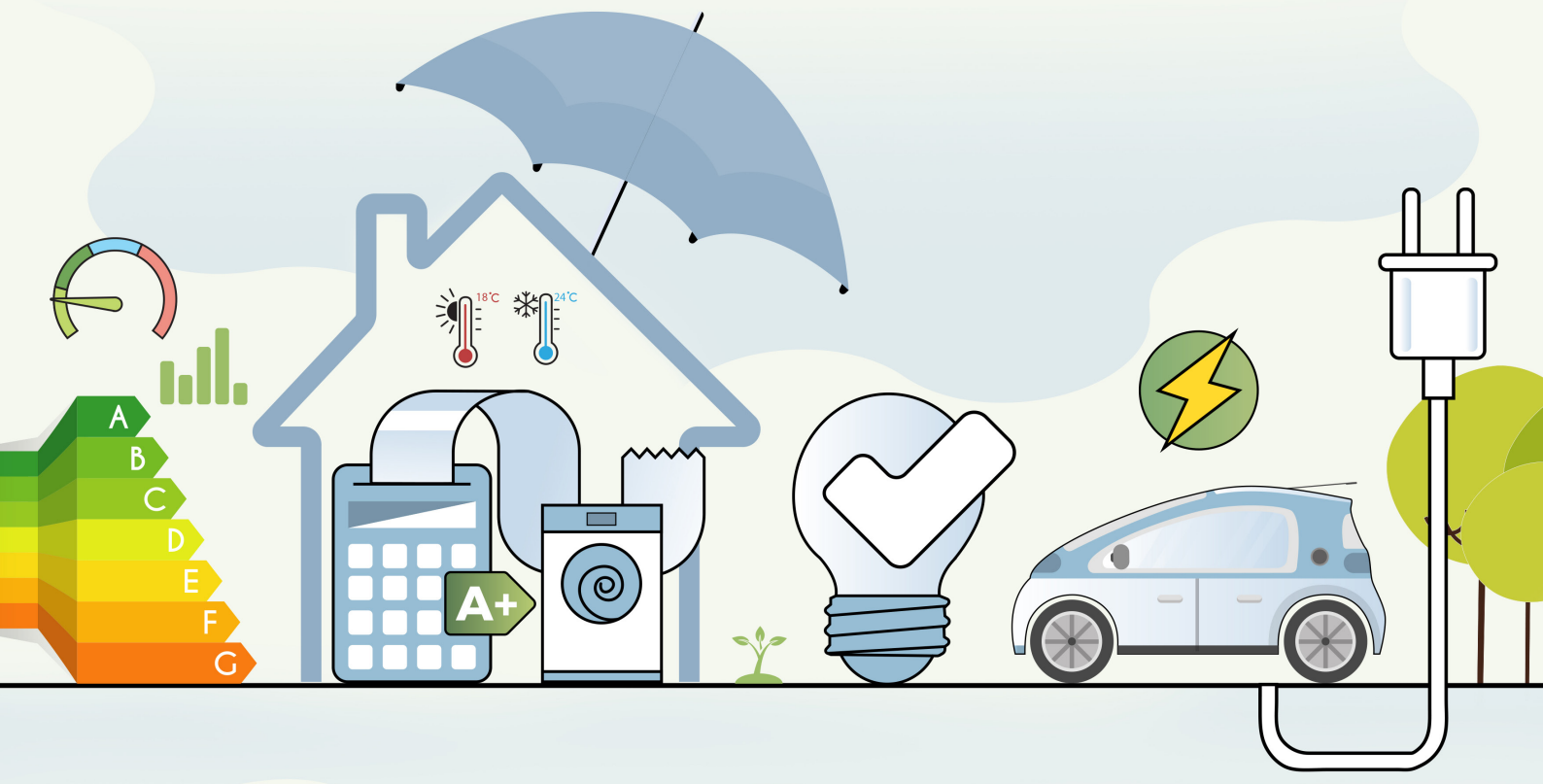
Ministry of Energy and Mineral Resources

وزارة الطاقة والثروة المعدنية

THIRD NATIONAL ENERGY EFFICIENCY ACTION PLAN

2024-2026



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Executive Summary

In recent years, Jordan's economy has shown steady growth at around 2.5% annually, except in 2020 due to the COVID-19 pandemic. During this period, primary energy consumption initially surged between 2015 and 2017, driven by factors such as population growth, industrial development, and urban expansion. However, the pandemic significantly impacted energy consumption, causing a sharp decline up until 2020. Between 2015 and 2017, there was notable growth in energy supply to meet increasing demand. Nevertheless, the pandemic led to a drastic decrease in energy supply. Jordan has been diversifying its energy supply mix, reducing reliance on oil products in favour of renewable energy sources. This shift aligns with the country's efforts to reduce energy imports.

The Third National Energy Efficiency Action Plan (NEEAP) for Jordan, spanning from 2024 to 2026, is a comprehensive framework aimed at enhancing energy efficiency across the nation. With two previous plans having achieved substantial energy savings, the Third NEEAP builds upon past successes and lessons learned. The first NEEAP achieved a 40.2% of the targeted reduction in energy consumption, primarily targeting residential and industrial sectors, while the second NEEAP achieved a 46.3% of the targeted reduction with a broader set of measures. These achievements provide valuable context for the third NEEAP.

Careful selection of the baseline year and methodology is a crucial aspect of the Third NEEAP. The plan considers the impact of the COVID-19 pandemic on energy consumption patterns and opts for a 2018 baseline year, aligning with the national energy strategy. Fifty energy efficiency measures are outlined, each assigned to responsible organizations. These measures aim to improve energy efficiency across residential, industrial, commercial, and transportation sectors. It aims to improve energy efficiency by 5.44% based on electricity consumption and 4.33% based on final energy consumption compared to the 2018 baseline. The anticipated cost savings from the final energy reduction are estimated to be approximately 214 million JOD. below table outlines targets broken down by sector, including investment costs, and greenhouse gas (GHG) emission reductions.

Sector	Targeted savings by 2026 (GWh)	Investment cost (million JOD)	GHG emission reduction (ktCO2e)
Industry	203.87	37.0	92.44
Residential	190.8	56.2	82.8
Services	242.2	35.7	107.7
Transport	2,455.1	303.8	431.6
Water & agriculture	165.43	91.8	76
Cross-sectoral	150.8	81.2	69.2
Total	**3408.2**	**605.8**	**859.74**

The Third NEEAP recognizes the importance of energy efficiency in Jordan's sustainable development. It not only contributes to energy savings but also reduces costs, lowers greenhouse gas emissions, and promotes a better understanding of energy consumption trends. Efficient collaboration with various stakeholders, both local and international, is central to the success of the plan.

Industry	EE Assessment for the Industrial Sector	EE incentives in the Industrial Sector	Competence centre for EE in industry	EU programme in the Industrial Sector
	Enhancing EE in Food industry	Implementing practices of Clean and Efficient Production in Resource Utilization in 15 Jordanian Factories.	Transfer of Environmentally Sound Technologies	Improving the Competitiveness of the Textile & Clothing
	EE for Industrial Productivity Programme	Industrial Sector Data Management System		
Residential	EE Assessment for the Residential sector	EE Benchmarking and Database for Residential Buildings	Enforcement of EE building codes	Promote Central and District Heating & cooling Systems
	Low-Cost EE Measures in the Residential Sectors	Installation of Solar Water Heaters in Residential Buildings	MEETMED II	Incentives for Home Retrofits
Services	EE Assessment for the Service Sector	Tourism Sector EE Programme	Public Buildings Energy Database	Roadmap for EE in Public Buildings
	The Excellence in Design for Greater Efficiencies (EDGE)	Lighting Replacement Program for Municipalities	Sustainable Workforce Development	
Transport	EE Assessment for the transport sector	Vehicle Tyre Energy Labelling	Promotion for E-Mobility	Strategy and action programme for public transport
	Truck Fleet Modernization	National railway - first phase	Government vehicles tracking project	Redesigning Airspace Procedures and Routes
Water and Agriculture	Energy Audits, Implementation and EnMS projects	Pumps and VFDs Replacement projects	Restructuring and Rehabilitation Projects	Raising EE in the Water Sector- Big projects
	EE Assessment for the Agriculture Sector	Support the Installation of VSD On Irrigation Pumps		
Cross-Sectoral	Enhancing KPI's and associated data collection processes	National campaign for EE	Capacity building for Green Building Refurbishment	EE Award in The Academic Sector
	Amendment and Implementation of By-Law 73 of 2012	Promote Sustainable Cooling and Using of Natural Refrigerants	EIB's Initiative - Improving Jordan's EE and RE	Minimum Energy Performance Standards for Motors
	ESCO Market Development	Study for the tax and customs targeted exemptions	EE in the power sector	Energy Management Systems (EMS)
	Training courses in Energy Efficiency	Capacity Building for Resilience and Environmental adaptation through the Circular Economy: Green innovations in Refugee-hosting Communities and the Azraq Camp – (Barakeh).		

Overview of the main measures of the third NEEAP per sector

List of Abbreviations

ACI	Amman Chamber of Industry
ADEME	Agence de la transition écologique
ASEZA	Aqaba Special Economic Zone Authority
BAU	Business as Usual
CO2	Carbon dioxide
CVDB	Cities and Villages Development Bank
DENA	German Energy Agency
DOS	Department of Statistics
EE	Energy efficiency
EIB	European Investment Bank
EU	European Union
EMRC	Energy and Mineral Regulatory Commission
ESCO	Energy Service Company
ESSA	Energy Sector Support Activity
GAM	Greater Amman Municipality
GDP	Gross Domestic Product
GHG	Greenhouse gases
GIZ	German Agency for International Cooperation
GWh	Giga Watt hours
IEA	International Energy Agency
JCI	Jordan Chamber of Industry
JNBC	Jordanian National Building Council
JREEEF	Jordan Renewable and Energy Efficiency Fund
JSMO	Jordan Standards and Metrology Organization
JVA	Jordan Valley Authority
KPI	Key Performance Indicator
ktoe	Kilo tonnes of oil equivalent
LTRC	Land Transport Regulatory Commission
MED-ENEC	Mediterranean Project on Energy Efficiency in the Construction Sector

MEDENER	Mediterranean Association of the National Agencies for Energy Management
MEMR	Ministry of Energy and Mineral Resources
MoEnv	Ministry of Environment
MoF	Ministry of Finance
MoL	Ministry of Labour
MoLA	Ministry of Local Administration
MIT	Ministry of Industry and Trade
MJ	Mega Joule
MoT	Ministry of Transport
MoPWH	Ministry of Public Works and Housing
Mtoe	Million tonnes of oil equivalent
MWh	Mega Watt hour
MWI	Ministry of Water and Irrigation
NDC	Nationally Determined Contribution
NEEAP	National Energy Efficiency Action Plan
NERC	National Energy Research Center
PPP	Purchasing Power Parity
RECP	Resource Efficient and Cleaner Production
REEE II TA	Renewable Energy and Energy Efficiency II Technical Assistance
RSS	Royal Scientific Society
SME	Small and Medium Enterprise
UNIDO	United Nations Industrial Development Organization
USAID	The United States Agency for International Development
WAJ	Water Authority of Jordan

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1.

Introduction

Jordan's economy has grown steadily at around 2.5% annually since 2013 except in 2020 due to the COVID-19 pandemic. Jordan's primary energy consumption has risen in the past decades, but it has experienced a decrease since 2017. The economic growth was associated and coupled with a higher demand for energy up until 2017. Energy efficiency supports the decoupling of economic growth from energy demand. Moreover, it creates the conditions for Jordan to meet the goals of a sustainable, secure, and affordable energy supply while fulfilling its climate action commitments.

The Jordanian energy strategy (2020-2030) aims to increase domestic resources (especially renewable energy sources) and energy consumption efficiency. Thus, the strategy reduces the economy's dependence on imported energy sources (security of supply) and energy consumption (efficiency of consumption). Energy intensity, energy consumption per economic output, is the primary long-term indicator for the energy efficiency policy.

The National Energy Efficiency Action Plan (NEEAP) is a short-term national plan to meet energy efficiency targets, contributing to the energy strategy and the objectives of energy transition and climate protection. It includes all the necessary programmes and projects in the shape of measures concerning energy efficiency implemented by ministries and all concerned stakeholders in a close cooperation. Jordan's Energy efficiency has improved since 2011 through the first and second NEEAPs and the adopted energy strategies.

The first NEEAP (2012-2014), focused on energy efficiency measures in the residential, public, industrial, commercial and water sector alongside some individual measures. In total, it comprised of 11 measures and set the target to save 806 GWh of electricity, a 7.6% improvement compared to the average electricity consumption from 2006-2010. By the end of the first NEEAP period, approx. 40% (324 GWh) of the intended energy savings were reached.

The second NEEAP (2018-2020), aimed at 1975 GWh of cumulative energy savings, a 17.6% target compared to average electricity consumption from 2006-2010, through the implementation of 35 sectoral and crosscutting measures within the residential, commercial, tertiary, industrial, water, street lighting, public and transport sector. By the end of the NEEAP period, approximately 46.3% (914.26 GWh) of the intended energy savings were reached.

The Ministry of Energy and Mineral Resources (MEMR) publishes this third NEEAP for 2024-2026 based on the energy strategy (2020-2030) and building on the first and the second NEEAPs. Furthermore, Medium- and long-term strategies and measures in all sectors are considered and endorsed in preparing the third NEEAP. The Jordanian-German Energy Partnership supported the development of the third NEEAP through Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in collaboration with the German Energy Agency (dena).

The energy efficiency measures included in the third NEEAP were developed in close cooperation with stakeholders from all relevant sectors and with the support of further local and international experts. The process of the third NEEAP development and methodology considered the Arab Guideline for Improving Electricity Efficiency of the Arab League and international good practices. As such, as a guidance, a wide range of measures from other countries were evaluated in terms of their eligibility for Jordan. During the process, a large number of meetings ensured the involvement of stakeholders who had the opportunity to bring in their impulses. Thus, the ideas and contributions of many stakeholders from all sectors in Jordan were integrated in the development of the third NEEAP.

In 2021, the sectoral distribution of the final energy mix was transport, residential, industry, and commercial (highest to lowest energy-consuming). Thus, the third NEEAP targeted the efforts on these sectors, additionally the sectoral measures cover water and agriculture sectors. The third NEEAP consists of 50 comprehensive sectoral and cross-sectoral measures (with 61 subordinate measures) to be implemented in 2024-2026. The main planned activities in the sectors are the following:

- **Industrial sector**, the focus is on further intensifying energy audits and implementing pilot projects. Measures in this sector also include initiatives like the EU Green Economy program in Jordan and the Competence Center for Energy Efficiency for promoting sustainable practices. Specific industries, such as food processing and textiles, are targeted to reach energy efficient and cleaner production methods. With the budget of the existing and new programs of JREEEF and international donors further pilot projects and a funding program for energy-efficient technologies should be implemented.
- **Residential sector**, besides anchoring energy requirements for new buildings, the focus is to improve existing buildings efficiency using different methods and technologies (e.g., solar water heaters, efficient air-conditioning units and electrical appliances) without neglecting awareness and the development of know-how among institutions and experts. Information and awareness enable households to implement immediate and small measures (low-cost and on behaviour) further opportunities are achievable with energy consultancy.
- **Service sector**, energy efficiency in the services sector is targeted by 7 key measures. These include energy assessments for the service sector, the Tourism Sector Energy Efficiency Program (TSEEP), by implementing detailed energy audits in hotels in Aqaba city to promote energy efficiency retrofits in this sector. Additionally, measures also include a public building energy database, a roadmap for energy efficiency in public buildings, and a lighting replacement program to install energy-savings LED units for municipalities. Moreover, the measures include a pilot project for MEMR building, energy audits for public schools, ministries and the installation of solar water heaters in public hospitals. These initiatives collectively target enhanced energy conservation and sustainability.
- **Transport sector**, analytical measures such as studies and strategies are conducted for multiple infrastructure projects that will lead to significant energy savings. Public transport system enhancement (such as efficiency, accessibility, and sustainability) and infrastructure expansion (such as Bus Rapid Transit transportation systems) will encourage transport mode shift. Moreover, electric vehicles adaptation is endorsed and accelerated through the strategic implementation of charging infrastructure. Furthermore, the endorsement of energy-efficient heavy-duty vehicles, the implementation of the National Railway project's first phase (Aqaba-Ma'an-Amman Madouneh), and the tracking of government vehicles all contribute to fostering new efficient transportation systems and the preservation of resources.
- **Water and agricultural sector**, a total of six significant measures are being implemented to enhance energy efficiency. Within the water sector, four impactful initiatives include energy audits, the implementation of energy management systems (EnMS) projects, replacement of pumps with energy-efficient models and the incorporation of Variable Frequency Drives (VFDs), and the restructuring and rehabilitation of water systems. In the agricultural sector, efforts are focused on assessing the energy efficiency potential and supporting the installation of Variable Speed Drives (VSD) on irrigation pumps, both aimed at reducing energy consumption and improving efficiency in agricultural practices.
- **Cross-sectoral** decision making will be enhanced using enhanced KPIs by improving the necessary structures for data collection, monitoring, and analysis. Thus, enabling policy updates and the amendments of the By-laws. Moreover, a comprehensive national campaign on energy efficiency is a crucial measure to

strengthen the awareness of the energy transition, climate action and energy efficiency in all target groups. By strengthening personnel capacities, the knowledge of experts will be expanded. ESCO market development is a key measure to mainstream energy efficiency, improving capacities and developing business models in all sectors. The use and further development of the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) is an important basis for realising the necessary financing of many measures. With the third NEEAP, a special emphasis is being put on the implementation of a systematic energy data collection and analysis of energy efficiency issues, reflecting the main measures in the sectors. A systematic monitoring of the energy efficiency policy will be implemented with specific KPIs in the sectors. Hereby, the current data situation requires further development to meet the new requirements to stringently implement and monitor the energy efficiency policy.

The responsible body for steering the NEEAP and the associated monitoring process is the MEMR, which oversees the regulation and implementation of policies applicable to energy and energy efficiency. The measures implementing ministries and organisations are responsible to regularly deliver the needed information about their measures and sectors and are involved in adequate organisational structures on the steering and working level. The implementation of the measures is monitored regularly and systematically along the foreseen milestones and the impact. Therefore, appropriate KPIs for sectors and subsectors will be defined and the systematic data-management will be elaborated therefore a specialised unit is foreseen. The monitoring will result in progress reports and a final NEEAP monitoring report to be approved by MEMR in accordance with other ministries. In these reports information on the implementation progress of every measure is foreseen along the set milestones and the implementation of savings. Thus, the savings will be measured and an overall impact of the NEEAP will be estimated.

2.

Energy Situation in Jordan

This chapter delves into the past development and current situation of Jordan's energy landscape, covering the country's energy demand (chapter 2.1) and supply (chapter 2.2), electricity demand (chapter 2.3) and supply (chapter 2.4), as well as its energy intensity development (chapter 2.5). Subsequently, energy efficiency policies are summarised in chapter 2.6 and the development of the energy service companies' market (ESCO) is described in chapter 2.7. The years 2015 to 2021 are considered, with 2018 serving as the baseline year prior to the outbreak of the covid pandemic which had a substantial impact on the Jordanian energy market. Thoroughly understanding the energy situation in Jordan through these seven chapters will support the measures in chapter four and pave the way for a more sustainable and resilient energy future for the country.

2.1

Energy Demand

In recent years, Jordan's energy demand has decreased due to the COVID-19 pandemic and its consequences. Between 2015 and 2017, Jordan witnessed a significant increase in final energy consumption, recording a growth of 15.9%, which translates to 941 ktoe. Factors such as population growth, industrial development, and expanding urban areas all contributed to this increase in energy consumption. However, the final energy consumption experienced a sharp decline of 16% (equating to 1094 ktoe) between 2017 and 2020, as shown in Figure 1. Despite this decline, final energy consumption increased in 2021 as the economy began to recover, reaching 6,222 ktoe. Although the final energy consumption showed a trend toward recovery, the energy consumption remains below pre-pandemic levels in 2018.

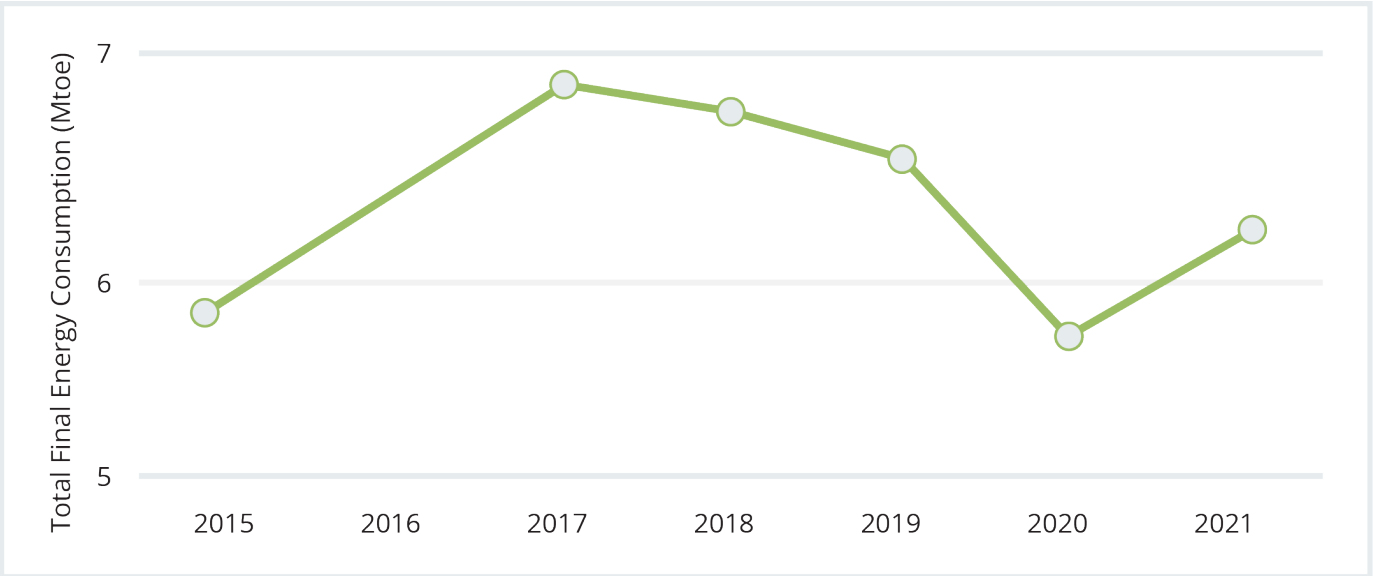

Figure 1: Final energy consumption for the years 2015-2021 (Mtoe) (MEMR, 2015-2021)

Jordan's energy consumption is divided into four key sectors: transport, industry, residential, and commercial. Table 1 presents the final energy consumption for each sector from 2015 to 2021. The transportation sector has been the biggest energy consumer since 2015, accounting for almost half the total energy consumption. However, the energy consumption in the transportation sector decreased significantly, due to the COVID-19 pandemic, by 1,123 ktoe between 2017 and 2020, which is more than the overall decrease in final energy consumption. As a result, the energy consumption in the other sectors remained relatively stable.

Table 1: Sectoral final energy consumption for the years 2015-2021 (ktoe) (MEMR, 2015-2021)

Sector	2015	2016	2017	2018	2019	2020	2021
Transport	2,811	3,184	3,431	3,363	3,074	2,308	2,677
Industry	991	1,064	938	954	891	935	1,017
Residential	1,272	1,342	1,549	1,463	1,484	1,487	1,520
Commerce and other	754	826	950	981	1,109	1,045	1,008
Total	**5,927**	**6,416**	**6,868**	**6,761**	**6,560**	**5,774**	**6,222**

In 2018, the transport sector was the most energy intensive, accounting for 49% of the total energy consumption. This was primarily due to the mode of transportation and the efficiency of fleets. The residential sector followed as the second largest energy consumer, while the industrial and commercial sectors had almost equal shares of energy consumption. Figure 2 provides a detailed breakdown.

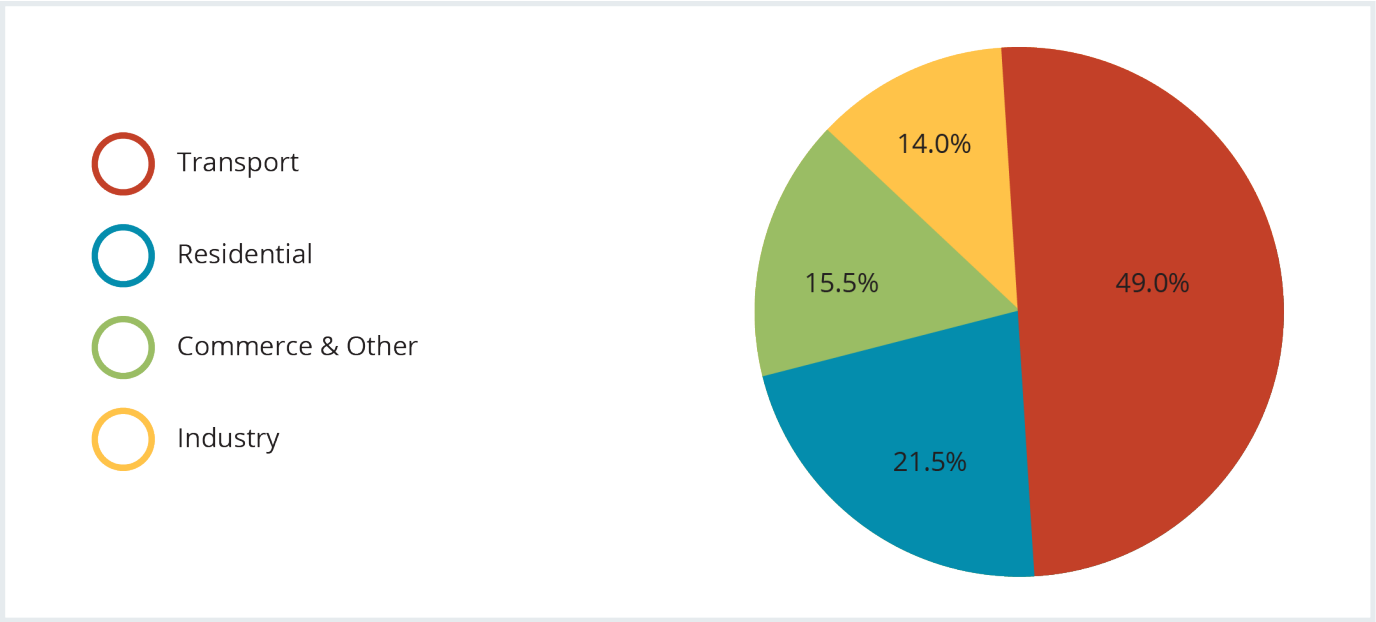

Figure 2: Sector distribution of the final energy consumption for the year 2018 (MEMR, 2015-2021)

2.2 Energy Supply

The level of energy supply has fluctuated significantly in recent years. While the rising demand between 2015 and 2017 was accompanied by an impressive growth in supply of 12% (1065 ktoe), the COVID-19 pandemic led to a drastic decrease of about 14% (1426 ktoe) between 2017 and 2020. The drop in energy supply is highly concerning because the supply fell below the 2015 level. However, there has been a slight improvement, with the supply reaching 8726 ktoe in 2021, although still below the 2015 level, as illustrated in Figure 3. It is important to note that the energy supply is on the path to recovery, with 2022 witnessing an increase in supply due to the ongoing economic recovery.

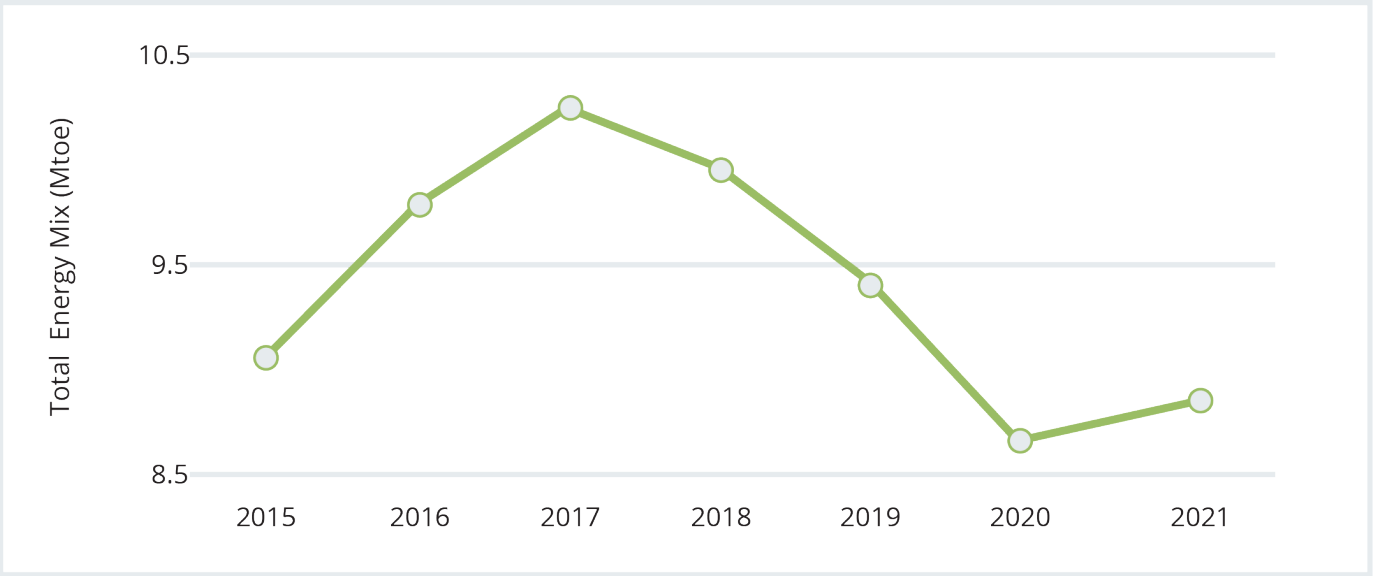

Figure 3: Total energy supply for the years 2015-2021 (Mtoe) (MEMR, 2015-2021)

Between 2015 and 2021 the energy supply mix in Jordan has experienced significant changes as shown in Table 2. The energy supply was dominated by oil products which made up 71 % of the total supply in 2015. However, the energy supply mix has become more balanced, oil product accounts for 45% and natural gas for 37% in 2021. To reduce the imports dependency, Jordan has been actively investing in renewable energy sources which led to a remarkable rise in their share in the energy mix from 2% (160 ktoe) in 2015 to 14% (1245 ktoe) in 2021. Consequently, the domestic energy supply also increased from 3% in 2015 to 16% in 2021.

Table 2: Energy mix by sector for the years 2015-2021 (ktoe) (MEMR, 2015-2021)

Primary Energy	2015	2016	2017	2018	2019	2020	2021
Crude Oil & Petroleum Products	6,331	5,327	5,671	5,225	5,006	4,121	3,966
Coal & Lignite	326	402	313	297	143	152	226
Renewable Energy	160	412	515	753	823	982	1,245
Natural Gas	1,944	3,389	3,510	3,438	3,281	3,311	3,270
Imported Electricity	152	84	13	47	12	16	19
Total	**8,944**	**9,614**	**10,009**	**9,759**	**9,266**	**8,583**	**8,726**

In 2018, Jordan depended on crude oil and petroleum products to provide 53.6% of its energy supply, as shown in Figure 4. Meanwhile, natural gas contributed to 35.2% of the total energy supply, primarily used for electricity. Domestic sources only accounted for 8% of the energy supply of that renewable sources comprised 7.7% of the domestic sources.

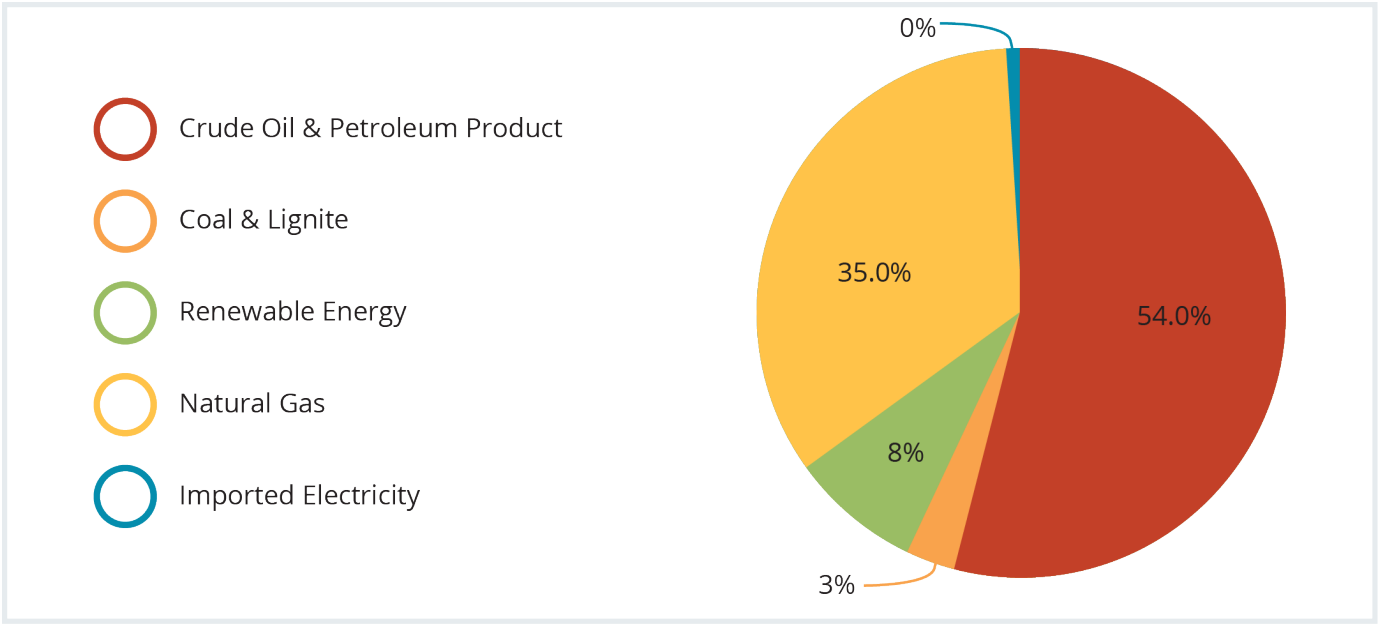

Figure 4: Energy mix per energy carrier for the year 2018 (MEMR, 2015-2021)

2.3 Electricity Demand

Between 2015 and 2021, electricity consumption in Jordan rose by almost 19% (3,133 GWh). However, there was a slight decrease in 2018, as shown in Figure 5. This increase in demand puts a significant strain on the power grid, necessitating continuous investment in infrastructure and power generation capacity.

