



وَنَارَةُ الطَّلَافَةِ وَالشَّرَافَةِ الْمَعْدِنَةِ

ANNUAL REPORT 2021





His Majesty King Abdullah II Ibn Al Hussein



His Highness Prince Al-Hussein bin Abdullah II, The Crown Prince



Foreword by the Minister of Energy & Mineral Resources

Together we create excellence and achieve sustainability, a slogan adopted by the Ministry of Energy and Mineral Resources to encourage a participatory approach with all concerned, believing in the importance of participatory work to achieve our vision of ensuring sustainable energy supply security and optimal utilization of natural resources.



A participatory approach that leads to the diversification of energy sources and increases the dependency on local sources, where the percentage of renewable energy share in the electricity generation reached (%26), and we seek to increase this percentage by working on many studies to develop the electrical grid and shift towards smart grids, and investigate the optimal storage options in order to keep pace with all global developments to enrich Jordan's success story in this field. In addition, working in parallel on electrical interconnection projects in order to make Jordan a regional center for energy exchange, which is considered one of the most important strategic goals within the energy sector's strategy.

It is necessary to focus on the importance of working on improving energy efficiency in various fields. As the Ministry of energy launched many programs to support in raising awareness among various sectors about the importance and benefits of improving energy efficiency. Moreover, we will continue supporting all sectors and provide support in various forms, financial support, raising awareness, and formulating policies to reach what we seek in this field.

Our mineral wealth has a major role in increasing our dependence on our national wealth, and we will continue working to provide clear investment opportunities and work towards developing appropriate legislation to attract various investments in this field.

Continuous improvement is an approach we follow and strive to achieve the best, to serve our dear homeland as a team.

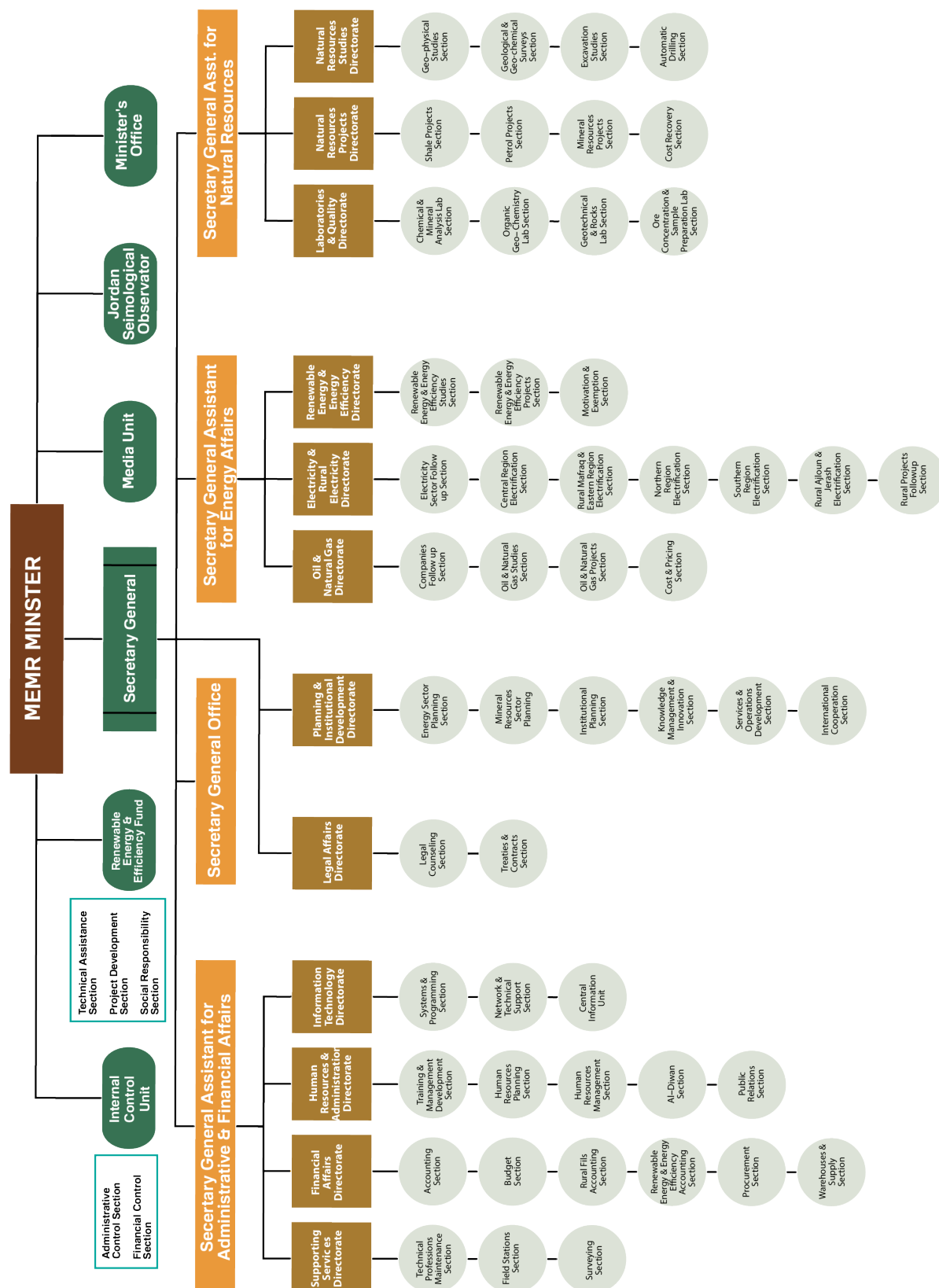
Minister of Energy & Mineral Resources



Contents

Organizational Structure	12
About The Ministry	13
Programmes which contribute to achieving the strategic objectives of the Ministry of Energy and Mineral Resources	15
Intitutional Framework	17
Structure of energy sector institutions	19
Accomplishments of the Ministry of Energy and Mineral Resource	21
The 2021 Energy Sector in Numbers	54
Special Indicators in Numbers	56
Service Centers in the Ministry of Energy and Mineral Resources	58
Ministry of Energy and Mineral Resources services in 2021	59
Electronic Services Gate for the Ministry of Energy and Mineral Resources	61

The Organizational Structure of the Ministry of Energy & Mineral Resources



About the Ministry of Energy and Mineral Resources

Vision

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

Message

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.

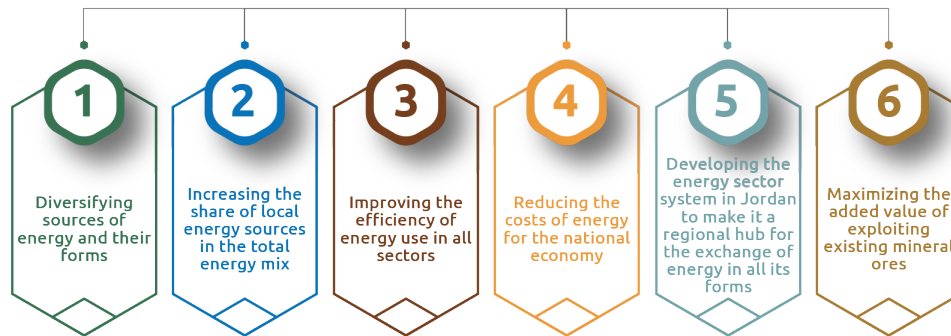
Principal values



National objectives the Ministry contributes to achieving



Strategic objectives for the Energy and Mineral Resources sector (sectoral objectives)



Strategic objectives of the Ministry of Energy and Mineral Resources



Programs which contribute to achieving the strategic objectives of the Ministry of Energy and Mineral Resources

Objective	Program
Establishing and reinforcing strategic thinking and governance practices	Developing the Ministry's strategies and decision-making mechanisms
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
Conserving energy and improving its efficiency	<ul style="list-style-type: none"> •Residential sector programme •Industrial sector programme •Government buildings sector programme •Tourism sector programme •Waiver programme •Energy training programme •Awareness and educational programme
Increasing investment in the mineral resources sector	<ul style="list-style-type: none"> •Increasing investment in the mineral resources sector •Increasing the accuracy and quality of laboratory tests
Monitoring, analysing and evaluating seismic information	Updating the Seismological Observatory
Reinforcing and developing relations and international co-operation	Encouraging international co-operation
Boosting the performance of institutions	<ul style="list-style-type: none"> •Institutional development •Information and communication technologies •Improving the efficiency of financial performance •Internal monitoring •Human resource development, creating and encouraging the capacities •Public relations •Administrative services



وزارة الطاقة والموارد المعدنية
MINISTRY OF ENERGY AND MINERAL RESOURCES

Ministry of Energy and Mineral Resources Building

Institutional Framework

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 supply of energy 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 completion of the tasks they have been assigned for.

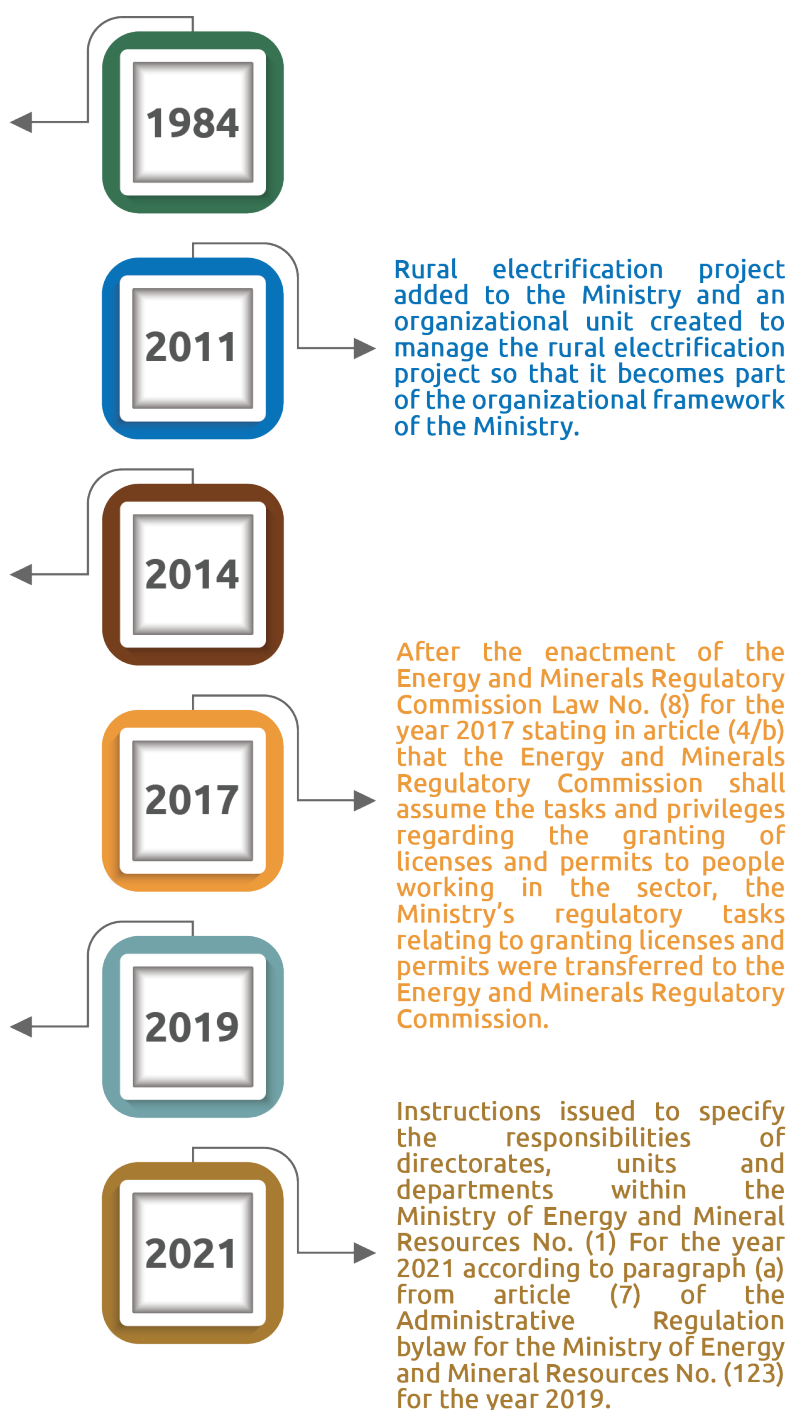
Since the inception of the Ministry of Energy and Mineral Resources in 1984 until now, the organizational framework of the Ministry has developed as follows:

The Ministry was created at the end of 1984 and was entrusted with the management and organization of the energy sector under the Ministry of Energy and Mineral Resources System of Regulation and Management No. (26) for the year (1985) so that it assumes responsibility for the complete planning of the sector.

