Guarantees System

13. Human resources

13.1. Workforce and credentials:

- The number of Ministry employees by the end of 2022 reached (384), distributed as follows:



- The employee happiness rate for the year 2022 reached 89.6%, compared to 88% in 2021.

13.2. Training and development:

- Implementation of 110 training programs during the implementation of the training plan for 2022 at a rate of approximately 90.5%
- Training 28 engineers within the engineer training program supervised by the Ministry of Public Works and Housing
- Training 28 recent graduate engineers within the agreement signed with the Jordanian Engineers Association for a year or six months.
- Training 64 geologists through the Jordanian Geologists Association.
- Training of 40 university graduates (from various university specializations applicable with the nature of the Ministry's work) within the Ministry's directorates
- Training 19 university students within the Ministry's directorates (Non-paid).
- Employee Bahjat Al-Adwan from the Natural Resources Projects Directorate has been awarded the Ideal Employee Award in the Civil Service for the supervisory category, achieving the first place at the national level.

13.3. Media and Communication

Preparing the media strategy for the Ministry of Energy and Mineral Resources for the years 2022-2023, including fields focusing on highlighting the ministry's identity and marketing it, as well as strengthening relationships with stakeholders through approved channels and activities carried out by the ministry in 2022, including:

1. Publishing all news covering the ministry's achievements and daily activities.
2. Responding to inquiries from journalists and media professionals regarding energy sector affairs.
3. Producing educational videos about the mineral resources sector to shed light on the importance and investment value of mineral commodities.

The ministry owns 3 accounts on social media platforms:

- Facebook: MEMR1GOV
- Twitter: @memrjo
- YouTube: memrjordan1966

The 2022 energy sector in numbers

1.	9471 ktoe	Quantities of primary energy consumed in Jordan
2.	217 kgoe / 1000\$	Energy intensity in 2021
3.	3523 million JOD	Cost of imported energy
4.	1821 kWh/individual	Rate of electrical energy consumption of individuals
5.	838 ktoe	Rate of energy consumption of individuals
6.	99%	Percentage of electricity access
7.	32 %	Contribution percentage of local sources to electricity generation
8.	27%	Contribution percentage of renewable energy to electricity generation
9.	68 %	Contribution percentage of natural gas to electricity generation
10.	5%	Contribution percentage of oil shale in electricity generation
11.	2577 Megawatts	Total installed capacity of power generation projects from renewable energy sources
12.	1498 Megawatts	Capacity of projects from which the generated electric power is sold to electrical companies
13.	1079 Megawatts	Capacity of renewable energy systems under net meter and Wheeling schemes
14.	4	Number of natural gas supply sources
15.	100%	Percentage of securing the supply of crude oil and oil derivatives
16.	40	Number of supply days for crude oil stock
17.	30	Number of supply days for liquidized petrol gas stock
18.	60	Number of supply days for petrol 90 stock
19.	70	Number of supply days for petrol 95 stock
20.	60	Number of supply days for diesel stock
21.	344 million ft ³	Average quantities of natural gas consumed per day for the generation of electric power from the four sources available
22.	10.96 million barrels of oil	Quantities of crude oil that were imported through the port of Aqaba.
23.	2.45 million barrels	Quantities of Iraqi oil imported to the Hashemite Kingdom of Jordan
24.	300 barrels	Daily production in Hamza field
25.	32 million ft ³	Productive capacity of Al-Risha gas field
26.	24 million ft ³	Average daily quantities of consumed natural gas in industries
27.	1,040	Number of solar energy systems with a capacity of (2) kilowatts installed for families benefiting from national aid covered by the Rural Electrification Project in the first and second phases
28.	25	Number of renewable energy systems (Photovoltaic) installed for small farmers within the agricultural sector project with the Agricultural Credit Corporation

29.	750	households benefited from JREEEF support and installed PV system.
30.	520	households benefited from JREEEF support and installed a solar water heater.
31.	12000	lighting unit distributed with support from JREEEF.
32.	16	PV system installed under the worship places program in collaboration with the Ministry of Awqaf and Islamic Affairs.
33.	92	industrial facility participated in the industrial program in cooperation with the Jordan Chamber of Industry. (Accumulative)
34.	39	industrial facility conducted energy audit study. (Accumulative)
35.	8	number of industrial facilities that implemented energy efficiency measures according to the outputs of energy audit studies. (Accumulative)
36.	95,000 units	number of lighting units installed for the project replacing traditional street lighting units with energy-efficient ones.
37.	2057	number of sites approved for implementation under the Rural Electrification Project.
38.	4046	Number of chemical and mineral analyses and tests.
39.	965	Number of earthquakes detected.
40.	97.6%	Satisfaction rate of information requests service recipients.
41.	5	Number of automated electronic payment services.
42.	18	Number of electronic systems in the ministry.
43.	11	Number of awareness lectures.
44.	30	employee from the ministry received specialized training (Innovative Administrative).
45..	87.7%	Partner satisfaction rate.
46.	92.8%	Customer satisfaction rate.
47.	95.4%	Budget performance ratio (current expenditures).
48.	88.5%	Budget performance ratio (capital expenditures).
49.	38	Number of information requests.
50.	One day	Average response time for information requests.