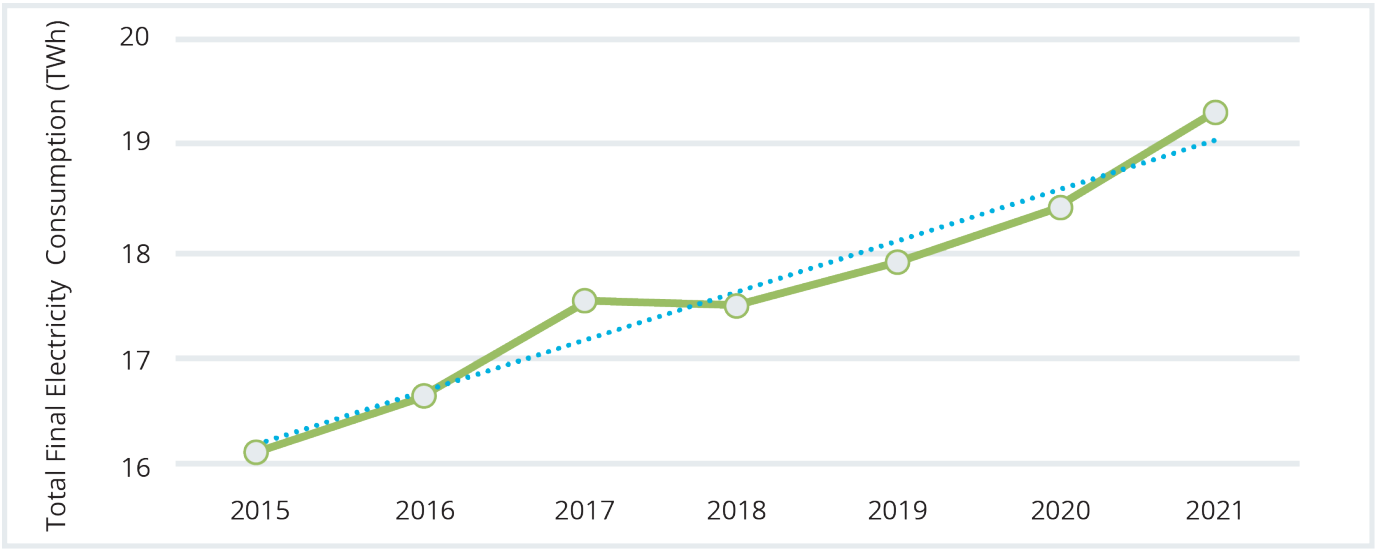

Figure 5: Total electricity consumption for the years 2015-2021 (TWh) (MEMR, 2015-2021)

Table 3 displays the sectors that primarily drive electricity consumption, namely residential, industrial, commercial and the public sector, as well as water and street lighting. The main drivers of electricity consumption are residential demand, commercial activities, and water pumping. Due to the increased population and the effects of COVID-19, more people are working from home, causing residential electricity consumption to increase by 5% between 2015 and 2021. Meanwhile, other sectors have decreased its electricity consumption over the same period. It is worth mentioning that the electricity consumption values mentioned earlier does not take into consideration electricity generated independently, commonly referred to as "Behind the Meter (BTM)" generation, as an example, electricity generated from renewable energy sources.

Table 3: Sectoral electricity consumption for the years 2015-2021 (GWh) (MEMR, 2015-2021)

Sector	2015	2016	2017	2018	2019	2020	2021
Residential Buildings	6,938	7,448	8,076	8,038	8,260	9,100	9,269
Industry	4,012	3,939	3,785	3,877	3,622	3,489	4,049
Commercial & Public Services	2,460	2,447	2,655	2,507	2,870	2,584	2,831
Agriculture & Water Pumping	2,426	2,485	2,655	2,706	2,747	2,866	2,767
Street Lighting	337	350	403	404	411	387	390
Total Electricity Consumption	**16,173**	**16,669**	**17,574**	**17,532**	**17,910**	**18,425**	**19,306**

In 2018, the largest electricity consumer was the residential sector, accounting for 45.9% (8038 GWh) of total electricity consumption. Following closely behind were the productive sectors (industry and commercial), collaboratively consuming 36.4% (6384 GWh). The third largest electricity consumer was the water sector, which accounted for 15.4% (2655 GWh) due to the high demand for water pumping caused by the natural water scarcity in Jordan, as shown in Figure 6.

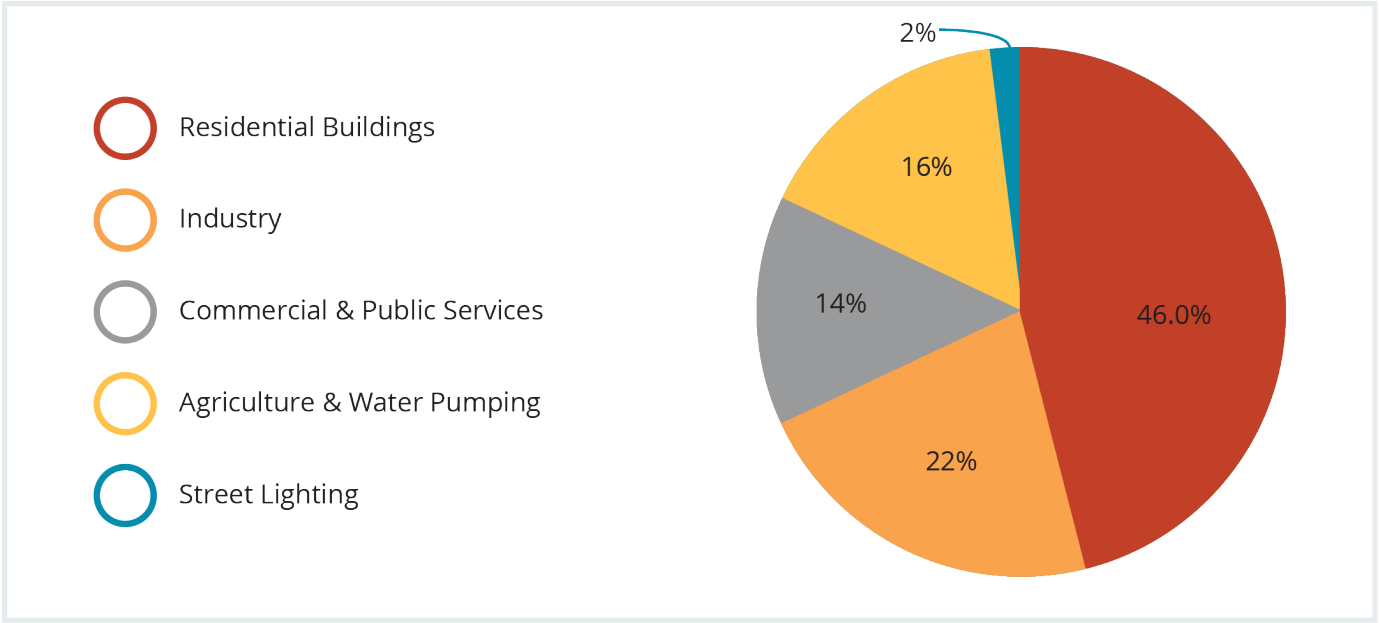

Figure 6: Sectoral share of electricity consumption for the year 2018 (MEMR, 2015-2021)

2.4 Electricity Supply

Jordan has achieved a remarkable accomplishment through the Rural Electrification Project (Files Al-Reef), as 99.9% of the population now has access to electricity. The peak load has increased by 17.6% since 2018, with the highest demand seen during winter nights, as shown in Figure 7. In 2020, The National Electric Power Company maintained a reliable electricity supply despite the challenges and difficulties compounded by the COVID-19 pandemic. Therefore, the electricity supply in 2020, averaged at only 1.6 interruptions of 136 minutes per interruption.

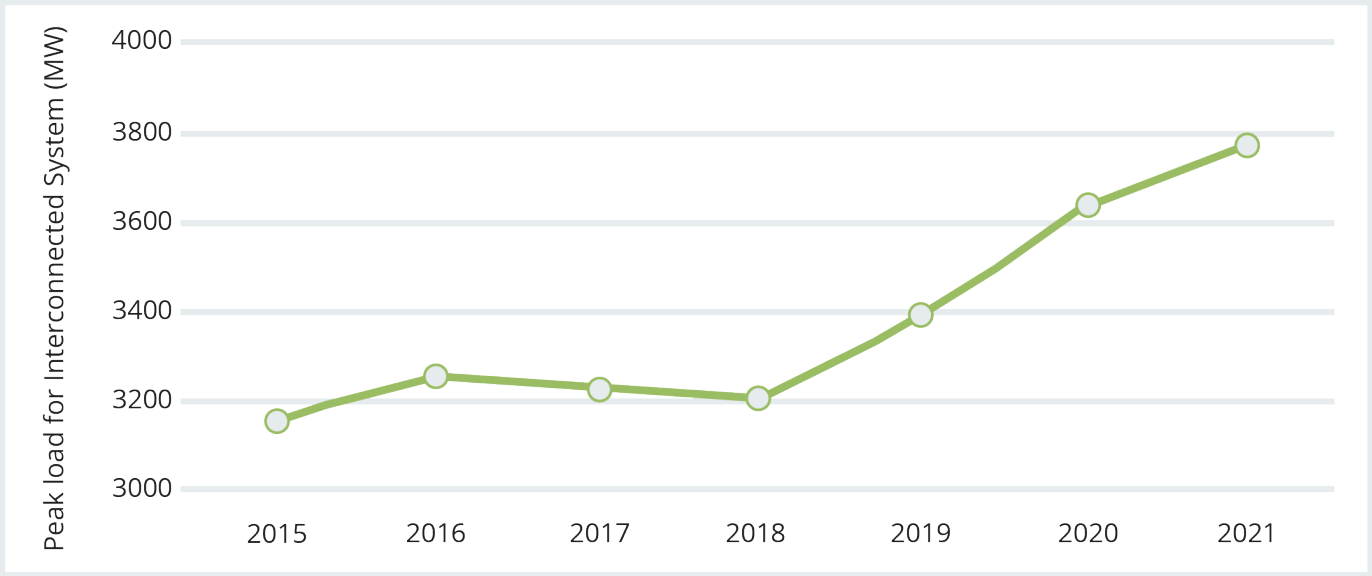

Figure 7: Grid peak load for the years 2015-2021 (MW) (NEPCO, 2015-2021)

New power plants were constructed, both conventional and renewable, to meet the rising electricity demand and peak load. Combined cycle plants dominate the power generation capacity, accounting for almost half of the 2021 generation capacity. Meanwhile, renewable energy plants have experienced significant expansion since 2016, constituting 28.4% of the generation capacity connected to the transmission network. The generation capacity share of steam and gas turbines technologies has decreased due to their lower efficiency compared to combined cycle power plants, as illustrated in Figure 8.

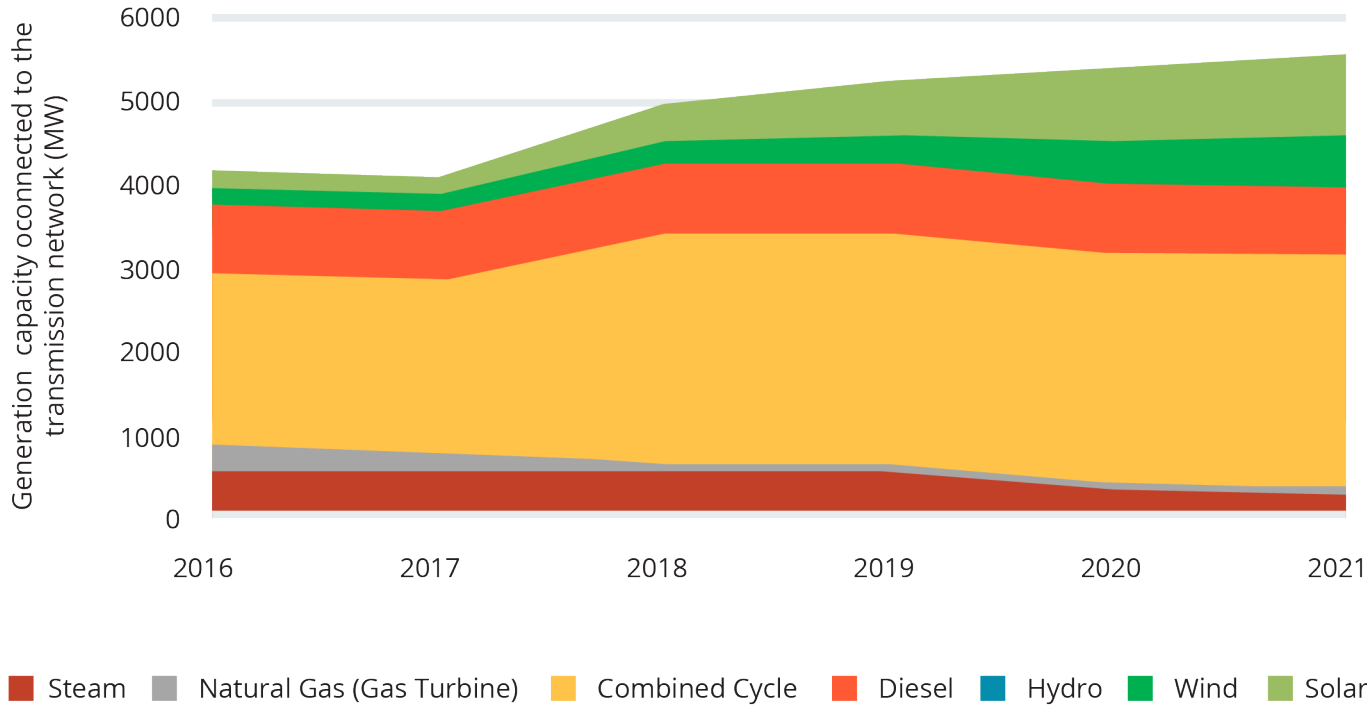

Figure 8: Generation capacity (MW) (NEPCO, 2015-2021)

Natural gas, heavy fuel, and diesel are used in the electricity generation sector. However, the use of natural gas decreased to less than 10% in 2014 due to supply disruptions. Currently, natural gas is the primary fuel used in electricity generation because it is the most cost-effective option for electricity generation, as shown in Figure 9, compared to diesel and heavy fuel.

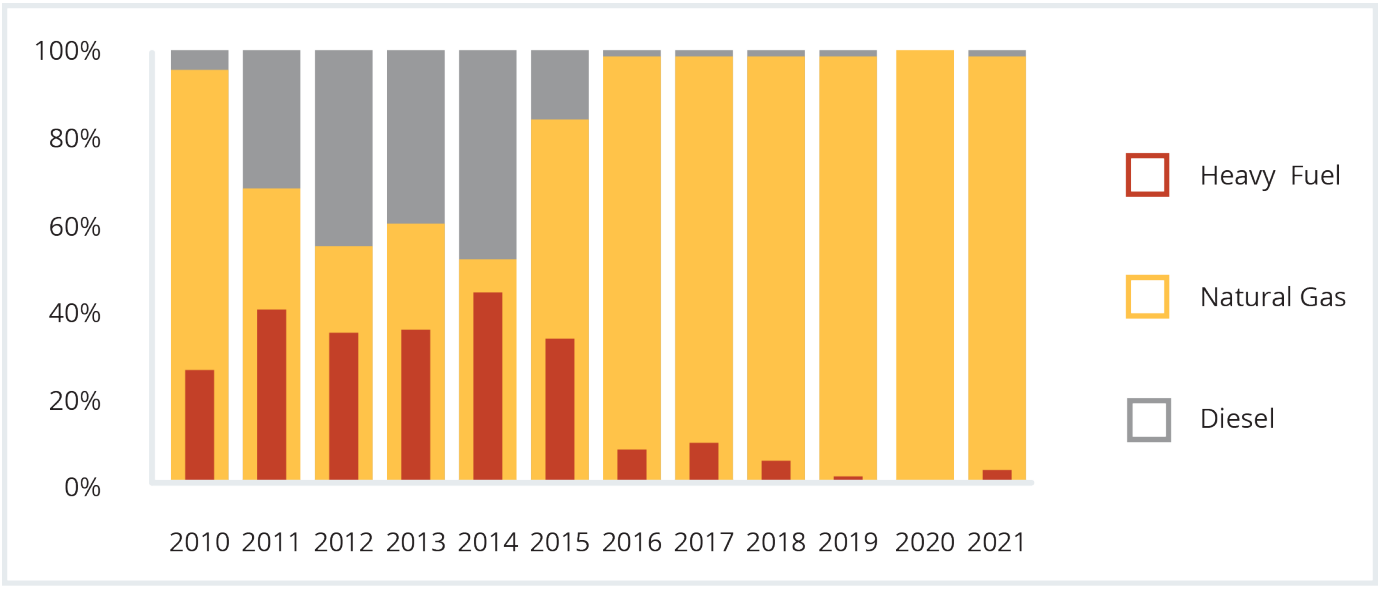

Figure 9: Fuel consumption share from conventional power plants (NEPCO, 2010-2021)

2.5

Energy Intensity

Economy-wide energy intensity is the energy used to produce a single unit of gross domestic product (GDP). It reflects how efficiently an economy consumes energy, representing mid and long-term changes in one country. Economy-wide energy intensity represents an aggregate of energy consumption from various activities and provides a rough idea of energy consumption trends with economic development. Jordan's energy intensity improved by around 1 MJ per 2017 $ Purchasing Power Parity (PPP) between 1990 to 2019, as illustrated in Figure 10. The decreasing energy intensity indicates a higher economic efficiency in energy consumption.

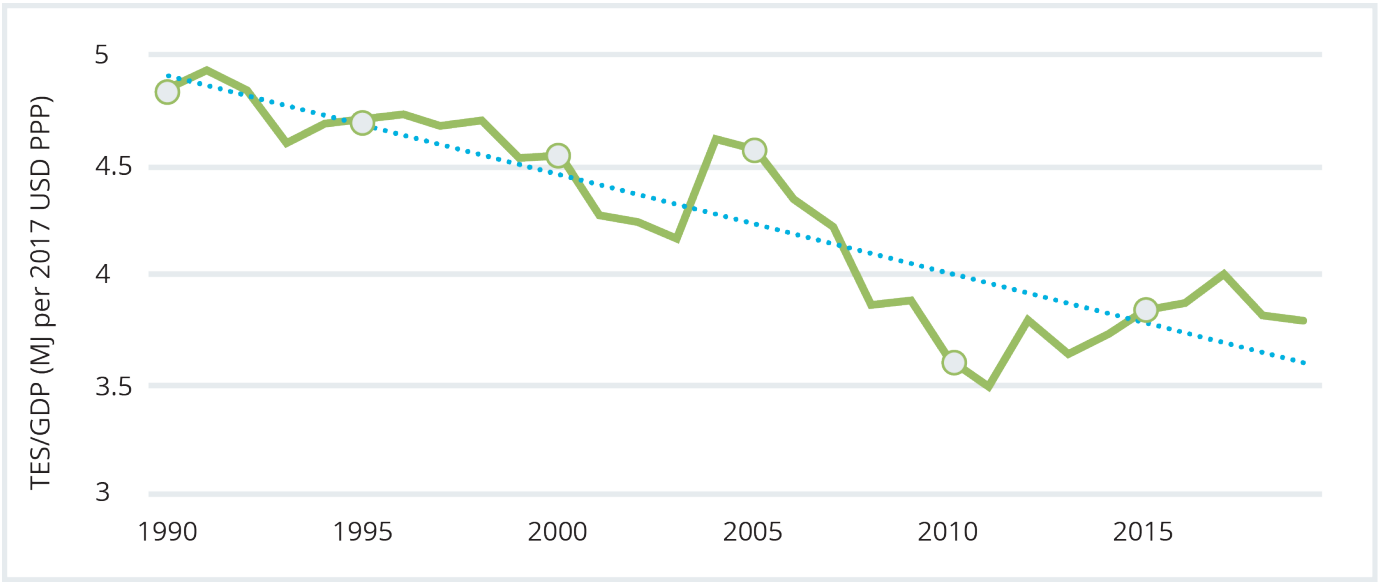

Figure 10: Long-term Jordan energy intensity trend in MJ per 2017 USD (PPP) (IEA, 2022)

From 2016 to 2021, Jordan's energy intensity varied but ultimately decreased to its lowest level since 2016. The COVID-19 pandemic had impacted Jordan's energy intensity, resulting in a drop of 6% between 2019 and 2020, as illustrated in Figure 11.

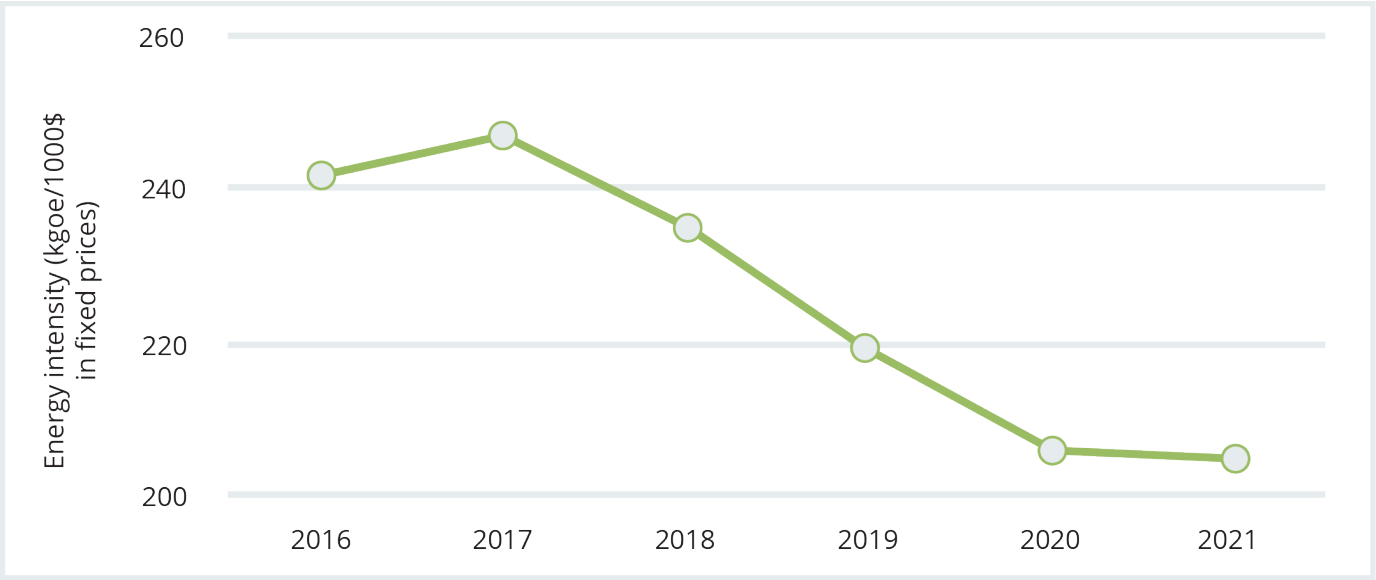

Figure 11: Energy intensity for 2016-2021 (MEMR, Jordan Energy Balance, 2015-2021)

The energy supply in Jordan is heavily dependent on imports, which account for 84% of the total energy supply in 2021. Its impact on Jordan's GDP has been significant, varied between 7% and 10% of the total GDP before the COVID-19 pandemic. Therefore, the economy is heavily burdened by the high cost of imported energy. The adverse economic effects of expensive energy imports are among several factors contributing to Jordan's energy intensity.

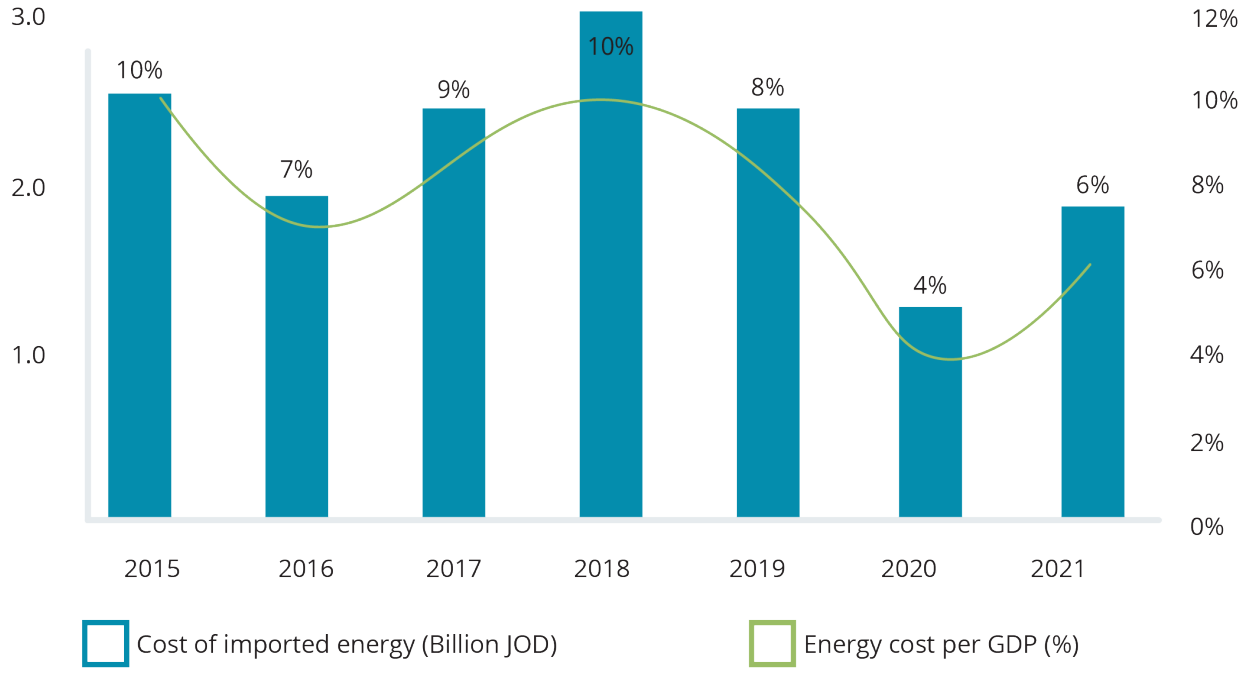

Figure 12: Cost of imported energy and its percentage of total GDP (MEMR, 2015-2021)

Regarding energy efficiency policies, it's not enough to look at the overall energy intensity of the economy. Many factors, such as economic changes, energy sources, and business cycles, can influence the economy-wide energy intensity. To better understand energy intensity trends, it's more helpful to examine sector-specific energy intensity, which filters out broader economic effects. Going even further and breaking down the data into sub-sectors can provide even more valuable insights, but it also requires more extensive data collection and analysis.

2.6

Energy Efficiency Policy

MEMR is the policy maker responsible for the design and implementation of the energy sector development strategies and policies and the oversight of their implementation. The EMRC is the sector regulator, carrying out, licensing, and supervising regulated activities. The Renewable Energy and Energy Efficiency Law of 2012 (Law 13 of 2012) has been instrumental in advancing energy efficiency and formulating effective policies which initiated the energy efficiency sector.

Before the Renewable Energy and Energy Efficiency Law of 2012, the Jordanian National Building Law of 1993 (Law 7 of 1993) was the main framework for energy efficiency in the building sector. The Jordanian National Building Law of 1993 regulates the construction sector, including the development and enforcement mechanisms of building codes. By virtue of the Jordanian National Building Law, the National Building Council developed the Thermal Insulation Code (in 1998 and revised in 2009) and the Energy Efficient Building Code (in 2010) that enhanced building's energy efficiency.

By virtue of The Renewable Energy and Energy Efficiency Law of 2012 (Law 13 of 2012) and its amendment (Law 33 of 2014), several supporting bylaws were enacted, including:

- **By-law 73 of 2012** on Regulating Procedures and Means of Conserving Energy and Improving Its Efficiency. Issued by virtue of article (18) of the Renewable Energy and Energy Efficiency law 13 of 2012.
- **By-law 49 of 2015**. The establishment of the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) according to article (12) of the Renewable Energy and Energy Efficiency Law 13 of 2012.
- **By-law 50 of 2018** of Provisions and Conditions of Exempting Systems of Renewable Energy Sources and its Devices and Equipment and the Energy Efficiency Equipment from the Customs Fees and Subjecting them to General Sales Tax in Percentage or Amount of (Zero) according to the Paragraph (C) of Article (11) of the Renewable Energy and Energy Efficiency Law 13 of 2012.

Several standards and regulations were introduced to further enhance energy efficiency practices in Jordan. For example, the following standards and regulations were key to the energy efficiency development:

- **Energy Audit Services Regulation:** Instructions for the license to practice the provision of energy audit services for the year 2017 issued in accordance with the provisions of Article (6) of the By-law 73 of 2012.
- **Energy Efficiency Standards and Labels addressing "energy-using products":** In accordance with By-law 73 of 2012, which prohibited the manufacturing and importing of equipment that did not meet the minimum energy efficiency standards, in 2013, JSMO introduced Energy Label Technical Rules and Eco-design regulations for household appliances: **JS 2104, JS 2108, JS 2101, and JS 2092: 2013**. To ensure compliance with these standards, the Energy Labelling Laboratory was established at NERC, equipped to test the energy efficiency and adherence to labelling standards.
- **Energy Audits Standards:** JSMO developed **JS 2243-(1-5): 2019** Energy Audits Jordanian Standards; comprehensive standards for energy audits. These standards specify the requirements, methodology and deliverables of an energy audit across various sectors.

2.7

Energy Service Framework

Energy Service Companies (ESCOs) develop energy efficiency projects through a complete range of services. ESCOs provide a variety of business models to accommodate clients' requests based on the project details. These models implement energy saving measures, designed and engineered based on energy audits. However, the services extend to securing funds and managing the facility operations. While Jordan has gained initial experience with the ESCO projects, further development is necessary to grow the market.

Access to investment capital is essential for covering the upfront costs of energy efficiency projects. However, accessing sufficient capital remains a major challenge in ESCO implementation. External financing is often required in ESCO models to share risks and provide adequate funding for energy efficiency projects. Funds supporting energy transition and climate action, such as JREEEF, can offer preferential debt, loan guarantees, or lease instruments to supplement ESCOs' and site hosts' funds. These funds have played a significant role in accelerating ESCO markets by providing „green" financing aligned with ESCOs' objectives, which is not typically offered by traditional financing institutions. JREEEF's expertise in funding mechanisms and its partnership with ESCOs are expected to foster the growth of ESCOs in Jordan.

Energy efficiency projects are crucial for advancing the ESCO market, generating energy savings, reducing carbon emissions, and promoting economic growth. To support ESCOs, JREEEF has initiated a pilot project in the tourism sector in Aqaba based on the ESCO model. Concrete support from government agencies like JREEEF and international organizations can accelerate the development of the ESCO market. Engaging relevant stakeholders, including clients, energy service companies, and financial service providers, will further expand the market. This expansion will encourage the development of specialized financial products by green funds and banks, contributing to the de-risking of investments in the sector.

In addition to financing, several key aspects contribute to a successful ESCO market. These include having technical skills and expertise to effectively implement energy efficiency projects, establishing legally enforceable performance contracts to ensure energy savings, raising awareness among the private sector about the benefits of energy efficiency upgrades, and utilizing standardized tender documents that outline the ESCO model and required services.

Collaborative efforts between stakeholders in the ESCO market, along with support from the public sector, will address these barriers and leverage success factors. Jordan's existing energy efficiency policy framework provides a supportive regulatory environment for the growth of energy services. The pilot projects undertaken by JREEEF pave the way for further development and growth of the ESCO market. The inclusion of multiple measures in the third NEEAP represents a significant step towards advancing the ESCO market in Jordan.

3.

National Energy Efficiency Objectives

This chapter establishes the framework for achieving national energy efficiency objectives by analysing previous savings in the first and second NEEAPs, introducing the methodology and baseline for the Third NEEAP, discussing energy consumption forecast, and outlining the national energy efficiency target. It concludes with a summary of proposed measures to enhance energy efficiency, providing a solid foundation for effective implementation of the Third NEEAP.

3.1

Previous Energy Efficiency Action Plans

Jordan has successfully implemented two NEEAPs in the past decade: the first from 2012-2014 and the second from 2018-2020. The National Energy Research Center (NERC) of the Royal Scientific Society (RSS) developed the first NEEAP with support from the MED-ENEC program in collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Ecofys (now known as Guidehouse), and Agence de la transition écologique (ADEME) from France. The second NEEAP was developed by the Jordan Renewable Energy and Energy Efficiency Fund of the Ministry of Energy and Mineral Resources (MEMR) with support from the European Union's REEE II technical assistance project.

The previous NEEAPs were developed based on the Arab Guideline for Improving Electricity Efficiency to achieve an energy saving of 2258 GWh. The saving intended to achieve a target of 20% based on the average electricity consumption between 2006 and 2010. The NEEAPs included 46 energy efficiency measures targeting various sectors, such as residential, public, industrial, commercial, water, and street lighting. The first NEEAP had 11 measures to achieve savings of 806 GWh, equivalent to a 7.6% reduction from the baseline. The second NEEAP had 35 measures, 26 for specific sectors and 9 cross-sectoral measures, with an overall goal of achieving a total savings of 1975 GWh, equivalent to a 17.6% reduction from the baseline energy consumption. Table 4 provides a detailed summary of the targets achieved in the previous NEEAPs.

Table 4: Overview of previous Jordanian NEEAPs

Previous NEEAPs	Period	Number of measures	Sectors	Energy Reduction Target (%)
First	2012 -2014	11	Residential, commercial, service, industrial, water pumping, street lighting	7.6 % final electricity consumption, approx. 806 GWh.
Second	2018 -2020	35 measures	Residential, commercial and services, industrial, water pumping, municipal, street lighting, and transportation	17.6 % final electricity consumption, approx. 1,975 GWh.

The First NEEAP achieved a total savings of 323.7 GWh which is 40.2% from the baseline. It primarily focused on the residential and industrial sectors, the largest electricity consumer. Six energy efficiency measures were employed to target these sectors, resulting in a saving of 609 GWh, which accounted for approximately 75% of the first NEEAP's objective. Although the industrial sector

achieved an 80% saving from the target, the residential sector had the highest energy savings of 172 GWH. The energy savings achieved by each sector in the first NEEAP can be found in Table 5.

Table 5: Targeted and achieved savings for the first NEEAP.