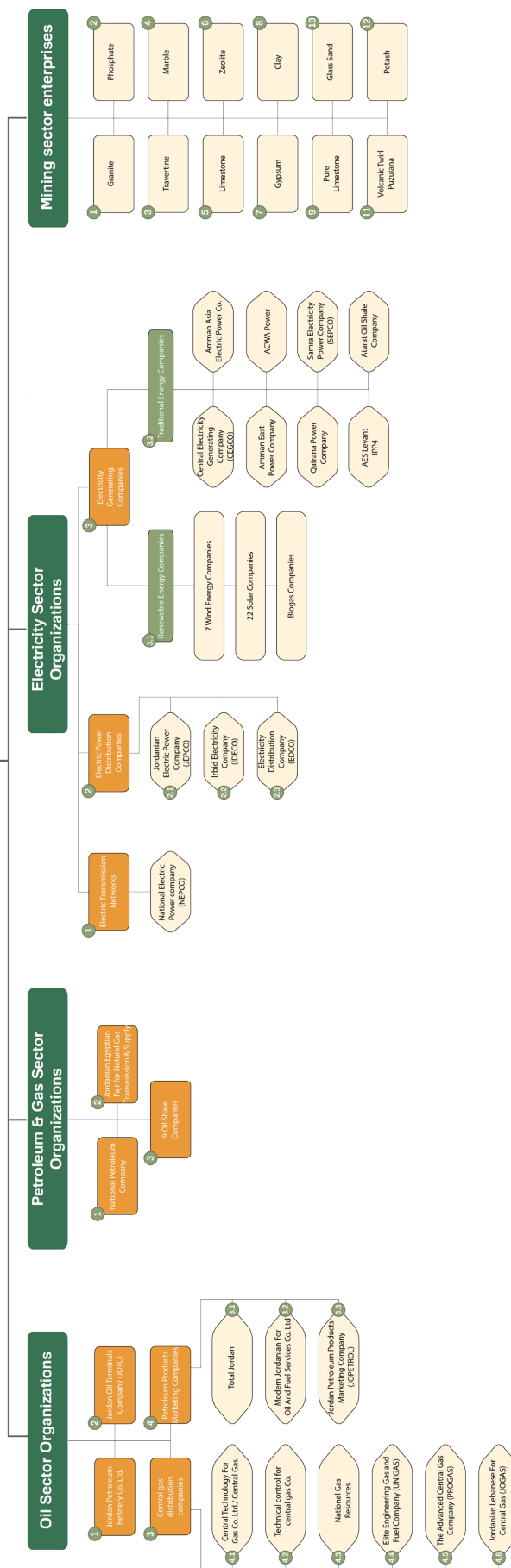
According to the paragraph c of Article 3 of the Law of Restructuring governmental agencies and Institutions No. (17) For the year (2014), the Natural Resources Authority established under the Natural Resources Regulation Law No. (12) Of the year 1968 has expired, and the rights and belongings of the authority have been transferred to the Ministry with the exception of regulatory tasks.

And accordingly the Ministry has since started work on preparing and developing suitable policies and legislation to achieve a sustainable supply of energy in addition to its main mission of achieving optimal use of natural resources according to best practices.

The regularity bylaw of the Ministry of Energy and Mineral Resources No. (123) for the year 2019 was issued, resulting in the restructuring of the organizational units in order to effectively and efficiently achieve the tasks entrusted to them.



Energy Sector Organizations



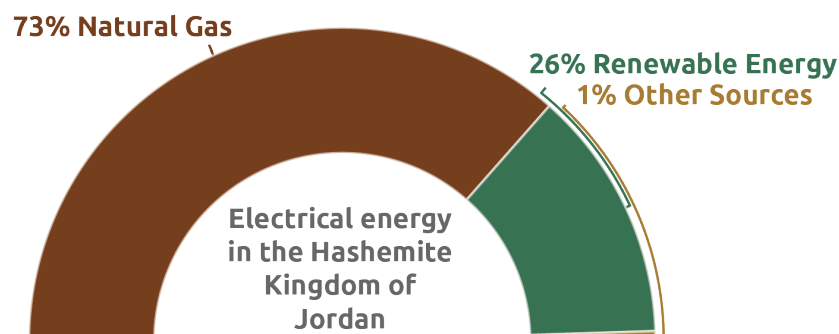


Accomplishments of the Ministry of Energy and Mineral Resources

Accomplishments in the field of energy and mineral resources which have been achieved in the year 2021 despite the many challenges that faced the sector during the Coronavirus pandemic, and for that reason this report will display those achievements as follows:

1. In the field of electrical energy

Electrical energy in the Hashemite Kingdom of Jordan was generated from natural gas at a percentage of (%73) and from renewable energy at a percentage of (%26) with (%1) from other sources, compared to (%80) and (%20) respectively for the year 2020

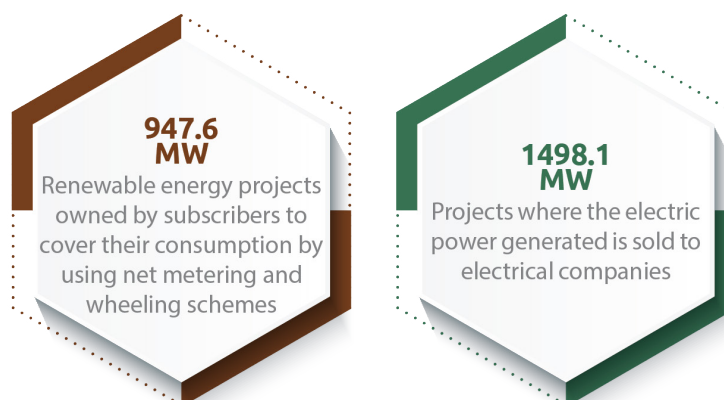


1.1 Generating electrical energy from natural gas

The quantity of natural gas consumed for electricity generation reached about (340) million cubic feet per day from the four available sources

1.2 Generating electrical energy from renewable energy

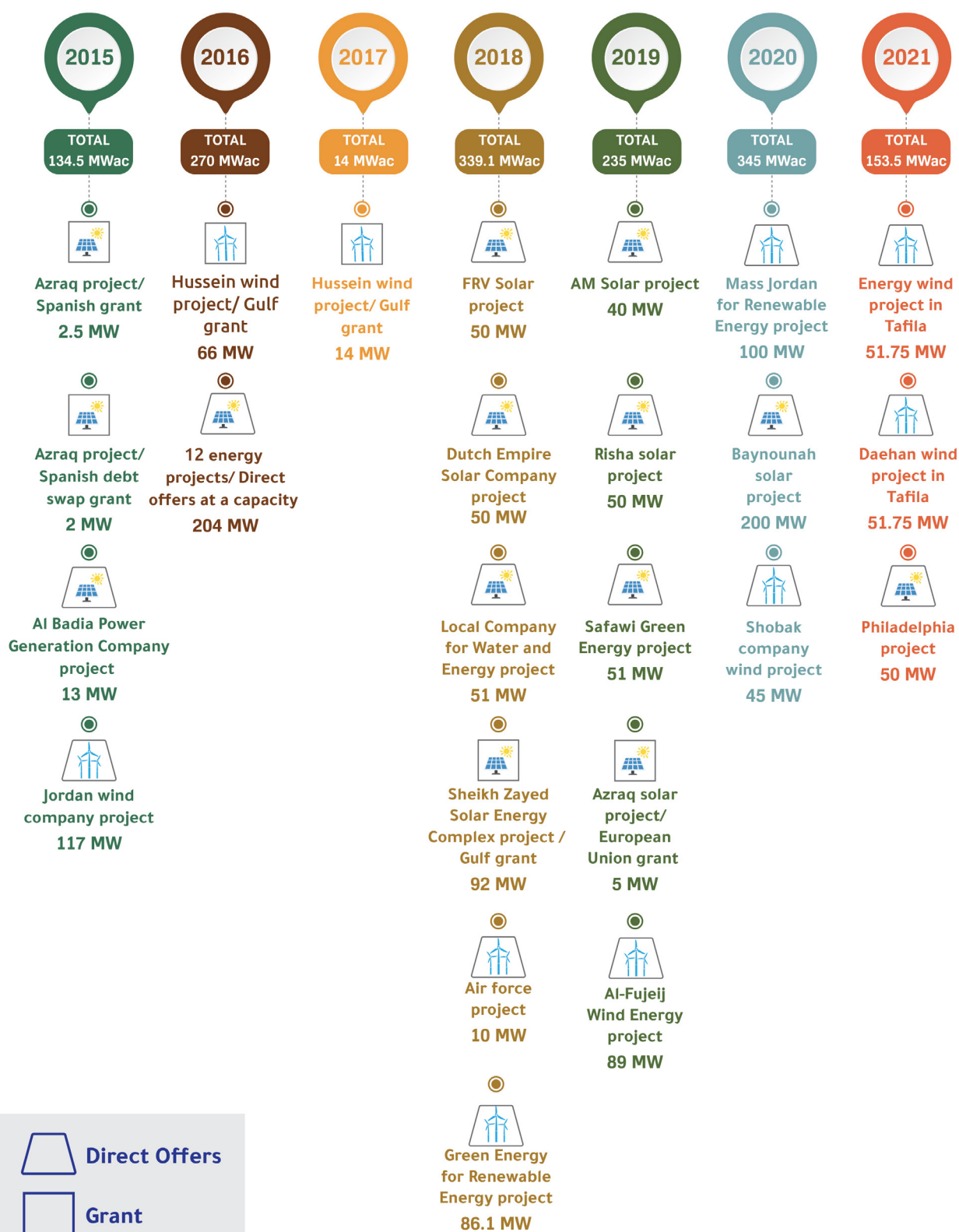
The total installed capacity of electric power generating projects from renewable energy reached about 2445.7 MW, and includes:



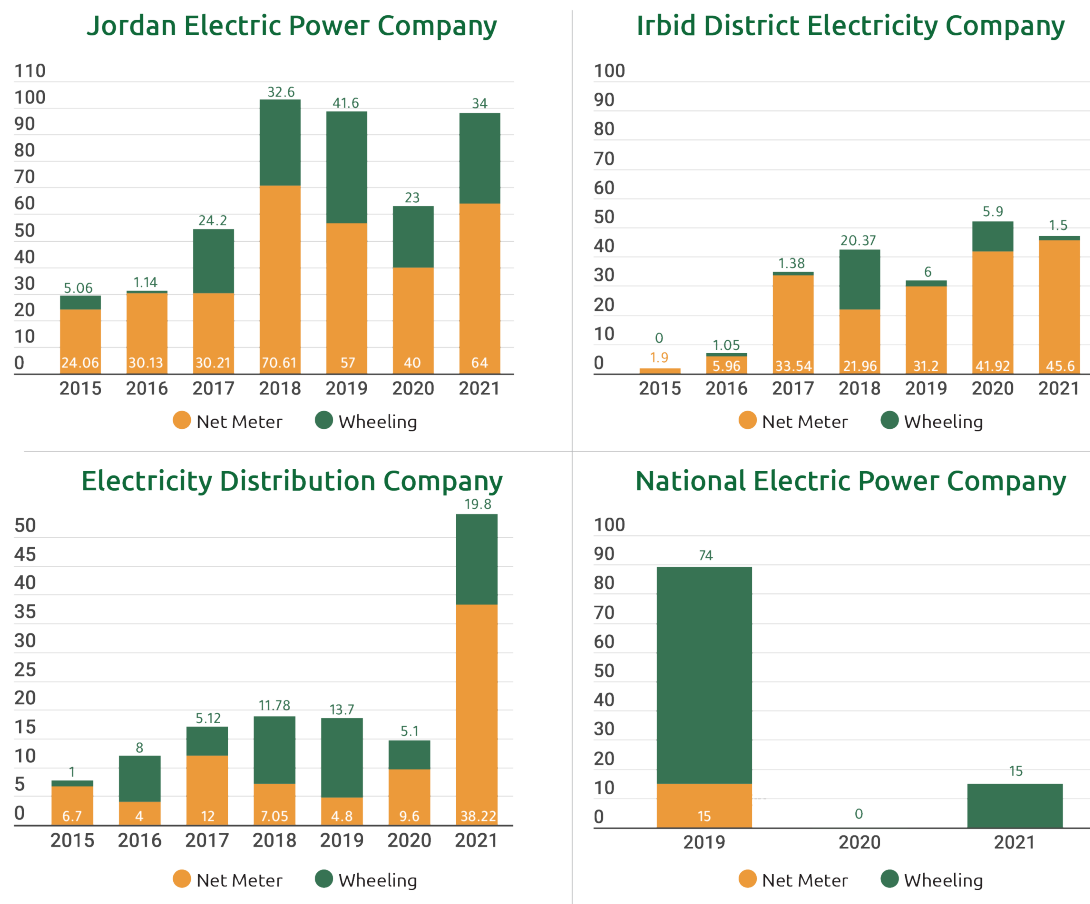
Electricity generation projects using renewable energy During the years 2015 - 2021