Special indicators in numbers

Crude oil and oil derivative imports during the period (2018-2022) Thousand tons

Year	Kerosene	Aviation fuel	Petrol	Diesel	Liquefied gas	Crude oil
2018	-	67	964	1145	357	2366
2019	-	305	977	963	432	2321
2020	4.8	0	773	910	409	2074
2021	23	16	899	914	377	1757
2022	-	74	911	1098	475	1805

Changes in consumption of oil derivatives during the period (2018-2022) Thousand tons

Oil derivatives Year	Asphalt	Fuel oil	Diesel	Kerosene	Aviation fuel	Petrol	Liquefied gas
2018	168	515	1672	69	412	1410	429
2019	176	132	1482	95	462	1411	478
2020	135	145	1313	83	137	1139	463
2021	96	176	1365	77	211	1342	438
2022	90	189	1596	69	215	1365	480

Local production of crude oil and gas between 2018 - 2022

Year	(barrels) Oil production	Gas production (billion cubic feet)
2018	5084	3.3
2019	0	3.5
2020	9714	5.3
2021	107880	6.51
2022	94675	5.38

Developments in electrical energy production and the maximum load of the electrical system during the period (2018-2022)

Year	Generated electrical energy kWh	Maximum load MW
2018	20476	3205
2019	20995.8	3380
2020	20952.8	3630
2021	22134	3770
2022	22545.7	4010

The sectoral consumption percentage of electrical energy during the period (2018-2022)

Sector	Street lighting %	Agricultural water pumping %	Commercial and hospitality %	Industrial %	Residential and public buildings %	Total %
2018	2	16	15	22	45	100
2019	3	15	16	20	46	100
2020	2	16	14	19	49	100
2021	2	14	15	21	48	100
2022	2	14	15	21	48	100

Financial data for the Ministry of Energy and Mineral Resources in 2022

Description	Allocation Dinars	Expenditure Dinars	Percentage expenditure %
Running expenses	5989000	5716137	%95.4
Capital expenditures after reducing the amount of (5,741,000) dinars	13659000	12081740	%88.5
Total	19648000	17797877	%90.6

Service centres in the Ministry of Energy and Mineral Resources

Number	Center	Location	Contact information
1.	North Region - Rural Electrification Office	Irbid	0272458989
2.	Mafrq and Eastern Region - Rural Electrification Office	Mafrq	026230498
3.	Central Region - Rural Electrification Office	Main offices Amman	065803060extension 1183 or 1184 Fax 065863321
4.	South Region - Rural Electrification Office	Karak	032387215

Ministry of Energy and Mineral Resources services in 2022

Electricity delivery services for approved segments (inside/outside the organization) at the expense of Rural Electrification Project (rural files)
Delivery of electricity from the existing networks to the beneficiaries according to the approved bases on the calculation of Rural Electrification Project (inside/outside the organization).
The delivery of electricity to artesian wells located outside the limits of regulation by electric networks or by using solar energy systems not connected to the grid at the expense of the Rural Electrification Project
Installation of solar energy systems for beneficiaries of the National Aid Fund and poor families at the expense of Rural Electrification Project
The delivery of electricity to individual homes located outside the limits of regulation using solar energy systems that are not connected to the grid at the expense of the Rural Electrification Project
Training of university students and recent graduates service
Training university students and recent graduates in the organizational units of the Ministry
Laboratory examinations
Requesting laboratory examinations
Renewable energy services
Requesting the approval to exempt the inputs of electricity generation systems using solar energy
Requesting the approval to exempt energy saving systems, devices and equipment
Granting the approval to exempt the inputs of solar water heaters.
Granting the approval to exempt the inputs of bioenergy systems
Granting the approval to exempt energy-saving systems (insulation materials)
Geological information and map services
Requesting information about petroleum and mineral resources and data about the petroleum archives
Providing geological maps and reports
Purchasing digital maps

Renewable energy endorsement and rationalization services
Granting the license to perform the activity of energy auditing
Renewing the energy audit license
Conduct Energy auditing for government buildings
Conduct the energy audit service to small and medium industries and implementing the outputs of the audit
Conduct the energy audit service to hotels
Energy and mineral resources information request services
Requesting information about energy and mineral resources
Seismological information and studies services
Seismological information and studies
Geological studies and surveys services
Geological surveys
Geophysical studies
Petrographic studies
Natural gas services
Requesting the approval for facility licenses on land plots which intersect or are within the vicinity of the natural gas pipeline
Granting the approval for sales contracts or splitting expropriated plots of land which are owned in parts for the gas pipeline project
Requesting the approval to include plucks and waste resulting from land acquisition for the natural gas pipeline project and which cannot be utilized

Electronic services gate for the Ministry of Energy and Mineral Resources

Electronic payment services

Number	Name of service
1.	Laboratory examinations
2.	Seismological information and studies
3.	Digital maps
4.	Petroleum and oil shale information and studies
5.	Purchasing tender copies

Free electronic services

Number	Name of service
1	Requesting information about energy and mineral resources
2	Delivering electricity at the expense of the Rural Electrification Project
3	Installing solar PV systems for beneficiaries of the National Aid Fund
4	Renewable energy system exemptions (5 templates)
5	Training (recent graduates and students)
6	Granting the approval for sales contracts or splitting expropriated plots of land which are owned in parts
7	Approval to include the plucking and waste resulting from the acquisition of lands for the gas pipeline project
8	Granting/Renewing an Energy Audit License (Category One, Category Two, Category Three) (3 templates)
9	Energy auditing for small and medium industries
10	Energy auditing for hotels