Sector	No. of measures	Targeted savings (in GWh)	Achieved savings (in GWh)	Rate of Completion (%)
Residential	5	509	172	34%
Commercial	1	50	15	30%
Industrial	1	100	80.4	80%
Water Pumping	1	85	34.1	40%
Street lighting	1	19	11.4	60%
Public	2	42	10.8	26%
Total	**11**	**805**	**323.7**	**40.2%**

The second NEEAP was ambitious in terms of measures, sectors, and savings. The second NEEAP tripled the number of measures, the targeted savings, and the achieved savings, which amounted to around 914.26 GWh (46.3%). The residential sector remained the primary focus of the second NEEAP at 998 GWh targeted saving, representing around half of the total savings. The commercial and services sector has increased incredibly the targeted savings by 752% from the first NEEAP. The achievement target increased in all sectors, exceeding 50%, except in the industrial sector. The Industrial sector faced multiple challenges and barriers that hindered the proper implementation and evaluation of energy efficiency measures. The main obstacles to implementing the second NEEAP were the availability of financial resources and the energy efficiency market readiness. The energy savings achieved by each sector in the first NEEAP can be found in Table 6.

Table 6: Targeted and achieved savings for the second NEEAP.

Sector	No. of measures	Targeted savings (in GWh)	Achieved savings (in GWh)	Rate of Completion (%)
Residential	4	998	490.8	49.2%
Commercial & services	6	376	262.4	69.8%
Water Pumping	11	163	125.4	76.9%
Street lighting	1	55	35.66	64.8%
Industrial*	1	383	N/A	N/A
Cross-sectoral	13	N/A	N/A	N/A
Total**	**35**	**1975**	**914.26**	**46.3%**

* Data availability hindered the evaluation of the achieved savings.
**Total savings does not reflect the actual energy saved.

The challenges of tracking and assessing progress in the second NEEAP were significant due to the comprehensive and detailed nature of the plan, which included numerous measures and sectors. Improved information management and cross-sectoral collaboration were deemed necessary in order to address these challenges. However, the task of collecting detailed and up-to-date data was daunting and

coordinating data collection efforts among different groups proved to be a significant hurdle that needed to be overcome.

The two previous National Energy Efficiency Action Plans (NEEAPs) achieved about 1238 GWh of energy savings, which is 55% of the 2258 GWh target for 2020. The residential sector was responsible for 53% of the total energy savings for both NEEAPs, with the industrial sector coming in second for the first NEEAP and the commercial sector for the second NEEAP. The contribution of water pumping and street lighting was also significant, as illustrated in Figure 8.

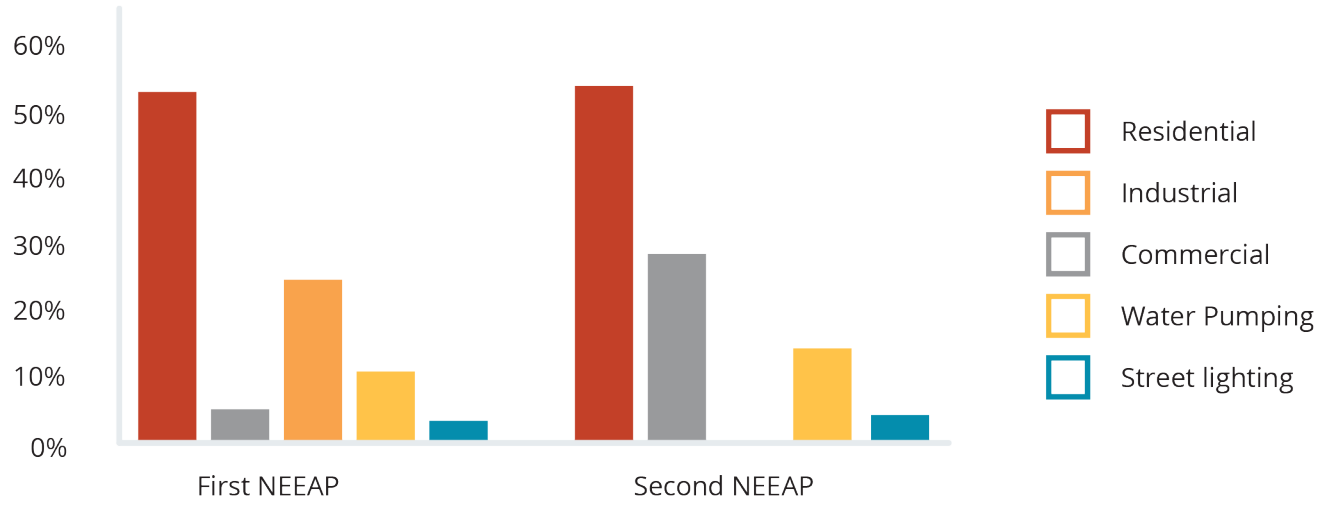

Figure 13: Sector saving contribution for the first and the second NEEAPs.

3.2

Energy Consumption Forecast

The TIMES Energy System Model was used to predict energy consumption until 2030 in the energy strategy. Two scenarios were considered: a Business-as-usual scenario (BaUS) and an Increase sustainability scenario (ISS). The BaUS assumes that the energy performance trends in terms of demand and supply will continue, while the ISS scenario assumes additional efficiency improvements and a higher penetration rate of efficient equipment. According to the model's predictions, final energy consumption from 2020-2030 will increase in both scenarios, but at different annual growth rates of 2.3% for BaUS and 1.7% for ISS. Additionally, electricity demand will increase with a yearly average of 1.7% and 1.2% for BaUS and ISS, respectively. BaUS and ISS forecast are illustrated in Figure 14.

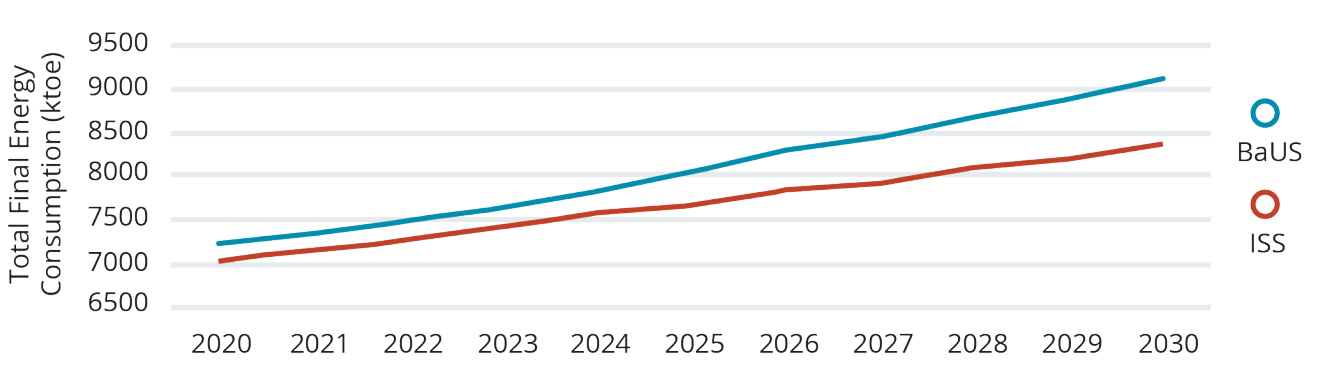

Figure 14: Forecasted final energy consumption (MEMR, 2015)

For both scenarios, the transport sector will remain the primary energy-consuming sector with a share of about 53% in 2030 in both scenarios. Meanwhile, the industry and residential sectors will experience a decrease in their share of energy consumption by 2030. Regarding electricity consumption, the residential sector will still be the largest consumer, accounting for around 40% of the total in the BaUS. The industry, and Commercial and services sectors will considerably decrease their electricity consumption share by 2030 in the ISS scenario. However, the increased use of electric vehicles in the transport sector is projected to offset this reduction, as it is expected to consume 9% of total electricity consumption in 2030 in the ISS scenario. Refer to Table 7 for the detailed sectoral energy consumption in both scenarios.

Table 7: Sectoral Energy Consumption in BaUS and ISS Scenarios (ktoe)

Sector	2030	
	BaUS	ISS
Industry	1216	983
Residential	1696	1609
Commercial and Services	623	608
Agriculture and Water Pumping	757	697
Transport	4804	4463
Total	**9,096**	**8,360**

The COVID-19 pandemic significantly impacted consumption patterns leading to shifts in energy demand across different sectors because of the lockdowns, travel restrictions, and economic disruptions. As a result, actual energy consumption in Jordan was lower than previously forecasted. However, this deviation in consumption is expected to be temporary as the economy and energy consumption recover.

3.3

Third NEEAP Methodology and Baseline

The third NEEAP strongly emphasised energy efficiency across all sectors and drew upon the successes of the first and second NEEAP. The transport sector received special attention due to its high energy consumption in Jordan. The residential, industrial, and other economic sectors were also recognised for their impact on energy consumption. Developing measures in the water sector was deemed necessary due to Jordan's critical water situation. The third NEEAP considered international practices and analysed energy efficiency measures employed by various countries to determine their relevance and applicability to Jordan. Throughout the development process, discussions were held with local stakeholders. A short overview of the consecutive steps during the preparation and development of the third NEEAP is given below:

- Analysis of the first and second NEEAPs
- Analysis of international NEEAPs from countries such as Germany, Turkey, Lebanon, Saudi Arabia, United Arab Emirates, and energy efficiency policy in European countries
- Interviews and meetings with stakeholders from different sectors
- Analysis of the available energy consumption data and identification of the sectors with greatest savings potentials

- Development of potential energy efficiency measures and request for energy efficiency projects and programmes (measures) from the sectors
- Particular meetings with ministries responsible for the implementation of measures
- Fine-tuning of measures and quantification of the potential energy savings of measures

The Arab Guideline for Improving Electricity Efficiency (AMCE, 2018) was utilized to determine the baseline for the first and second NEEAPs. The guideline methodology to establish the baseline is a five-year average final electricity consumption before the target-setting year, for which official data is available. Consequently, the baseline for the first and second NEEAPs was established by calculating the average electricity consumption for 2006-2010.

In 2018, the energy efficiency target for 2030 was formed in the energy strategy for 2020-2030. Therefore, the baseline for the 2030 energy efficiency target is the average electricity consumption between 2014 and 2018, according to Arab Guideline for Improving Electricity Efficiency (AMCE, 2018). However, the 2014-2018 baseline does not align with the 2021 total electricity consumption, which deviates by 2,633 GWh, as shown in Table 8. To ensure the third NEEAP baseline is accurately represented, a recent period between 2016 and 2020, similar to the previous NEEAPs baseline period, would be a more appropriate choice.

Table 8: Average electricity consumption for 2014-2018 and 2016-2020, and consumption in 2021

Sector	Average electricity consumption of 2014-2018 (GWh)	Average electricity consumption of 2016-2020 (GWh)	Electricity consumption in 2021 (GWh)
Residential	7,416	8,184	9,269
Industry	3,898	3,742	4,049
Commercial & services	2,485	2,613	2,831
Water pumping	2,512	2,692	2,767
Street lighting	362	391	390
Total	**16,673**	**17,622**	**19,306**

The electricity consumption contributed to nearly 27% of the total energy consumption in 2021. Examining the final energy consumption is crucial to enhancing energy efficiency and effectively reducing energy consumption in vital sectors, especially transport. Hence, the final energy consumption will produce a higher potential for energy efficiency by accounting for the whole sectoral consumption. The third NEEAP baseline must extend its scope to encompass a more comprehensive energy spectrum beyond just electricity. However, the average final energy consumption for 2014-2018 and 2016-2020 is higher than that of 2021 (Table 9) because the COVID-19 pandemic has had a distinct effect on energy consumption dynamics from electricity. Consequently, addressing sectoral consumption is vital in advancing energy efficiency and decreasing energy consumption.

Table 9: Average final energy consumption for 2014-2018 & 2016-2020, and consumption in 2021

Sector	Average energy consumption of	Average electricity consumption of 2016-2020 (GWh)	Electricity consumption in 2021 (GWh)
2014-2018 (ktoe)	Average energy consumption of	8,184	9,269
2016-2020 (ktoe)	Energy consump-tion in 2021 (ktoe)	3,742	4,049
Transport	3,069	3,072	2,677
Industry	1,005	956	1,017
Residential	1,356	1,465	1,520
Commerce and other	846	982	1,008
Total	**6,296**	**6,476**	**6,222**

To accurately represent energy consumption without the impact of COVID-19, the international best practice of three years average (2017-2019) is proposed as a baseline for the third NEEAP. However, to comply with the Arab Guideline for Improving Electricity Efficiency while including final energy consumption, a unified baseline is necessary (AMCE, 2018). The 2018 energy consumption is almost equal to the average consumption of 2017-2019 (Table 10) and is close to the average electricity consumption for 2016-2020 (Table 11). Therefore, the third NEEAP baseline is suggested to be a single year's final energy consumption in 2018 rather than a five-year average. This approach will yield the most accurate and reliable results.

Table 10: Average final energy consumption for 2017-2019, and consumption in 2018

Sector	Average energy consumption of 2017-2019 (ktoe)	Energy consumption in 2018 (ktoe)
Transport	3,289	3,363
Industry	928	954
Residential	1,499	1,463
Commerce and other	1,013	981
Total	**6,730**	**6,761**

Table 11: Average electricity consumption for 2016-2020, and consumption in 2018

Sector	Average electricity consumption of 2016-2020 (GWh)	Electricity consumption in 2018 (GWh)
Residential	8,184	8,038
Industry	3,742	3,877
Commercial & services	2,613	2,507
Water pumping	2,692	2,706
Street lighting	391	404
Total	**17,622**	**17,532**

Moreover, 2018 is the baseline year used to develop the energy strategy for 2020-3030. Thus, taking the same base year allows for better evaluation of the achieved savings of the third NEEAP in the context of the energy strategy and whether the NEEAP is getting closer to reaching the Energy Strategy target.

3.4 Third NEEAP Target

The third NEEAP 2024-2026 target is to improve energy efficiency by 6.02% (1,055.16 GWh) in 2026 compared to the 2018 electricity consumption baseline, according to the Arab Guideline for Improving Electricity Efficiency. Table 12 provides a detailed breakdown of the electricity consumption in 2018, the base year, and outlines the targeted energy savings for each sector as a percentage of the 2018 electricity consumption. The targeted energy savings for each sector are determined by calculating the energy savings of all quantifiable measures of the third NEEAP.

Table 12: Targeted savings of the third NEEAP (2024-2026) based on the electricity consumption

Sector	2018	2024-2026	
	Baseline (GWh)	Targeted savings (GWh)	% of baseline
Residential	8,038.00	190.79	2.37%
Industry	3,877.00	207.42	5.35%
Commercial & services	2,507.00	32.19	1.28%
Water pumping	2,706.00	263.89	9.75%
Street lighting	404.00	210.05	51.99%
Cross-sectoral	N/A	150.83	N/A
Total	**17,532**	**1,055.16**	**6.02%**

Considering the final energy consumption, the third NEEAP target equates to 4.46% (3,510.33 GWh) in 2026 compared to the 2018 final energy consumption. Table 13 outlines the energy consumption in 2018 and the targeted savings for each sector as a percentage of the baseline. Although the overall targeted savings have increased, the saving percentage decreased due to a significant increase in the baseline.

Table 13: Targeted savings of the third NEEAP (2024-2026) based on the final energy consumption.

Sector	2018	2024-2026	
	Baseline (GWh)	Targeted savings (GWh)	% of baseline
Transport	39,112.69	2,455.17	6.28%
Industry	11,095.02	207.41	1.87%
Residential	17,014.69	190.79	1.12%
Commerce and other	11,409.03	656.96	5.76%
Total	**78,631.43**	**3,510.33**	**4.46%**

The energy efficiency measures were developed in collaboration with various organisations in different sectors. Local and international experts were also consulted in developing third NEEAP energy efficiency measures. All responsible organisations and involved institutions were assigned for each measure in the plan to clarify the roles and responsibilities. This NEEAP comprises 50 energy efficiency measures to be implemented between 2024 and 2026. These measures are allocated among the relevant sectors, as outlined in Table 14.

Table 14: Key third NEEAP impact indicators

Sector	Targeted savings by 2026 (GWh)	Investment cost (million JOD)	GHG emission reduction (ktCO2e)
Industry	207.4	37.1	94.1
Residential	190.8	56.2	82.8
Services	242.2	35.7	107.7
Transport	2,455.1	303.8	431.6
Water & agriculture	263.9	91.8	120
Cross-sectoral	150.8	81.2	69.2
Total	**3,510.3**	**605.8**	**906.4**

These measures aim to improve energy efficiency, resulting in a considerable reduction in energy consumption and costs, thereby increasing the sustainable use of energy. Furthermore, these measures provide numerous additional benefits, such as raising awareness about energy efficiency, a better understanding of energy consumption and trends through data collection and encouraging efficient energy-consuming processes and practices.

In the context of the global discussion on climate change, the efficient use of energy is crucial for achieving Jordan's climate goals and reducing overall energy consumption. The third NEEAP GHG emission reduction is estimated at 906.4 ktCO2e. Nonetheless, earlier implementation of the measures can have a significant impact on the energy transition and emission reduction. Therefore, it is essential to regularly align the NEEAP with the climate goals and integrate it into the nationally determined contributions.

The potential effects of energy efficiency measures can be thoroughly assessed by examining their impact on expected energy intensity. Energy intensity serves as a crucial indicator for monitoring progress toward Sustainable Development Goal 7, which focuses on achieving affordable and clean energy. Specifically, it aligns with SDG indicator 7.3.1, which measures progress in terms of primary energy consumption and GDP. To assess the impact of these measures, three scenarios have been developed:

- BAU Scenario: This scenario involves forecasting final energy consumption and total GDP without factoring in the influence of energy efficiency measures. It essentially represents a baseline projection.
- SDG 7.3 Scenario: This scenario is formulated based on the global objective of meeting SDG 7.3, which entails an average annual improvement of 3.2% in energy intensity until the year 2030.
- Third NEEAP Scenario: In this scenario, energy intensity is calculated with consideration for the targeted 4.46% energy savings resulting from the implementation of the energy efficiency measures outlined in the third NEEAP across various sectors.

Figure 15 shows that the NEEAP scenario energy intensity is outperforming the SDG scenario, which is a huge improvement from the BAU. However, this reduction in energy intensity is only achievable with significant investment in cost-effective energy efficiency improvements on a systematic scale in multiple sectors.

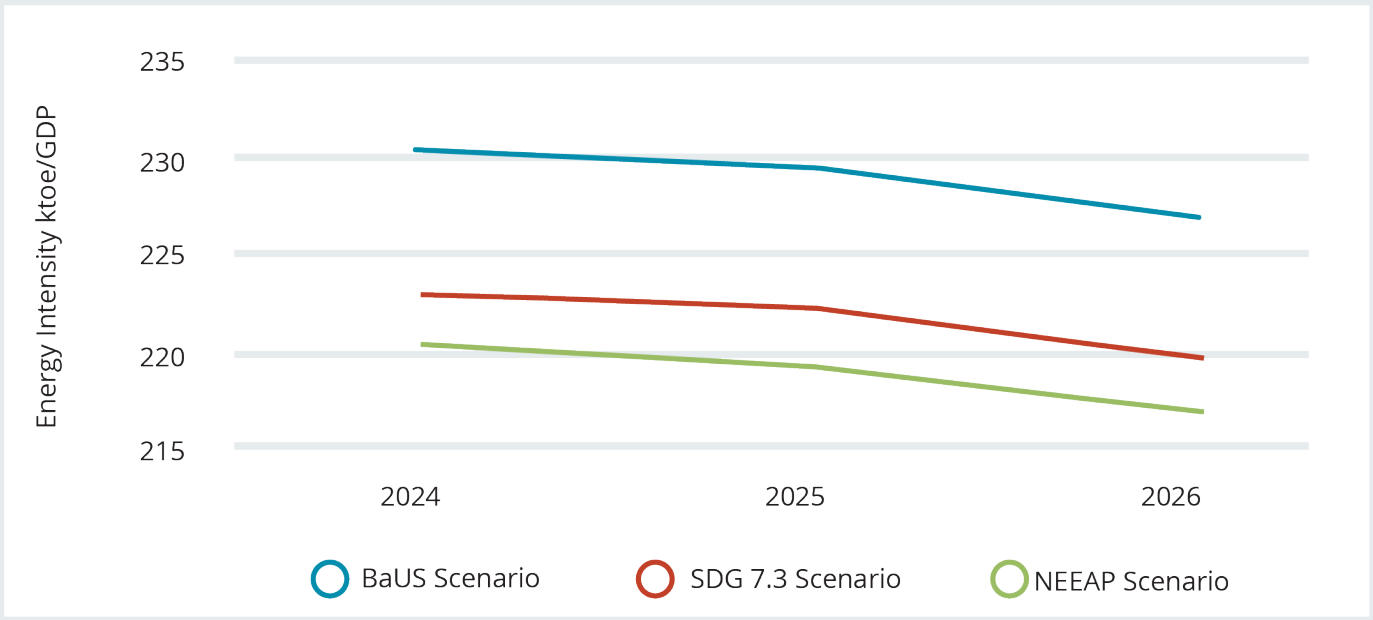

Figure 15: Jordan Energy Intensity ktoe\ 1000 GDP (2024-2026)

To determine sectoral energy intensity, two primary variables were assessed for the years 2024-2026: final energy consumption and GDP within each sector. The analysis incorporated the economic modernization vision and growth indicators specific to each sector. Energy intensity within the industrial, transportation, and commercial sectors is depicted in Figures 16 to 18 below.

The proposed energy efficiency enhancements in the industrial sector have brought the SDG scenario within reach. Nevertheless, additional efforts are necessary to achieve the desired outcome. According to Figure 16, an additional 6 ktoe is required to align with the SDG. This necessitates securing funding and a firm commitment to implement all the suggested projects and initiatives.

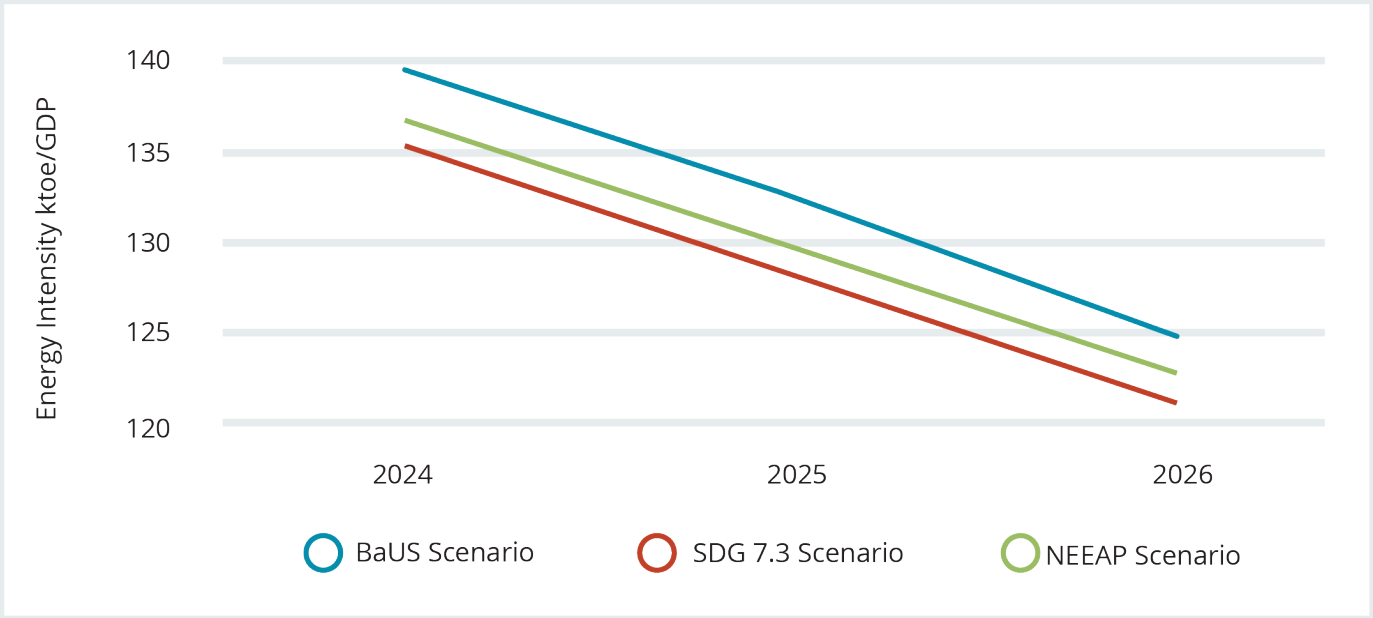

Figure 16: Industrial sector Energy Intensity ktoe\ 1000 GDP (2024-2026)

Figure 17 illustrates that the energy intensity in the transport sector under the NEEAP scenario surpasses that of the SDG scenario. This notable reduction in energy intensity can be attributed to the shift towards electric vehicles coupled with a decrease in the usage of gasoline-powered cars, along with the implementation of a significant public transport project designed to promote the transition from private to public transportation, and the introduction of a truck modernization program, all play crucial roles in achieving this decline.

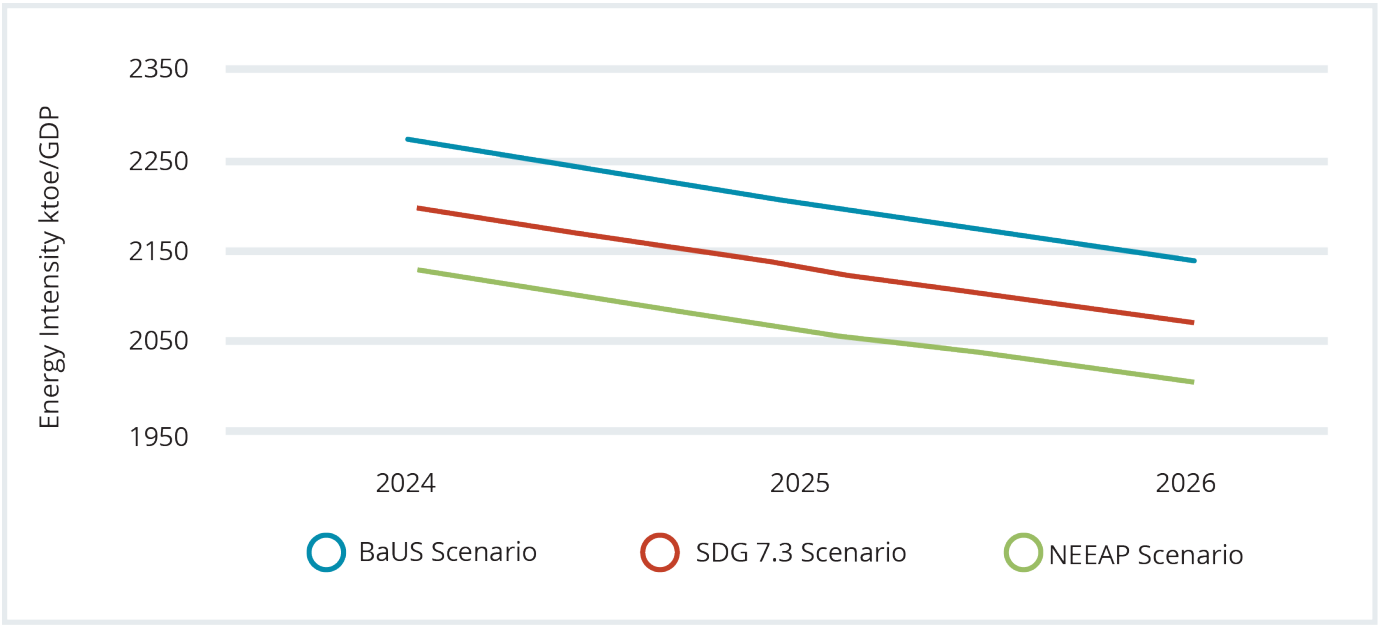

Figure 17: Transport sector Energy Intensity Ktoe\ 1000 GDP (2024-2026)

Energy intensity in the commercial, service, and other sectors demonstrates a significant reduction in the NEEAP scenario as shown in Figure 18. This decline can be attributed to substantial projects in the water sector, with a focus on enhancing energy efficiency across all water-related operations. Furthermore, a lighting replacement program for municipalities has also played a role in achieving this improvement.

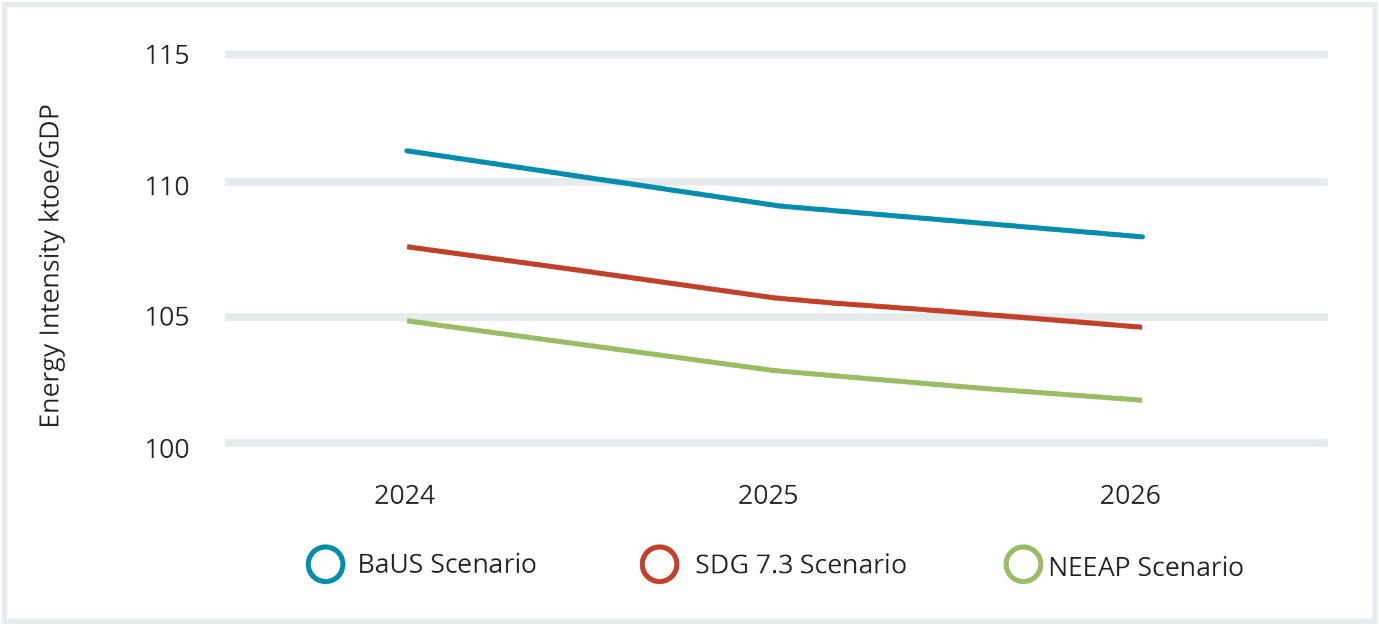

Figure 18: Other Sectors Energy Intensity ktoe/1000 GDP (2024-2026)

4.

Energy Efficiency Measures by Sector

In the following subsections, a description of the energy efficiency strategy aims and some specific goals within each sector is given alongside an overview of the individual energy efficiency measures. For each measure, the identification number (ID), name, short description, timeframe, responsible organisation and (if available) energy savings is provided. Some main measures have subordinated measures (identified through their ID through the number after the decimal point). The detailed descriptions of the measures are elaborated in the annex.

The actual implementation of the developed measures depends on sufficient funding being secured for each of the described measures. For some measures funding is already available - if these are ongoing or measures that are secured through the national budget, funds from international donors or through decisions by the responsible government agencies. This NEEAP includes additional measures aimed at enhancing energy efficiency, but these measures have not been fully detailed to the extent where funding decisions have been reached. Thus, cost estimates have been provided to the best extent possible at this stage. The initial phase of NEEAP implementation intends to refine these strategies to the point where implementation specifics and their associated costs are finalized, allowing responsible stakeholders to make informed decisions regarding their execution. It is especially crucial to determine which of these measures may require international donor support and to establish the necessary preparations. Information on the financial backing secured for each measure can be found in the measure sheet in the annex.

4.1

Industry

Industry accounts for a significant share of total energy consumption (approx. 16%), which includes the consumption of electricity, gas, oil, and fuels to operate equipment and machines, generate heat and ensure the transportation of goods and raw materials (dealt with in the transport sector). The energy efficiency plan for industry, therefore, must focus on very different energy consumption levels and set conditions and incentives for the entire sector to systematically reduce energy consumption in all sub-sectors through an increase in energy efficiency and resource efficiency.

Internationally, success has been achieved by combining standards-setting, financial incentives, support through information, model projects, and advice. The creation of novel processes that allow production to become more carbon-neutral is crucial going forward. A sector-specific approach is also proven to be successful; in particular, large companies and specific companies with high energy consumption have different framework conditions than SMEs, which also account for an important share of energy consumption due to their large number. The following objectives should be prioritized when looking at the NEEAP's specific starting points:

- Anchor energy efficiency in industry, commerce, trade, and service sector.
- Ensure reduction of energy consumption through appropriate government requirements e.g., for cross-sectorial technologies and crucial branches.
- Develop and disseminate suitable business models for energy efficiency measures as well as realistic access to finance.
- Provide information and build capacity for guidance.
- Accelerate implementation of measures through financial incentives.
- Strengthening the (international) competitiveness of industrial enterprises.
- Combine energy efficiency strategies with the advantages of renewable measures.