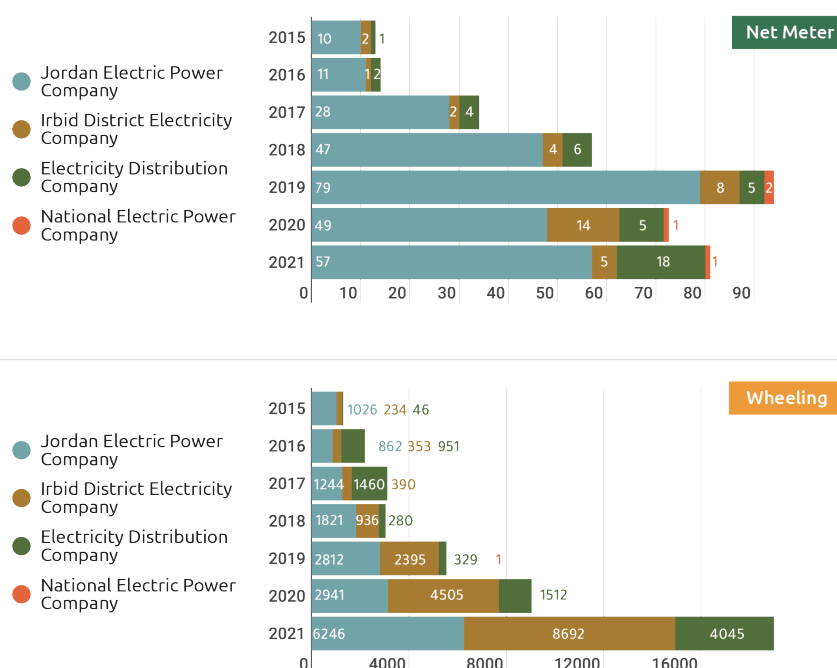
MINISTRY OF ENERGY AND MINERAL RESOURCES



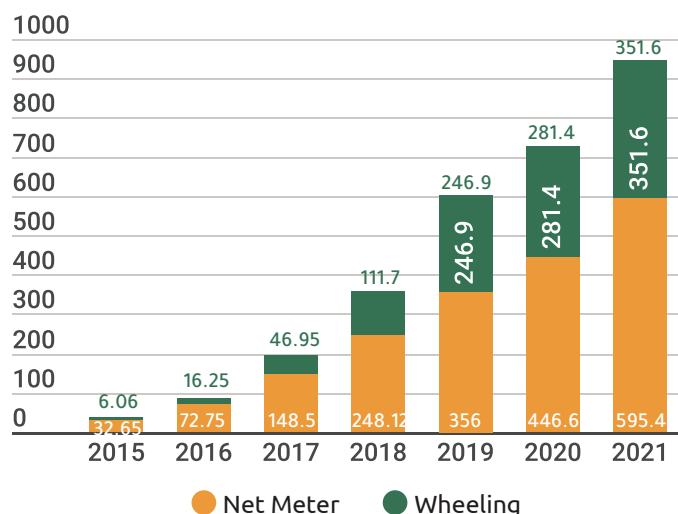
Added capacities for renewable energy systems with the purpose of covering the consumption of subscribers during (2015–2021) by companies (MW)



Number of renewable energy systems with the purpose of covering the consumption of subscribers during (2015-2021) by companies



Cumulative capacities of renewable energy systems with the purpose of covering the consumption of subscribers during (2021-2015) by companies (MW)



1.3 Generating electricity using the direct combustion of oil shale

This project which depends on the direct combustion of oil shale to generate electricity at a capacity of 470MW is being implemented by Attarat Power Company, it is expected that the operational tests of the project and its commercial operation will be completed during 2022.

1.4 In the field of electrical interconnections

Strengthening the Jordanian-Egyptian interconnection



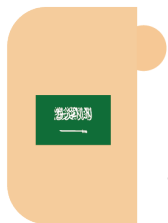
A framework agreement was signed 2021/3 between the two sides on during the joint Jordanian-Egyptian higher committee meeting to determine future steps and to prepare financial and technical feasibility studies for the electrical interconnection strengthening project between Jordan and Egypt

The Jordanian - Syrian - Lebanese Interconnection



Several meetings in Amman were held in the presence of their excellencies the Ministers of the three countries Jordan, Syria and Lebanon and agreements were made to set a timeframe and clear roadmap to restart the Syrian-Jordanian electrical interconnection 250MW of line and provide Lebanon with electrical power

Jordanian-Saudi interconnection (400kV)



The necessary feasibility studies have been prepared for the Jordanian-Saudi interconnection project and a memorandum of understanding has been signed under which the two parties will initiate the preparation of the electrical interconnection project agreements and proceed with the implementation procedures of the project

Jordanian-Iraqi interconnection (Eastern Passage 400kV)



The necessary studies have been prepared to electrically connect Jordan with Iraq directly, and an electrical energy purchase contract from Jordan to Iraq has been signed

Jordanian-Gulf-Egyptian interconnection



To strengthen the existing Jordanian-Egyptian interconnection, a memorandum of understanding was signed between the National Electric Power Company, the GCC Interconnection Authority and the Egyptian Electricity Transmission Company and a global advisor was appointed to prepare the technical, financial and environmental feasibility studies

Jordanian-Palestinian interconnection



Agreements have been made between the two sides on strengthening the electrical interconnection between them and establish necessary interconnections and transformer stations to increase the amount of exported energy to 80MVA





Residential Sector Program - A project to support the installation of solar cell systems for the residential sector

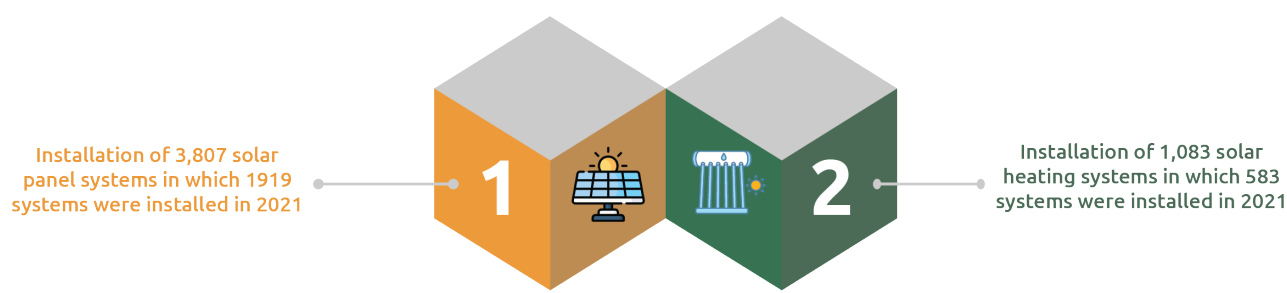


2. In the field of conserving energy and improving its efficiency

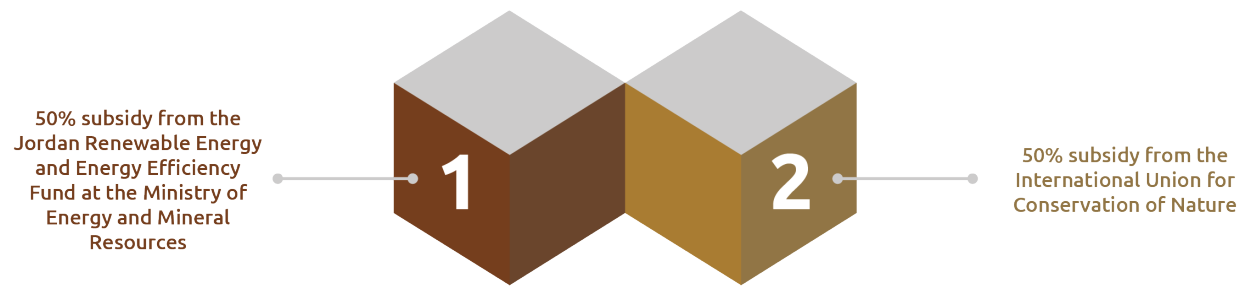
The Ministry is working on implementing a number of projects in the various governorates of the Kingdom and the various sectors through the Jordan Renewable Energy and Energy Efficiency Fund and through the Electricity Directorate and the Rural Electrification project of the Ministry in co-operation with several partners as follows:

2.1 Residential sector program

2.1.1 A number of agreements have been signed with Islamic and commercial banks, civil society organizations and local associations (cooperative and charitable) in order to implement the program of installing solar heating systems and solar energy systems for the residential sector subsidized by %30 the cost of these systems, through the Jordan Renewable Energy and Energy Efficiency Fund, where the following has been achieved through this program since its launch in 2020:



2.1.2 A joint cooperative agreement was signed with the International Union for Conservation of Nature to install solar heating systems for poor families in the area of Sahab Brigade / Al Khashafieh and Al Manakher for a total of 200 systems of which 60 were installed during 2021, and subsidized at %100 of the cost of the systems as follows:



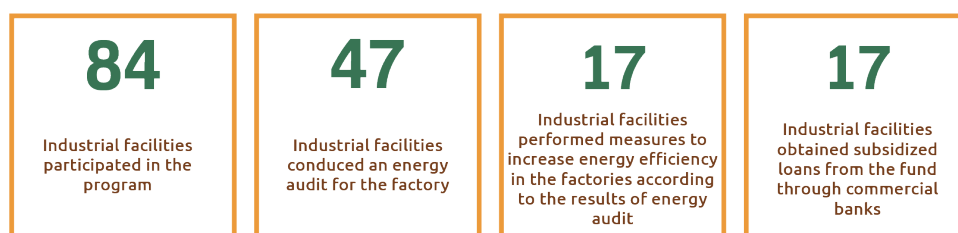
2.1.3 121,090 energy saving LED lighting units were distributed by the three electricity distribution companies in the Kingdom, of which 68,390 were distributed during 2021.

2.1.4 Project of installing grid connected solar energy systems at a capacity of 2kW at the expense of the rural files for the beneficiaries of the National Aid Fund, in which during 2021:



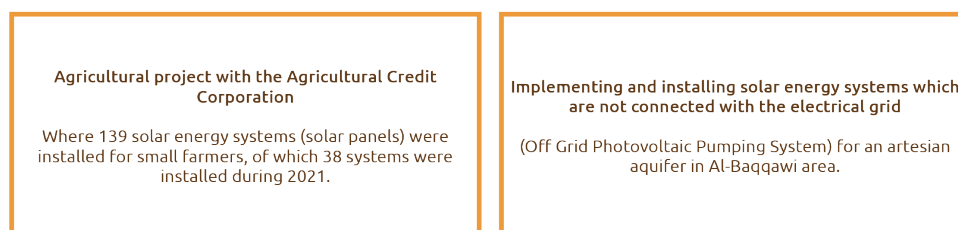
2.2 Industrial sector program

Work is being done on the industrial program in co-operation with the Jordan Chamber of Industry, where the fund supports %50 of the value of energy auditing and supports the interests of loans covering the costs of implementing the energy efficiency measures resulting from the audits, and the achievements since the start of the program until the end of 2021 were as follows:



2.3 Agricultural sector program

Work is being done on the agricultural sector in co-operation with the Agricultural Credit Corporation to support the installation of solar panels for small farms.





2.4 Public and Governmental Buildings

2.4.1 Places of Worship

Continuing to implement the places of worship program with the Ministry of Awqaf and Islamic Affairs, where solar energy systems were installed for a total of 575 places of worship, of which 44 were installed during 2021, in all governorates of the Kingdom.

2.4.2 Institutions of Public Interest

Included the support project for the installation of solar panels for civil society institutions and associations that provide shelter services for individuals with special needs or are of public interest, the fund performed the initial receipt of solar panel systems during 2021 for the following associations:



And an agreement was signed during 2021 to support %100 of the cost of installing solar panel systems for Aldiaa Charity Organization.

2.4.3 Main municipal buildings

A joint cooperation agreement was signed with the Italian Ministry of Environment, Land and Seas to finance the installation of solar panel systems for the main buildings of all the municipalities of the Kingdom. The project will be implemented in two phases. The first phase includes the installation of solar panels for 30 municipalities, while the phase includes the installation of solar panels for 70 municipalities.