Table 15: Overview of energy efficiency measures in the industry sector

ID	Measure	Description
I1	Energy Efficiency Assessment for Industry Sector	This assessment enhances industrial energy efficiency through stakeholder engagement, data analysis, and policy evaluation, fostering sector competitiveness with tailored projects. One subordinated measure complements this effort. • 1.1 Survey of energy consumption in the industry sector
I2	Energy Efficiency Incentives and Financing Mechanisms in the Industrial Sector	The study assesses current incentives, funding impact, and improvement areas. It informs new programs and monitoring system, supported by five sub-measures. • 2.1 Industrial Sector Energy Efficiency Program (ISEEP) • 2.2 Initiative and Financial Support for Energy Efficient Cross-Sectional Technologies in the Industry Sector • 2.3 Industrial Sustainability and Energy Efficiency Department Establishment Initiative • 2.4 Industrial Pumping Infrastructure Enhancement Program • 2.5 Waste Heat Recovery Program in Industrial Sector
I3	Competence Center for Energy Efficiency in Industry	The centre fosters industrial energy efficiency through its online platform, sharing research, tech data, and finance options. It also conducts public events and training to engage stakeholders and enhance energy auditing and management skills.
I4	The European Union (EU) Green Economy Program for EE in the Industrial Sector	The EU Green Economy for Energy Efficiency Program promotes energy efficiency and sustainability in Jordan's industrial sector. It provides 100 energy audits, technical assistance, capacity building, and policy support, engaging stakeholders and sharing knowledge to foster a green economy.
I5	Enhancing Energy Efficiency in Food Industry	This measure boosts energy efficiency in the food industry through financial support for energy audits, assistance in implementing energy-saving measures, and the development of energy performance contracts.
I6	Implementing practices of Clean and Efficient Production in Resource Utilization in 15 Jordanian Factories.	The project activities to be implemented in collaboration with relevant stakeholders, where industrial facilities are selected based on specific criteria, including but not limited to availability of resource-savings opportunities.
I7	Transfer of Environmentally Sound Technologies (MED TEST III)	Since 2019, the MED TEST III project has promoted resource-efficient production standards in Jordan's chemical, food and plastic industries, showcasing their benefits.
I8	Improving The International Competitiveness of the Textile and Clothing Sector– MENA Tex JOR	This measure aims to improve Jordan's textile sector by enhancing institutional policies and supporting SMEs. It aims for a better business environment through policy changes and strengthening the Textile Industry Support Institution. Additionally, it supports 25 SMEs with customized support, training, financing, and technology transfer.
I9	Energy Efficiency for Industrial Productivity Programme (EE4IPP)	The EE4IPP provides tailored assistance, facilitates Energy Management Systems, raises awareness, and offers financing access to boost energy efficiency and productivity.
I10	Industrial Sector Data Management System (DMS)	ESSA (within EE4IPP) are developing a centralized Data Management System (DMS) to monitor energy consumption, carbon footprint, sub-sector benchmarks, and statistics for SMEs in the industrial sector.

An overview of the detailed savings, cost and GHG reduction for the industrial sector is provided in the table below.

Table 16: Industry sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/ MWh)	GHG reduction (ktCO2e)
I2.1	Industrial Sector Energy Efficiency Program (ISEEP)	2022-2024	21.00	65.3	9.63
I2.2	Initiative and Financial Support for Energy Efficient Cross-Sectional Technologies in the Industry Sector	2024-2030	58.15	49.7	26.66
I2.3	Industrial Sustainability and Energy Efficiency Department Establishment Initiative	2024-2026	3.88	N/A	1.78
I2.4	Industrial Pumping Infrastructure Enhancement Program	2024-2026	40.50	N/A	18.57
I2.5	Waste Heat Recovery Program in Industrial Sector	2024-2026	5.34	N/A	1.42
I3	Competence Center for Energy Efficiency in Industry	2024-2028	11.30	61.9	5.18
I4	The European Union (EU) Green Economy Program for Energy Efficiency in the Industrial Sector	2023-2025	32.50	34.9	14.90
I5	Enhancing Energy Efficiency in Food industry	2024-2026	3.39	21.8	1.55
I6	Implementing practices of Clean and Efficient Production in Resource Utilization in 15 Jordanian Factories.	October 2023 - October 2025	N/A	N/A	N/A
I7	Transfer of Environmentally Sound Technologies (TEST) (MED TEST III)	2022-2024	26.01	16.5	11.92
I8	Improving the International Competitiveness of the Textile and Clothing Sector– MENA Tex JOR	2018-2024	1.80	52.5	0.83
	Total		**203.87**	**49.16**	**92.44**

**Determined by dividing the total costs by the total energy saved over the measures' lifetime.*

4.2 Residential

The residential sector is one of the largest energy consumers in Jordan (accounting for 25% of total energy consumption). Energy is consumed for cooling (especially in warm climates), heating and lighting of buildings as well as for multiple appliances and devices.

Some starting points for an energy efficiency strategy relate in particular to: energy standards for new buildings, strategies for economically viable building refurbishment, the procurement of efficient and climate-friendly (refrigerants,) cooling and heating equipment, the increased usage of existing systems (e.g. solar heating for water heating) and (in the medium-term) the development of a climate-neutral strategy for building heating and cooling. Strategies for increasing efficiency in the sector are based on showcase

buildings that demonstrate how the large building stock can be improved step by step.

On this path, a widespread campaign and a targeted build-up of expertise have a special role to play. Some central goals of an energy efficiency strategy for buildings are:

- Develop differentiated energy efficiency strategies in buildings for different climate zones and uses.
- Establishing a reliable data basis in the residential sector as the basis for an overall strategy
- Define requirements for sustainable buildings in the region.
- Define and enforce appropriate standards for new buildings.
- Build know-how for various target groups in the chain of action (planners, financial sector, crafts)
- Development of advisory infrastructure (building audits, classification of buildings, accompaniment of renovation)
- Ensuring the use of the most efficient technology for cooling and heating

Private households make up a significant share of total energy consumption, especially as users of buildings and of technical devices in the home. In addition to the technical efficiency of installations and appliances, individual behaviour plays a major role here. In fact, private households are also essential users of the transport infrastructure, if they own cars or use public transportation (which is dealt with in the transport sector). House and flat owners can have a particular influence on energy consumption by optimising the energy efficiency of buildings (in new construction as well as in existing buildings). In this sector, comprehensive information and advice is particularly important to bring about a change in awareness towards energy efficiency and climate action. In addition, considerable savings can be achieved in the short term through low-investment measures (such as measurement and control devices, passive measures for cooling buildings, etc.). The main goals of an efficiency plan for private households are:

- Realisation of immediate and low-threshold measures (e.g., controlling heating or cooling, passive cooling measures, use of appliances, etc.) through information and incentives
- Replacement of inefficient appliances by financial incentives and providing information (energy label)
- Direct use of renewable energy for water heating or cooling

Table 17: Overview of energy efficiency measures in the residential sector

ID	Measure	Description
R1	Energy Efficiency Assessment for the Residential Sector	This measure evaluates and improves energy efficiency policies in the residential sector. It begins with a detailed assessment of energy use in buildings, considering factors like housing types, demographics, and technological advancements. It identifies opportunities for enhanced energy efficiency, aligning with sustainability goals by reducing consumption and carbon emissions. This measure has one subordinated measure as follows: R1.1 Survey of Energy Consumption in the Residential Sector
R2	Energy Efficiency Benchmarking and Database for Residential Buildings	The measure will collect data on building energy use and emissions, create a residential building typology, and set energy efficiency standards. This will help improve existing buildings and promote energy efficiency for a sustainable built environment. This measure has one subordinated measure: R2.1 Study for Home Energy Labels
R3	Enforcement of Energy Efficiency Building Codes	This measure aims to enforce the provisions of By-Law #52 for the year 2020, which establishes inspection committees responsible for ensuring compliance with energy efficiency building codes during construction.
R4	Promote Central and District Heating and Cooling Systems	Promoting Central and District Heating and Cooling (DHC) in Jordan involves a structured approach: assessing potential, identifying priority areas, planning efficient networks, and training staff for sustainable operation. This measure has one subordinated measure: R4.1 Code for district cooling
R5	Low-Cost Energy Efficiency Measures in the Residential Sectors	The initiative educates citizens about home energy-saving. It suggests cost-effective measures and behaviour changes for efficient energy use, supported by a communication campaign, consultant training, webinars, and a user-friendly national platform.
R6	Installation of Solar Water Heaters in Residential Buildings	JREEEF supports residential energy efficiency, including small-scale solar water heaters (SWH). Residents engage via program partners, with approved vendors offering 30% cost incentives. JREEEF oversees installation and functionality, while beneficiaries repay the remaining 70% through a set schedule to banks or the Civilian Consumer Corporation.
R7	Mitigation Enabling Energy Transition in the Mediterranean Region – phase II (MEETMED II Project)	The MEETMED II project aims to enhance energy security and foster low-carbon economies. It focuses on implementing energy efficiency measures and improving the energy mix in buildings and appliances sectors through regional cooperation. The project aims to promote renewable energy adoption, showcase energy efficiency benefits, provide capacity-building programs, and raise awareness for a cleaner energy transition.
R8	Incentives for Home Retrofits	This project promotes energy-efficient retrofits in homes by providing financial incentives, energy audits, and access to low-interest loans. It aims to reduce energy consumption, lower utility bills, and benefit the environment. This measure has one subordinated measure: R8.1 Energy-Efficient Landscaping for Cooling Savings

An overview of the detailed savings, cost and GHG reduction for the residential sector is provided in the table below.

Table 18: Residential sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/ MWh)	GHG Reduction (ktCO2e)
R3	Enforcement of Energy Efficiency Building Code	N/A	20.75	56.2	8.08
R5	Low-Cost Energy Efficiency Measures in the Residential Sectors	2024-2026	114.30	21.7	52.41
R6	Installation of Solar Water Heaters	2024-2026	46.61	30.1	18.14
R8	Incentives for Home Retrofits	2024-2026	0.59	N/A	0.27
R8.1	Energy-Efficient Landscaping for Cooling Savings	2024-2026	8.55	N/A	3.92
	Total		**190.79**	**26.51***	**82.82**

** Determined by dividing the total costs by the total energy saved over the measures' lifetime.*

4.3 Services

The service sector differs than the industrial sector regarding its energy consumption and the potential for energy efficiency. The service sector includes large areas such as trade, tourism, the financial sector, private and public administration, the education sector, and the health sector. Here, the focus is on the efficient management of buildings, public infrastructure, and the provision of specific services. In addition to the optimisation of the building envelope and systems technology, also behavioural change can have an impact. Therefore, measures regarding information, consulting, and capacity building as well as the introduction of an energy management and the elaboration of energy-efficient behaviour are of particular importance.

The public sector is essential for a successful energy efficiency strategy in society, as other sectors expect the public sector to act as a role model and pioneer. Therefore, the energy efficiency strategy should pay special attention to this sector and implement pilot measures, which should later be transferred to the private sector. Some central starting points in the public sector are the energy optimisation of buildings as well as the design/implementation of everyday services and working conditions (e.g., digitalisation, handling of air conditioning, control of building technology, energy-efficient behaviour at the workplace and in dealing with customers). A plan for energy efficiency in the public sector pursues the following goals in particular:

- Exercising the role model function in the energy transition.
- Systematic reduction of energy consumption in the public sector: audits, energy management systems, pilot projects, commitment
- Strengthening energy efficiency markets (consulting, contracting) through comprehensive measures in the public and private sectors
- Realisation of savings potentials through behavioural changes (maintenance, control, temperature, lighting, processes)

Table 19: Overview of energy efficiency measures in the services sector

ID	Measure	Description
S1	Energy Efficiency Assessment for Service Sector	The assessment examines potential energy efficiency gains and obstacles, involving stakeholders and data analysis. It uses cost-benefit analysis to inform an Energy Efficiency market preparation plan, promoting sustainable energy management practices. The plan aims to enhance resource efficiency and resilience in the service sector. This measure has one subordinated measure: S1.1 Survey of Energy Consumption in the Service Sector
S2	Tourism Sector Energy Efficiency Program (TSEEP)	The TSEEP adopts a comprehensive approach to enhance energy efficiency in Aqaba's hotels. It begins with detailed energy audit studies for 11 hotels. The program includes three phases: firstly, the Energy Audit phase, followed by the Implementation Phase and finally, the Measurement and Verification (M&V) Phase which employs a third-party to verify energy savings for each hotel, updating the Energy Performance Contracting (EPC) accordingly.
S3	Public Building Energy Database	The measure aims to create an integrated database to improve energy efficiency in the public sector. The National Energy Efficiency Building Database platform gathers data on buildings, strategies, and consumption, aiding analysis, and targeted renovations.
S4	Roadmap for Energy Efficiency in Public Buildings	The measure develops Energy Efficiency Refurbishment Roadmaps for public buildings (government offices, schools, hospitals), outlining phases and standards. A Pilot Project implements heating, cooling, insulation, shading, lighting improvements, and user awareness. Another Pilot Project introduces renewable technologies like PV, solar thermal, and geothermal systems. The project evaluates experiences for wider application. This measure has four subordinated measures: S4.1 Pilot Project for Government Offices: MEMR-Building S4.2 Energy Audits and Implementation for Public Schools S4.3 Solar Water Heaters Installation for Public Hospitals S4.4 Energy Audits and Implementation for Ministries
S5	The Excellence in Design for Greater Efficiencies (EDGE)	This project aims to promote green building practices, including enhancing regulations, raising awareness, educating professionals, and certifying green buildings. Its goal is to create a supportive environment for sustainability and cost savings in Amman and beyond.
S6	Lighting Replacement Program for Municipalities	MEMR is collaborating with local companies to replace 410,000 traditional streetlights with energy-efficient LED units in Jordan's southern and central regions. This three-year project promises significant cost savings, reduced energy consumption.
S7	Sustainable Workforce Development and Facility Management Support	The project encourages commercial buildings to appoint energy efficiency or Corporate Social Responsibility (CSR) experts, providing financial incentives, training, and professional development.

An overview of the detailed savings, cost and GHG reduction for the service sector is provided in the table below.

Table 20: Service sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/ MWh)	GHG reduction (ktCO2e)
S2	Tourism Sector Energy Efficiency Program (TSEEP)	2022-2024	4.66	94	2.14
S4.1	Pilot Project for Government Offices: MEMR-Building	2024-2025	0.05	68.7	0.02
S4.2	Energy Audits and Implementation for Public Schools	2024-2026	4.73	N/A	2.17
S4.3	Solar Water Heaters Installation for Public Hospitals	2024-2026	16.48	N/A	4.22
S4.4	Energy Audits and Implementation for Ministries	2024-2026	5.33	N/A	2.44
S6	Lighting Replacement Program for Municipalities	2024-2026	210.05	58.4	96.31
S7	Sustainable Workforce Development and Facility Management Support	2024-2025	0.93	N/A	0.43
	Total		**242.24**	**59.2***	**107.73**

** Determined by dividing the total costs by the total energy saved over the measures' lifetime.*

4.4

Transport

The transport sector is responsible for almost half (approx. 43 %) of Jordan's final energy consumption. Therefore, a strategy to reduce energy consumption and to achieve the climate goals must place a special focus on this sector. An integrated strategy to reduce energy consumption in transport focuses on the predominant modes of private car transport and freight transport and shows strategies on how transport can be avoided, shifted to other modes (especially public transport) or made more efficient and climate friendly. Therefore, strategies for shifting passenger transport (change of modal split) to buses and trains as well as the introduction of an e-mobility strategy (based on renewable electric energy) are of high importance in the medium term. In freight transport, the shift to rail transport and the development of a climate-friendly transport infrastructure are of particular importance. Strategies to reduce energy consumption should go hand in hand with urban development goals in order to improve the quality of life in cities and reduce existing inconveniences such as traffic congestions. An energy efficiency plan in the transport sector pursues the following goals in particular:

- Reduction of CO2 emissions through a consistent and long-term e-mobility strategy and sector coupling with the expansion of renewable energies
- Reduction of energy consumption or CO2 emissions through the promotion of vehicles with alternative drives and fuels (battery electric vehicles (BEV), fuel cell electric vehicles (FCEV)).
- Realisation of savings potentials through efficient behaviour (reduction of individual traffic, organisation of the work environment, efficient tyres, driver training)
- Reduction of motorised individual transport through the creation of attractive offers (public transport, cycling, walking).

- Strengthening rail transport and shifting freight transport from road to rail
- Ensuring the necessary infrastructure for sustainable transport (rail, metro/tram, buses, charging and refuelling infrastructure for alternative fuels).
- lighting, processes)

Table 21: Overview of energy efficiency measures in the transport sector

ID	Measure	Description
T1	Energy Efficiency Assessment for the Transport Sector	This measure assesses fuel consumption, vehicle performance, and operations, considering alternative fuels, advanced tech, driver behaviour, policies, and partnerships. Cost-benefit analysis and a monitoring system inform an energy-efficient transport roadmap. It promotes eco-friendly practices through policies, regulations, and awareness campaigns, with three sub-measures. T1.1 Survey of Energy Consumption in the Transport Sector T1.2 Policies to Increase Energy-Efficient and Climate-Friendly Cars T1.3 Carpooling and Ridesharing Governance Framework
T2	Vehicle Tyre Energy Labelling	This project aligns Jordan's tyre regulation and labelling with European standards, providing consumers with info on fuel efficiency, safety, and noise. It includes market analysis, stakeholder engagement, and the development of a Jordan-specific regulation and label, following European Regulation (EU) 2020/740.
T3	Promotion for E-Mobility Endorsement and Acceleration	In line with Jordan's energy goals, an e-mobility strategy will be developed. A study will assess past efforts and challenges, involving stakeholders to establish an action plan, charging infrastructure, tariffs, and explore hydrogen and climate-neutral fuels. • T3.1 Integrated Adoption of Electric Mobility in Jordan
T4	Strategy and Action Program for Public Transport	The current strategy improves public transport with adapted services, bus prioritization, infrastructure upgrades, and energy-efficient vehicles. The upcoming approach focuses on comprehensive public transport, featuring fast transit, better service, and electric bus regulations, including BRT and optimized systems. thirteen sub-measures are included. T4.1 Bus Rapid Transit (BRT) project between Amman and Zarqa T4.2 Feasibility Study for The Second Phase BRT Project T4.3 Feasibility study for a Regular Mass-Transit project Between Amman-Salt T4.4 Feasibility study for a Regular Mass-transit project Between Sweileh-Queen Alia International Airport T4.5 Green Buses for Tourist Transport in Petra Region T4.6 Feasibility study for Solar Powered Electric Bus Fleet Pilot in Karak, Ma'an and Tafilah Governorates T4.7 Jordan Urban Local Bus Reform Project in Irbid and Zarqa T4.8 Amman bus second phase T4.9 Implementing Jerash holistic scheme recommendations. T4.10 Ramtha Bus Terminal Construction T4.11 Rehabilitation of Zarqa Bus Terminal T4.12 Rehabilitating new terminal for Petra/Wadi Musa T4.13 Establish geodatabase for LTRC

T5	Truck Fleet Modernization Program	The government encourages modernizing truck fleets by replacing trucks over 20 years old, enforces emissions standards with strict inspections and penalties, and offers incentives to promote fuel-efficient truck adoption. T5.1 Study to Incentivize Old Vehicles Replacement
T6	National Railway First Phase (Aqaba-Ma'an-Amman Madouneh)	The National Railway First Phase aims to replace road cargo transport with an efficient railway. It involves comprehensive studies, land acquisition, and infrastructure construction. 78% of the land is secured. The initial phase focuses on the Aqaba-Ma'an-Madouneh route, using diesel-powered trains, with plans for future electrification.
T7	Government Vehicles Tracking Project	This measure aims to install GPS tracking systems in government vehicles to optimize vehicle usage, manage maintenance costs, and monitor fuel consumption for efficiency. The initiative also promotes sustainability by replacing inefficient vehicles with electric or hybrid alternatives.
T8	Redesigning Airspace Procedures and Routes	Enhance energy efficiency and reduce flight time.

An overview of the detailed savings, cost and GHG reduction for the transport sector is provided in the table below.

Table 22: Transport sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/ MWh)	GHG reduction (ktCO2e)
T2	Vehicle Tyre Energy Labelling	2024-2026	93.83	23.6	24.23
T3	Promotion for E-Mobility - Endorsement and Acceleration	2022-2025	1,575.78	N/A	212.72
T4.1	Bus Rapid Transit (BRT) project between Amman and Zarqa	2023-2026	656.16	14.7	163.69
T4.8	Amman bus second phase	2022-2026	8.08	N/A	2.02
T5	Truck Fleet Modernization Program	Continuous	62.62	19.3	16.70
T7	Government Vehicle Tracking Project	2017-ongoing	58.68	10.4	12.28
	Total		**2,455.17**	**17.59***	**431.64**

One of the most important projects for the transport sector in the long-term is the national railway project, constructing a Railway can significantly contribute to energy saving and efficiency, promoting sustainable and environmentally friendly transportation options for both freight and passengers. By promoting a shift from road and air transport, railways can reduce energy-intensive modes of travel and complement public transport in urban areas. Overall, the project is expected to save 2848 GWh in 2030 as the first year of operation.

4.5

Water and agriculture

The water and agriculture sectors play an important role in Jordan's energy consumption accounting for approximately 15% of the total final energy consumption. Large geographic distances between water production and the consumers, along with challenging hydrogeological conditions and topography, contribute to the high energy consumption of the water sector. The water sector has a strong interest in implementing Energy Efficiency measures and reducing Non-Revenue-Water (NRW). The recently updated National Water Strategy 2023-2040 addresses several goals for the water sector, the Water-Energy-Food-Ecosystem (WEFE) NEXUS and irrigated agriculture. In addition to reducing specific water consumption and minimizing losses during transport, the energy efficiency of pump technology plays a special role. Thanks to the significant potential for technical optimization in pumps, efficient pumps can quickly lead to cost savings in water supply. Key objectives of an energy efficiency strategy in the water sector include:

- Improve energy efficiency in all water sector operations through better energy management practices in order to lower costs and improve financial performance of the sector.
- Consideration of the potentials of renewable energy and energy efficiency in technical retrofitting.
- Realisation of energy savings in the further development of water supply in large-scale plants as well as decentralised in the local water supply.
- Energy optimisation of the wastewater sector through efficient plants and in particular pumps as well as through the use of methane emissions for energy supply
- Institutionalise effective management of the water-energy-food- ecosystem (WEFE) nexus to drive synergies, leverage investments, develop nexus projects, ensure coherent policies and regulations, and conduct complementary planning across these sectors.
- Coordinate closely with the ministry of agriculture to manage irrigation water allocations, policy, and incentives—to ensure that cross-sectoral policies and practices also reflect the reality of climate change impacts on water supplies.

Table 23: Overview of energy efficiency measures in the water sector

ID	Measure	Description
W1	Energy Audits, Implementation and Energy Management System (EnMS) projects	The measure includes projects focusing in enhancing energy management and identifying energy efficiency opportunities through comprehensive energy audits and implementation. This measure has four subordinated measures: W1.1 Energy Efficient Water Sector (EnMS) W1.2 Energy audit and Implementation for Mujib pumping station W1.3 Energy audit and Implementation for Zarqa Ma'in pumping station. W1.4 Energy audit and Implementation for Wadi Arab dam pumping station
W2	Pumps and VFD Replacement Projects	The measure includes projects aiming to replace pumps and VFDs in the water sector to boost efficiency and reliability. These upgrades save energy, reduce costs, and improve system performance, essential for sustainable water management. W2.1 Replacing Station Pumps with High-efficiency Pumps in Aqaba W2.2 High-efficiency Well Pumps in Disa Area W2.3 Improving Pumps Performance Using Variable Frequency Drive (VFD) in Aqaba
W3	Restructuring and Rehabilitation Projects	The measure includes projects working on upgrading water facilities and networks, which is crucial for efficiency reliability, and sustainability in the water sector. W3.1 Enhancing Energy Efficiency at Miyahuna Company - Booster 11 and Old Basatin Station W3.2 Rehabilitation of Khaw Station W3.3 Rehabilitation of Zai Water Treatment Plant W3.4 Rehabilitation of New Zarqa Station W3.5 Rehabilitation of Baqouriya Station W3.6 Restructuring and rehabilitation of water networks in the areas of Al-Rasheed, Al-Waha and Al-Kharabsheh W3.7 Enhance Leak Detection and Repair program
W4	Raising Energy Efficiency in the Water Sector - Big Projects	This measure includes big projects aiming to raise the energy efficiency in targeted plants and cities by restructuring distribution networks, modernizing equipment, replacing pumps, and installing renewable energy systems. This measure has three subordinated measures: W4.1 Raising Energy Efficiency in the Water Sector in Al-Salt (#2) W4.2 Raising Energy Efficiency in Water Sector 4 W4.3 Jordan Water Sector Efficiency Program

An overview of the detailed savings, cost and GHG reduction for the water sector is provided in the table below:

Table 24: Water sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/ MWh)	GHG reduction (ktCO2e)
W1.2	Energy audit and implementation for Mujib pumping station	2024	9.73	27	4.46
W1.3	Energy audit and implementation for Zarqa Ma'in pumping station	2024	3.26	60.7	1.49
W1.4	Energy audit and implementation for Wadi Arab dam pumping station	2024	2.09	131.2	0.96
W2.1	Replacing Station Pumps with High-efficiency Pumps in Aqaba	2022-2024	1.50	133.3	0.69
W2.2	High-efficiency Well Pumps in Disa Area	2022-2025	1.0	100	0.46
W2.3	Improving Pumps Performance Using Variable Frequency Drive (VFD) in Aqaba	2022-2024	1.5	143	0.69
W3.1	Enhancing Energy Efficiency at Miyahuna Company - Booster 11 and Old Basatin Station	2022-2024	6.64	61.3	3.05
W3.2	Rehabilitation of Khaw Station	2021-2024	12.27	31.4	5.63
W3.3	Rehabilitation of Zai Water Treatment Plant	2021-2024	69.05	46.1	31.66
W3.4	Rehabilitation Project of New Zarqa Station	2021-2024	6.04	6.8	2.77
W3.5	Rehabilitation of Baqouriya Station	2021-2024	3.52	73	1.61
W3.6	Restructuring and rehabilitation of water networks in the areas of Al-Rasheed, Al-Waha and Al-Kharabsheh	2020-2024	3.74	89.7	1.71
W3.7	Enhance Leak Detection and Repair program	2024-2030	98.46	N/A	45.14
W4.1	Raising Energy Efficiency in the Water Sector in Al-Salt (#2)	2022-2024	28.78	94.4	13.19
	Total		**247.58**	**63.41***	**113.52**

** Determined by dividing the total costs by the total energy saved over the measures' lifetime.*

In the agricultural sector, energy consumption is particularly linked to the irrigation of fields. While efficient and climate-friendly technical installations can be encouraged through minimum standards, the decentralised use of renewable energies and through financial support, special attention must be paid to the irrigation of agricultural products. The aim must be to reduce specific water consumption (irrigation technology), to supply water efficiently and, in the development of cultivated products, to give preference to those that produce or cultivate with smaller amounts of water. Finally, agricultural waste must be directly linked to a climate-neutral energy supply in agriculture e.g., through a biomass strategy. The energy efficiency strategy in agriculture focuses on the following goals:

- Utilisation of renewable energy and energy efficiency potential in rural areas (e.g., biomass, photovoltaic (PV), reduction of water demand)
- Promotion of sustainable (low energy and resources) land management (cultivation methods, optimisation of irrigation, use of renewable energies)
- Support the shift to sustainable products (low-energy livestock farming, drought-adapted crop production, potentially vertical farming)
- Optimisation of the transportation of agricultural products
- Utilisation of the energetic potential of the biomass produced.

ID	Measure	Description
A1	Energy Efficiency Assessment for the Agriculture Sector	The aim of the assessment is to boost competitiveness of the sector by adopting energy-efficient and sustainable practices, aligning with sector-specific needs. This measure entails a holistic approach through stakeholder engagement, data analysis, and benchmarking. It involves identifying barriers, evaluating policies, and designing tailored energy efficiency projects for the agriculture sector. This measure has one subordinated measure: A1.1 Survey of Energy Consumption in the Agriculture Sector
A2	Program to Support the Installation of Variable Speed Drives (VSD) on Irrigation Pump	The VSD Installation Support Program focuses on implementing VSD technology for irrigation pumps in agriculture. It provides financial assistance, enhances energy efficiency, and reduces electricity consumption.

Table 25: Overview of energy efficiency measures in agriculture

An overview of the detailed savings, cost and GHG reduction for the agriculture sector is provided in the table below:

Table 26: Agriculture sector impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/MWh)	GHG reduction (ktCO2e)
A2	Program to Support the Installation of Variable Speed Drives (VSD) on Irrigation Pump	2024-2026	16.31	N/A	7.48

4.6 Cross-sectoral

In addition to sector-specific strategies, an integrated energy efficiency strategy also contains cross-sectoral approaches that aims to have an additional impact on all sectors. In addition to the central legislation and organisation of government action on energy efficiency, this subsection also includes cross-sectoral approaches of a national energy efficiency campaign, comprehensive information for all target groups and cross-sectoral capacity building.

For a sustainable energy efficiency strategy, the systematic development of databases and the establishment of action oriented KPIs play a special role in order to be able to set up an effective monitoring concept for the energy efficiency strategy as well as for the concrete programmes of measures.

Table 27: Overview of cross-sectoral energy efficiency measures

ID	Measure	Description
C1	Enhancing energy KPI's and associated data collection processes across sectors	This measure aims to create a national energy statistics repository by gathering accurate sector-specific data. It will enhance energy monitoring, supporting policy instruments for the energy transition. Additionally, it encourages cross-sector collaboration for more effective energy policies. It includes one sub-measure. C1.1 Energy Efficiency Reporting and Accountability
C2	National campaign for energy efficiency	The campaign targets private households and other relevant groups to raise awareness about efficient electricity and energy fuel use. It includes one subordinate measure. C2.1 Promotion of Energy Efficiency Networks
C3	Capacity building for green building refurbishment	The measure aims to minimize environmental impact and improve buildings energy efficiency through training, certification, and an educational network. A dedicated Competence Center supports this effort, reducing greenhouse gas emissions.
C4	Energy Efficiency Award in the Academic Sector	An award to encourage research and graduation projects for university students and researchers in the field of energy efficiency in all sectors.
C5	Amendment and Implementation of the Energy Conservation By-Law 73 of 2012	Amending the by-law on "Regulating procedures and means of conserving energy and improving its efficiency" no. 73 of 2012 and issuing the relevant instructions to implement the regulations under this bylaw.
C6	Promote Sustainable Cooling and Using of Natural Refrigerants	The project aims to raise awareness of sustainable cooling and improve access to finance for cooling technologies in a growing market. C6.1 Certification scheme for technicians in RAC sector C6.2 Capacity building and awareness raising measures about sustainable cooling and using of natural refrigerants. C6.3 MEPS and energy labelling Program for Commercial Refrigeration C6.4 MEPS and Energy Labelling Program for Commercial Air Conditioning C6.5 Development of financial incentives for energy-efficient appliances with natural refrigerants
C7	EIB's Initiative - Improving Jordan's Energy Efficiency and Renewable Energy	The measure collaborates with Jordanian financial intermediaries to fund energy efficiency investments for MSMEs and Mid-Caps through loans, guarantees, and technical support, possibly alongside incentive payments or climate insurance.
C8	Minimum energy performance standard for Motors	JSMO, MEMR, and GIZ are reinstating industrial motor energy standards for increased efficiency. They evaluate the market, improve regulations, and introduce incentives, including tax breaks. A Regulatory Impact Assessment examines the potential effects, enabling climate finance projects like NAMA.
C9	Energy Service Companies (ESCOs) Market Development	The roadmap for ESCO market development involves legal framework adjustments, creating a specialized EE unit for public sector projects, securing financial resources through IFI partnerships, and capacity-building. It includes one subordinate measure. C9.1 Developing Energy Performance Contracts (EPC) for the industrial sector

C10	Study on Tax and Customs Exemptions for Energy Efficiency Solutions	The study will propose and investigate a scheme to provide incentive for different sectors encouraging them to invest in systems and appliances with higher efficiencies. This measure has one subordinate measure: C10.1 Establishment of a database/ registration platform for energy efficient electrical appliances
C11	Energy efficiency in the power sector	This measure aims to reduce electricity losses during generation, transmission, and distribution. It improves power plant efficiency, enhances the power sector with smart grids and real-time tracking via smart meters, and explores energy storage. The measure also focuses on integrating renewable energy and demand-side management for energy savings. This measure has two subordinate measures: • C11.1 Study for Power factor management in the Private Sector including industries. • C11.2 Minimum Performance Standards for Transformers
C12	Energy management system (EMs)	This measure involves training energy auditors, promoting audits in commercial and public sectors, and launching 10 initial pilot projects. It aims to improve audit quality, update regulations, introduce auditor certification, and implement a quality assurance system.
C13	Training courses in Energy Efficiency	This measure aims to provide technical and practical training on energy efficiency topics to qualify engineers and technicians to work in this domain.
C14	Capacity Building for Resilience and Environmental adaptation through the Circular Economy:	Green innovations in Refugee-hosting Communities and the Azraq Camp – (Barakeh).

An overview of the detailed savings, cost and GHG reduction for the cross sectoral measures is provided in the table below:

Table 28: cross sectoral impact indicators

ID	Measure	Period	Saving by 2026 (GWh)	Cost/energy saved (JOD/MWh)	GHG-reduction (ktCO2e)
C2.1	Promotion of Energy Efficiency Networks	2023-2025	27.0	49.7	12.38
C6.2	Capacity Building and Awareness Raising About Sustainable Cooling and Using of Natural Refrigerants	2023–2026	0.74	N/A	0.34
C6.3	MEPS and energy labelling Program for Commercial Refrigeration	2023-2027	10.0	115.4	4.59
C6.4	MEPS and Energy Labelling Program for Commercial Air Conditioning	2023-2027	67.0	76.9	30.72
C7	EIB's Initiative - Improving Jordan's Energy Efficiency and Renewable Energy	2023-2025	27.26	85.2	12.50
C8	Minimum energy performance standard for motors	2024	11.28	23.2	5.17
C9.1	Developing Energy Performance Contracts (EPC) for the industrial sector	2024-2025	7.0	49.7	3.21
C12	Energy management system (EMs)	2024-2025	0.55	81.31	0.25
	Total		**150.83**	**72.45***	**69.16**

** Determined by dividing the total costs by the total energy saved over the measures' lifetime.*

5.

Monitoring of the third NEEAP

Monitoring holds significant importance for overseeing the National Energy Efficiency Action Plan (NEEAP) in Jordan. It plays an essential role in ensuring the success of the developed energy efficiency measures. The primary purpose is to evaluate the progress made towards achieving the defined NEEAP objectives and measures. The monitoring approach in this third NEEAP sets it apart from the first and second NEEAPs, as those earlier plans did not include a dedicated focus on monitoring. The aim is to maintain a comprehensive understanding of Jordan's accomplishments in achieving energy efficiency objectives and measures. General monitoring methods can be implemented to ensure an effective approach:

Data Collection and Reporting

The responsible body for steering the NEEAP and the associated monitoring process is the Ministry of Energy and Mineral Resources (MEMR), which oversees the regulation and implementation of policies applicable to energy consumption and energy efficiency. MEMR is responsible for monitoring the progress status of each measure by collecting information and data regarding different energy efficiency measures. The ministry is also responsible for developing and publishing progress reports and providing a final monitoring report by the end of the NEEAP period. Measures in the third NEEAP will be monitored and analysed regarding the progress of implementation, developed work plans, milestones, as well as their impact. The progress reports will offer comprehensive comparisons between the current state and the outcomes for each specific measure.

Energy Efficiency Unit within MEMR

To ensure the successful monitoring of the third NEEAP, the establishment of an energy efficiency unit within MEMR is essential. This unit would play a crucial role in accurately reviewing the collected data and assessing its accuracy. Moreover, it is crucial for this unit to execute coordination between sectors, consult and agree on the progress report of the NEEAP, to discuss and decide on strategic issues in energy efficiency policy and cooperation, and propose adjustments to the plan. By integrating the monitoring process, this approach enhances transparency, accountability, and coherence, thus strengthening the effectiveness of the NEEAP's implementation.

Energy Systems Performance Documentation

Regular assessments and thorough documentation play a significant role in enhancing the monitoring process of the third NEEAP. By conducting regular energy audits for industrial facilities, commercial buildings, and public institutions, potential opportunities for energy savings are identified. These assessments closely examine how energy is used and where improvements can be made. The results are then used to guide decisions on how to make energy use more efficient.

Collaborations and Partnerships

Collaborations and partnerships are critical in enhancing the effectiveness of the monitoring process of the third NEEAP. The collection of information and data related to the implemented measures necessitates a collaboration and cooperative efforts with sectoral stakeholders responsible for these energy efficiency objectives. These stakeholders bear the responsibility of accurately gathering, processing, evaluating, and

subsequently providing MEMR with official data of NEEAP's progress and objectives. This collaborative approach not only ensures the accuracy and reliability of the collected data but also fosters a sense of shared ownership in the monitoring process. By engaging sectoral experts and stakeholders, valuable insights and feedback can be incorporated to the third NEEAP, facilitating a comprehensive understanding of the plan's progress and impact.

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ANNEX – DESCRIPTIONS OF ENERGY EFFICIENCY MEASURES

Energy Efficiency Measures in the Industry Sector

Measure - ID	**I1**
Title	**Energy Efficiency Assessment for the Industrial Sector**
Sector	Industry
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry and Trade (MIT), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF), Jordan Chamber of Industry (JCI).
Stakeholders Involved	Chambers of Industry, Royal Scientific Society (RSS)
Target Group	Industrial associations and companies
Objective	• Identify and assess potential energy efficiency opportunities within the industrial sector to gain a comprehensive understanding of its status quo. • Promote resilience and efficiency in the industrial sector by driving widespread adoption of energy-efficient practices in the identified opportunities. • Strengthen energy efficiency policies to precisely match the distinctive characteristics and requirements of the industrial sector, enabling the development and implementation of customized and impactful energy efficiency initiatives.
Description	The measure constitutes a comprehensive process anchored in stakeholder engagement, data analysis, and benchmarking against best practices. This measure unfolds through a series of steps to achieve its objectives: • Stakeholder engagement across the sector to obtain a holistic understanding of diverse perspectives, needs, and challenges. • Robust data analysis to identify patterns, trends, and energy-saving potential. • Barrier identification and resolution to overcome obstacles that hinder optimal energy efficiency in the sector. • Policy and regulation examination to evaluate their impact on energy efficiency within the industrial sector. • Informs the design and deployment of tailored energy efficiency initiatives, ensuring they align with the sector's distinct characteristics and needs. The proactive adoption of energy-efficient solutions and sustainable energy management practices will reshape the industrial sector's landscape, elevating its competitiveness.
Measure Cost	The estimated cost is between 100k and 300k JOD depending on the scope. Additional costs are required for the stakeholder consultation process.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Assessments of energy efficiency in the industrial sector and relevant subsectors. • Cost-benefit analysis and estimation of energy efficiency potential. • Stakeholder engagement events such as workshops • Strategically aligned energy efficiency initiatives in the industrial sector.

Measure - ID	I1.1
Title	**Survey of Energy Consumption in the Industrial Sector**
Sector	Industry
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Chamber of Industry (JCI), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Industry and Trade (MIT), Energy and Minerals Regulatory Commission (EMRC), Royal Scientific Society (RSS), Department of Statistics (DOS).
Target Group	Industry sector
Objective	• Gather comprehensive data on energy usage in the sector to understand the energy consumption patterns and identify areas of high consumption. • Enhance the efficiency and effectiveness of data gathering by identifying barriers and challenges in collecting energy data in the industrial sector. • Develop energy efficiency overview and map energy-saving potential in relevant sub-sectors.
Description	The energy consumption survey in the industrial sector plays a vital role in assessing the potential for energy efficiency. It provides valuable insights into energy management, intervention targeting, and driving improvements in energy efficiency within the sector. Key aspects of the survey include defining the survey scope, engaging stakeholders for accurate data, collecting energy consumption data from diverse sources, assessing equipment and technologies, and utilizing questionnaires or interviews to gain further insights. By executing this survey, a comprehensive understanding of energy consumption patterns in the industrial sector can be obtained, enabling the identification of areas with potential for energy efficiency enhancements. The survey will include energy audits in sample factories of selected subsectors (minimum five per subsector). The findings will support mapping savings potential and establish energy consumption benchmarks.
Measure Cost	The survey cost varies depending on the sample size and the collected data. However, 200k JOD is estimated for a basic survey. Additional cost between 3-6k JOD for medium intensive energy audits to a sample of relevant subsectors. Further benchmarking analysis requires additional 50k-100k JOD.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Methodology and design of the industrial sector energy efficiency survey. • Number of participants (factories & stakeholder) in the energy efficiency survey. • Percentage of the validated collected data per subsector. • Survey analysis including KPIs and trend identification in the industrial sector. • Reporting and dissemination of the energy efficiency survey in the industrial sector.

Measure - ID	I2
Title	**Energy Efficiency Incentives and Financing Mechanisms in the Industrial Sector**
Sector	Industry
Timeline	2024-2025
Implementing Agency	Jordan Renewable Energy & Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry for Energy and Mineral Resources (MEMR), Ministry of Finance (MoF), Ministry of Industry Trade and Supply (MIT), Ministry of Environment (MoEnv), Central Bank of Jordan (CBJ), Association of Banks in Jordan (ABJ), Jordan Chamber of Industry (JCI), United States Agency for International Development (USAID)
Target Group	Industrial companies, banks, Energy Service Companies (ESCOs)
Objective	• Development of incentives and funding framework conditions to increase energy efficiency in the industry. • Access facilitation to available (national and international) funding schemes to finance energy efficiency measures in Jordan.
Description	A study will thoroughly analyse the current incentives and funding programs available for the industrial sector, evaluating their impact and identifying areas for improvement. By understanding the current landscape, policymakers can make informed decisions about designing new financial incentives that align with national energy goals and promote energy efficiency. The study's findings will inform concrete recommendations aimed at optimizing the existing incentive and financing mechanisms. These recommendations will focus on making the incentives targeted, attractive, and easily accessible for the industrial sector to promote energy efficiency. Additionally, the recommendations will encompass a legal and financial framework, as well as a robust monitoring and evaluation mechanism for the incentive and financing programs. By implementing these recommendations, policymakers can foster a supportive environment for energy-efficient practices in the industrial sector, contributing significantly to sustainable energy goals.
Measure Cost	Study cost estimated 50k - 150k JOD depending on the scope.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Evaluation of the incentives and funding programs functionality • Validating the evaluation of the incentives and funding programs by key stakeholders • Recommendations aimed at optimizing the existing incentive and financing mechanisms. • Monitoring of financial funding programs by relevant KPIs

Measure - ID	I2.1
Title	**Industrial Sector Energy Efficiency Program (ISEEP)**
Sector	Industry
Timeline	2022-2024
Implementing Agency	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Jordan Chamber of Industry (JCI), German Agency for International Cooperation (GIZ), Jordan Loan Guarantee Corp (JLGC), Energy Service Companies (ESCOs), Local banks
Target Group	Small and medium industrial facilities
Objective	• Increase energy efficiency across industrial facilities to optimize the energy consumption and improve the productivity. • Encourage technological innovation and the widespread adoption of energy-efficient solutions within the industrial sector. • Enhance the capacity of industrial stakeholders to identify, implement, and sustain energy efficiency measures. • Increase the industrial sector competitiveness and resilience
Description	The ISEEP offers financing opportunities of energy efficiency measures to medium and small industries. The support includes 50% of the energy audit cost (up to 10K JOD) and cover the interest of the loan used to implement the EE measures (up to 350K JOD) and 70% of the loan guarantee. In addition, JREEEF supports the program implementation from the energy audit, through financing, and until the implementation and commissioning. The programme undergoes the following main stages: • Program initiation and applications processing through the chambers of industry, including awareness, stakeholder engagement, and EE seminars. • For the third phase starting from 2022, the goal is to Execute 10 studies and support 5 in implementation to selected factories (around 10). The program team will discuss the EE recommendations with the factories for further implementation. • EE measures implementation for up to 5 factories. The program team will supervise the progress & provide technical advice in all implementation phases. • Energy efficiency training and capacity building to the factories' engineers and technicians to improve or maintain the efficiency gains.
Measure Cost	
Source of Funding	• JREEEF covers the energy audit (50% of the costs, up to 10K JOD), the interest of the loan used to implement the EE measures (up to 350K JOD), and 70% of the Jordan Loan Guarantee Corp. • The German Federal Ministry for Economic Cooperation and Development (BMZ), the measure implemented through the GIZ project "Green Action in Enterprises" (GAIN).
Cost / Energy Saved	
Monitoring and Quantification of Impact	• Number of received applications and participants in awareness activities. • Number of energy audits conducted for selected factories (target is 10 audits). • Number of factories implementing energy saving measures (target is 5 factories) • Further KPIs are monitored in accordance with financial funding programs. • Energy saved (estimated 1750 MWh) & CO_2 emission avoided (estimated 750 tons).

Measure - ID	**I2.2**
Title	**Initiative and Financial Support for Energy Efficient Cross-Sectional Technologies in the Industry Sector**
Sector	Industry
Timeline	2024-2030
Implementing Agency	Ministry for Energy and Mineral Resources (MEMR), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Ministry of Industry, Trade and Supply (MIT), National Energy Research Center (NERC), Royal Scientific Society (RSS), Jordan Chamber of Industry (JCI), Local Associations, Jordan Standards and Metrology Organization (JSMO) , Amman Chamber of Industry (ACI), Zarqa Chamber of Industry, and Irbid Chamber of Industry.
Target	Industries, Energy Service Companies (ESCOs)
Objective	• Offer guidance and knowledge on cross-sectional technology adoption. • Grant financial incentives to small and medium-sized enterprises (SMEs) for transitioning away from inefficient technologies. • Align Jordan's minimum energy performance standards (MEPS) with the latest technological advancements in this sector.
Description	The project aims to promote the adoption of cross-sectional technologies in Jordan's industrial sector through a comprehensive strategy. It involves analysing and describing relevant technologies and disseminating this information, a targeted communication strategy will be implemented, including content creation, an online presence, and educational workshops. Additionally, a consultancy service will provide guidance and support to businesses interested in adopting these technologies. A funding program will be introduced, offering financial support for the modernization or acquisition of efficient cross-sectional technologies, with eligibility criteria aligned with international best practices. Administrative structures, including a dedicated website and a technical expert team, will be set up to facilitate the program. Integration of the funding program with communication and consultancy services will ensure a holistic approach to technology adoption. Continuous monitoring, feedback mechanisms, and evaluation will be in place to assess the program's impact and refine it as needed, ultimately enhancing Jordan's economic competitiveness and sustainability.
Measure Cost	24 million JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	49.7 JOD/ MWh
Monitoring and Quantification of Impact	• Number of received applications and participated SME. • Number of consultancy requests • Further KPIs are monitored in accordance with financial funding programs. • Monitor technology adoption rates and energy savings.

Measure - ID	I2.3
Title	**Industrial Sustainability and Energy Efficiency Department Establishment Initiative**
Sector	Industry
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Chamber of Industry (JCI), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Ministry of Industry, Trade and Supply (MIT), Ministry of Environment (MoE), Chambers of Industry, Royal Scientific Society (RSS).
Target	Industrial companies.
Objective	• Help organizations allocate resources, define roles, and set goals for their sustainability and energy efficiency departments, ensuring alignment with overall business objectives. • Ensure that departments are well-equipped to navigate and adhere to relevant sustainability and energy efficiency regulations and standards.
Description	The measure is designed to incentivize large and mid-sized industrial facilities to establish dedicated departments focused on sustainability and energy efficiency. In today's rapidly changing business landscape, sustainability and energy efficiency have become essential for both environmental responsibility and long-term economic viability. This measure offers comprehensive support to industrial organizations seeking to create these specialized departments. This department has multidimensional role. It primarily focuses on energy auditing, analysing current energy usage patterns, and developing strategies for optimization and resource conservation. Compliance with environmental regulations, integration of renewable energy sources, and training employees to engage in energy-efficient practices are also vital functions. Data analysis and reporting help track progress, cost reduction and environmental responsibility. The department promotes a culture of environmental responsibility and continually seeks innovation and research for staying at the forefront of energy-efficient technologies. This department plays a crucial role in ensuring that industrial facilities reduce energy consumption, minimize environmental impact, and remain economically viable, aligning with the imperative of sustainability in today's business landscape.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• The number of industrial facilities that have established dedicated energy efficiency departments. • Monitoring of energy consumption and carbon emissions reduction after the department establishment.

Measure - ID	**I2.4**
Title	**Industrial Pumping Infrastructure Enhancement Program**
Sector	Industry
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Jordan Chamber of Industry (JCI), Ministry of Industry, Trade and Supply (MIT), Chambers of Industry, Royal Scientific Society (RSS).
Target	Industrial facilities, pumps' suppliers.
Objective	• Attain substantial energy conservation through the enhancement of pumping operations, resulting in a decrease in carbon emissions. • Incorporate contemporary technologies like intelligent sensors and controls to enable real-time monitoring and remote management of pumping systems
Description	This program focuses on efficiency improvement, reliability enhancement, and resource conservation. Key components include the replacement of outdated pumps, infrastructure modifications to reduce pumping operating schedules, and the incorporation of Variable Frequency Drives (VFDs) on new pumps. Proper sizing and regular maintenance are crucial for efficient pump operation. Implementing backup systems and reliable seals minimizes downtime and energy losses. Efficient pump selection, monitoring, and staff education are key components. By achieving these objectives, the program aims to reduce energy consumption, lower operational costs, ensure uninterrupted production processes, and minimize environmental impact. It also prioritizes compliance with safety and environmental standards while promoting sustainability efforts.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• The number of industrial facilities participated in the program. • Number of factories implementing pumping infrastructure enhancement. • Energy saved and CO_2 emission avoided.

Measure - ID	I2.5
Title	**Waste Heat Recovery Program in Industrial sector**
Sector	Industry
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF), Jordan Chamber of Industry (JCI).
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Electricity Distribution Companies, Ministry of Industry, Trade and Supply (MIT), Ministry of Environment (MoE), Chambers of Industry, Royal Scientific Society (RSS).
Target group	Industrial companies
Objective	• Improve energy efficiency within industrial processes by capturing and reusing waste heat, reducing the need for additional energy inputs. • Encourage the development and adoption of advanced waste heat recovery technologies and practices. • Reduce dependence on external energy sources and enhance energy security.
Description	This program encourages industries to adopt waste heat recovery systems, which capture and reuse excess heat generated during various manufacturing and production processes. The process begins with an initial assessment and technical feasibility study to identify potential waste heat sources and recovery technologies. Ensuring compliance with environmental regulations and allocating necessary resources. The next step will be selecting and integrating the appropriate technologies into the existing processes and establishing real-time monitoring and control systems. Training the staff in addition to implementing quality assurance measures and exploring opportunities for using the recovered heat within the facility would be the third step. By implementing these systems, industries can significantly increase energy efficiency, reduce operational costs, and decrease their environmental footprint. This measure not only benefits businesses by optimizing their energy usage but also contributes to a more sustainable and resource-efficient industrial sector, aligning with the global goal of minimizing energy waste and reducing greenhouse gas emissions.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• The number of industrial facilities participated in the program. • Number of factories implementing waste heat recovery technologies. • Energy saved and CO2 emission avoided after implementation.

Measure - ID	I3
Title	**Competence Centre for Energy Efficiency in Industry**
Sector	Industry
Timeline	2024-2028
Implementing Agency	Jordan Chamber of Industry (JCI)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Ministry of Environment (MoEnv), Ministry of Industry, Trade and Supply (MIT), Jordan Standards and Metrology Organization (JSMO), National Energy Research Centre (NERC), Jordan Industrial Estates Company (JIEC), Jordan Exporters Association (JEA)
Target Group	Industrial companies, chambers of industry, industrial zones, industrial associations, Energy Service Companies (ESCOs)
Objective	• Delivery of prepared information and expert advice to target groups within the industrial sector. • Accelerate the implementation of energy-efficient technologies for more impactful and sustainable energy consumption. • Raise awareness about energy efficiency in the industrial sector, by establishing and developing an industrial database for energy efficiency and national benchmarking, to encourage companies to adopt concrete energy-saving measures.
Description	The competence centre starts by defining its goals, scope, and character. To ensure smooth functioning, it secures five-year financing from the national budget and International Financial Institutions (IFIs). The organizational structure is carefully designed, and personnel are recruited to form a dedicated team. The centre online platform is an essential source for information dissemination. The centre will deliver advanced services for the industries; as well as establish services for new investors to be able to support new factories with the most efficient energy consumption. The information includes extensive research, data, and material on energy-efficient technologies for different industrial sub-sectors. The centre also offers insights into financing options, successful cases, and best practices to inspire stakeholders. The centre will regularly host public events to engage the target groups effectively, creating a space for knowledge exchange and awareness-building. Furthermore, specialized training courses will be conducted to empower professionals in the fields of energy auditing, energy management, and the organizational implementation of energy efficiency projects.
Measure Cost	The estimated cost is 3.6 million JOD over a period of 5 years.
Source of Funding	Funding is not secured
Cost / Energy Saved	61.9 JOD/MWh
Monitoring and Quantification of Impact	• Establishment of the competence centre and development of its training program. • Developing the centre's online platform and publishing energy efficiency information. • Key performance indicators (KPIs) of the centre's activities such as trainings, workshops, and seminars, and qualitative indicators of the centre's efforts on raising awareness about energy efficiency within the industrial sector. • Percentage of consultations that lead to the implementation of energy efficiency measures.

Measure - ID	**I4**
Title	**The European Union (EU) Green Economy Program for Energy Efficiency in the Industrial Sector**
Sector	Industry
Timeline	2023-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Industry and Trade (MIT), Ministry of Planning and International Cooperation (MOPIC), EU delegation in Jordan, Jordan Chamber of Industry (JCI), Local Industry Chambers, Aqaba Special Economic Zone Authority (ASEZA), Energy Service Companies (ESCOs), consultancy services providers, Ministry of Environment (MoEnv).
Target Group	Industrial companies, factories.
Objective	• Strengthen the industrial sector's energy efficiency, driving the adoption of cutting-edge technologies and sustainable practices. • Enhanced industrial competitiveness to serve as a cornerstone for fostering a thriving green economy and sustainable growth. • Foster productive partnerships and collaborative dialogues with industry stakeholders to facilitate the exchange of knowledge and insights. • Reduce carbon emissions and environmental footprint of the industrial sector.
Description	The EU funded Energy Efficiency Program is a strategic initiative with the overarching goal of advancing energy efficiency and sustainability within the industrial sector. The measure targets to support 100 energy audits across various industrial facilities. This involves a comprehensive process that includes the establishment of essential technical assistance, capacity-building, and the formulation of policy support mechanisms. Through a collaborative approach, the program actively engages with industry stakeholders, forging partnerships that enable the exchange of knowledge and insights. This collaborative dialogue contributes to a collective understanding of energy-efficient practices and their potential impact on the industrial landscape. Furthermore, the program maintains the monitoring process, consistently assessing its influence and outcomes, serving as a mechanism for continuous improvement. The program includes audits, technical support, capacity building, stakeholder engagement, and impact assessment. At its core, the program plays a pivotal role in nurturing Jordan's green economy. By fostering energy efficiency and optimizing energy consumption, it contributes to a more sustainable and environmentally conscious industrial sector.
Measure Cost	The program cost is estimated at 1.25 million JOD including the energy audits.
Source of Funding	European Union (EU) under the "EU Support to Green Economy in Jordan" under act Neighbourhood, development, and international cooperation instrument – Global Europe.
Cost / Energy Saved	34.9 JOD/MWh
Monitoring and Quantification of Impact	• Programme application and industrial facilities qualification processes • Awareness and stakeholder engagement events and programme material • Number of energy audits conducted for industrial facilities. • Energy savings in the participating companies within the programme duration. • Capacity building and training activities to the program participants • Number of trained and certified auditors and energy managers.

Measure - ID	I5
Title	**Enhancing Energy Efficiency in Food Industries**
Sector	Industry
Timeline	2024-2026
Implementing Agency	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Industry & Trade (MIT), Ministry of Environment (MoEnv), National Energy Research Center (NERC), Jordan Chamber of Industry (JCI), Energy Service Companies (ESCOs), Amman Chamber of Industry (ACI), Zarqa Chamber of Industry, and Irbid Chamber of Industry
Target Group	Industrial facilities in the food sector
Objective	• Optimize energy consumption and utilization across various segments of the food industry. • Strengthen governance of energy performance contracts in the food industry to de-risk energy efficiency investments for food-related businesses. • Increase the competitiveness and resilience of the sector.
Description	The programme provides an extended support focused on enhancing energy efficiency in the food industry. The support not only provides financial support for energy audits, but also build the awareness and capacity while providing free expert consultation to implement energy performance contract. The implementation of energy-saving measures, identified in the energy audits, will drive practical reductions in energy consumption and costs. The programme includes industry-specific capacity building and seminars which will be conducted in partnership with industry stakeholders. Each facility receives tailored assistance, fostering ongoing efficiency improvements. Moreover, JREEEF extends the support to the industrial facilities, providing free technical support and consultations to ensure effective implementation. This comprehensive approach aims to establish sustainable energy practices within the food industry, contributing to a greener and more economically viable future for Jordan. By fostering a culture of energy efficiency, the programme aims to position Jordan food industries as a regional leader in sustainable practices while driving positive environmental and economic outcomes.
Measure Cost	Estimated to be 0.2 million JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	21.8 JOD/MWh
Monitoring and Quantification of Impact	• Programme application and industrial facilities qualification processes • Awareness and stakeholder engagement events and programme material • Number of energy audits conducted targeting food-related industries. • Number of consultation meetings to assist energy performance contracts. • Energy saved in the participating companies within the programme duration. • Capacity building and training activities to the program participants

Measure - ID	**I6**
Title	**Implementing practices of Clean and Efficient Production in Resource Utilization in 15 Jordanian Factories.**
Sector	Industry
Timeline	October 2023 - October 2025
Implementing Agency	Ministry of Industry and Trade (MIT) ,Royal Scientific Society (RSS)
Stakeholders Involved	Ministry of Environment (MoEnv), Jordan Chamber of Industry (JCI), and Local Chambers
Target Group	Industries
Objective	• Improving resource efficiency of the industrial sector, shifting behaviour towards efficient and environmentally friendly resource practices, and supporting the transition towards a circular economy.
Description	The project activities to be implemented in collaboration with relevant stakeholders, where industrial facilities are selected based on specific criteria, including but not limited to availability of resource-savings opportunities. The project supports the implementation of resource-saving measures through the following activities: • Applying the methodology of clean and efficient production in resource utilization in 15 small, medium, and large industrial facilities. • Training employees of industrial facilities on the methodology of clean and efficient production in resource utilization. • Workshops to disseminate project results and raise awareness.
Measure Cost	-
Source of Funding	European Union
Cost / Energy Saved	Not quantified.
Monitoring and Quantification of Impact	• Raising the efficiency of resource consumption in facilities. • Raise awareness and training on strategies and practices to improve resource efficiency (energy, water and materials) in the industrial sector.

Measure - ID	I7
Title	**Transfer of Environmentally Sound Technologies (TEST) (MED TEST III)**
Sector	Industry
Timeline	2018-2024
Implementing Agency	United Nations Industrial Development Organization (UNIDO) and Royal Scientific Society (RSS)
Stakeholders Involved	Ministry of Industry, Trade and Supply (MIT), Ministry of Environment (MoEnv), Jordan Chamber of Industry (JCI), Amman Chamber of Industry (ACI)
Target Group	Food, chemical, and plastic industries
Objective	• Expanding the adoption of resource-efficient and circular business models in the industrial sector • Enhancing the capabilities of local service providers • Integrating resource efficiency into national higher education and policy framework • Improving the production efficiency, environmental performance, and competitiveness of the industrial sector in Jordan, thus increasing opportunities for growth and access to international markets
Description	Led by UNIDO and executed by the Royal Scientific Society (RSS), in cooperation with the Jordan and Amman Chambers of Industry, the MED TEST III project has continued, since 2019, to advance the adoption of resource-efficient production standards in Jordan's industry. The project follows a comprehensive approach and has demonstrated the business case for resource-efficient production in 15 industries from Jordan's chemical, food and beverage, and plastic sectors. To do so, MED TEST III leveraged the capacities of locally trained Jordanian service providers. The TEST methodology, developed by UNIDO, offers a systematic approach to identifying and exploiting the most feasible opportunities for resource efficiency and continuous improvement in the use of materials, water, and energy within a company. This methodology combines essential tools for sustainable production, namely, Resource-efficient and Cleaner Production Assessment (RECPA), Material Flow Cost Accounting (MFCA) and Environmental and Energy Management Systems (EMS/EnMS). As a result of the customized integration and implementation of these tools, best practices, new skills, and an innovative management culture are adopted. TEST enables any company to transition towards more sustainable production business models.
Measure Cost	1 million JOD
Source of Funding	The European Union (EU)
Cost / Energy Saved	16.5 JOD/MWh
Monitoring and Quantification of Impact	• Follow-up is carried out by the responsible institution together with the companies regarding the implementation of recommendations of the resource efficiency studies in the project. • Verification of the savings ratios achieved. • The project could potentially save: 8,671 MWh of energy, 1,635 tons of materials, 1,152,239 of m^3 of water and 3,375 tons of CO_2 equivalent annually.

Measure - ID	I8
Title	**Improving the International Competitiveness of the Textile and Clothing Sector–MENA Tex JOR**
Sector	Industry
Timeline	2018-2024
Implementing Agency	International Trade Centre (ITC)
Stakeholders Involved	Jordan Chamber of Industry (JCI), Ministry of Industry and Trade (MIT), Jordan chamber of commerce, Textile and Clothing facilities, Swedish International Development Cooperation Agency (SIDA)
Target Group	Leather & weaving industries
Objective	• Creation of new jobs, increase the level of income and increasing the global competitiveness across the value chain of the textile and clothing sector. • Promotion of regional cooperation and trade in the MENA region • Enhancing environmental and societal sustainability of the sector considering the criteria for women's empowerment and youth support.
Description	MENATEX Jordan aims to bolster Jordan's export competitiveness in the Textile and Clothing (T&C) sector. The first expected outcome focuses on improving the institutional infrastructure surrounding the T&C sector, with a particular emphasis on policy aspects. By implementing necessary policy changes and enhancing the performance of the Textile Industry Support Institution (TISI), the project aims to create an improved business environment. This conducive environment is expected to stimulate growth, innovation, and overall efficiency within the industry, laying the groundwork for long-term success. The second outcome is targeted at the enterprise level, seeking to enhance the competitiveness of Small and Medium-sized Enterprises (SMEs) operating within the T&C sector. The project aims to provide comprehensive support to 25 select enterprises (10 companies for the second phase started in 2022), offering tailored assistance, capacity building, training, and access to financing and technology transfer. The project entails conducting evaluation studies to uncover resource-saving possibilities by applying the principles of resource efficiency and circular production (RECP) within garment industrial facilities. The objective is to identify opportunities for optimizing resource utilization. Subsequently, each factory will be furnished with a comprehensive report delineating the diverse avenues for resource optimization.
Measure Cost	200K JOD
Source of Funding	Swedish International Development Cooperation Agency (SIDA)
Cost / Energy Saved	52.5 JOD/MWh
Monitoring and Quantification of Impact	• Number of field visits to textile and clothing facilities. • Policy recommendation to improve the textile and clothing business environment. • Number of supported enterprises to enhance their energy efficiency. • Follow-up procedures for the implementation of the energy audit studies. • Awareness and stakeholder engagement events for garment factories. • Energy saved in the participating garment factories within the programme duration. • Capacity building and training activities to the program participants.

Measure - ID	I9
Title	**Energy Efficiency for Industrial Productivity Programme**
Sector	Industry
Timeline	2023-2027
Implementing Agency	United States Agency for International Development (USAID) – Energy Sector Support Activity (ESSA)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Jordan Chamber of Industry (JCI), Jordan Industrial Estates Company (JIEC), Chambers of Industry, Development Partners
Target Group	Small and Medium-sized Enterprises (SMEs) from different industrial sectors
Objective	• Enhance the productivity and competitiveness of the industry. • Increase EE implementation and reduce energy costs. • Increase the industry's internal capacity to manage energy utilization. • To provide a financing directory of local and international entities that support EE implementation.
Description	The USAID Energy Sector Support Activity (ESSA) developed the Energy Efficiency for Industrial Productivity Program (EE4IPP) to engage SMEs in the industrial sector in the energy efficiency journey to increase productivity. The Program provides direct technical assistance to Jordanian industries while also collaborating with other development partners and stakeholders to achieve market-driven, scalable energy efficiency (EE) adoption. Based on scalability, energy intensity, export capability, social impact, and EE potential, the Program's initial focus will be on three industrial sub-sectors (Food, Chemical, and Engineering Industries). Subsectors may be expanded in response to market demands. The program assesses applicants' readiness for EE implementation on three levels, then creates a unique and customized intervention plan for each participating industry, which includes: • Customized technical assistance in implementing Energy Efficiency Measures. • Support in establishing an Energy Management System (EnMS). • Awareness raising in areas related to the Global Low Carbon Market Transition. • Access to available finance schemes. • Provision of trained engineers to support the energy units in each industry and collect data.
Measure Cost	Not applicable
Source of Funding	USAID/Jordan
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	The program will create an M&V and data management system with project partners (i.e., JREEEF & JCI) to verify and register the savings and amount of investment mobilized

Measure - ID	I10
Title	**Industrial Sector Data Management System (DMS)**
Sector	Industry
Timeline	2023-2025
Implementing Agency	United States Agency for International Development (USAID) – Energy Sector Support Activity (ESSA)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Jordan Chamber of Industry (JCI)
Target Group	Industrial facilities
Objective	• To enable JCI to collect data and updates for the industrial sector on energy, production, and employment to support their analysis, advocacy, and reporting. • To establish a dashboard that represents updated industrial sector data, as well as benchmarking for industrial subsectors and opportunities available for industries.
Description	The USAID Energy Sector Support Activity designed the "Energy Efficiency for Industrial Productivity Program" (EE4IPP) to engage SMEs in the industrial sector in the energy efficiency journey to increase productivity. ESSA is assisting partners with a high impact on the industrial sector and market dynamics, such as JCI and JREEEF, in developing a data management system (DMS) that will incorporate all previous industry programs data, as well as institutionalize data collection and M&V for energy efficiency projects. The DMS will have a dashboard that indicates sectoral energy use, carbon footprint, sub-sectoral benchmarks, and the ability to report and analyse sectoral statistics.
Measure Cost	Not applicable
Source of Funding	USAID/Jordan
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	JCI will be able to create reports, analyse statistics and provide sub-sectoral updated information.

Energy Efficiency Measures in the Residential Sector

Measure - ID	R1
Title	**Energy Efficiency Assessment for the Residential Sector**
Sector	Residential
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR).
Stakeholders Involved	Jordanian National Building Council (JNBC), Energy and Mineral Regulatory Commission (EMRC), International Financial Institutions (IFIs), Royal Scientific Society (RSS).
Target Group	Construction associations, owners, or occupants of residential buildings.
Objective	• Identify and assess potential energy efficiency opportunities within the residential sector to gain a comprehensive understanding of its status quo. • Promote resilience and efficiency in the residential sector by driving widespread adoption of energy-efficient practices in the identified opportunities. • Develop inclusive energy efficiency policies and programs targeting underserved and marginalized communities in the residential sector.
Description	The sector assessment encompasses a comprehensive review of existing policies and regulatory frameworks, aiming to uncover the current state of energy efficiency implementation. This assessment considers the unique characteristics of the residential sector, which vary based on factors such as housing types, ownership models, population density, location, economic conditions, demographics, and technological advancements. A thorough evaluation will identify the energy consumption patterns and efficiency levels of various components such as heating and cooling systems. The assessment will present energy efficiency opportunities, serving as a foundation to a strategic approach to enhancing the sector energy efficiency. Sustainability is a central theme in developing a strategic approach to the residential sector. Striving for reduced energy consumption, lower carbon emissions, and resource-efficient practices aligns with broader environmental goals. The residential sector can contribute significantly to sustainability targets through the implementation of energy-efficient building designs, and community-wide initiatives that encourage responsible energy usage. Furthermore, the assessment will prioritize inclusivity by tailoring these policies to address the specific needs of underserved and marginalized communities. By recognizing and addressing the unique challenges faced by these segments, the policies ensure equitable access to energy-efficient opportunities, contributing to a sustainable and just energy landscape.
Measure Cost	The estimated cost is between 100k JOD and 200k JOD, which includes the assessment and stakeholder consultation process.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Analysis and assessment of the energy efficiency in the residential sector. • Evaluation report of the residential sector energy efficiency policies. • Consultation and stakeholder engagement events such as expert workshop • Recommendations for the energy efficiency policies in the residential sector • Updates and adjustments made to energy efficiency policies in the residential sector based on evaluation and recommendations.