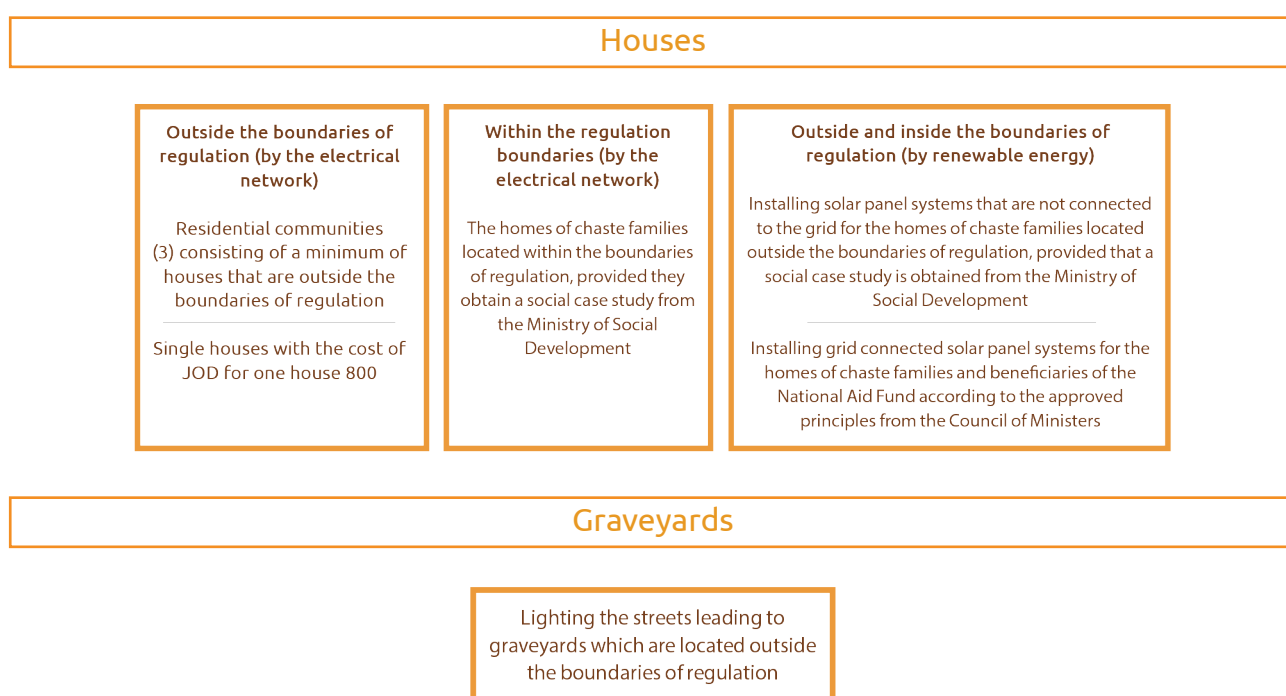
2.4.4 Health centers

Work is underway to implement a project to install solar panel systems for 23 health centers distributed in all governorates of the Kingdom, with %100 support through the Jordan Renewable Energy and Energy Efficiency Fund.

3. In the field of Rural Electrification

The Ministry continues its efforts to deliver electricity to remote villages, rural population centers and poor families through the rural fils, as the project contributed to the development of local communities and the support of various sectors. As for the achievements in the field of rural electrification, they were as follows:

3.1 The approved bases for rural fils have been developed in order to meet the needs of service recipients, so that the beneficiary segments of rural fils are as follows:



3.2 The number of applications submitted for rural fils for the year 2021 reached (2,300), detailed as follows:





Farms containing artesian wells, agricultural projects, charitable and cooperative associations

Providing electricity to farms owned by citizens and containing artesian wells, farms containing artesian wells belonging to associations (charitable and cooperative), and operational artesian wells belonging to state institutions through electrical grids and solar panels systems which are not connected to the grid

Agricultural projects such as (cattle, sheep, poultry and fish farms)

Agricultural and charitable cooperative societies, provided that the association is registered in the Associations Register

Projects relating to governmental sectors

Houses implemented through the initiatives of His Majesty the King / which the Royal Court is constructing, houses that are being built by the Ministry of Social Development, and locations affiliated with governmental facilities, regardless of their organizational status



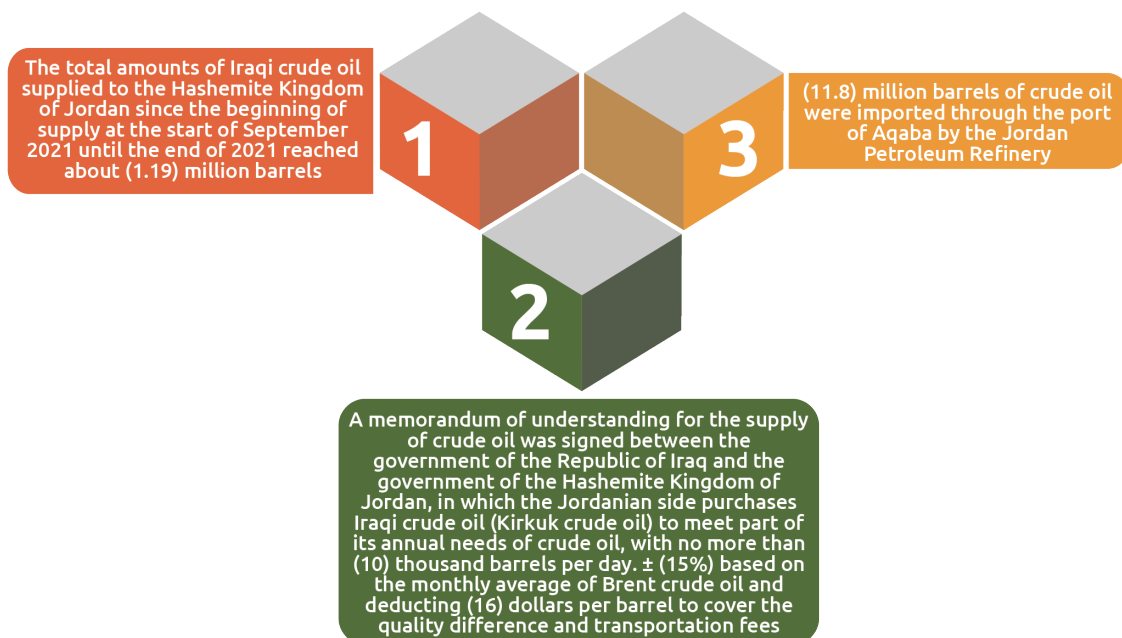
A visit to the company's oil facilities in the Madouna





4. In The Oil Sector Field

4.1 Diversifying the sources of crude oil



4.2 Strategic stock of oil derivatives



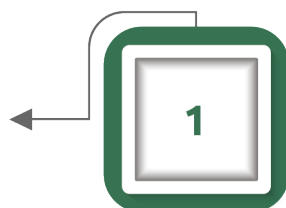




5. In The Field of Natural Gas

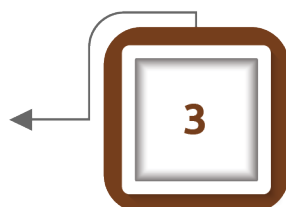
5.1 Diversifying the sources of Natural Gas

Covering the natural gas needs of generating stations by relying on imported natural gas from the Arab Republic of Egypt, Chevron Corporation, and Sheikh Al-Sabah Natural gas port in Aqaba in addition to gas produced from Al-Risha gas field



The Aqaba Development Corporation in co-operation with the Ministry of Energy and National Electric Power Company is working on developing the Sheikh Al-Sabah Natural gas port by constructing an Onshore Regasification Unit with a capacity of about 400 million cubic feet per day and working to replace the current Floating Storage and Regasification Unit (FSRU) with a Floating Storage Unit (FSU) in which it was referred to Technip E&C consulting company to prepare the engineering studies, preliminary designs and tender documents (EPC), where the project is expected to be completed and operated during 2024

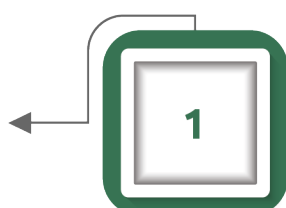
Increasing the production capacity of the Risha field to about (32) million cubic feet per day, as the Risha wells (50,51,53) were entered into production during the year 2021



The production of the Risha gas field during the year 2021 reached about (6510) million cubic feet, at a daily rate of (17.8) million cubic feet, an increase of (22%) from the year 2020

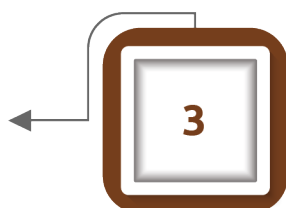
5.2 Encouraging the use of natural gas in all sectors

A project was commissioned to supply the industrial complex in Aqaba which is affiliated to the Jordan Phosphate Mines Company with natural gas under the patronage of His Excellency the Minister of Energy and Mineral Resources, where the project came under the framework agreement between the Jordan Phosphate Mines Company and Jordanian Egyptian Fajr Company for Natural Gas Transmission and Supply with the goal of providing the industrial complex in Aqaba with about (4) million cubic feet of natural gas per day



Issuance of a decision from the Council of Ministers to agree on pricing natural gas produced from the Al-Risha gas field for private sector consumers to create an encouraging investment climate by attracting investors to build investment projects relying on gas from Al-Risha whether in the eastern regions of the kingdom or in regions which will be able to benefit from compressed natural gas or liquidized natural gas

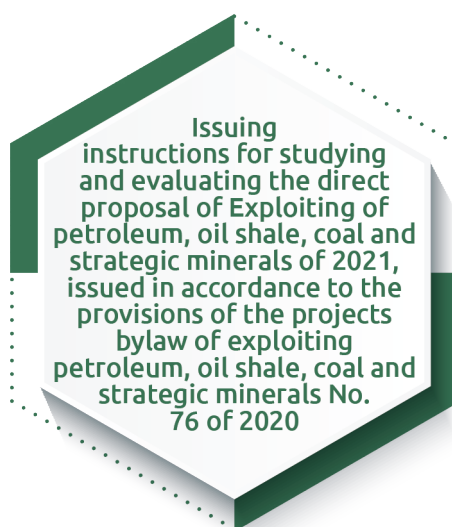
The rate of natural gas quantities consumed by industries in 2021 amounted to (24) million cubic feet per day





Well Drilling Process with SD300 Excavator

6. In the Field of Petroleum and Oil Shale



Regarding the Hamza oil field, the following has been done:

Continuing work on the concluded agreement with the National Petroleum Company to develop and operate the May 27 Hamza oil field which was signed on with the goal of increasing the 2020 productivity of the operating wells in the Hamza oil field

The quantity of oil produced from the field amounted to 105 thousand barrels during 2021

Analyzing the three-dimensional seismic information of the Hamza oil field with an area of 300 km²

7. In the field of Geology and Mining

7.1 Geophysical Studies

- Issuance of the geological reserves bylaw No. (21) of 2021 issued in accordance with paragraph (d) of the natural resources law No. (19) of 2018
- Measuring earth's gravitational values for 111 gravitational points in the regions of Debedeeb, Batn Al-Ghoul and Al-Mudawwara south of the kingdom using gravitational field surveying equipment, taking accurate geodesic readings, and updating the general gravitational survey map of the kingdom, in addition to producing two maps with a scale of 1:50000 for Deir Abo Saed and Ramtha.
- Conducting borehole photography for a number of exploration wells in the rare earths project in the Debedeeb region and issuing the technical report for the results

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

Issuing the technical report for the geophysical survey by the magnetotelluric method in the Risha gas field, which was requested by the National Petroleum Company in order to produce supportive geophysical maps and aid the available geophysical information and use it for the development of the Risha gas field	Conducting a field study at the request of the Ministry of Local Administration to assess the slipping characteristic of a group of lands in Al-Thaniya and the Karak governorate	Determining the locations of archaeological manifestations buried in the archaeological site in Petra in Al-Khazneh Square and Al-Wahajat Street at the request of the Petra Regional Authority
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7.2 General Geological Survey Project

The project aims to produce geological maps of differing scales covering all regions of the Kingdom. The project contains the distribution of rock units and geological structures, where the preparation of the geological map of Ras al-Naqab was completed at a scale of 1:50000

7.2.1 Project for Natural Resources Exploration

Rare Earth Elements Project		
Carrying out general geochemical surveys for the formation of Hiswa	Exploration studies for the second phase of the rare earth elements project in the southern part of the Debedeeb region/southern Jordan, where the targeted area reached 19.36 km ² in which 24 exploration wells were drilled and 10 trenches were dug, with the geological stock resource of rare earth elements amounting to 223984 metric tons and 655990.26 metric tons of trace elements	
Lithium Exploration project in the Lesan area / Dead Sea	Phosphate Exploration Project / Al-Risha	
Exploration studies showed that the element of lithium is concentrated in the carnallite minerals, which are deposited at depths ranging from 149 to 163 meters, and therefore increases the possibility of detecting the lithium content at depths of up to 150 meters.	Detailed Exploration studies have been started on phosphate deposits in Al-Risha area to evaluate the quality and thickness of phosphate ores and to identify the resource, in addition to determine the investment areas for mining in terms of quality and thickness of the ores	Two wells were drilled to prospect explore the phosphate within the first phase

7.2.2 General Geochemical Survey Project

- The highest result for copper ore in Wadi Malaga reached %5.2, while the highest result in Wadi Khaled was %2.4.
- Three samples were taken from the Faynan area from Faynan's granite rocks unit to prospect for the element lithium. The results of the igneous incisors reached 130 ppm, which are considered hopeful results for the igneous rocks.