Measure - ID	R1.1
Title	**Survey of Energy Consumption in the Residential Sector**
Sector	Residential
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Ministry of Public Works and Housing (MoPWH)
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Department of statistics (DOS), Greater Amman Municipality (GAM), Municipalities, Royal Scientific Society (RSS), Jordanian National Building Council (JNBC)
Target Group	Building owners and households.
Objective	• Gather comprehensive data on energy usage in the sector to understand the energy consumption patterns and identify areas of high consumption. • Enhance the efficiency and effectiveness of data gathering by identifying barriers and challenges in collecting energy data in the residential sector. • Strengthen national energy policies specifically tailored for the residential sector, fostering energy efficiency and sustainable practices.
Description	Building upon the foundation established by the MEMR's 2013 survey, this survey will update and enrich the energy consumption insights in the residential sector. The survey's methodology will be carefully designed to ensure accurate and comprehensive data collection, encompassing various energy sources including fuels, electricity, and heat. It will also investigate into the usage patterns of energy-consuming appliances commonly found in households. Beyond data collection, the survey will also address the challenges and obstacles inherent in gathering energy consumption data from residential areas. To ensure the reliability and applicability of the findings, the survey sample will be carefully selected to represent diverse residential characteristics such as urban and rural households, variations in household sizes, and different types of buildings. By systematically analysing the collected data, the survey will identify dominant energy consumption trends and patterns within the residential sector. An essential component of the survey involves examining the relationships between household fuel preferences, income levels, and housing standards. The insights derived from the survey will serve as a foundation for the development of tailored national energy policies specific to the residential sector. These policies will place a significant emphasis on promoting energy efficiency measures and sustainable practices. By aligning with broader environmental and socio-economic objectives, the policies will contribute to overall energy conservation and the reduction of carbon emissions.
Measure Cost	The estimated cost is subject to the scope of the survey. An estimated budget of 200k JOD will ensure comprehensive data collection and successful questionnaire.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Methodology and design of the residential sector energy efficiency survey • Number of participants (buildings & stakeholder) in the energy efficiency survey. • Percentage of the validated collected data per subsector. • Survey analysis including KPIs and trend identification in the residential sector. • Reporting and dissemination of the energy efficiency survey in the residential sector

Measure - ID	R2
Title	**Energy Efficiency Benchmarking and Database for Residential Buildings**
Sector	Residential
Timeline	2024-2025
Implementing Agency	Ministry of Public Works and Housing (MoPWH), Jordanian National Building Council (JNBC)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Ministry of Local Administration (MoLA), Jordan Standards and Metrological Organization (JSMO), Greater Amman Municipality (GAM)
Target Group	Policy makers, Municipalities, Building owners, Energy auditors.
Objective	• Establish an inventory of buildings in the urban, peri-urban and rural areas for energy efficiency benchmarking and assessment in the residential buildings. • Develop a national database for residential building, containing relevant energy specific information to support systematic refurbishment of the building stock. • Provide building owners and stakeholders a comprehensive platform to assess, compare, and enhance energy performance of residential buildings.
Description	The program will collect and curate essential data, including building energy consumption, carbon emissions, and other significant energy-related information, culminating in the creation of a comprehensive national database. A key aspect of this initiative involves the development of a country-specific building typology dedicated to residential structures, incorporating corresponding energy efficiency values, and seamlessly integrating it into the database. By establishing a reliable National Energy Efficiency Building Database for residential buildings, the program will facilitate a systematic approach to restore existing building stocks. Moreover, the database will be enhanced to incorporate vital features, such as existing standards, recommended improvements, potential energy savings, and benchmarking realistic targets for each distinct building typology. The program's overarching goal is to leverage the database to identify optimal implementation strategies and unlock the considerable energy-saving potential for each building typology, thereby fostering a more sustainable and energy-efficient built environment in Jordan.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Regularly assess the energy efficiency benchmarks of buildings within the national database. • Monitor changes in energy consumption and carbon emissions over time. • Analyse the impact of the measure on achieving energy efficiency goals. • Evaluate the effectiveness of the renovation or retrofit programs on the residential building stock. • Measure the success of capacity-building efforts for relevant institutions, technicians, engineers, contractors, and local companies.

Measure - ID	**R2.1**
Title	**Study for Home Energy Labels**
Sector	Residential
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR).
Stakeholders Involved	Jordanian National Building Council (JNBC), Energy and Minerals Regulatory Commission (EMRC), Royal Scientific Society (RSS), Jordan standards and metrology organization (JSMO), Energy Service Companies (ESCOs).
Target	Construction associations, owners, or occupants of residential new buildings, suppliers for construction business.
Objective	• Drive demand for energy-efficient properties, incentivizing builders, and homeowners to invest in energy-saving upgrades and sustainable construction practices. • Establish standardized energy labelling and reporting procedures to ensure consistency and reliability in the information provided to buyers. • Encourage homeowners to invest in energy-efficient retrofits and improvements to increase a property's energy performance and overall value.
Description	The study on Home Energy Labels involves assessing and analysing various aspects of energy efficiency labelling programs for residential properties. This program is designed to provide homeowners and potential buyers with information about a home's energy performance, aiming to encourage energy-efficient practices and reduce energy consumption. The study involves assessing the possibility of implementing energy labelling programs for homes, offering prospective buyers' essential information on a property's energy efficiency before making a purchase. It also encourages the disclosure of energy usage history during real estate transactions, providing a transparent view of a home's energy performance over time. Implementing Home Energy Labels help buyers to make informed decisions, considering not only the aesthetics and location of a home but also its long-term sustainability and operating costs. Sellers, on the other hand, are incentivized to invest in energy-efficient upgrades and showcase their property's green credentials, enhancing its market appeal. By bridging the gap between energy efficiency and the housing market, this measure empowers consumers, reduces carbon footprints, and advances collective efforts towards a more sustainable and environmentally conscious future.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Study on Home energy labels publication.

Measure - ID	R3
Title	**Enforcement of Energy Efficiency Building Codes**
Sector	Residential
Timeline	2024-ongoing
Implementing Agency	Ministry of Public Works and Housing (MoPWH), Jordan Standards and Metrology Organization (JSMO).
Stakeholders Involved	Ministry of Energy and mineral resources (MEMR), Jordanian National Building Council (JNBC), Jordan Green Building Council (JGBC), Jordan Construction Contractors Association (JCCA), Jordan Engineers Association (JEA), Committee of Engineering Offices, and Public Security Directorate – Civil Defence
Target Group	Building contractors and developers (general and specialized construction companies), Energy Service Companies (ESCOs), Municipalities.
Objective	• Ensure residential buildings comply with building codes, specifically energy efficiency related by Regular monitoring during construction phases. • Increase energy savings and spread the adoption of green building practices.
Description	This measure is based on the articles of By-Law #52 for the year 2020 and its subsequent instructions, which established inspection committees with the responsibility of conducting inspections on buildings that are under construction. To effectively enforce the building codes, a set of specific procedures will be developed and implemented across all regions in Jordan, which will outline the actions and protocols to be followed during the inspections, this may include guidelines on compliance assessment and mechanisms for addressing non-compliance issues. Furthermore, energy systems used in buildings will only be permitted after receiving Energy Efficiency (EE) standards compliance certification from Jordan Standards and Metrology Organization (JSMO).
Measure Cost	Estimated to be 10 million JOD, including the private investment to comply with the code.
Source of Funding	Jordan Building Council Budget
Cost / Energy Saved	56 JOD/MWh
Monitoring and Quantification of Impact	Jordan Building Council should issue a yearly report that shows the number of new dwellings visited and an overview of the main findings of the inspectors.

Measure - ID	R4
Title	**Promote Central and District Heating and Cooling Systems**
Sector	Residential
Timeline	2024-2030
Implementing Agency	Ministry of Public Works and Housing (MoPWH)
Stakeholders Involved	Ministry of Energy and mineral resources (MEMR), Ministry of Local Administration (MoLA), Municipalities, Housing & Urban Development Corporation (HUDC), National Energy Research Centre (NERC)
Target Group	Suppliers, District cooling providers and manufacturers, Municipalities, Urban developers.
Objective	• Identification of the economic and ecological potential of DHC in Jordan. • Increasing energy savings and use of renewable energy for heating & cooling. • Demonstration of projects and research and development initiatives.
Description	The promotion of Central and District Heating and Cooling (DHC) in Jordan can be initiated through a well-structured approach. A pre-feasibility study is required to assess the potential of DHC, followed by investigating waste heat and cooling potentials in the country, where priority areas can be identified. Studies and planning are required for pilot projects which involve the installation of Highly Efficient District Heating & Cooling Networks in densely populated urban areas or industrial sites. Capacity-building initiatives are crucial for training staff responsible for the proper implementation and operation of sustainable district cooling systems.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Introducing sustainable district cooling systems using renewable energies will result in: • Reducing energy consumption and GHG emission. • Helping to insure energy supply reliability. • Reducing the direct emissions from environmentally harmful refrigerants. • Supporting the uptake of renewable energy supply. • Improve the thermal comfort and health of the citizens. • Use of the energy storage effect of DHC.

Measure - ID	R4.1
Title	**Code for District Cooling**
Sector	Residential
Timeline	2024-2027
Implementing Agency	Jordanian National Building Council (JNBC)
Stakeholders Involved	Ministry of Environment (MoEnv), Ministry of Energy and Mineral resources (MEMR), Municipalities, Ministry of Public Works, and Housing (MoPWH), Royal Scientific Society (RSS), Jordan Standards and Metrology Organization (JSMO)
Target Group	District cooling providers and manufacturers, Urban developers, Facility managers
Objective	• Create a regulatory framework that maximizes the benefits of district cooling. • Utilize the high energy-saving potential and a variety of further benefits of district cooling.
Description	Developing and integrating a district cooling code in Jordan involves several crucial steps. Firstly, an investigation of existing local regulations and practices related to energy supply and air conditioning to identify areas for improvement. Collaboration with the JSMO helps define international district cooling standards, forming the basis for the new code. The code emphasizes the use of very efficient chillers with sustainable refrigerants and a high share of renewable energy. To support its implementation, legal and regulatory frameworks are established, and capacity building for staff responsible for district cooling is provided. Supporting measures, such as communication campaigns are designed to encourage the adoption of sustainable cooling solutions. Additionally, monitoring and maintenance schemes are implemented to ensure long-term efficiency and enforcement procedures are established to uphold the code's provisions.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Several performance indicators will be developed to measure the progress toward the targets. • Monitoring the milestones to achieve the elaboration of the code. • Monitoring the implementing mechanism and enforcement of the code.

Measure - ID	R5
Title	**Low-Cost Energy Efficiency Measures in the Residential Sectors**
Sector	Residential
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders Involved	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Ministry of Public Works and Housing (MPWH), Jordanian National Building Council (JNBC), Chamber of Commerce, National Energy Research Centre (NERC), Municipalities, Ministry of Digital Economy and Entrepreneurship (MoDEE).
Target Group	Residents, Energy Service Companies (ESCOs)
Objective	• Promote awareness of energy efficiency by educating residential consumers about the low-cost and immediate energy-saving opportunities within their homes. • Establish a centralized and easily accessible database providing the most updated information and resources about energy efficiency. • Encourage residents to implement low-budget and easily applicable solutions to achieve immediate energy savings.
Description	The residential sector offers significant potential for low-cost energy-saving measures that can result in both environmental benefits and cost savings for homeowners. Many of these actions are relatively simple and don't require major investments. Encouraging homeowners to implement low-cost energy-saving measures involves a combination of education, awareness campaigns, and accessible resources. This programme provides homeowners with information about the benefits of energy-saving actions, including cost savings, environmental impact, and improved comfort. The measure includes: • Development of guideline for low-cost energy efficiency measures fit for the Jordanian residential sector for the defined target groups. • Establish an accessible and use-friendly national platform to act as a centralized and comprehensive source where individuals can find all the information, they need on low-cost energy efficiency measures in the residential sector. • Conduct a communication campaign to elevate public awareness through easily implementable and low-cost energy solutions. • Provide links to experts and service providers for further consultation and advice about energy efficiency measures. • Develop and disseminate fact sheets and up-to-date energy information to allow benchmarking and identification energy efficiency potential. Ultimately, this measure will empower homeowners and residents to embrace energy efficiency at home, cultivating responsible energy practices and contributing to national energy conservation.
Measure Cost	200K JOD per year for the communication campaign
Source of Funding	Funding is not secured
Cost / Energy Saved	26.7 JOD/MWh
Monitoring and Quantification of Impact	• Development of low-cost energy-saving measures guideline. • Establish an accessible and use-friendly national platform on low-cost energy efficiency measures in the residential sector. • Reachability and engagement through metrics like website traffic, social media interactions, and participation in webinars. • Estimated energy saving and GHG reduction through a voluntary reporting of measure implementation.

Measure - ID	R6
Title	**Installation of Solar Water Heaters in Residential Buildings**
Sector	Residential
Timeline	2024-2026
Implementing Agency	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Local Banks, Civil Society Associations, Implementing Companies/Vendors (Local businesses)
Target Group	Homeowners or residents, suppliers, and manufacturers of solar water heating units
Objective	• Promote the adoption of Solar Water Heaters in residential buildings. • Lower the energy cost in the residential sector by harnessing solar energy. • Encourage environmental responsibility and sustainable practices in the residential sector. • Diversifying energy sources and reducing dependence on imported fossil fuels for residential water heating needs.
Description	JREEEF has introduced a financing mechanism to support energy efficiency initiatives in the residential sector. Among multiple initiatives, JREEEF supports the installation of residential small-scale solar water heater (SWH) systems. The measure aims not only reducing final energy consumption but also fostering a culture of sustainable living. Within this framework, citizens from the domestic sector are empowered to engage with the program through established partners from civil society, commercial banks and Islamic banks. JREEEF has a list of certified solar water heater vendor list that went through technical and financial due diligence where the citizens can choose one vendor from the list, afterwards the vendors prepare technical and financial offers for the selected SWH system. JREEEF evaluate and approve the submitted proposals, thereby triggering an incentive amounting to 30% of the SWH system cost. The local vendor installs the approved system, guaranteeing the SWH system functionality and parts. The balance of 70% is arranged to be repaid by the beneficiary through a structured repayment schedule to either the affiliated bank or the Civilian Consumer Corporation. The measure is explicitly designed to make energy-efficient and sustainable solutions accessible to residents, encouraging the widespread use of SWH in residential buildings. Thereby, the measure contributes to the overarching enhancement of energy efficiency across the sector.
Measure Cost	Estimated cost is 4.6 million JOD in (2023-2025) including the cost of SWHs.
Source of Funding	JREEEF
Cost / Energy Saved	30.10 JOD/MWh
Monitoring and Quantification of Impact	• SWH campaign to advertise the benefits and incentives. • Number of received and processed applications for the SWH program • Number and capacity of the installed SWH units • Energy saving estimation and the resulting reduction in fossil fuel consumption. • Estimated cost-saving benefits of SWH on the beneficiary's energy bill.

Measure - ID	R7
Title	**Mitigation Enabling Energy Transition in the Mediterranean Region – phase II (MEET-MED II Project)**
Sector	Residential
Timeline	2021-2024
Implementing Agency	Mediterranean Association of the National Agencies for Energy Management (MEDENER), Regional Centre for Renewable Energy and Energy Efficiency (RCREEE), Royal Scientific Society (RSS)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR)
Target Group	Government agencies, local authorities, private sector entities, civil society organizations.
Objective	• Contribute to enhancing the energy security of beneficiary countries while fostering their transition to a low-carbon economy. • Expedite the transition to clean energy by advocating for widespread adoption of renewable energy and energy-efficient measures. • Increase public awareness of energy's pivotal issues and challenges related to energy, motivating proactive engagement from both public and private sectors.
Description	The project aims to bolster energy security and promote low-carbon economies in Southern and Eastern Mediterranean nations, including Jordan. It focuses on enhancing energy efficiency and optimizing the energy mix in buildings and appliances at local and regional levels, fostering collaboration. The MEETMED II project concentrates on the following focus areas: • Promoting renewable energy and energy efficiency adoption to expedite the clean energy transition in the Southern Neighbourhood region. • Executing demonstrative actions to highlight building energy efficiency benefits and enhance efficient appliances markets nationally and regionally. • Providing training, capacity-building, tailored tools, and online platforms for informed decision-making. • Spreading awareness through targeted campaigns to encourage active involvement in the clean energy transition. MEETMED II significantly contributes to Jordan and other participating countries by advancing energy security, sustainability, and resilience, paving the way for a greener, more prosperous future.
Measure Cost	RSS €25,875 EU €99,375
Source of Funding	European Union (EU) (Grant)
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Conducting qualitative monitoring to evaluate the extent to which the MEETMED II project is achieving its key objectives, including enhanced energy security and a transition to a low-carbon economy. • Tracking relevant KPIs related to the project's objectives, such as the scale of renewable energy and energy efficiency measures deployed in buildings and appliances sectors, to accelerate the clean energy transition. • Monitoring and evaluating the level of involvement, networking, and engagement among relevant stakeholders, ensuring active participation and collaboration throughout the project.

Measure - ID	R8
Title	**Incentives for Home Retrofits**
Sector	Residential
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR),
Stakeholders Involved	Jordan Renewable and Energy Efficiency Fund (JREEEF), Energy and Minerals Regulatory Commission (EMRC), Ministry of Finance (MoF), Central Bank of Jordan (CBJ), Housing & Urban Development Corporation)HUDC(Energy Service Companies (ESCOs) ,Ministry of Local Administration Greater Amman Municipality (GAM), Municipalities.
Target	Residential buildings owners and occupants, suppliers.
Objective	• Lower utility bills for homeowners by improving the energy performance of their homes, leading to increased disposable income. • Enhance the comfort and liveability of homes by improving insulation, heating, cooling, lighting and overall energy efficiency. • Contribute to environmental sustainability by reducing energy waste and the carbon footprint associated with residential energy use.
Description	This project offers financial incentives or low-interest loans to encourage homeowners to retrofit their properties with energy-efficient measures, helping them reduce energy consumption, lower utility bills, and contribute to a greener future. It begins with promotion and education about the benefits of energy-efficient retrofits, followed by eligibility checks and an energy audit. Homeowners select energy-efficient upgrades and receive financial incentives and access to financing options in order to implement energy efficiency measures. In addition to direct financial support, this project establishes financing mechanisms like Property Assessed Clean Energy programs, making it easier for homeowners to access the resources needed to improve their homes' energy performance. By combining financial incentives and accessible financing options, the project aims to catalyse energy-efficient home improvements, benefiting homeowners, the environment, and the broader community.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Monitor and track the number of retrofits completed and the energy savings achieved.

Measure - ID	R8.1
Title	**Energy-Efficient Landscaping for Cooling Savings**
Sector	Residential
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Greater Amman Municipality (GAM), Municipalities.
Stakeholders Involved	Jordan Renewable and Energy Efficiency Fund (JREEEF), Energy and Minerals Regulatory Commission (EMRC), Ministry of Public Works and Housing (MoPWH), Ministry of Environment (MoE), Energy Service Companies (ESCOs)
Target	Residential buildings owners, farmers, environmental entities.
Objective	• Plant trees and shrubs to provide shade to the residential building, reducing the need for air conditioning and lowering cooling costs during the summer. • Contribute to urban resilience by mitigating the impact of heatwaves and extreme temperatures, creating a more adaptable and sustainable residential environment.
Description	The project involves the strategic planting of trees and shrubs around residential buildings to achieve multiple objectives. Firstly, it aims to reduce the need for air conditioning and lower cooling costs during the summer by providing natural shade. This approach simultaneously creates a more comfortable indoor environment for residents by lowering indoor temperatures through natural shading. Additionally, the project enhances the visual appeal of residential properties and improves the overall quality of life for residents through well-designed landscaping. The presence of greenery contributes to a more sustainable living environment. Furthermore, the project plays a crucial role in urban resilience by mitigating the impact of heatwaves and extreme temperatures. It helps create a more adaptable and sustainable residential environment, reducing energy consumption and environmental footprints. This energy-efficient landscaping project strategically plants trees and shrubs to provide natural shade and insulation, resulting in reduced cooling costs, improved aesthetics, and a more comfortable, sustainable living environment for residents.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Monitoring of energy consumption after implementation.

Energy Efficiency Measures in the Services and Public Sectors

Measure - ID	S1
Title	**Energy Efficiency Assessment for the Services Sector**
Sector	Services
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry and Trade (MIT).
Stakeholders Involved	Associations of Service Sector (tourism, banks, etc.), Energy Service Companies (ESCOs), Green Building Council (GBC)
Target Group	Service sector businesses and organizations
Objective	• Identify and assess potential energy efficiency opportunities within the service sector to gain a comprehensive understanding of its status quo. • Promote resilience and efficiency in the service sector by driving widespread adoption of energy-efficient practices in the identified opportunities. • Develop an effective Energy Efficiency market preparation plan for the service sector to improve energy intensity towards a sustainable sector.
Description	The Energy Efficiency assessment of the service sector and relevant subsectors identifies the energy efficiency potential, as well as any gaps and barriers hindering it. This assessment encompasses stakeholder engagement, data analysis, identification of areas with significant energy-saving opportunities. Through rigorous cost-benefit analysis and estimation of energy efficiency potential, this assessment uncovers valuable insights to create a well-informed Energy Efficiency market preparation plan. By driving the adoption of sustainable energy management practices, the plan aims to foster a more resource-efficient and resilient service sector. It seeks to create an enabling environment that encourages the widespread adoption of energy-efficient practices, thus enhancing energy intensity within the sector. The goal is to push the service sector towards sustainability, aligning it with broader sustainability objectives. The findings from this assessment play a crucial role in prioritizing energy-saving measures, reducing operational costs, and contributing to the sector's overall sustainability. By embracing energy-efficient solutions, the service sector can establish itself as a leading example in sustainable practices.
Measure Cost	• The estimated cost is 100k JOD, includes the assessment. • Additional cost relates to stakeholder consultation process.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Assessments of service sector and relevant subsectors. • cost-benefit analysis and estimation of energy efficiency potential. • Energy Efficiency market preparation plan. • Stakeholder engagement events such as workshops.

Measure - ID	S1.1
Title	**Survey of Energy Consumption in the Service Sector**
Sector	Services
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Chamber of Commerce (JCC)
Stakeholders Involved	Department of statistics (DOS), Energy and Mineral Regulatory Commission (EMRC), Association of Services Sector, Royal Scientific Society (RSS)
Target Group	Services sector
Objective	• Gather comprehensive data on energy usage in the sector to understand the energy consumption patterns and identify areas of high consumption. • Obtain qualitative data from stakeholders to gain deeper insights into factors that influence energy consumption and identify potential barriers or opportunities for energy efficiency improvements. • Enhance the efficiency and effectiveness of data gathering by identifying barriers and challenges in collecting energy data in the service sector.
Description	The energy consumption survey in the service sector plays a vital role in assessing the potential for energy efficiency (EE). It provides valuable insights into energy management, intervention targeting, and driving improvements in energy efficiency within the sector. Key aspects of the survey include defining the survey scope, engaging stakeholders for accurate data, collecting energy consumption data from diverse sources, assessing equipment and technologies, and utilizing questionnaires or interviews to gain further insights. By executing this survey, a comprehensive understanding of energy consumption patterns in the service sector can be obtained, enabling the identification of areas with potential for energy efficiency enhancements.
Measure Cost	The estimated cost is dependent on the scope. However, a minimum of 100k JOD is required to obtain adequate data (includes basic data collection and questionnaire).
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Methodology and design of the service sector energy efficiency survey • Number of participants (companies & stakeholder) in the energy efficiency survey. • Percentage of the validated collected data per subsector. • Survey analysis including KPIs and trend identification in the service sector. • Reporting and dissemination of the energy efficiency survey in the service sector

Measure - ID	S2
Title	**Tourism Sector Energy Efficiency Programme (TSEEP)**
Sector	Services
Timeline	2022-2024
Implementing Agency	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), United Nation Development Program (UNDP), Aqaba Special Economic Zone Authority (ASEZA), local hotels in Aqaba.
Target Group	Aqaba's hotels (4-stars or less), Energy Service Companies (ESCOs)
Objective	• Enhance competitiveness of Aqaba's hotels by lowering energy costs • Reduce environmental impact of Aqaba's hotels and adopt sustainable practices. • De-risking energy efficiency investment in the services sector. • Promote widespread energy efficiency retrofits in the hospitality sector. • Encourage knowledge exchange and continuous improvement within the industry.
Description	JREEEF will support the implementation of detailed energy audit in 11 hotels in Aqaba city. The TSEEP is a collaboration between ASEZA, JREEEF, UNDP, and hotels association. ASEZA and JREEEF support financially the implementation of energy savings both covers 50% of the cost equally. The remaining 50% of the implementation costs are covered by the participating hotel. The share of the cost covered by the hotels will be financed through an ESCO model, ensuring the hotel owners' commitment to energy efficiency improvements and active engagement in the program. UNDP will provide a grant to conduct energy audits and offer logistical support for project implementation. Moreover, JREEEF and UNDP extend their support through the project phases, providing advice and consultation to participating hotels. The program consists of three phases: 1. **Energy Audit Phase:** Experienced energy audit companies are selected to conduct detailed studies in 11 pre-selected hotels. 2. **Implementation phase:** Specialized contractors are chosen through a governmental bid for project design and implementation. Companies propose technical and financial solutions based on detailed energy audits. 3. **Measurement and Verification (M&V) Phase:** energy savings will be verified in each hotel, using the International Performance Measurement and Verification Protocol (IPMVP).
Measure Cost	Estimated cost is 1.25 million JOD
Source of Funding	JREEEF, ASEZA, and the participating hotels.
Cost / Energy Saved	94 JOD/MWh
Monitoring and Quantification of Impact	• JREEEF conducts monitoring and evaluation of the projects based on pre-set Key Performance Indicators (KPIs). It is anticipated that the program will lead to annual savings of over 300 thousand JODs in hotels' operational expenses.

Measure - ID	S3
Title	**Public Buildings Energy Database**
Sector	Public
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Ministry of Education (MoE), Ministry of Health (MoH), Ministry of Public Works and Housing (MoPWH), and all relevant ministries
Target Group	Public sector buildings
Objective	• Create a building typology for public buildings, categorizing them based on characteristics and purpose. • Develop a national energy consumption database for public buildings. • Establish a benchmark for public buildings and identify energy saving opportunities. • Develop energy-saving strategies for each typology and prioritize retrofitting measures for maximum impact.
Description	The establishment of an integrated database system on public buildings will support the reform of energy efficiency in the public sector. This system is designed to holistically gather, manage, and transmit data to an online platform, referred to as the National Energy Efficiency Public Building Database. This digital platform will serve as a repository for a diverse range of information, including comprehensive details on the existing inventory of public sector buildings, energy efficiency opportunities, and records of energy consumption patterns. The collected data will be presented on the platform, facilitating insightful analysis, and benchmarking. The analysis will enable policymakers to gain a profound understanding of the prevailing energy landscape within the public sector. The project's impact will extend beyond data collection and presentation. It will be a catalyst for practical action, with the database forming the foundation for a strategic renovation program. The database will identify priority buildings and optimize energy efficiency interventions. By focusing on targeted renovations, the project will significantly contribute to the reduction of energy consumption and associated environmental impacts. Recognizing the significance of human capital, the project includes a capacity-building initiative. This effort entails comprehensive training and skill development programs for personnel across relevant institutions in which they will acquire the competencies needed to effectively manage, maintain, and utilize the database and platform.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Public building stock topology catalogue based on characteristics and purpose. • Energy performance overview of public building stock. • Establish energy performance benchmarks for public buildings. • Recommendations to improve energy performance of a specific public building stock typology and the necessary investments for these recommendations. • Develop a concept for public building refurbishment and retrofit programs.

Measure - ID	S4
Title	**Roadmap for Energy Efficiency in Public Buildings**
Sector	Public
Timeline	2024-2025 (further roadmap implementation 2026-2030)
Implementing Agency	Ministry of Public Works and Housing (MoPWH), Ministry of Energy and Mineral Resources (MEMR).
Stakeholders Involved	Ministry of Education (MoE), Ministry of Health (MoH), Jordanian National Building Council (JNBC), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) Ministry of Public Works and Housing (MoPWH),.
Target Group	Public Buildings starting with government offices, schools, and hospitals.
Objective	• Establish a comprehensive energy efficiency refurbishment roadmap tailored to government offices, schools, and hospitals. • Develop nationwide uniform standards for energy-efficient refurbishments in public buildings. • Provide stakeholders with expert energy advice to navigate energy-efficient measures, facilitating informed decision-making during refurbishment.
Description	An energy efficiency refurbishment roadmap will be developed for three distinct types of public buildings: government offices, schools, and hospitals. This roadmap will outline the necessary steps and phases to successfully implement energy-efficient refurbishments. It will also establish consistent nationwide standards for energy efficiency and provide well-informed energy advice. The roadmap will be put into action through pilot projects that focus on refurbishment measures, including heating and cooling systems in public buildings. The initial phase involves conducting comprehensive and detailed energy audits to identify inefficiencies and areas for improvement. These audits will provide essential data to make informed decisions. In the subsequent phase, renovation concepts will be formulated for each building typology using the gathered data and drawing inspiration from best practices and innovative design approaches. Establishing a uniform benchmark for energy efficiency will not only enhance the quality of refurbishment projects but also promote a shared understanding among all stakeholders. The third phase will tailor the roadmap to the specific energy requirements of government offices, schools, and hospitals. This customization ensures practicality, effectiveness, and significant impact. The roadmap also acknowledges the significance of well-informed decision-making. To facilitate this, it will offer grounded energy advice to navigate the complexities of energy-efficient refurbishments. By offering clear guidance based on data-driven insights, the roadmap empowers stakeholders to make sound choices that align with their energy-saving objectives. Additionally, the roadmap will integrate the implementation of renewable technologies such as PV systems and solar thermal solutions.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• The development of energy efficiency refurbishment roadmap for Public Buildings • The execution of pilot projects for the suggested public building typologies.

Measure - ID	S4.1
Title	**Pilot Project for Government Offices: MEMR-Building**
Sector	Public
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders Involved	Ministry of Public Works and Housing (MoPWH), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Jordan Building Council (JNBC), Jordan Standards and Metrology Organisation (JSMO), Jordan Green Building Council (JGBC), Construction and Sustainable Buildings Center (CSBC).
Target Group	Public buildings, specifically MEMR building, Energy Service Companies (ESCOs).
Objective	• To lead by example in adopting energy-efficient building practices in the Public Sector. • Create environmentally responsible, resource-efficient, and healthy buildings that contribute positively to both the environment and the well-being of their occupants.
Description	The project aims to identify areas for improvement and establish energy efficiency standards for MEMR buildings. A comprehensive plan will be developed for the renovation, and potential financing options will be explored to ensure project feasibility. The renovation measures will then be implemented as a pilot project to showcase the benefits of green building practices. The results and experiences gained from the pilot project will be evaluated, and recommendations will be provided to support the implementation of energy efficiency measures in other public buildings. Additionally, training will be provided to government building maintenance experts, equipping them with the necessary skills and knowledge for green building concepts, certifications, and life-cycle cost analysis. This holistic approach seeks to create a foundation for sustainable and energy-efficient government buildings in Jordan, contributing to a greener and more environmentally conscious public sector.
Measure Cost	20-40k JOD for Basic energy audit implementation.
Source of Funding	Funding is not secured.
Cost / Energy Saved	68.7 JOD/MWh
Monitoring and Quantification of Impact	• Monitoring energy consumption after energy efficiency measures implementation.

Measure - ID	S4.2
Title	**Energy Audits and Implementation for Public Schools**
Sector	Service
Timeline	2024-2026
Implementing Agency	Ministry of Education (MoE)
Stakeholders Involved	Ministry of Public Works and Housing (MoPWH), Jordanian National Building Council (JNBC), Energy Service Companies (ESCOs)
Target	Public schools
Objective	• Create environmentally responsible, resource-efficient, and healthy buildings that contribute positively to both the environment and the well-being of their occupants. • Use energy efficiency projects as educational tools to teach students about sustainable practices, energy conservation, and environmental stewardship.
Description	This measure aims to enhance the sustainability and efficiency of energy consumption in the public-school buildings. Regular energy audits will assess the current energy usage patterns, identify opportunities for optimization, and develop strategies for reducing energy consumption and greenhouse gas emissions. By implementing energy-efficient measures and promoting sustainable practices, this initiative not only reduces the environmental footprint but also contributes to cost savings for the education sector, ultimately ensuring a brighter and greener future for Jordan's public schools.
Measure Cost	Depends on the number of committed facilities and the size of each facility.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Number of public schools conducting energy audit and implementing the recommendations. • Monitoring energy consumption after energy efficiency measures implementation.

Measure - ID	S4.3
Title	**Solar Water Heaters Installation for Public Hospitals**
Sector	Service
Timeline	2024-2026
Implementing Agency	Ministry of Health (MoH)
Stakeholders Involved	Ministry of Public Works and Housing (MoPWH), Energy Service Companies (ESCOs)
Target	Public hospitals
Objective	• To implement solar water heating systems to reduce energy costs, decrease carbon emissions, and ensure a reliable hot water supply in the public hospitals. • Create environmentally responsible, resource-efficient, and healthy buildings that contribute positively to both the environment and the well-being of their occupants.
Description	Installing solar water heaters in public hospitals offers a sustainable and cost-effective solution to the energy needs of healthcare facilities. The process involves a series of steps, beginning with a detailed assessment and feasibility study to determine if solar water heating is suitable for the hospital's specific requirements. After that a well-designed system is planned, considering factors like available space and sunlight exposure. To ensure compliance with building codes and permits, the installation phase is carried out with precision, positioning solar collectors in optimal locations, connecting them to the hospital's hot water distribution system, and integrating backup heating systems as needed. Comprehensive testing, commissioning, and staff training ensure efficient and safe operation. After installation, ongoing monitoring and maintenance are essential to track system performance, address any issues, and optimize energy savings. Data on reduced energy consumption and carbon emissions contribute to environmental responsibility. The benefits of solar water heaters in public hospitals are multiple: they reduce operational costs and contribute to sustainability while ensuring a consistent supply of hot water critical for healthcare services. This not only lowers energy bills but also potentially frees up budget resources that can be redirected towards patient care and essential medical equipment. Ultimately, the installation of solar water heaters aligns with the hospital's commitment to environmental responsibility and cost-efficient healthcare.
Measure Cost	Depends on the number of committed facilities and the size of each facility.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Number and capacity of the installed SWH units • Energy saving estimation and the resulting reduction in fossil fuel consumption. • Estimated cost-saving benefits of SWH on the beneficiary's energy bill.

Measure - ID	S4.4
Title	**Energy Audits and Implementation for Ministries**
Sector	Service
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR) , Ministry of Health (MoH).
Stakeholders Involved	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Jordanian National Building Council (JNBC), Energy Service Companies (ESCOs).
Target	Public hospitals and health Centres
Objective	• Conduct energy audits for ministries buildings and execute the suggested improvements to minimize energy usage and reduce the overall governmental energy expenses. • Develop the expertise and knowledge within the ministries to sustain energy management efforts and continually improve energy efficiency.
Description	This measure involves energy audits of ministry facilities to identify inefficiencies and opportunities for improvement. By implementing energy-efficient technologies, practices, and policies, ministries aim to reduce operational costs, lower their environmental impact, and enhance employee well-being. The program fosters responsible governance, ensures compliance with energy regulations, and sets an example for other organizations while promoting economic growth and job creation through energy-efficient initiatives. Ultimately, this measure aligns ministries with modern energy management practices, transparency, and a commitment to a sustainable future.
Measure Cost	Depends on the number of committed facilities and the size of each facility.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and Quantification of Impact	• Number of ministries implementing energy efficiency audit and recommendations. • Monitoring energy consumption after energy efficiency measures implementation.

Measure - ID	S5
Title	**The Excellence in Design for Greater Efficiencies (EDGE)**
Sector	Service
Timeline	2023-2025
Implementing Agency	Greater Amman Municipality (GAM), The International Finance Corporation (IFC)
Stakeholders Involved	Chambers of Commerce and Industry, and Associations.
Target Group	Public Sector Entities, Academic sector.
Objective	• To advance green building practices in Amman, Jordan, with a focus on enhancing the policy framework, promoting awareness, and capacity building for green building certification (particularly the EDGE certificate). • To establish effective incentives for green construction and increase certified floor space using EDGE.
Description	The measure includes promoting green building practices in Amman, Jordan, with the potential to expand countrywide. It has four main components: • Enhancing regulations: Assessing existing green building regulations and proposing policy improvements and incentives. Specialized training will enable effective enforcement. • Raising awareness and demand: Showcasing the benefits of green construction, conducting workshops, and collaborating with industry associations, financial institutions, and NGOs to make green buildings more appealing. • Building professional capacity: Introducing a "Designing for Greater Efficiency (DfGE)" academic course in local universities to educate students, engineers, and architects about sustainable building practices. Establishing certified green buildings: Assisting public and private buildings in obtaining EDGE certification and integrating green requirements into various programs and procurement processes. The project aims to create a supportive environment for green building, promoting sustainability, cost savings, and environmental preservation in Amman and beyond.
Measure Cost	Not available
Source of Funding	IFC
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• The adopted green building incentives scheme. • Additional regulatory changes needed to enable green building (if any). • Green Building/EDGE training sessions. • Green Building/EDGE awareness raising workshops. • EDGE certification by additional buildings. • Formalization and/or Roll-out of the DfGE program at academic institutions.

Measure - ID	S6
Title	**Lighting Replacement Program for Municipalities**
Sector	Public
Timeline	2024 - 2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Ministry of Local Administration (MoLA)
Stakeholders Involved	Municipalities, Electricity Distribution Companies.
Target Group	Municipalities, Lighting Suppliers and Providers.
Objective	• Reduce the energy consumption from street lighting and accordingly reduce its costs for municipalities. • Improving the services of municipalities by utilizing the savings from improving EE in street lighting.
Description	The Ministry of Energy and Mineral Resources (MEMR), in collaboration with local companies, has initiated a project to replace 410k traditional lighting units in municipalities with energy-saving LED units. The project includes the southern and central regions of Jordan, including Irbid, Mafraq, Ajloun, and Jerash governorates. The new LED streetlights are expected to have a lifespan of nine years, resulting in substantial cost savings for municipalities. The project's implementation phase spans three years, during which traditional streetlighting systems will be systematically replaced with technologically advanced LED luminaires. This transition holds the promise of not only ease energy consumption and financial overheads but also underpins the broader perspective of sustainability, aligning with global efforts to reduce carbon footprints and enhance resource stewardship.
Measure Cost	65 million JOD
Source of Funding	35 million JOD from the Rural Fund, while the remaining funding is provided by the municipalities.
Cost / Energy Saved	38 JOD/MWh
Monitoring and Quantification of Impact	• The project includes thorough monitoring of the implementation of LED street lighting in the municipalities involved. Regular reports are generated to track the number of replaced lamps and accordingly the energy savings. • The expected reduction in electricity consumption can reach up to 70%, with an average of around 50%, depending on the local situation and the control mechanism implemented.

Measure - ID	**S7**
Title	**Sustainable Workforce Development and Facility Management Support**
Sector	**Service**
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Ministry of Industry, Trade and Supply (MIT), Chambers of Industry, Royal Scientific Society (RSS), Energy Service Companies (ESCOs).
Target	Public buildings
Objective	• To enhance the sustainability and energy efficiency of commercial buildings by encouraging the appointment of dedicated energy experts. • Provide technical support to assist businesses in identifying key areas where sustainability and energy efficiency professionals can have the most significant positive impact on their daily operations.
Description	This project is designed to motivate commercial buildings to designate dedicated experts in energy management or Corporate Social Responsibility (CSR). It offers financial incentives, training opportunities, and professional development support to business owners and operators who appoint or assign individuals responsible for overseeing sustainability initiatives and energy efficiency enhancements. By offering resources and acknowledgment for these roles, the program aims to strengthen the capability of commercial buildings to implement and sustain eco-friendly practices, reduce energy usage, and minimize their environmental footprint. The presence of dedicated experts ensures that sustainability remains a central focus, leading to enduring cost savings, improved building performance, and decreased carbon emissions.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Number of commercial facilities involved in the project. • Monitoring of energy consumption and carbon emissions reduction after appointing energy experts.

Energy Efficiency Measures in the Transport Sector

Measure - ID	T1
Title	**Energy Efficiency Assessment for the Transport Sector**
Sector	Transport
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Transport (MoT), Energy and Mineral Regulatory Commission (EMRC), Department of statistics (DOS), Land Transport Regulatory Commission (LTRC), Civil Aviation Regulatory Commission (CARC), Jordan Maritime Commission (JMC), Royal Scientific Society (RSS)
Target Group	Commuters, Transport companies and associations
Objective	• Identify and assess potential energy efficiency opportunities within the transport sector to gain a comprehensive understanding of its status quo. • Promote resilience and efficiency in the transport sector by driving widespread adoption of energy-efficient practices in the identified opportunities. • Strengthen energy efficiency policies to precisely match the distinctive characteristics and requirements of the transport sector, enabling the development and implementation of customized and impactful energy efficiency initiatives.
Description	This measure aims to drive energy efficiency in the transport sector by employing a comprehensive approach. By engaging key stakeholders within the transport industry and selecting a diverse group of participants from various demographics, the assessment includes data analysis on fuel usage, compliance with standards, driver behaviours influencing fuel consumption, current traffic patterns revealing inefficient management areas, and the distribution of vehicle types and models. Additionally, the project explores fuel alternatives and innovative technologies, while accounting for infrastructure requirements and economic feasibility. Through the analysis of driver behaviour, the initiative strives to promote fuel-efficient driving practices. Collaborating with industry partners and policymakers, the assessment analyses policies and establishes a monitoring mechanism to drive continuous improvements. By conducting in-depth lifecycle and cost-benefit analyses, the initiative charts a strategic roadmap for enhancing energy efficiency. This data-driven approach empowers informed decisions, cost reductions, and diminished environmental impact. The goal is to foster an environment supportive to energy-efficient practices through policy incentives, regulations, and awareness campaigns.
Measure Cost	The estimated cost is between 100k JOD and 200k JOD, which includes the assessment and stakeholder consultation process.
Source of Funding	Funding is not secured.
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Assessments of energy efficiency in the transport sector. • Cost-benefit analysis and estimation of energy efficiency potential. • Stakeholder engagement events such as workshops • Strategically aligned energy efficiency initiatives in the transport sector.

Measure - ID	T1.1
Title	**Survey of Energy Consumption in the Transport Sector**
Sector	Transport
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Ministry of Transport (MoT), Department of statistics (DOS), Land Transport Regulatory Commission (LTRC), Civil Aviation Regulatory Commission (CARC), Jordan Maritime Commission (JMC), Energy and Mineral Regulatory Commission (EMRC), Royal Scientific Society (RSS)
Target Group	Transport sector
Objective	• Gather comprehensive data on energy usage in the transport sector to understand the energy consumption patterns and identify areas of high consumption. • Obtain qualitative data from stakeholders to gain deeper insights into factors that influence energy consumption and identify potential barriers or opportunities for energy efficiency improvements. • Enhance the efficiency and effectiveness of data gathering by identifying barriers and challenges in collecting energy data in the transport sector.
Description	The energy consumption survey within the transport sector serves as a crucial tool in evaluating the potential for energy efficiency enhancements; the survey would include various key aspects: • Data collection on fuel usage and standards. • Insights on driver's behaviours that impact fuel consumption. • Current traffic patterns to identify areas with inefficient traffic management. • Percentages of utilized vehicle types and models. • Number of people using public transportation modes. The previous key points can be collected by engaging stakeholders in the transport sector to achieve accurate results, and by also choosing a representative sample of participants from various groups and regions. Collecting these data points will help evaluate the progress of Jordan's transport sector in alignment with Jordan's Long-term National Sector Strategy objectives, policymakers can then identify trends and patterns which can enhance the energy and fuel consumption in the sector, which will also provide insights into energy efficiency improvements, emission reductions, and the success of various initiatives outlined in the plan.
Measure Cost	The estimated cost is dependent on the scope. However, a minimum of 100k JOD is required to obtain adequate data (includes data collection and questionnaire).
Source of Funding	Funding is not secured.
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Methodology and design of the transport sector energy efficiency survey. • Number of participants (vehicles, operators, or relevant entities) in the energy efficiency survey. • Size of the collected data considering statistical significance, feasibility, and granularity. • Survey analysis including KPIs and trend identification in the transport sector. • Reporting and dissemination of the energy efficiency survey in the transport sector.

Measure - ID	T1.2
Title	**Policies to Increase Energy-Efficient and Climate-Friendly Cars**
Sector	Transport sector
Timeline	2024-2025
Implementing Agency	Ministry for Energy and Mineral Resources (MEMR)
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Environment (MoEnv), Ministry of Finance (MoF), National Energy Research Center (NERC), Royal Scientific Society (RSS), Jordan Standards and Metrology Organization (JSMO), Chamber of Commerce, Driver and Vehicle Licensing Department (DVLD), and Energy & Minerals Regulatory Commission (EMRC).
Target Group	Commercial or public fleets, automotive industry, stakeholders in transport sector.
Objective	• Develop regulatory, financial, quality control, and incentives measures to increase the uptake of low- and zero-emission vehicles, considering the most viable technologies and consumer preferences. • Reduce CO2-emissions and fuel consumption of new passenger cars and light commercial vehicles. • Roadmap for transition to low- and zero-emission vehicles towards a more sustainable transportation system.
Description	A comprehensive study to increase the uptake of energy-efficient and climate-friendly passenger cars and light commercial vehicles considering various aspects (e.g., technology and policy). The study involves analysing various vehicle types, such as electric vehicles (EVs), hybrid vehicles, and other alternative-fuel vehicles. The study will evaluate their energy efficiency, emissions reduction potential, infrastructure requirements, and overall environmental impact. The study will assess and focus on the following aspects: • International best practice in promoting energy efficient and climate friendly cars including vehicles energy and emission standards. • Energy-efficient and climate-friendly vehicle technologies and their trends to identify the most promising solutions for widespread adoption. • Barriers that hinder the widespread adoption of energy-efficient and climate-friendly cars among consumers such as challenges related to vehicle charging or refuelling infrastructure, availability of spare parts and maintenance services, initial cost, and the range limitations of electric vehicles. • Policies to overcome the barriers and challenges including financial incentives, standards (e.g., fuel standards), energy labelling, and quality controls. • Environmental and economic impact of the developed policies to promote low- and zero-emission cars.
Measure Cost	Approx. 200k to – 300k JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring And Quantification of Impact	• Energy-Efficient and Climate-Friendly Cars study release. • Key performance indicators (KPIs) to quantitatively track progress, these could include percentage increase in the adoption of energy-efficient vehicles, reduction in emissions from vehicles in the target region, number of charging or refuelling infrastructure installations, changes in consumer perceptions and preferences, success rate of policy implementation.

Measure - ID	**T1.3**
Measure	**Carpooling and Ridesharing Governance Framework**
Sector	Transport
Timeline	2024-2025
Implementing agency	Ministry of Transport (MoT), Land Transport Regulatory Commission (LTRC)
Stakeholders involved	Ministry for Energy and Mineral Resources (MEMR), Ministry of Digital Economy and Entrepreneurship (MoDEE).
Target group	Commuters.
Objective	• Set guidelines for managing and regulating carpooling and ridesharing services. • Establish and promote carpooling and ridesharing programs to reduce the number of single-occupancy vehicles on the road.
Description	a comprehensive set of guidelines and regulations should be designed to oversee and manage carpooling and ridesharing services. It encompasses various aspects of these shared transportation modes, including safety standards, licensing, pricing, accessibility, environmental impact, and consumer protection. This framework serves several critical purposes: Defining the regulatory authority responsible for overseeing carpooling and ridesharing services, including licensing, safety standards, and compliance. In addition to establishing requirements for obtaining licenses or permits for drivers and platforms, including background checks, vehicle inspections, and insurance coverage. Moreover, the framework emphasizes data privacy, accessibility for all passengers, and insurance requirements to safeguard the interests of both service providers and users. It encourages public-private partnerships and community engagement for a collaborative approach to improving transportation options. The establishment and promotion of carpooling and ridesharing programs represent an approach to mitigate the impact of single-occupancy vehicles on our roadways. By encouraging multiple individuals to share rides, it can significantly reduce traffic congestion, lower fuel consumption, and decrease greenhouse gas emissions, ultimately leading to a more sustainable and efficient transportation system. Promotion is essential to the success of these programs, as public awareness and participation are key. Moreover, technology-driven platforms and mobile apps can simplify the process of finding suitable carpool or rideshare matches, making these options more accessible and convenient for a broader range of commuters.
Measure cost	Not Available
Source of funding	Funding is not secured
Cost / Energy Saved	Not Available
Monitoring and quantification of impact	• The establishment of carpooling and ridesharing governance framework. • KPIs to measure the project success, these could include metrics related to carpooling and ridesharing adoption, reduced single-occupancy vehicle trips, and environmental impact.

Measure - ID	T2
Title	**Vehicle Tyre Energy Labelling**
Sector	Transport sector
Timeline	2024-2026
Implementing Agency	Jordan Standards and Metrology Organization (JSMO)
Stakeholders Involved	Ministry of Transport (MoT), Ministry for Energy and Mineral Resources (MEMR), Driver and Vehicle Licensing Department (DVLD)
Target Group	Consumers, tyre manufacturers and dealers, regulatory authorities, transportation industry
Objective	• Develop regulation for tyre energy labelling while aligning it with the European standard to improve fuel efficiency, safety, and noise performance of tyres. • Enable informed purchasing decisions by providing the consumers with clear and easy-to-understand information through the tyre energy label, • Encourage tyre manufacturers and engage key stakeholders to innovate and improve product performance to achieve higher energy efficiency classifications.
Description	Providing a regulation and an energy label for tyres in alignment with the European standard, specifically the European Regulation (EU) 2020/740. The label will effectively communicate the tyre's performance in terms of fuel efficiency, safety, and noise, empowering consumers to make well-informed purchase decisions. Additionally, the label encourages manufacturers to innovate and strive for top classifications in various categories. The implementation process involves several key steps: • Conducting a comprehensive status quo analysis of the tyre market in Jordan. • Engaging with key stakeholders to gather insights and ensure their involvement throughout the process. • Using the European Regulation (EU 2020/740) as a reference to develop Jordan's own regulation and an easy-to-understand label that conveys essential information, including minimum requirements (MEPS). • Accompanying the label's introduction with an awareness campaign and capacity-building measures to ensure effective dissemination and understanding among consumers and relevant industry stakeholders. • Establishing market monitoring mechanisms to enforce compliance and defining penalties for non-compliance. • Requiring tyre manufacturers to provide the new label in a suitable form, such as stickers, and include label values as part of their product communication. • Ensuring that tyre dealers provide clear information along with the invoice and prominently display tyre labels to consumers.
Measure Cost	Estimated to be 31.8 million JOD private investment for tyre replacement
Source of Funding	National Budget
Cost / Energy Saved	23.6 JOD/MWh
Monitoring and Quantification of Impact	• Monitor tyre sales and imports over the years and track the changing share of tyres in different energy efficiency classes, track energy savings based on the changed shares. • Potential reduction in fuel consumption by 0.5 l/100 km using an appropriate classification of energy efficiency classes for tyres. • Expected increase in the demand from 10% in the first year to 25% after 5 years as consumers become more aware of and adopt energy-efficient tyres.

Measure - ID	T3
Title	**Promotion for E-Mobility - Endorsement and Acceleration**
Sector	Transport
Timeline	2022-2025
Implementing Agency	Ministry for Energy and Mineral Resources (MEMR)
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Finance (MoF), Jordan Standards and Metrology Organization (JSMO) Energy and Minerals Regulatory Commission (EMRC), Land Transport Regulatory Commission (LTRC), Driver and Vehicle Licensing Department (DVLD), World Bank (WB), United States Agency for International Development (USAID), , Ministry of Environment (MoEnv) .
Target Group	Transport sector (public and private), car retailers and owners, residents, and commuters.
Objective	• Promote the adoption of electric vehicles by developing a national E-mobility strategy. • Expansion and enhancement of charging infrastructure, including public charging stations and home charging solutions. • Installing 750 charging distribution in various region in Jordan.
Description	In line with the Jordan Five Year Reform Matrix (Pillar No. 9 Energy), a strategy for e-mobility will be developed to guide the country's efforts to scale up e-mobility. To achieve this, a comprehensive study will be conducted. This study will encompass an in-depth assessment of previous actions related to e-mobility, while concurrently pinpointing critical challenges and concerns associated with its implementation. A pivotal dimension of this strategic project involves the formulation of a roadmap, which will be featured by Key Performance Indicators (KPIs), facilitating structured monitoring and quantifiable progress assessment. The strategy will focus on energy-sector issues, incentivizing stakeholders, the planning of charging infrastructure where public-private partnerships are anticipated to be key drivers in this dimension, tariff frameworks for charging are also expected to be delineated, ensuring a balanced economic model while incentivizing EV adoption. Stakeholder engagement and a monitoring framework will ensure successful implementation. The proposed strategy coherently merges an array of dimensions, from policy to infrastructure, technology to economics.
Measure Cost	Cost of Strategy development: 350K The cost for private investment is expected to reach 585 million JOD
Source of Funding	World Bank (WB) through the Multi-Donor Trust Fund (MDTF) of Jordan
Cost / Energy Saved	27.5 JOD/MWh
Monitoring and Quantification of Impact	• Monitoring will be conducted by MEMR, WB, and e-Mobility Committee • E-Mobility strategy and action plan issuance • Define a set of measurable KPIs aligned with the strategy's objectives. These could include metrics like the number of charging stations deployed, percentage increase in electric vehicle adoption, reduction in emissions, etc.

Measure - ID	T3.1
Title	**Integrated Adoption of Electric Mobility in Jordan**
Sector	Transport
Timeline	2032-2026
Implementing Agency	Ministry of Environment
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Finance (MoF), Ministry for Energy and Mineral Resources (MEMR), Energy and Minerals Regulatory Commission (EMRC), Land Transport Regulatory Commission (LTRC), United Nation Industrial Development Organization (UNIDO)
Target Group	Transport sector (public and private), car retailers and owners, residents, and commuters.
Objective	To catalyse and accelerate the breakthrough of electric mobility in urban areas in Jordan through innovation and technology transfer. Outcome 1: E-mobility policies established, through enhanced inter-ministerial coordination • Output 1.1 The High-level Forum on E-mobility (HFE) is established and functional. • Output 1.2 Public-private roadmap for transitioning toward more sustainable tourism transport sector. • Output 1.3 Regulations to enable integrated e-mobility and renewable energy investments. Outcome 2: Strategic investment drives e-mobility and enables higher public and private • Objective investment. • Output 2.1 Scalable E-mobility project (Petra E-bus project) in place to demonstrate replicability • Output 2.2 Petra bus implementation program delivered • Output 2.3 Strategies and pipeline are developed to scale-up e-mobility and renewable energy. Outcome 3: Government and private sector are better prepared and enabled to replicate e- mobility successes in Jordan. • Output 3.1 Knowledge and best practice shared through regular exchange of global regional, and national experiences through the Global Programme. • Output 3.2 Capacity building program on integrating e-mobility and renewable energy technologies as well as environmentally sound management of EV batteries
Description	The objective is to catalyse electric mobility breakthrough in Jordan through stakeholder coordination, investment, policy solutions and knowledge transfer. This project is developed as a child project of the "Global Programme to Support Countries with the Shift to Electric Mobility" funded by the Global Environment Facility (GEF-7), UNIDO as GEF agency and GGI as lead executing entity will leverage their global expertise to maximize impact. This initiative aims to support the transition to a sustainable lowcarbon transport sector in Jordan, addressing challenges such as reliance on imported fossil fuels, inadequate cross-sector coordination, limited awareness of green transport benefits, and a lack of sustainable public transit solutions
Measure Cost	Around 1 million (JOD)
Source of Funding	Global Environment Facility (GEF)
Cost / Energy Saved	Not available yet.
Monitoring and Quantification of Impact	

Measure - ID	T4
Title	**Strategy and Action Programme for Public Transport**
Sector	Transport
Timeline	2023-2030
Implementing Agency	Ministry of Transport (MoT)
Stakeholders Involved	Ministry of Planning and International Cooperation (MoPIC), Ministry of Finance (MoF), Ministry of Public Works and Housing (MoPWH), Greater Amman Municipality (GAM), Land Transport Regulatory Commission (LTRC), Municipalities, Social Security Investment Fund (SSIF), international donors, etc.
Target Group	Residents and commuters
Objective	• Enhance the efficiency, accessibility, and sustainability of public transport system, thus encourage transport mode shift.
Description	As result of the existing strategy on national and regional level, several measures to strengthen the public transport are already defined. To come to an overall strategy for the public transport and as basis for further funding, a strategy and an action program is to be developed focusing on tailoring improvements in public transport to suit the unique requirements of different cities, including acceleration and enhanced comfort. The strategy focuses on increasing the frequency and densification of public transport services, alongside initiatives to bolster punctuality and reliability. Infrastructure at bus stops is also slated for enhancement to improve user experience. The acquisition of energy-efficient buses, potentially based on E-Mobility. Regulatory amendments and tax incentives for owning electric buses are recommended. The strategy also entails comprehensive analysis, decision-making, introduction, and operation of Bus Rapid Transit (BRT) Systems, as well as conducting feasibility studies for optimizing bus systems. This holistic approach aims to underpin a robust, sustainable, and accessible public transportation network, laying the foundation for enhanced urban mobility.
Measure Cost	The cost of the strategy development is 250K JOD
Source of Funding	Grant from World Bank
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• The issuance of public transport strategy and action program. • Periodic reviews of the strategy's implementation and outcomes. • KPIs could include public transport ridership numbers, fuel consumption reductions, passenger satisfaction ratings, and average bus frequency.

Measure - ID	T4.1
Title	**Bus Rapid Transit (BRT) project between Amman and Zarqa**
Sector	Public Transport
Timeline	2023-2026
Implementing Agency	Ministry of Transport (MoT), Land Transport Regulatory Commission (LTRC), Greater Amman Municipality (GAM), Zarqa Municipality, Ministry of Public Works and Housing (MoPWH).
Stakeholders Involved	Social Security Investment Fund (SSIF), Ministry of Planning and International Cooperation (MoPIC)
Target Group	The residents of Amman and Zarqa, commuters, visitors, and tourists.
Objective	Operate green (environmentally friendly) BRT lines between Amman and Zarqa on exclusive BRT lanes.
Description	The project is designed to address the growing demand for efficient, reliable, and sustainable transit options. Central to the project's plan is the creation of dedicated bus lanes that traverse the heart of the roadway, fostering uninterrupted bus movements in both directions, which will reduce travel times and alleviate traffic congestion. It also includes the widening and reconstruction of existing roads, by expanding the road infrastructure to support three-lane traffic on each side, the project strives to provide sufficient space for the enhanced BRT system. However, the scope of the project is not confined to road expansion alone. A network of novel bridges and tunnels is set to rise, shaping a landscape of elevated connectivity. In alignment with the 2022-2027 public transport strategy, the plan aims to gradually increase electric bus adoption. By 2026, the goal is to have 20% of the total fleet (32 out of 187 buses) operating on Amman-Zarqa BRT and Amman BRT.
Measure Cost	213 million JOD
Source of Funding	19 million JOD Gulf (grant),140 million JOD Social Security fund loan in addition to the share of National budget
Cost / Energy Saved	13 JOD/MWh
Monitoring and Quantification of Impact	• The implementation of BRT project between Amman and Zarqa. • Key performance indicators (KPIs) to quantitatively track progress, these could include metrics like the average bus speed, ridership numbers, reduction in travel time, adoption of electric buses, using Euro5 and 6 diesel, road expansion progress, and public satisfaction surveys. • The expected impact of this measure is to elevate the utilization of public transportation to around 25%, a substantial increase from the current rate of 11%. (mode shift from private vehicles to public transport)

Measure - ID	T4.2
Title	**Feasibility Study for the Second Phase Bus Rapid Transit (BRT) Project**
Sector	Public Transport
Timeline	2022-2024
Implementing Agency	Greater Amman Municipality (GAM)
Stakeholders Involved	World Bank (WB), Ministry of Public Works and Housing (MoPWH).
Target Group	The residents of Amman, commuters, visitors, and tourists.
Objective	Prepare feasibility studies for dedicated BRT lanes that span 50 kilometres on four main roads in Amman
Description	The proposal to implement Bus Rapid Transit (BRT) lanes along four strategic routes within Amman aimed at connecting the city's western and southern parts, including the customs square area. The primary objective is to establish a rapid, efficient, and user-friendly transit system that provides residents with convenient access to vital city centres, reducing travel time and enhancing overall mobility. The key component of this plan is the introduction of internationally standardized electric buses, which offer a multitude of benefits compared to traditional fuel-powered vehicles. These modern buses are equipped with cutting-edge electronic payment systems that streamline the boarding process, making it more efficient for passengers. The integration of CCTV monitoring systems ensures enhanced safety and security for passengers and personnel alike, fostering a sense of confidence and trust in the public transportation system. Beyond the immediate transportation goals, the broader societal impact of this project is noteworthy. By strategically connecting different parts of the city, the BRT system creates opportunities for improved accessibility to essential services, educational institutions, healthcare facilities, and employment centres. In particular, vulnerable groups such as women, refugees, youth, and seniors stand to benefit significantly from increased access to economic and social opportunities, thereby contributing to the reduction of workforce participation gaps and promoting more inclusive urban development.
Measure Cost	Study cost: 3 million JOD
Source of Funding	Grant
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Feasibility study completion. • The implementation of the Second Phase Bus Rapid Transit (BRT) in Amman, contingent upon its feasibility. • Key performance indicators (KPIs) to quantitatively track progress, such as ridership numbers, on-time performance, revenue generation, environmental impact, and customer satisfaction..

Measure - ID	T4.3
Title	**Feasibility study for a Regular Mass-Transit project Between Amman- Salt**
Sector	Public Transport
Timeline	2024-2025
Implementing Agency	Ministry of Transport (MoT)
Stakeholders Involved	Land Transport Regulatory Commission (LTRC), Greater Amman Municipality (GAM), Salt Municipality, Ministry of Public Works and Housing (MoPWH).
Target Group	The residents of Amman and Al-Salt, commuters, visitors, and tourists
Objective	Assessing the feasibility of a public transport line that stretches from Salt, through Amman, and towards the main airport.
Description	The feasibility study aims to assess the feasibility of Regular Mass-transit system project linking Amman and Al-Salt. The study evaluates existing transportation infrastructure, traffic flow, and potential BRT demand. Key steps include analysing traffic patterns, forecasting demand, designing the routes, assessing financial sustainability, considering environmental and social impacts, engaging stakeholders, and conducting risk assessments. The study aims to determine if the Regular Mass-transit system can alleviate congestion, improve accessibility, and generate sufficient revenue to cover costs. It involves collaboration between experts in transportation, urban planning, economics, and the community. Ultimately, the study will provide informed recommendations for decision-makers, shaping the future of transportation and mobility between the two cities, benefiting both residents and travellers.
Measure Cost	Study cost: 900k JOD
Source of Funding	National Budget
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Feasibility study completion.

Measure - ID	**T4.4**
Title	**Feasibility study for a Regular Mass-transit project Between Sweileh- Queen Alia International Airport**
Sector	Public Transport
Timeline	2023-2025
Implementing Agency	Ministry of Transport (MoT)
Stakeholders Involved	Greater Amman Municipality (GAM), Land Transport Regulatory Commission (LTRC), Ministry of Public Works and Housing (MoPWH).
Target Group	The residents of Amman, Commuters, Visitors and Tourists
Objective	Feasibility of implementing of Regular Mass-transit system connecting Amman and Queen Alia International Airport.
Description	The feasibility study aims to assess the feasibility of Regular Mass-transit system project linking Amman and Queen Alia International Airport. The study evaluates existing transportation infrastructure, traffic flow, and potential BRT demand. Key steps include analysing traffic patterns, forecasting demand, designing the route, assessing financial sustainability, considering environmental and social impacts, engaging stakeholders, and conducting risk assessments. The study aims to determine if the Regular Mass-transit system can alleviate congestion, improve accessibility, and generate sufficient revenue to cover costs. It involves collaboration between experts in transportation, urban planning, economics, and the community. Ultimately, the study will provide informed recommendations for decision-makers, shaping the future of transportation and mobility in the Amman, benefiting both residents and travellers.
Measure Cost	The cost of the study: 900k JOD
Source of Funding	National Budget
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Feasibility study completion.

Measure - ID	T4.5
Title	**Green Buses for Tourist Transport in Petra Region**
Sector	Transport
Timeline	2022-2026
Implementing Agency	Petra Development Tourism Regional Authority (PDTRA)
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Environment (MoEnv), Ministry of Planning and International Cooperation (MoPIC), Land Transport Regulatory Commission (LTRC).
Target Group	Tourists and visitors, local community, tourism industry.
Objective	To Introduce electric transport buses in tourist sites in Petra.
Description	The implementation of eco-friendly buses for tourist transportation in the Petra region and its adjacent tourist sites signifies a commitment to offering environmentally responsible travel choices to tourists exploring this renowned destination. By introducing these green buses, the project's primary objective is to curtail the environmental footprint stemming from tourism activities in the area, thereby fostering a culture of responsible travel. The shift from horse-drawn carts to electric vehicles presents environmental advantages, such as reduced emissions and pollution. Furthermore, the deployment of electric vehicles can enhance overall transportation efficiency, convenience, and comfort, especially on back roads. The broader impact could also extend to creating opportunities for sustainable practices, like renewable energy integration for vehicle charging, attracting eco-conscious tourists, and fostering economic growth through associated services and job creation.
Measure Cost	Estimated cost of 5 million JOD
Source of Funding	Grant
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• key performance indicators (KPIs) to quantitatively track progress: Improved air quality, noise levels, increased usage of eco-friendly buses including ridership numbers, frequency of trips, and routes, and enhanced visitor satisfaction.

Measure - ID	**T4.6**
Title	**Feasibility study for Solar Powered Electric Bus Fleet Pilot in Karak, Ma'an and Tafilah Governorates**
Sector	Public transport
Timeline	2024-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC)
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Environment (MoEnv), Ministry of Planning and International Cooperation (MoPIC), Ministry of Energy and Mineral Resource (MEMR).
Target Group	The residents of Karak, Ma'an, and Tafileh, Commuters, Visitors and Tourists.
Objective	To assess the practicality of implementing solar-powered electric buses for public transport in Karak, Ma'an, and Tafileh, considering technical, economic, social, and environmental factors
Description	The feasibility study aimed at investigating the practicality and potential benefits of introducing sustainable transportation solutions in the cities of Karak, Ma'an, and Tafileh. This study will involve a multidimensional evaluation. It will begin by thoroughly assessing the existing transportation infrastructure within these regions, taking into account factors such as road conditions, existing bus routes, and passenger demand patterns. Furthermore, the study will evaluate solar energy resources, analysing solar irradiance levels, weather conditions, and potential sites for the installation of solar panels to power the proposed electric buses. A significant aspect of the feasibility study will involve analysing the demand for public transportation services in Karak, Ma'an, and Tafileh. By closely examining passenger preferences, travel patterns, and the scope of potential ridership, the study will provide insights into the feasibility of integrating electric buses into the local transportation system. On a technical side, the study will assess various components, including the required solar energy generation capacity, the design and establishment of charging infrastructure, and the integration of electric buses into existing and optimized routes. The study will also include a comprehensive cost-benefit analysis, estimating the initial investment required for solar panels, charging stations, and electric buses, alongside evaluating the long-term operational and maintenance expenses. Moreover, it will explore the potential environmental advantages, examining reductions in greenhouse gas emissions, improved air quality, and the overall ecological impact of such a sustainable transportation initiative.
Measure Cost	The cost of the feasibility study is approximate 100k JOD
Source of Funding	Grant
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Feasibility study completion. • The integration of electric buses into public transportation systems in Karak, Ma'an, and Tafileh, contingent upon its feasibility. • Key performance indicators (KPIs) to measure progress and success in the following aspects: ridership data, including passenger numbers, demographics, and usage patterns, reduction of emissions and the improvement of air quality.

Measure - ID	T4.7
Title	**Jordan Urban Local Bus Reform Project in Irbid and Zarqa**
Sector	Transport
Timeline	2018-2023 Feasibility study 2024-2029 Project Implementation
Implementing Agency	Land Transport Regulatory Commission (LTRC), Zarqa Municipality, Irbid Municipality.
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Finance (MoF), Ministry of Planning and International Cooperation (MoPIC), Ministry of local administration (MOLA), Private sector
Target Group	The residents of Irbid and Zarqa, commuters and visitors.
Objective	Studying options to expand public transport services with a fleet of new buses (diesel and electric) to encourage mode shift from private car to public transport.
Description	Expanding public transport services through the introduction of a modern fleet of new buses, including 35 buses in Irbid, in addition to 4 backups (30 diesel, 9 electric); and 27 in Zarqa, in addition to 4 backups (19 diesel, 12 electric). The project aims to create a more environmentally friendly and accessible transportation system, alleviating traffic congestion and improving air quality. The project's timeline outlines the completion of necessary documentation and cost estimates in 2023, with implementation slated to begin in 2024. This expansion holds the potential to reshape urban mobility, fostering sustainable transit options while mitigating the adverse effects of traffic congestion. The integration of modern, energy-efficient buses emphasizes the project's commitment to environmental stewardship. As the timeline advances, these developments are set to contribute to an improved quality of life for both residents and visitors, promoting a cleaner, more accessible, and seamlessly connected urban environment.
Measure Cost	Not Available
Source of Funding	25% grant, 75% government loan
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• The introduction of new fleet of buses. • Monitoring with relevant Key Performance Indicators (KPIs) focusing on the following aspects: emissions reduction and air quality improvement, ridership growth, reduction in congestion, and accessibility improvements, Operational Efficiency.