7.3 Investment opportunities in the field of Mineral Resources

Re-classification of the mining industries, both transformative and extractive, and reviewing it with the Energy and Minerals Regulatory Commission

Jordan's hosting of the Fourth Mining Conference in Amman, where the Ministry participated through a pavilion in which the investment opportunities in mineral resources, oil and gas were presented along with samples of mineral resources in Jordan and providing explanations for visitors interested in this field



8. In the field of maintaining the preservation and presentation of information on petroleum, oil shale and mineral resources

The Ministry of Energy and Mineral Resources is concerned with maintaining, preserving and presenting information on petroleum, oil shale and mineral resources through studies which have been carried out in various regions of the Kingdom since the end of the 1940s of the last century until this moment, through the establishment of a data bank for natural resources of projects and studies carried out by the various directorates of the Ministry, or companies contracting with them, in the field of natural resources. Maps of mining projects are also produced via Geographic Information System (GIS) softwares.

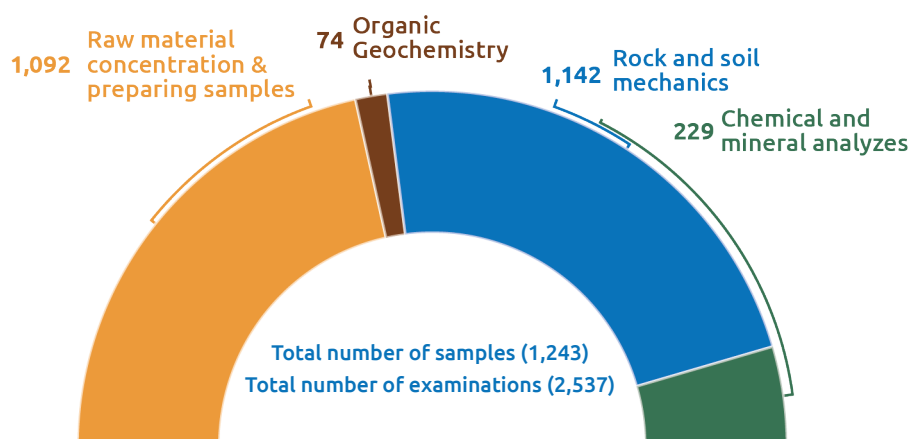
The Ministry has provided the service of supplying interested public and private institutions, companies, researchers and university students with technical reports and maps of all kinds as follows:



9. In the field of Laboratory Analyses

The laboratories of the Ministry provide their services by conducting all the chemical and mineral analyzes and examinations of the various natural rock samples for the public and private sectors, where the following was done in 2021:

- Renewing the approval of 14 laboratory tests the Ministry carries out after the external evaluation process by the Jordanian Accreditation Unit according to the ISO standard: 2017/17025
- Number of samples and analyzes which have been conducted by the departments of the Laboratories and Quality Directorate until the end of 2021:



10. In the field of Earthquake Detections

- %100 coverage of seismic activity
- Following up on seismic detection in the kingdom, where (818) earthquakes have been detected, comprising of:

432

Distant
Earthquakes

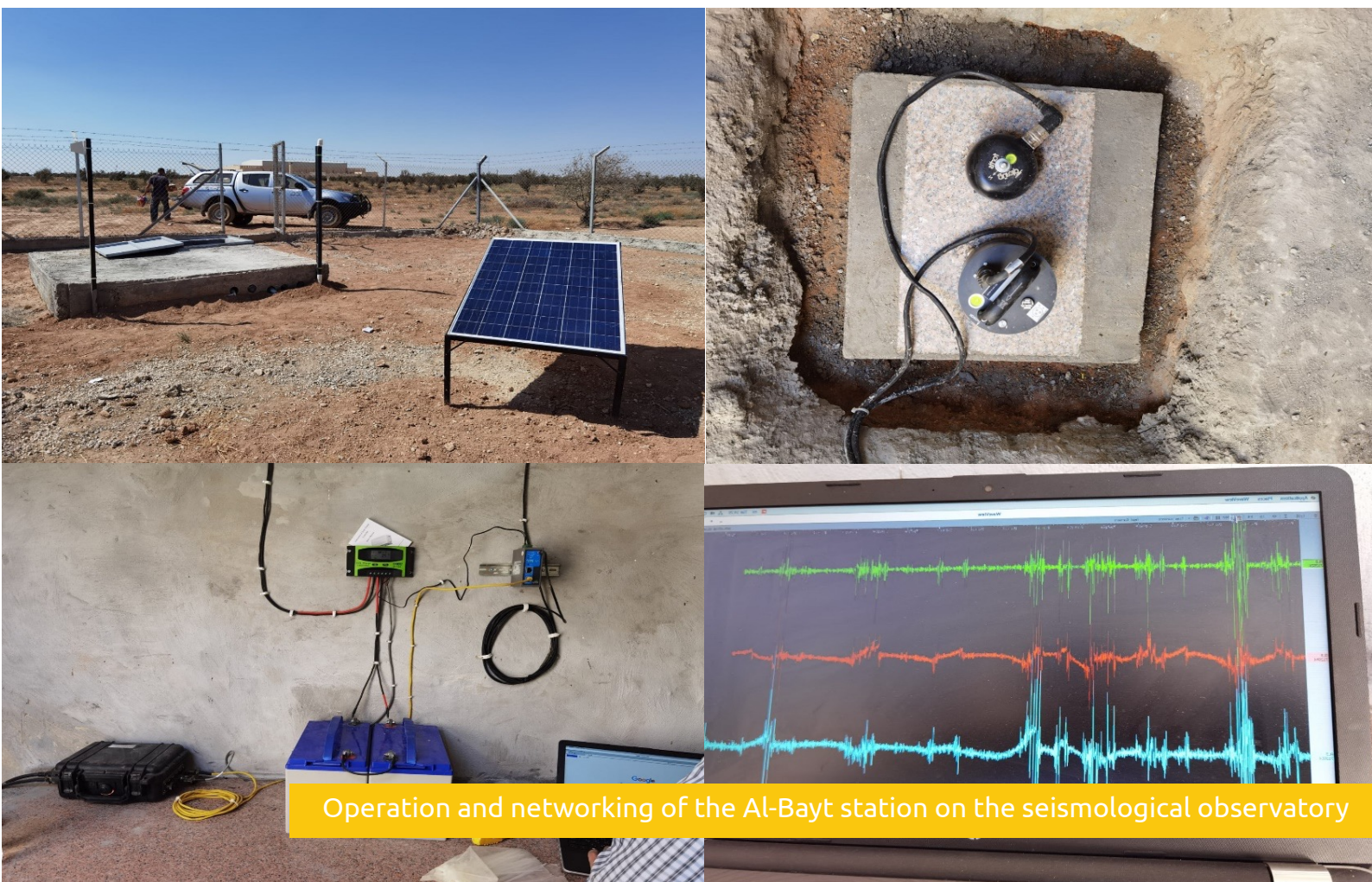
308

Regional
Earthquakes

78

Local
Earthquakes

- Working to prepare a seismic hazard study for the Petra region, where %50 of the natural vibration points of the study area have been completed during 2021
- Installing two new seismic monitoring stations (Al al-Bayt University station in Mafraq Governorate and Al-Asha station on the northern border in Irbid Governorate)

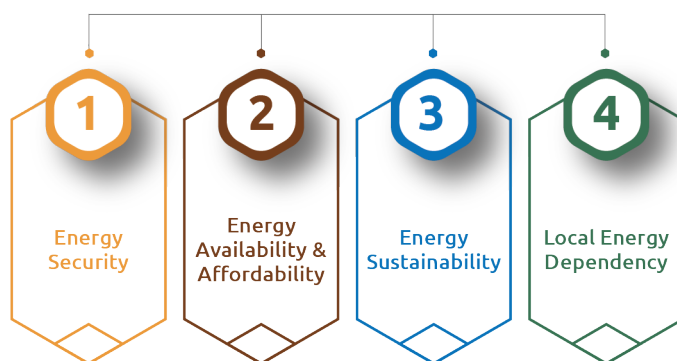


11. In the field of Institutional Planning & Development

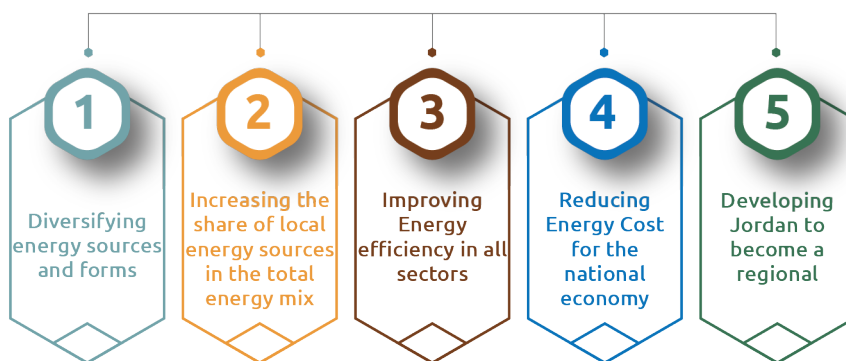
11.1 Planning of The Energy Sector

- Evaluate the execution of Jordan Energy Strategy for the period (2030-2020) in co-operation with all partners. The Strategy main pillars are:

Strategy Main Pillars



Main Strategic Goals of Energy Sector

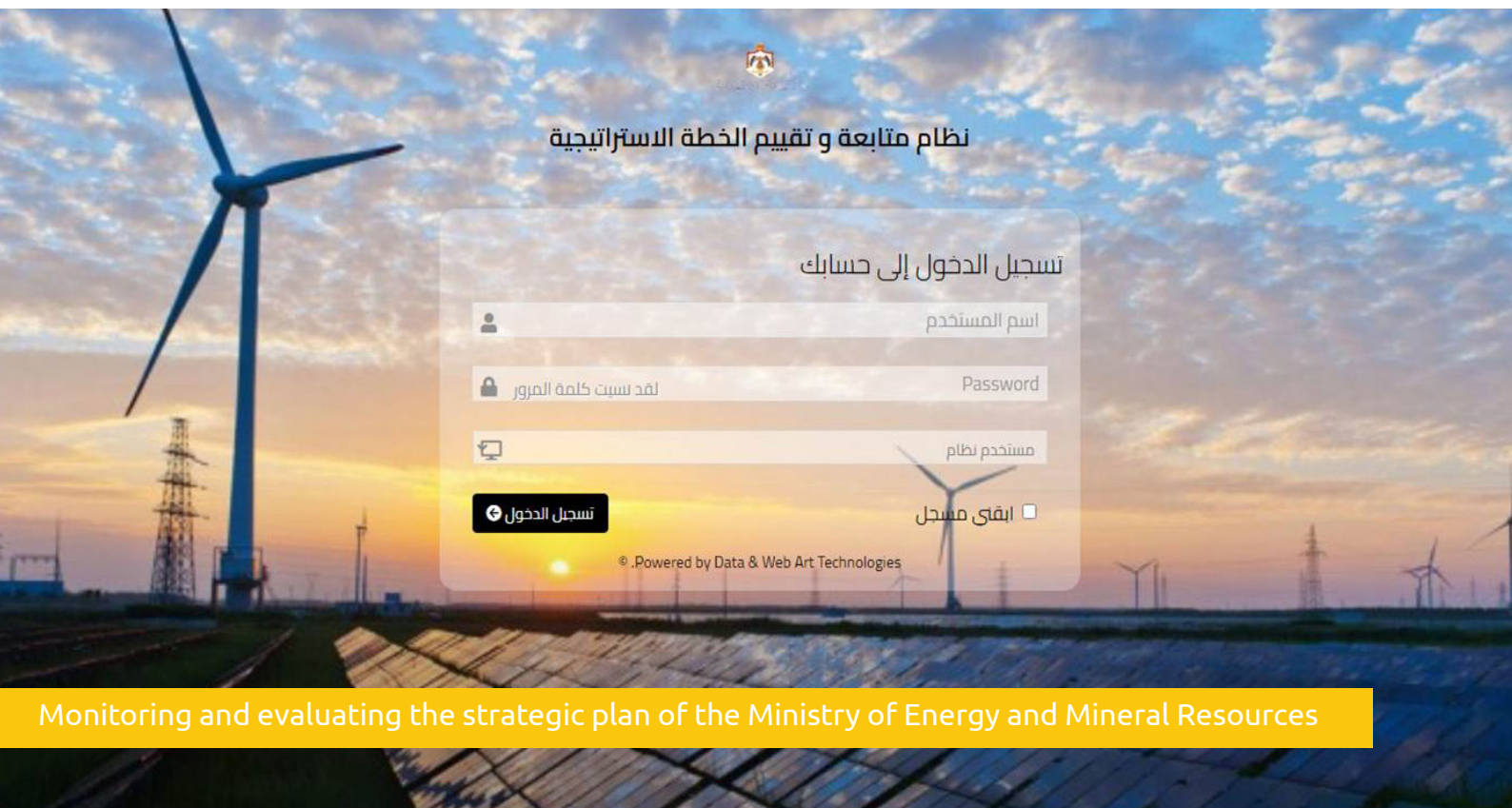


Tracking the progress of the Energy projects included within the government plans, such as the Executive Development Program and the government's priority project (2021-2023) which included the following projects:



- Following the progress of Granted projects.

11.2 Institutional Planning



Monitoring and evaluating the strategic plan of the Ministry of Energy and Mineral Resources

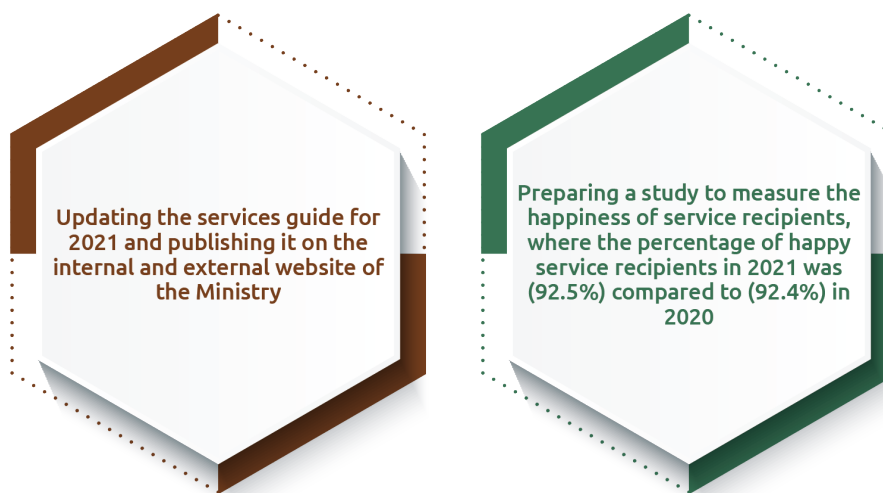
11.3 Managing Relations with Partners

Preparing a study to measure the happiness of partners, where the percentage of happy partners in 2021 reached (87.4%) compared to (87%) in 2020

Activating the partnership with the academic side by forming the following partnership committees between the public and academic sectors:

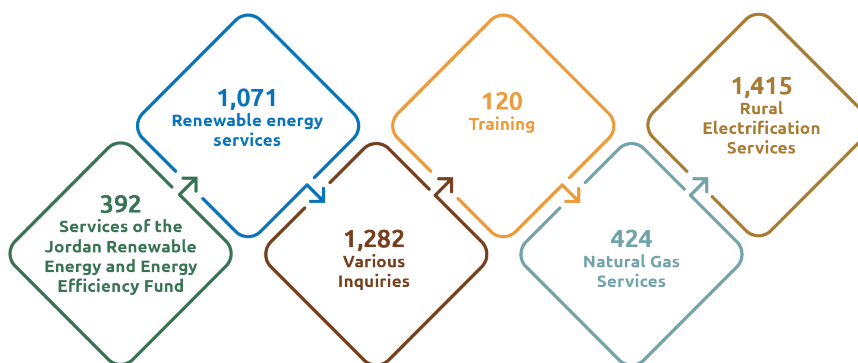
1. The partnership committee between the public and academic sectors to study issues relating to the electrical system
2. The partnership committee between the public and academic sectors to study issues relating to renewable energy, conserving energy and improving the efficiency of energy use
3. The partnership committee between the public and academic sectors to study issues relating to mineral resources

11.4 Managing Relations with Service Recipients



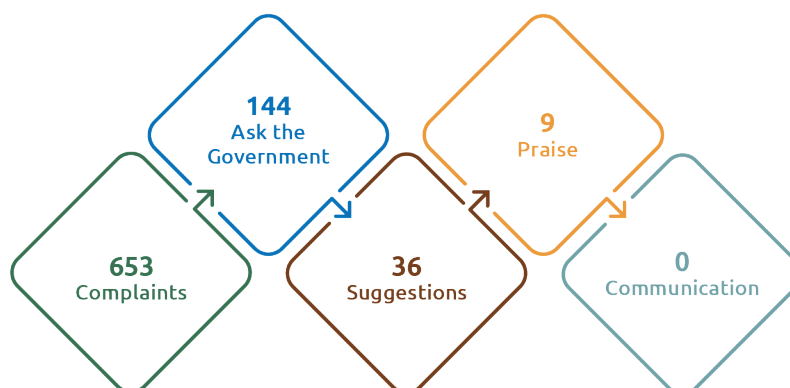
Customer Happiness Office

The number of customers received by the Customer Happiness Office reached (4502 visitors) according to the following classification:



Bekhedmetkom platform

The number of incoming orders to the Bekhedmetkom platform for the energy and mineral resources sector reached (842) during 2021, distributed as follows:



Where the answer rate within the specified time was %100.

Government Accelerators

In order to serve customers, the Ministry participated in the Government Accelerators Program through two challenges:

1. Establishing an electronic platform for the procedures of the investor's journey for three services which are as follows:

Request the direct proposal for oil shale or coal exploitation projects

Request the direct proposal for strategic minerals projects

Request the direct proposal for petroleum projects

2. Establishing an electronic platform for granting approvals to exempt renewable energy systems and inputs as well as energy saving inputs and systems from customs duties and the general sales tax, which includes three services:

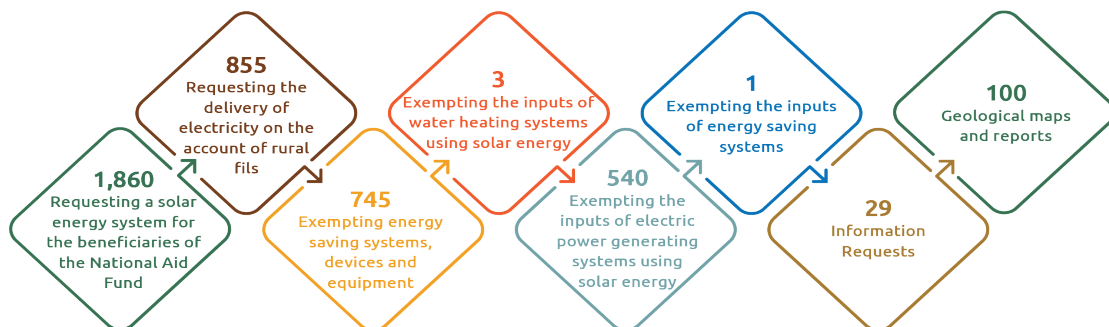
Request the approval to exempt the inputs of electric power generating systems using solar energy

Request the approval to exempt energy saving systems, devices and equipment

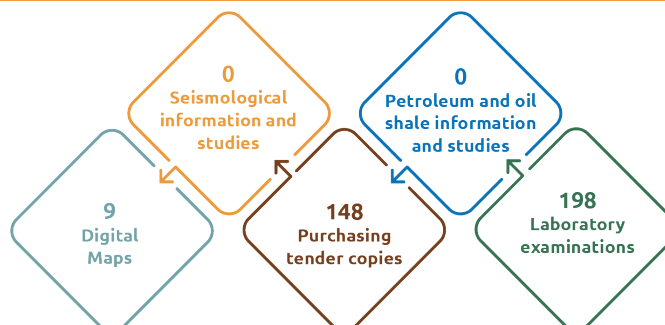
Requesting the approval to exempt the inputs of water heating systems which use solar energy and solar panels

11.5 Electronic Services

Electronic Services



Charged services



11.6 In the Field of Knowledge and Innovation Management

Launching the government innovation lab program in co-operation with the King Abdullah II Center for Excellence and with support from the Jordanian-German Energy Partnership, as MEMR is considered to be the first government entity to implement the program

1

2

Conducting a professional training in the field of government innovation by enrolling (25) staff from MEMR and sectorial institutions, where (5) innovative projects have been worked on to come-up with innovative solutions in the field of energy and mineral resources

3

Organizing & Holding (7) awareness lectures with different subjects according to the approved approach of holding lectures

4

The cognitive impact percentage of the lectures was (98%) and the attendance rate of staff was (22) staff/lecture, and the satisfaction rate of lectures was (95.6%)

5

The awareness rate of innovation among the staff in 2021 was (78.6%) , whilst in 2020 it was (76.2%)

6

Responding to (30) information requests, including 28 electronic requests and (2) paper requests, and the response rate to requests was (1) day

7

The satisfaction rate of information request service's recipients in 2021 was (98.8%), whilst in 2020 it was (97.4%)

8

Celebrating the week of the right to access to information in conjunction with the International Day for Universal Access to Information through:

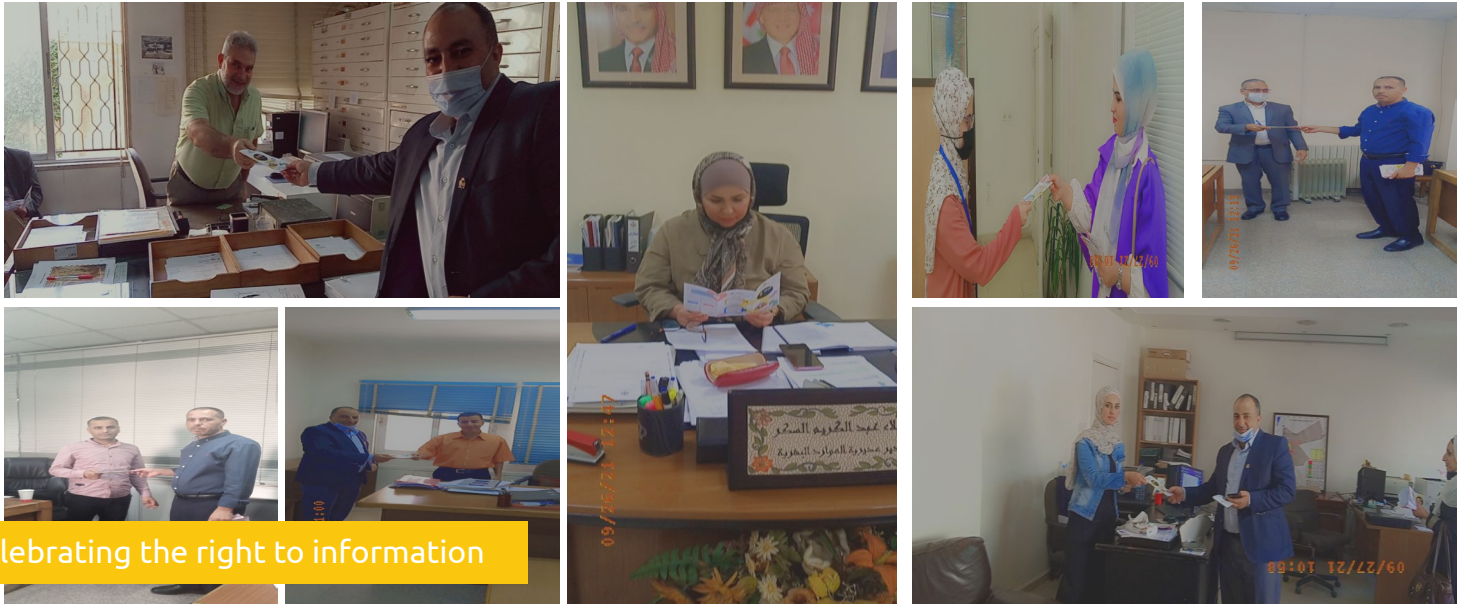
1- Distribution of awareness brochures to MEMR staff, clients and surrounding official institutions

2- Circulating awareness messages to MEMR staff via e-mail

9

Counting & analyzing all the documents of MEMR through:

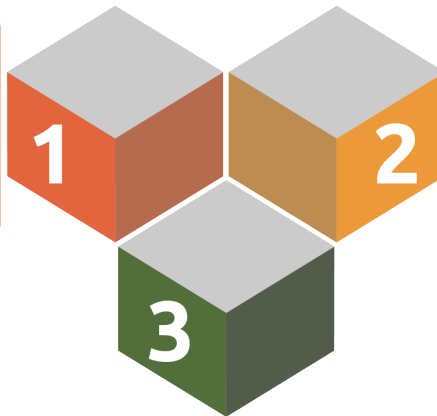
1- Listing the available explicit documents, which were (176) documents in 2021
2- Classification of confidential and protected documents, which were in total (231) documents



11.7 In the field of International Cooperation

The following memorandums of understanding and agreements have been signed:

1 A framework agreement was signed to develop the electrical interconnection capacities between the Jordanian Ministry of Energy and Mineral Resources and the Ministry of Electricity and Renewable Energy in the Arab Republic of Egypt



2 Technical cooperation protocol in the fields of geology and mining for cooperation between the Ministry of Energy and Mineral Resources in the Hashemite Kingdom of Jordan and the Ministry of Industry and Minerals in the Republic of Iraq

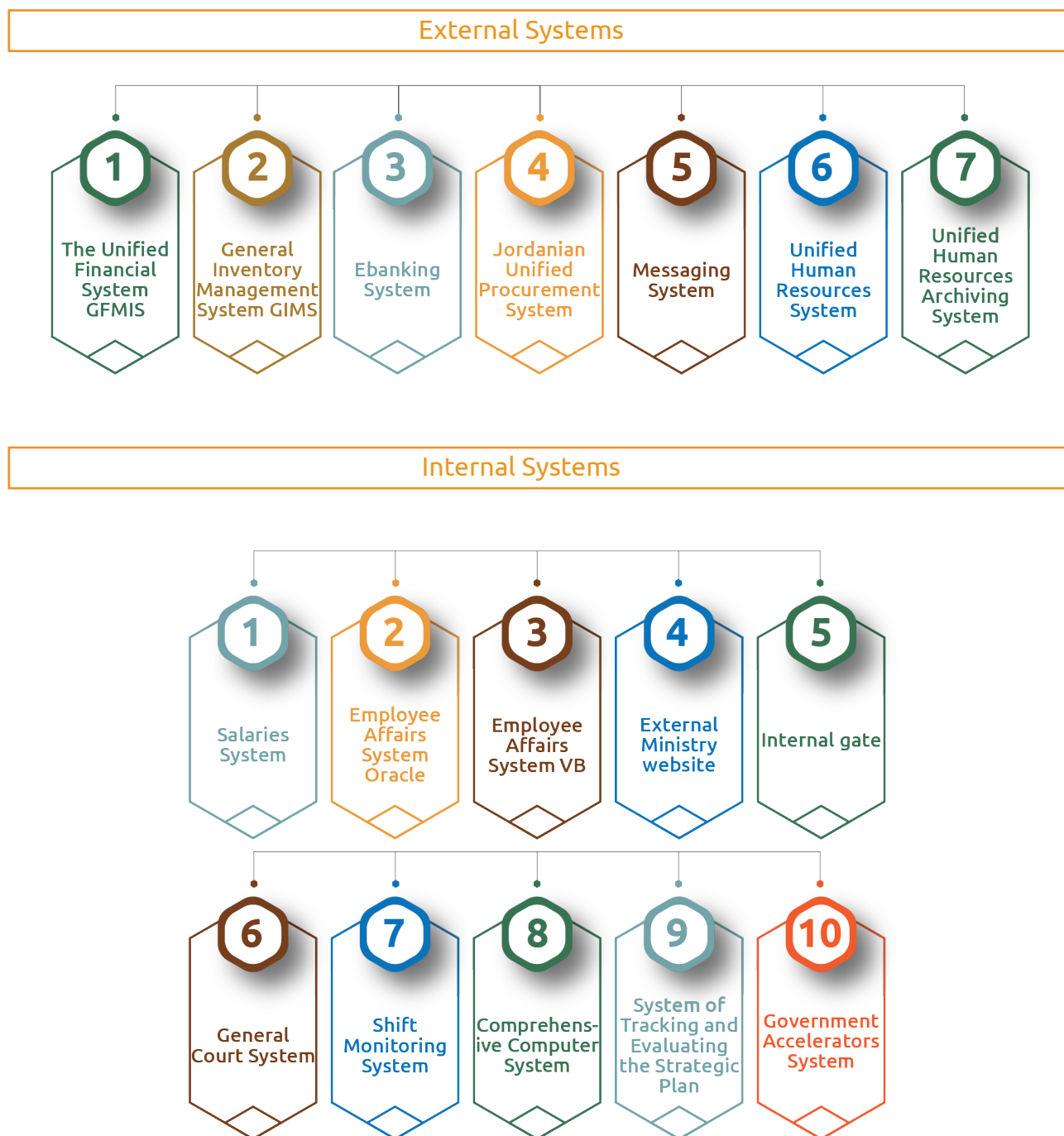
3 Signing a memorandum of understanding with Freiberg University of Mining and Technology / Institute of Drilling Engineering and Fluid Mining / Germany and the supplementary appendix for the existing memorandum between the Ministry and the Geological Institute of Freiberg University



A Jordanian-Iraqi cooperation protocol in the field of geology

12. Electronic Readiness

- Providing %92 of the staff with modern computers and %98 of these devices with internet and e-mail services
- Electronic automation of the training department's procedures, where an electronic record of the training courses was prepared for each employee
- Number of electronic systems: 17 electronic systems and as follows:

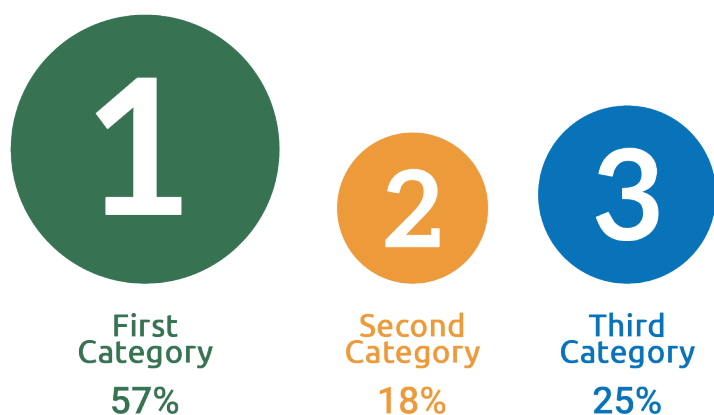


13. Human Resources

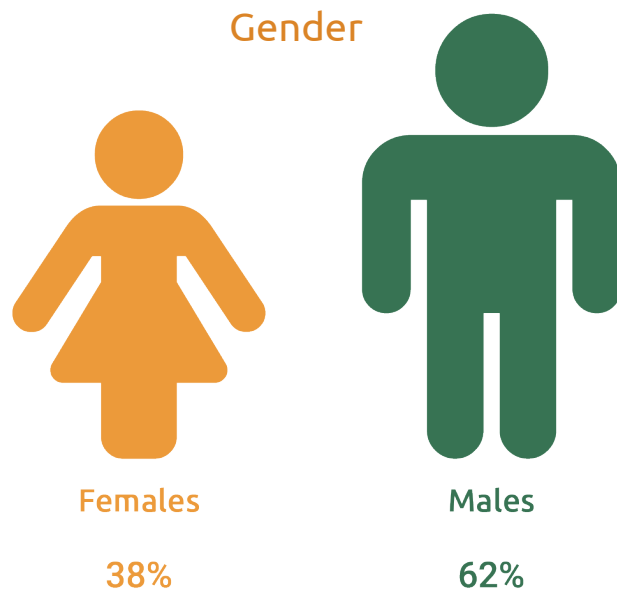
13.1 Workforce and Credentials

The number of Ministry employees by the end of 2021 reached (384), distributed as follows:

Types of Roles



Gender



Categories of Employees



The employee happiness rate measure in 2021 reached (%88) compared to (%69) in 2020.

13.2 Training & Development

Training 86 employees out of the 95 candidate employees for mandatory and permissible promotions

Implementation of 110 training programs during the implementation of the training plan for 2021 at a rate of approximately 90.5%

Training (18) engineers within the engineer training program supervised by the Ministry of Public Works and Housing

Training (18) recent graduate engineers within the agreement signed with the Jordanian Engineers Association

Training 95 geologists through the Jordanian Geologists Association.

Six trainees were trained for a period of six months within the (I want experience) program of the Engineers Syndicate

Training of 20 university graduates (from various university specializations applicable with the nature of the Ministry's work) within the Ministry's directorates

Training 48 university students within the Ministry's directorates

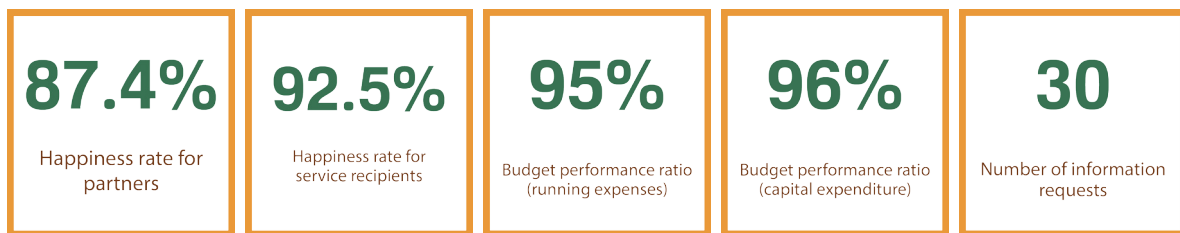
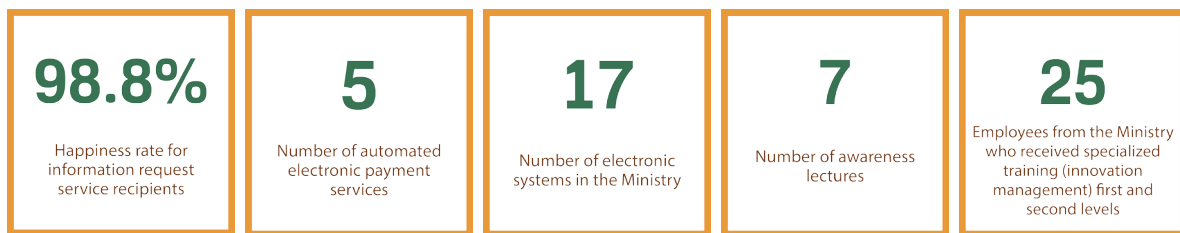
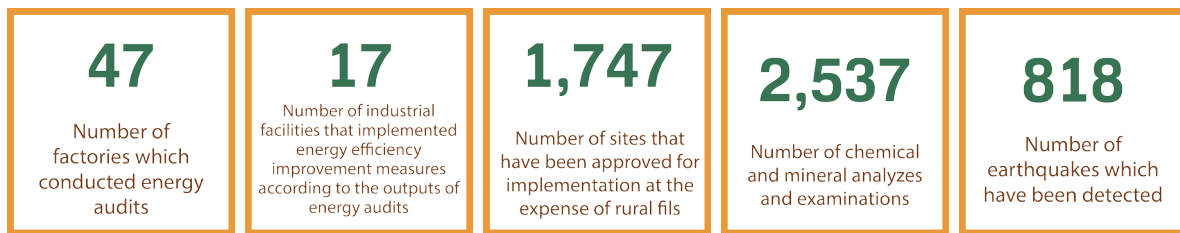


The employee Amani Rasheed Al-Mady, from the Directorate of Planning and Institutional Development, received the award for the ideal employee in the civil service of the Specialized Category / second place



The 2021 Energy Sector in Numbers

8,166 ktoe Quantities of primary energy consumed in the Kingdom	192 ktoe / \$1000 Energy density for with 2021 the year constant purchasing	1,858 Million Jordanian Dinars Cost of Imported Energy	1,746 kWh / individual Rate of Electrical Energy consumption of individuals	739 koe/ individual Rate of energy consumption of individuals
99% Percentage of securing the electrical energy supply	28% Contribution percentage of local sources to electricity generation	26% Contribution percentage of renewable energy to electricity generation	73% Contribution percentage of natural gas to electricity generation	2,445.7 MW Total installed capacity of power generation projects from renewable energy sources
1,498.1 MW Capacity of projects from which the generated electric power is sold to electrical companies	947.6 MW Capacity of renewable energy systems projects owned by consumers to cover their consumption by using net metering and transit meters	4 Number of natural gas supply sources	100% Percentage of securing the supply of crude oil and oil derivatives	45 Number of supply days for crude oil stock
34 Number of supply days for liquidized petrol gas stock	60 Number of supply days for petrol 90 stock	60 Number of supply days for petrol 95 stock	60 Number of supply days for diesel stock	340 Million ft ³ Average quantities of natural gas consumed per day for the generation of electric power from the four sources available
11.8 Million Barrels of Oil Quantities of crude oil that were imported through the port of Aqaba	1.19 Million Barrels Quantities of Iraqi oil imported to the Hashemite Kingdom of Jordan	427 Barrels Daily production in Hamza field	32 Million ft ³ Productive capacity of Al-Risha gas field	24 Million ft ³ Average daily quantities of consumed natural gas in industries
5,542 Number of solar energy systems kilowatts (2) with a capacity of installed for chaste families benefiting from national aid at the expense of rural fils in the first and second phases	38 Number of renewable energy systems (solar panels) installed for small farmers within the agricultural sector project with the Agricultural Credit Corporation	44 Renewable energy systems installed within the houses of worship program with the Ministry of Awqaf and Islamic Affairs and Holy Places	68,390 Number of lighting units distributed through electricity distribution companies	84 Industrial facilities that participated in the industrial program in co-operation with the Jordan Chamber of Industry



The 2021 Energy Sector in Numbers

Crude oil and oil derivative imports during the period (2017-2021) -Thousand tons-

Year	Crude oil	Liquefied gas	Diesel	Petrol	Aviation fuel	Kerosene
2017	2795	368	1029	923	125	-
2018	2366	357	1145	964	67	-
2019	2321	432	963	977	305	-
2020	2074	409	910	773	0	4.8
2021	1757	377	914	899	16	23

Changes in consumption of oil derivatives during the period (2017-2021) -Thousand tons-

Oil derivatives	Liquefied gas	Petrol	Aviation fuel	Kerosene	Diesel	Fuel oil	Asphalt
Year							
2017	431	1431	396	88	1859	505	226
2018	429	1410	412	69	1672	515	168
2019	478	1411	462	95	1482	132	176
2020	463	1139	137	83	1313	145	135
2021	438	1342	211	77	1365	176	96

Local production of crude oil and gas in 2021

	Data	Value
1	Daily rate of production for Hamza field	427 Barrels
2	Generative capacity for Al-Risha field	32 million ft ³ / day
3	Rate of gas production from Al-Risha field	17.8 million ft ³ / day

Developments in electrical energy production and the maximum load of the electrical system during the period (2017-2021)

Year	Maximum load MW	Generated Electrical Energy kWh
2017	3320	20793.5
2018	3205	20476
2019	3380	20995.8
2020	3630	20952.8
2021	3770	22134

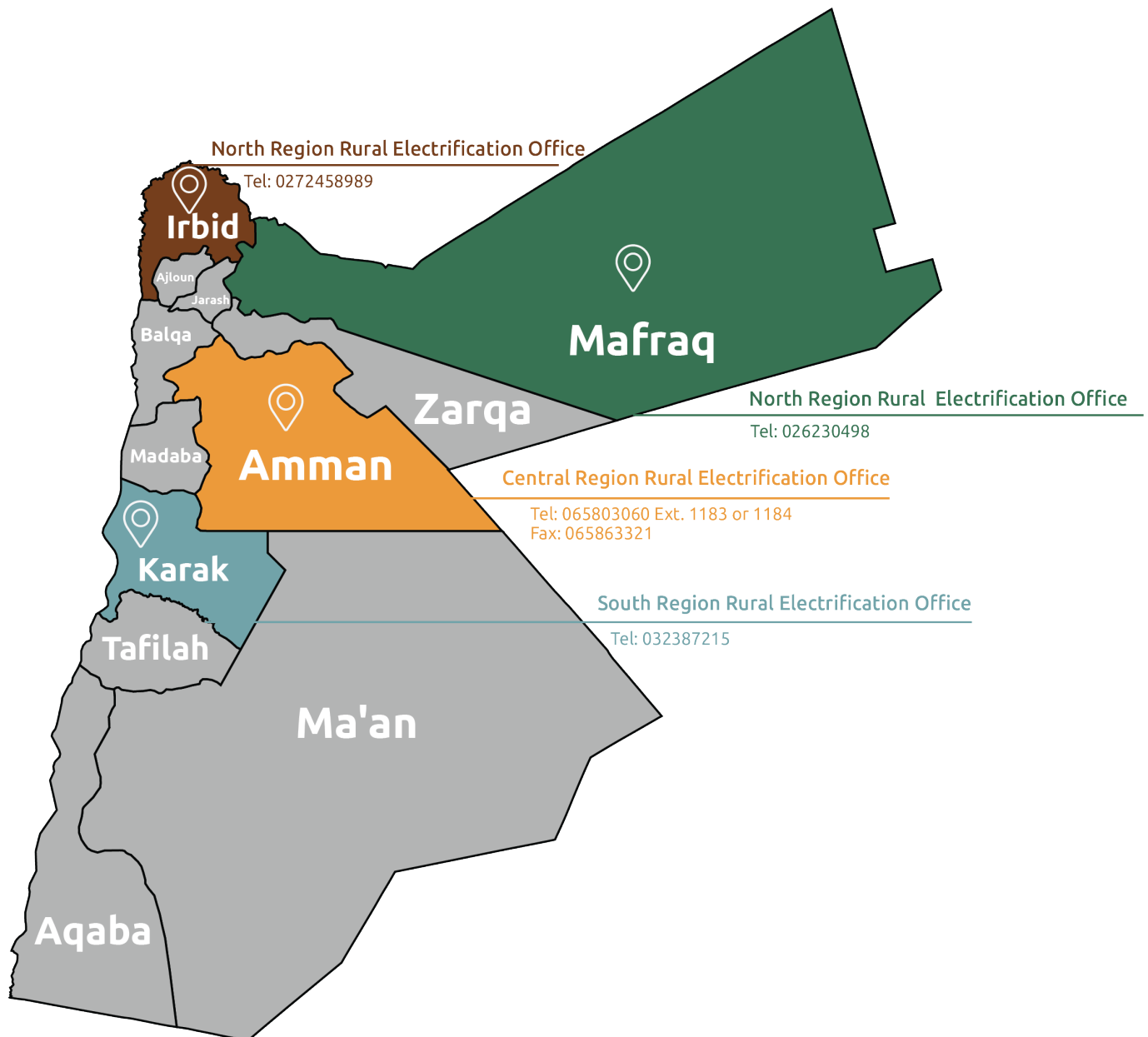
The sectoral consumption percentage of electrical energy during the period (2017-2021)

Sector	Residential and public buildings %	Industrial %	Commercial and hospitality %	Agricultural water pumping %	Street lighting %	Total %
Year						
2017	45	22	15	16	2	100
2018	45	22	15	16	2	100
2019	46	20	16	15	3	100
2020	49	19	14	16	2	100
2021	48	21	15	14	2	100

Financial data for the Ministry of Energy and Mineral Resources in 2021

Description	Allocation Dinars	Expenditure Dinars	Percentage expenditure %
Running expenses	5,811,000	5,504,836	95%
Capital expenditures	14,585,000	14,015,653	96%
Total	20,396,000	19,520,489	96%

Service Centers in the Ministry of Energy and Mineral Resources



Ministry of Energy and Mineral Resources Services in 2021

Electricity delivery services for approved segments (inside/outside the organization) at the expense of rural files

- 1 Delivery of electricity from the existing networks to the beneficiaries according to the approved bases on the calculation of rural files (inside/outside the organization)
- 2 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 files
- 3 Installation of solar energy systems for beneficiaries of the National Aid Fund and poor families at the expense of rural files
- 4 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 files

Training of University Students and Recent Graduates Service

- 1 Training university students and recent graduates in the organizational units of the Ministry

Laboratory Examinations

- 1 Requesting laboratory examinations

Renewable Energy Services

- 1 Requesting the approval to exempt the inputs of electrical energy production systems using solar energy
- 2 Requesting the approval to exempt energy saving systems, devices and equipment
- 3 Requesting the approval to exempt the inputs of water heating systems using solar energy
- 4 Granting the approval to exempt the inputs of bioenergy systems
- 5 Granting the approval to exempt energy-saving systems (insulation materials)

Geological Information and Map Services

- 1 Requesting information about petroleum and mineral resources and data about the petroleum archives
- 2 Providing geological maps and reports
- 3 Purchasing digital maps



Renewable Energy Endorsement and Rationalization Services

- 1 Granting The License To Perform The Activity Of Energy Auditing
- 2 Renewing the energy audit license
- 3 Energy auditing for government buildings
- 4 Providing the energy audit service to small and medium industries and implementing the outputs of the audit
- 5 Providing the energy audit service to hotels

Energy and Mineral Resources Information Request Services

- 1 Requesting information about energy and mineral resources

Seismological Information & Studies Services

- 1 Seismological information and studies

Geological Studies & Surveys Services

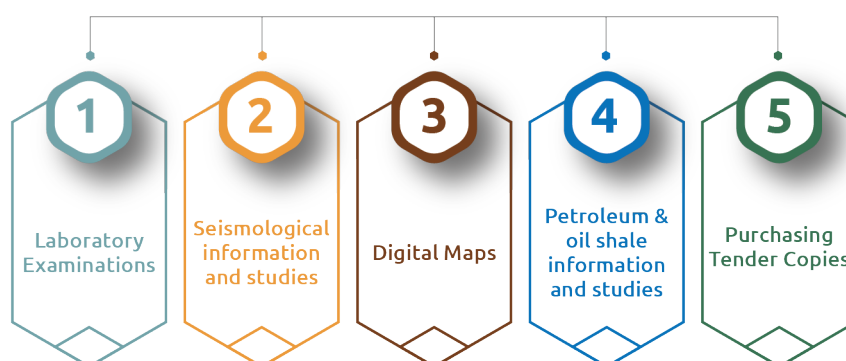
- 1 Geological surveys
- 2 Geophysical studies
- 3 Petrographic studies

Natural Gas Services

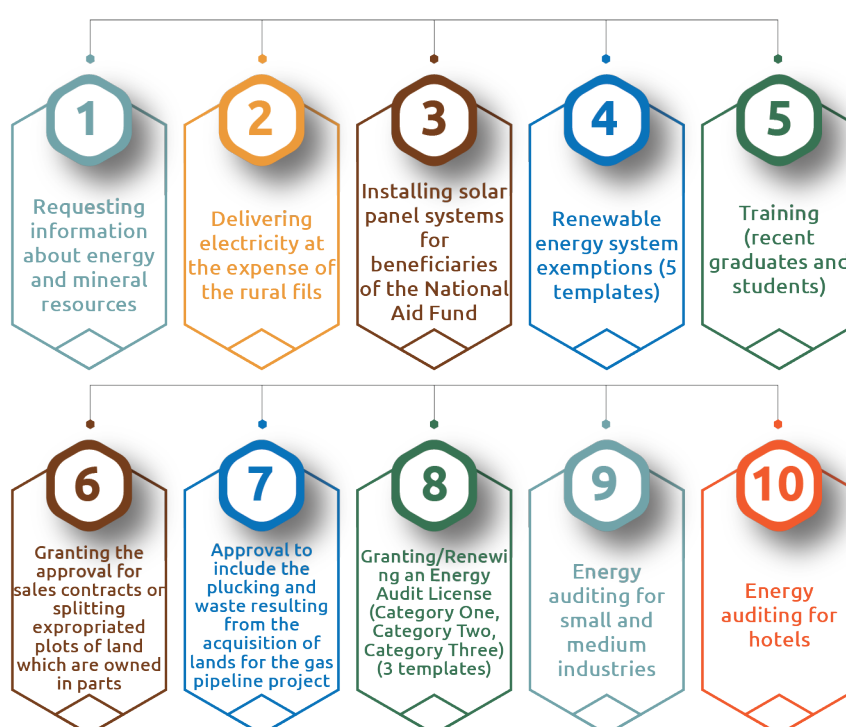
- 1 Requesting the approval for facility licenses on land plots which intersect or are within the vicinity of the natural gas pipeline
- 2 Granting the approval for sales contracts or splitting expropriated plots of land which are owned in parts for the gas pipeline project
- 3 Requesting the approval 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



Free Electronic Services





وَنَارَةُ الطَّاقَةِ وَالشَّرَوَةِ الْمُعَدَّنِيَّةِهَا

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