Measure - ID	T4.8
Title	**Amman Bus Second Phase**
Sector	Transport
Timeline	2022-2026
Implementing Agency	Greater Amman Municipality (GAM)
Stakeholders Involved	Amman Vision Company
Target Group	The residents of Amman, Commuters, Visitors and Tourists.
Objective	Improve the public transport fleet by providing a high-quality distinguished service that is equipped with data tracking, electronic payment, and CCTV monitoring, in addition to being accessible for people with disabilities and seniors.
Description	The second phase of the Amman City Bus network expansion includes the introduction of 151 new buses, with 15 electric and 135 diesel-powered vehicles, this initiative aims to provide enhanced and accessible mobility options for Amman's residents and visitors. The inclusion of electric buses underscores a commitment to environmental sustainability, reducing emissions and noise pollution while promoting a cleaner urban environment. These buses will operate along 23 new routes, supplementing the existing 18, to create a comprehensive network of 41 routes that cover vast areas of the city. A remarkable feature of this expansion is the strategic allocation of 90 buses to operate on dedicated Bus Rapid Transit (BRT) routes, designed to offer efficient and rapid service. This innovation, coupled with the remaining buses acting as feeder lines to BRT stations, ensures a seamless and integrated travel experience for commuters. By catering to both core routes and extending access to peripheral areas, the project envisions easing traffic congestion, reducing individual car usage, and enhancing overall accessibility. The goal of this expansion is to elevate the quality of public transport services, providing residents and visitors alike with a distinguished travel experience. With improved connectivity, reduced environmental impact, and efficient transit options, the Amman City Bus network expansion stands to redefine urban mobility and contribute to the city's sustainable development.
Measure Cost	Cost estimate is 35 million JOD
Source of Funding	Grant
Cost / Energy Saved	Not applicable due to the high cost of infrastructure
Monitoring and Quantification of Impact	• The introduction of new fleet of buses. • Monitoring with relevant Key Performance Indicators (KPIs) focusing on the following aspects: the number of new routes established, the percentage reduction in traffic congestion, increase in ridership, reduction in emissions, and customer satisfaction ratings.

Measure - ID	**T4.9**
Title	**Implementing Jerash Holistic Scheme Recommendations**
Sector	Transport
Timeline	2018-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC), Jerash Municipality.
Stakeholders Involved	Ministry of Transport (MoT)
Target group	Public Transport Providers
Objective	Encourage people to switch from private to public modes of transport
Description	The project's main goal is to encourage a shift from private to public transportation by enhancing the quality and efficiency of public transit systems. Key measures include the introduction of 108 new buses to replace older ones on selected bus lines, thereby improving service reliability. Collaborative meetings with public transport providers and partners will ensure the effective implementation of these changes, while a public awareness campaign will inform end users about the upgraded system's benefits, increasing its visibility and attractiveness. Regulatory adjustments will align the legal framework with the evolving public transport landscape (i.e., bylaw for Passenger Transport Law), and a financial analysis will determine suitable support measures for providers. By modernizing infrastructure, fostering collaboration, communicating effectively, adapting regulations, and providing financial assistance, this initiative aims to make public transportation more appealing, reduce private vehicle reliance, and promote sustainable urban mobility solutions.
Measure cost	2.4 million JOD/ year
Source of funding	National budget
Cost / Energy Saved	Not available
Monitoring And Quantification of Impact	• Monitoring of steps of implementation • Monitor and track the percentage increase in public transport ridership or the reduction in private vehicle use, the number of new buses deployed, passenger satisfaction rates, and changes in travel behaviour.

Measure - ID	**T4.10**
Title	**Ramtha Bus Terminal Construction**
Sector	Transport
Timeline	2023-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC)
Stakeholders Involved	Ministry of Transport (MoT), Ramtha Municipality.
Target group	Public transport users in Ramtha
Objective	• Develop and improve the infrastructure to raise the level of public transport services.
Description	The Ramtha Bus Terminal Construction project aimed at enhancing public transportation services and promoting sustainability. The key components of this project include the integration of solar power solutions into the terminal's infrastructure. Firstly, the project envisions powering the terminal with a solar energy system, which not only reduces environmental impact but also ensures a reliable and sustainable source of energy. Moreover, innovative solar panels will serve a dual purpose by providing shelter for buses parked at the terminal. This innovative use of solar technology not only protects the buses from the elements but also generates clean energy. Additionally, the project entails significant infrastructure development, including the construction of 45 bus lanes and a two-story building covering a total area of 2000 square meters. Notably, these facilities will also utilize solar power and solar panels for shading the buses' parking areas. The Ramtha Bus Terminal Construction project demonstrates a commitment to improving public transportation, making commuting more accessible and efficient for residents, reducing environmental impact, and harnessing renewable energy through innovative solar solutions, ultimately benefiting both commuters and the environment.
Measure cost	3 million JOD
Source of funding	National budget
Cost / Energy Saved	Not applicable
Monitoring And Quantification of Impact	KPIs that assess the objective of the project, these could include passenger satisfaction ratings, economic impact, and environmental sustainability metrics.

Measure - ID	**T4.11**
Title	**Rehabilitation of Zarqa Bus Terminal**
Sector	Transport
Timeline	2023-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC)
Stakeholders Involved	Ministry of Transport (MoT), Zarqa Municipality.
Target group	Public transport users in Zarqa
Objective	Developing and improving the infrastructure to raise the level of public transport services.
Description	The project aims to rehabilitate the old Zarqa terminals by introducing innovative and sustainable design. Firstly, it involves the construction of a modern terminal adjacent to the existing Bus Rapid Transit (BRT) Terminal, serving as a hub for all public transport lines. This development enhances convenience for commuters and contributes to efficient urban mobility. Furthermore, the project incorporates renewable energy solutions by powering the terminal with a solar system. Solar panels will be strategically placed as shelter for buses in the parking area, offering protection while simultaneously generating clean energy. In addition to the terminal upgrade, the project encompasses the construction of extensive bus lanes spanning over 60 dunums. These lanes will incorporate photovoltaic (PV) systems to provide shade for buses while simultaneously harnessing solar energy. The Rehabilitation of the old Zarqa terminals project is a holistic approach to modernizing public transportation infrastructure, enhancing energy efficiency, and promoting sustainability through the integration of solar power and innovative urban design.
Measure cost	100K JOD for studies and design
Source of funding	National budget
Cost / Energy Saved	Not applicable
Monitoring And Quantification of Impact	KPIs to assess the objective of the project, these could include passenger satisfaction ratings, economic impact, and environmental sustainability metrics.

Measure - ID	**T4.12**
Title	**Rehabilitating new terminal for Petra/Wadi Musa**
Sector	Transport
Timeline	2023-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC),
Stakeholders Involved	Ministry of Transport (MoT), Petra Development Tourism Regional Authority (PDTRA).
Target group	Public transport users in Wadi Musa
Objective	• To enhance and modernize public transportation services while promoting sustainability through the use of solar energy.
Description	The project for developing and enhancing infrastructure to elevate the quality of public transport services is an important project with a sustainable perspective. One key aspect involves the implementation of solar energy systems within transportation terminals. By harnessing the power of solar panels, these terminals can generate clean and renewable energy, reducing the carbon footprint associated with their operations. This not only aligns with environmental sustainability goals but also reduces operating costs over the long term. Additionally, the use of solar panels as shelter for parking buses represents a dual-purpose innovation. These panels not only provide shade and protection for the vehicles but also generate electricity, contributing to the energy needs of the transportation system. This approach not only enhances the overall efficiency of public transport services but also promotes eco-friendly practices.
Measure cost	3 million JOD
Source of funding	National budget and PDTRA budget
Cost / Energy Saved	Not applicable
Monitoring And Quantification of Impact	• Track progress throughout the project's lifecycle. Regularly collect data on energy generation from solar panels, energy consumption, and operational performance of the transport system.

Measure - ID	**T4.13**
Measure	**Establish geodatabase for LTRC**
Sector	Transport
Timeline	2023-2025
Implementing Agency	Land Transport Regulatory Commission (LTRC)
Stakeholders Involved	Ministry of Transport (MoT), Ministry of Digital Economy and Entrepreneurship (MoDEE).
Target group	Public transport providers including taxis, buses, rental cars, cargo and others.
Objective	• Improve land transport networks and the quality of public transport infrastructure. • Mode shift from private car transport to public transport.
Description	The implementation of this project consists of two phases, with the initial phase including Irbid, Jerash, and Zarqa, and the subsequent phase extending to other governorates. The project is dedicated to enhancing several critical aspects of the transportation infrastructure while incorporating strategic actions. Firstly, the project aims to establish a geodatabase that integrates with Geographic Information Systems (GIS). This geodatabase is instrumental in improving the overall efficiency and accuracy of location-based data, which is crucial for effective transportation planning and management. Additionally, the project introduces a new numbering system to enhance the identification and tracking of various locations within the transportation network. Secondly, schematic maps will be developed to illustrate the layout and routes of public transport lines, taking into account their intersections. These maps serve as valuable visual aids for both commuters and transportation authorities, simplifying route planning and navigation. Lastly, the project emphasizes connectivity with the Land Transport Regulatory Commission (LTRC) database. This connection enhances data sharing and coordination between various stakeholders, promoting a more integrated and efficient transportation ecosystem.
Measure cost	800k JOD
Source of funding	National budget
Cost / Energy Saved	Not Applicable
Monitoring And Quantification of Impact	• The development of integrated GIS geodatabase • The development of schematic maps for public transport routes • The maps and database integration with LTRC

Measure - ID	T5
Title	**Truck Fleet Modernization Program**
Sector	Transport
Timeline	Continuous
Implementing Agency	Driver and Vehicle Licensing Department (DVLD), Jordan Customs Department, Land Transport Regulatory Commission (LTRC).
Stakeholders Involved	Ministry of Transport (MoT)
Target Group	Operators in the cargo transport sector (companies and individuals). Owners of heavy-duty vehicles (individuals and companies)
Objective	• Modernize cargo truck fleet to achieve energy savings and emissions reduction. • Comply with neighbouring countries' regulations to secure supply route access and improve competitiveness. • Reduce trucks by about 31% of the 19000 current trucks.
Description	The cargo truck fleet currently is considered oversized, with an excess of 6,000 trucks. To address this and promote more efficient and environmentally friendly transportation, a decision by the Council of Ministers was issued to modernize the fleet. According to this decision, any truck older than 20 years must be replaced with a truck less than 8 years old. Furthermore, a framework of enforcement is essential to the successful implementation of the modernization plan. Recognizing that policies can only reach their potential when supported by a foundation of compliance, the government is committed to expediting the reinforcement of pertinent laws and regulations. This commitment is poised to materialize through a comprehensive range of measures, including rigorous inspections, emissions assessments, and consequential penalties for non-compliance. In a bid to stimulate the modernization process, the government should work on issuing ministerial incentives for truck upgrades. These incentives will act as grants to support the replacement of older trucks with newer, more fuel-efficient models. (the Government issued to grant incentives and exemptions on electric trucks)
Measure Cost	Estimated to be 21.43 million JOD which accounts for the private investment for truck replacement.
Source of Funding	The government will not incur any expenses for this measure
Cost / Energy Saved	19.3 JOD/MWh
Monitoring and Quantification of Impact	Monitoring with relevant Key Performance Indicators (KPIs) focusing on the following aspects: Percentage of Fleet Modernization and compliance rate, Emission reduction and fuel efficiency improvement for the number of trucks replaced.

Measure - ID	**T5.1**
Measure	**Study to Incentivize Old Vehicles Replacement**
Sector	Transport
Timeline	2024-2025
Implementing agency	Ministry of Finance (MoF), Ministry for Energy and Mineral Resources (MEMR)
Stakeholders involved	Ministry of Transport (MoT), Land Transport Regulatory Commission (LTRC) Driver and Vehicle Licensing Department (DVLD)
Target group	Car owners
Objective	• Implementing incentives to replace old, less fuel-efficient vehicles with newer and more efficient ones to reduce emissions, promote sustainability, and improve environmental and economic outcomes.
Description	Implementing incentives to replace older, less fuel-efficient vehicles with newer and more efficient ones is a proactive strategy to combat emissions, enhance sustainability, and promote economic growth. These incentives can take various forms, such as cash rebates, tax credits, and reduced registration fees, making it financially appealing for individuals and businesses to upgrade their vehicles. Scrappage programs, reduced interest rates, further encourage adoption. In addition to reducing greenhouse gas emissions and air pollution, these incentives stimulate economic activity by boosting demand for cleaner vehicles. They also alleviate the financial burden on consumers, particularly low-income individuals, and contribute to improved energy efficiency. Public awareness campaigns play a vital role in informing the public about these incentives and the benefits of fuel-efficient vehicles. Collectively, these measures contribute to a greener, healthier, and more sustainable transportation landscape while aligning with broader environmental and economic goals.
Measure cost	Not Available
Source of funding	Funding is not secured
Cost / Energy Saved	Not Available
Monitoring and quantification of impact	• The publication of the study on Incentives to replace old vehicles. • Track progress through KPIs that align with the project's goals, such as the issuance of an incentive scheme, the number of vehicles replaced, emissions reductions, and economic benefits.

Measure - ID	T6
Title	**The first phase of the Jordan National Railway Project (Aqaba-Madouneh)**
Sector	Transport
Timeline	2020-2028
Implementing Agency	Ministry of Transport (MoT), Jordan Investment Fund
Stakeholders Involved	Aqaba Special Economic Zone Authority (ASEZA), Land Transport Regulatory Commission (LTRC), Ministry of Public Works and Housing (MoPWH), Jordan Phosphate Mines Company, Jordan Silos Company, Ports of Aqaba.
Target Group	Cargo transport sector
Objective	• Provide primary domestic freight connections between major economic activity centres. • Serve the national economy by increasing the freight handling capacity, reducing transport and road maintenance costs, and creating new jobs. • Improve transport safety and reduce road traffic accidents in addition to safeguarding the environment by reducing transport-related emissions of fumes and toxic gases.
Description	The National Railway First Phase (Aqaba-Ma'an-Amman Madouneh) measure aims to construct new standard gauge railway link to be used for freight. The project involves establishing a railway network, which includes conducting comprehensive studies, acquiring the necessary land, and constructing the required infrastructure. Currently, the studies for the railway network are nearly completed, and 78% of the required land has been successfully acquired. The initial implementation of the railway infrastructure will focus on the Aqaba-Ma'an-Madouneh route. This railway line will connect the seaports in Aqaba, pass through the logistic centre in Ma'an, and finally reach the proposed logistic centre at Madouneh, Amman. For the initial phase, the project will utilize diesel-powered trains, but there are plans to electrify the railway in the future, enhancing its environmental sustainability. This phase aims to link Aqaba Ports (Container Terminal and Industrial) to Madouneh Dry Port in Amman with a total length of 418 KM.
Measure Cost	1.9 billion JOD (CAPEX) according to the original study, which is under assessment by the Saudi Jordanian Investment Fund Company (the investor)
Source of Funding	Private investment as per Jordan Investment Fund Law no. 16 to the year 2016
Cost / Energy Saved	21.1 JOD/MWh
Monitoring and Quantification of Impact	• Submission of the feasibility study assessment.

Measure - ID	T7
Title	**Government Vehicles Tracking Project**
Sector	Transport
Timeline	2017-ongoing
Implementing Agency	Ministry of Transport (MoT)
Stakeholders Involved	Digital Economy and Innovation Ministry (MoDEE), Driver and Vehicles Licensing Department (DVLD), Integrity and Anti-corruption Commission, Audit Bureau (AB).
Target Group	Public sector - All 221 public sector institutes with vehicles under their operation.
Objective	• Enhance control and accountability over the use of public sector vehicles through the implementation of GPS tracking systems. • Minimize fuel wastage and reduce the environmental impact of government vehicles, promoting sustainable and responsible usage.
Description	The "Government Vehicles Tracking Project" entails the implementation of GPS tracking systems in government vehicles, aimed at enhancing control over their movement and ensuring their operation solely during working hours. It aims to optimize the utilization of vehicles and effectively manage costs related to non-operational vehicles under maintenance. GPS tracking systems are already installed in 99.6% of the government fleet's vehicles, providing real-time data for monitoring and analysis. Additionally, the project includes the monitoring of fuel consumption, allowing for the identification and rectification of inefficiencies within the system. In line with promoting sustainability, the initiative seeks to replace inefficient vehicles with electric or hybrid alternatives, contributing to reduced environmental impact. The current proportion of hybrid or electric vehicles in the government fleet is 7%, and the goal is to increase this to 30% by the year 2025, promoting the use of environmentally friendly vehicles. To ensure successful implementation, comprehensive training will be provided to all government ministries and entities utilizing government vehicles. The training will focus on equipping personnel with the necessary skills to effectively operate the vehicle tracking system. To support this measure, there will be a need for amending the government vehicles regulation of 2011 and its subsequent instructions to incorporate the requirements and provisions of the tracking project. This will ensure a robust regulatory framework that facilitates seamless integration and effective monitoring of government vehicles.
Measure Cost	Estimate cost at 1.5 million JOD, the project cost from 2017 – 2022 was 2.4 million JOD.
Source of Funding	National budget
Cost / Energy Saved	10.4 JOD/MWh
Monitoring and Quantification of Impact	• Continuation of monitoring with relevant Key Performance Indicators (KPIs) focusing on the following aspects: reduction of unauthorized use of government vehicles, decrease in fuel consumption, reduction in the number of vehicles allocated, increase in the usage of environmentally friendly vehicles, decrease in vehicles with engine capacities exceeding 2000cc, ensuring proper vehicle usage, and tracking CO_2 emissions. • The measure has resulted in a notable 27% reduction in fuel consumption, amounting to a cost savings of 4.2 million JOD between 2017 and 2022

Measure - ID	T8
Title	**Redesigning Airspace Procedures and Routes**
Sector	Transport
Timeline	October 2023 - October 2025
Implementing Agency	Civil Aviation Regulatory Commission (CARC)
Stakeholders Involved	Ministry of Transport (MoT)
Target Group	
Objective	• Enhance energy efficiency and reduce flight time.
Description	Project activities are implemented in cooperation with relevant stakeholders, and air routes are selected based on specific criteria, including the most direct routes. Project Activities: • Redesigning airspace and air traffic control. • Creating more direct flight paths to reduce distances and thus decrease fuel consumption. • Reducing unnecessary deviations and allowing more efficient flight paths.
Measure Cost	----
Source of Funding	----
Cost / Energy Saved	----
Monitoring and Quantification of Impact	• Achieving optimal use of flight fuel and reducing greenhouse gas emissions and other pollutants.

Energy Efficiency Measures in the Water and Agriculture Sectors

Measure - ID	W1
Title	**Energy Audits, Implementation and Energy Management System (EnMS) projects**
Sector	Water
Timeline	2021-2025
Implementing Agency	Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), German Agency for International Cooperation (GIZ), Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ).
Target Group	Water supply companies' facilities
Objective	To improve energy efficiency and sustainability in the water sector through the application Energy Audits, Implementation and Energy Management System (EnMs)
Description	Energy audits, implementation, and Energy Management Systems (EnMS) projects in the water sector are pivotal for optimizing energy usage and reducing operational costs. Energy audits involve data collection, site inspections, and analysis to identify energy inefficiencies, while the subsequent implementation of energy-efficient measures such as equipment upgrades, automation, and renewable energy integration can lead to substantial energy savings. The establishment of an EnMS provides a structured framework for ongoing energy performance management, encompassing policy development, planning, measurement, and review. These projects not only enhance the sustainability of water treatment and distribution facilities but also contribute to environmental conservation and cost reduction, making them essential components of modern water resource management.
Measure Cost	10.8 million JOD
Source of Funding	Funding source is partially secured as per sub measures
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	Progress of the sub measures.

Measure - ID	W1.1
Title	**Energy Efficient Water Sector (EnMS)**
Sector	Water
Timeline	2021-2025
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), German Agency for International Cooperation (GIZ)
Target Group	Yarmouk Water Company (YWC), Aqaba Water Company (AWC), Miyahuna Water Company (MWC), Jordan Valley Authority (JVA).
Objective	To improve energy efficiency and sustainability in the water sector through the application of energy management systems.
Description	The measure involves enhancing energy efficiency in water supply companies. This includes conducting comprehensive energy audits within these companies, aimed at uncovering operational inefficiencies and laying the groundwork for targeted energy-saving initiatives. A pivotal aspect of this initiative is the implementation of Energy Management Systems (EnMS) based on ISO 50001 standards. These systems are set to revolutionize operations, ensuring a sustained and effective energy-efficient approach. Furthermore, the project extends its impact through the introduction of Measurement and Verification (M&V) processes. These processes serve as a vital mechanism to gauge the tangible energy savings resulting from energy efficiency (EE) projects. An integral component of this endeavour involves empowering employees through EnMS training, equipping them with the necessary skills to integrate energy-efficient practices into daily operations. Concurrently, the project engages in targeted awareness-raising communication activities within the water sector to foster a collective understanding of the significance of energy efficiency. Additionally, the project collaboratively develops three innovative project concepts that focus on cost reduction. These concepts are formulated in close collaboration with both the water and energy sectors, underlining the project's commitment to holistic cross-sectoral partnerships. One of the keystones of this initiative is the revitalization of energy units within each company.
Measure Cost	8.23 million Euros
Source of Funding	The Federal Ministry for Economic Cooperation and Development (BMZ) (Grant)
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Monitoring procedure aligned with key performance indicators (KPIs), which might encompass tracking metrics such as the number of energy audits conducted, the number of energy management systems installed, the percentage reduction in energy consumption, the number of employees trained. • A reduction in energy consumption by at least 63-84 GWh/year corresponds to a cost savings equal to 7.5% which is approximately 140 million JOD compared to the reference scenario from 2019 (baseline of 152 million JOD).

Measure - ID	W1.2
Title	**Energy Audit and Implementation for Mujib Pumping Station**
Sector	Water
Timeline	2024
Implementing Agency	Jordan Valley Authority (JVA)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ), German Agency for International Cooperation (GIZ), Water Authority of Jordan (WAJ)
Target Group	Mujib Pumping station, Mujib Community, Jordan Valley Authority (JVA)
Objective	Implementing an energy audit and an energy management system at the Mujib pumping station to monitor consumption and save energy.
Description	The energy audit process for Mujib pumping station encompasses a comprehensive series of steps. This includes the analysis of its energy consumption patterns and identifying trends and variations. The audit involves the selection of pumping equipment optimized for specific operating modes, thus maximizing efficiency. Additionally, an in-depth evaluation of the economic feasibility of equipment replacement is undertaken, considering factors such as initial costs and projected savings over time. Following the selection, the installation of the chosen equipment and the introduction of behavioural optimization measures. A crucial aspect of this process is the establishment of monitoring and verification mechanisms. These mechanisms play a pivotal role in ensuring that the implemented changes translate into tangible improvements in performance. The overarching objective of this multidimensional effort is to significantly alleviate the financial burden associated with electricity costs. This is achieved through the enhancement of operational efficiency, leading to sustainable and substantial long-term savings. Expanding the scope further, the project also includes the establishment of an energy efficiency unit within the Jordan Valley Authority. This dedicated unit plays a pivotal role in steering the broader energy efficiency initiatives. Its responsibilities encompass the formulation of energy efficiency policies, and strategic frameworks, and the development of comprehensive action plans.
Measure Cost	0.92 million JOD
Source of Funding	• The Audit funded by the German Federal Ministry for Economic Cooperation and Development (BMZ); the measure implemented through German Agency for International Cooperation (GIZ). • Funded by USAID
Cost / Energy Saved	27 JOD/ MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the success of the project. These could include metrics like energy consumption reduction, equipment efficiency improvements, and cost savings. • A reduction in energy consumption by 4.8 GWh/year corresponds to a cost savings of approximately 0.47 million JOD/year.

Measure - ID	W1.3
Title	**Energy Audit and Implementation for Zarqa Ma'in Pumping Station**
Sector	Water
Timeline	2024
Implementing Agency	Jordan Valley Authority (JVA)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ), German Agency for International Cooperation (GIZ)
Target Group	Zarqa Ma'in pumping station, Zarqa Ma'in community, Jordan Valley Authority (JVA)
Objective	Implementing an energy audit and an energy management system at Zarqa Ma'in pumping station to monitor consumption and save energy.
Description	Conducting an energy audit for the Zarqa Ma'in pumping station involves a comprehensive analysis aimed at understanding and optimizing its energy consumption. This process contains a detailed assessment of the station's energy usage patterns, examining factors such as operational cycles and load fluctuations. The audit also entails a thorough examination of the pumping equipment's efficiency, identifying potential areas for improvement. Through this audit, the goal is to pinpoint opportunities to enhance energy efficiency within the pumping station. This might involve identifying inefficient equipment, proposing replacements or upgrades, and suggesting operational adjustments that align with peak efficiency. Additionally, the economic feasibility of proposed changes will be evaluated, considering factors such as initial investment costs and projected energy savings over time. The audit process extends to the installation of energy monitoring and management systems, which provide real-time insights into energy consumption trends. These systems contribute to informed decision-making, helping operators fine-tune their processes and optimize energy usage. Ultimately, the energy audit for the Zarqa Ma'in pumping station strives to achieve not only reduced energy costs but also a more sustainable and environmentally responsible operation. The insights gained from the audit will guide the implementation of targeted measures to enhance energy efficiency, aligning with broader conservation goals and contributing to a more resilient and efficient infrastructure.
Measure Cost	0.69 million JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	60.7 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the success of the project. These could include metrics like energy consumption reduction, equipment efficiency improvements, and cost savings. • A reduction in energy consumption by 1.6 GWh/year corresponds to a cost savings of approximately 0.16 million JOD/year.

Measure - ID	W1.4
Title	**Energy Audit and implementation for Wadi Arab Dam Pumping Station**
Sector	Water
Timeline	2024
Implementing Agency	Jordan Valley Authority (JVA)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ), German Agency for International Cooperation (GIZ)
Target Group	Wadi Arab Dam Pumping Station and Community, Jordan Valley Authority (JVA).
Objective	Implementing an energy audit and an energy management system at Wadi Arab dam pumping station to monitor consumption and save energy.
Description	The overarching objective of the project is to curtail the financial strain attributed to electricity costs. The energy audit for Wadi Arab Dam pumping station involves assessing its energy consumption patterns, selecting efficient pumping equipment based on operating modes, and calculating the economic feasibility of replacement. Installation of the chosen equipment and behavioural optimization measures are implemented. Monitoring and verification ensure performance improvements. The goal is to reduce electricity costs through enhanced efficiency, resulting in long-term savings and a more environmentally sustainable operation. Furthermore, the project takes an even broader step toward promoting energy efficiency. This entails the establishment of an energy efficiency unit within the Jordan Valley Authority. This specialized unit is poised to take on the pivotal role of shaping and implementing energy efficiency policies, formulating overarching strategies, and comprehensive action plans.
Measure Cost	0.96 million JOD
Source of Funding	• The Audit funded by the German Federal Ministry for Economic Cooperation and Development (BMZ); the measure implemented through German Agency for International Cooperation (GIZ). • Funded by USAID
Cost / Energy Saved	131.2 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include percentage reduction in energy consumption, cost savings achieved, successful implementation of the energy efficiency unit, and improvements in operational efficiency. • A reduction in energy consumption by 1.1 GWh/year corresponds to a cost savings of approximately 0.105 million JOD/year.

Measure - ID	W2
Title	**Pumps and VFDs Replacement projects**
Sector	Water
Timeline	2022-2025
Implementing Agency	Aqaba Water Company (AWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), United States Agency for International Development (USAID), Water Authority of Jordan (WAJ)
Target Group	Water sector in Aqaba
Objective	Increase energy efficiency and reduce the cost of energy through the replacement of station pumps with high-efficiency pumps and the integration of VFD.
Description	Pump and Variable Frequency Drive (VFD) replacement projects in the water sector are crucial aiming at enhancing the efficiency and reliability of water stations and wells. These projects involve the removal and replacement of outdated or inefficient pumps and the integration of advanced VFD technology to control pump speed and optimize energy usage. By implementing these upgrades, water utilities can achieve improved water distribution, reduced energy consumption, lower operational costs, and enhanced overall system performance. This is essential for ensuring the efficient and sustainable management of water resources and infrastructure in the water sector.
Measure Cost	3 million JOD
Source of Funding	The fund is partially secured by USAID
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	Progress of the sub measures.

Measure - ID	W2.1
Title	**Replacing Station Pumps with High-efficiency Pumps in Aqaba**
Sector	Water
Timeline	2022-2024
Implementing Agency	Aqaba Water Company (AWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ), United States Agency for International Development (USAID)
Target Group	Aqaba Water Sector
Objective	Increase energy efficiency and reduce the cost of energy through the replacement of station pumps with high-efficiency pumps.
Description	The primary objective of this project is to substantially improve energy efficiency. This goal will be achieved through the replacement of current pumps with advanced, high-efficiency models. The project involves a series of pivotal stages: Initially, an assessment of existing pump stations in Aqaba will be undertaken. This assessment will identify pumps that are prime candidates for replacement and determine optimal locations for the integration of high-efficiency pumps. Through the selection process, appropriate high-efficiency pump models will be chosen, considering factors such as performance, energy consumption, and compatibility with the existing infrastructure. Following this, the chosen high-efficiency pumps will be installed, and to ensure effective operation and maintenance, a comprehensive training program will be devised for operators, encompassing proper pump operation, maintenance protocols, and troubleshooting procedures specific to the new models. Throughout the project's duration, a monitoring and evaluation system will be in place to continually track energy consumption, pump performance, and overall efficiency. The gathered data will be analysed to quantify energy savings and improvements resulting from the pump replacements. The project's transition to high-efficiency pumps will yield a reduction in energy consumption, thereby lowering carbon emissions and overall environmental impact. This aligns with broader sustainability objectives centred on energy efficiency.
Measure Cost	1 million JOD
Source of Funding	USAID
Cost / Energy Saved	133 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include energy consumption reduction, pump performance improvement, carbon emissions reduction, and successful completion of training programs. • A reduction in energy consumption by 0.5 GWh/year corresponds to a cost savings of approximately 0.48 million JOD/year.

Measure - ID	W2.2
Title	**High-efficiency Well Pumps in Disa Area**
Sector	Water
Timeline	2022-2025
Implementing Agency	Aqaba Water Company (AWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ)
Target Group	Water sector in Disa area
Objective	Improve energy efficiency in Disa Wells by replacing well pumps with high-efficiency pumps.
Description	The primary objective of this project is to substantially improve energy efficiency. This goal will be achieved through the replacement of current pumps with advanced, high-efficiency models. The project involves a series of pivotal stages: Initially, an assessment of existing pump stations in Disa will be undertaken. This assessment will identify pumps that are prime candidates for replacement and determine optimal locations for the integration of high-efficiency pumps. Through the selection process, appropriate high-efficiency pump models will be chosen, considering factors such as performance, energy consumption, and compatibility with the existing infrastructure. Following this, the chosen high-efficiency pumps will be installed, and to ensure effective operation and maintenance, a comprehensive training program will be devised for operators, encompassing proper pump operation, maintenance protocols, and troubleshooting procedures specific to the new models. Throughout the project's duration, a monitoring and evaluation system will be in place to continually track energy consumption, pump performance, and overall efficiency. The gathered data will be analysed to quantify energy savings and improvements resulting from the pump replacements. The project's transition to high-efficiency pumps will yield a reduction in energy consumption, thereby lowering carbon emissions and overall environmental impact. This aligns with broader sustainability objectives centred on energy efficiency.
Measure Cost	1.5 million JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	100 JOD/ MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include energy consumption reduction, pump performance improvement, carbon emissions reduction, and successful completion of training programs. • A reduction in energy consumption by 1 GWh/year corresponds to a cost savings of approximately 0.21 million JOD/year.

Measure - ID	W2.3
Title	**Improving Pumps Performance Using Variable Frequency Drive (VFD) in Aqaba**
Sector	Water
Timeline	2022-2024
Implementing Agency	Aqaba Water Company (AWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), United States Agency for International Development (USAID), Water Authority of Jordan (WAJ)
Target Group	Water sector in Aqaba
Objective	Increase energy efficiency and reduce cost of energy to the national economy via VFD controls on pumps in different areas.
Description	The implementation of Variable Frequency Drive (VFD) controls on pumps in different areas is proposed. VFDs adjust pump motor speed based on actual water demand, by operating pumps at lower speeds during periods of low water demand, energy consumption is significantly reduced, resulting in cost savings and a lower carbon footprint. VFDs also extend the lifespan of pumping equipment. The ability to adjust motor speed based on demand reduces wear and tear on the pump. Overall, the project offers improved pump performance, lower maintenance costs, and a relatively short payback period for the investment.
Measure Cost	0.5 million JOD
Source of Funding	USAID
Cost / Energy Saved	142.9 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include energy consumption reduction, cost savings, pump performance improvement, and extended equipment lifespan. • A reduction in energy consumption by .5 GWh/year corresponds to a cost savings of approximately 0.048 million JOD/year.

Measure - ID	W3
Title	**Restructuring and Rehabilitation Projects**
Sector	Water
Timeline	2020-2024
Implementing Agency	Miyahuna Water Company (MWC), Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), German Agency for International Cooperation (GIZ), Japan International Cooperation Agency (JICA), United States Agency for International Development (USAID), KfW Development Bank.
Target Group	Water sector facilities
Objective	• Optimize performance and reduce long-term maintenance costs and energy consumption. • Enhance operational efficiency and improve reliability through rehabilitation of stations and treatment plants, and the restructuring of water networks.
Description	The rehabilitation of stations and treatment plants, along with the restructuring of water networks, represents critical projects within the water sector. These projects focus on the restoration and modernization of aging facilities such as pumping stations and treatment plants to ensure they operate efficiently and meet current efficiency standards. Simultaneously, the restructuring of water networks involves optimizing the layout and design of distribution systems to minimize water loss, improve reliability, and enhance overall water supply and delivery. These projects are essential for maintaining water quality, reducing waste, and ensuring a sustainable and reliable water supply for communities, industries, and agriculture.
Measure Cost	13.3 million JOD
Source of Funding	Mixed of grants from JICA, USAID, GIZ, KFW and self-financing with private sector participation
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	Progress of the sub measures.

Measure - ID	**W3.1**
Title	**Enhancing Energy Efficiency at Miyahuna Company - Booster 11 and Old Basatin Station**
Sector	Water
Timeline	2022-2024
Implementing Agency	Miyahuna Water Company (MWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), German Agency for International Cooperation (GIZ).
Target Group	Miyahuna Water Company (MWC)
Objective	Upgrade the pumping system in old Basatin stations and remove a booster station to improve efficiency and optimize pressure control.
Description	The project revolves around a comprehensive refurbishment of the water distribution infrastructure at the old Basatin station, encompassing multiple interconnected strategies to elevate operational efficiency and reliability. Central to the initiative is the modernization of the pumping system, involving the replacement of existing pumps with advanced, energy-efficient models. This transition is expected to yield substantial benefits such as improved system performance, reduced energy consumption, and enhanced sustainability. Concurrently, the removal of a booster station constitutes a strategic move aimed at optimizing pressure management within the distribution network, streamlining operations, and potentially eliminating redundancies. Additionally, the project entails a meticulous redesign and optimization of the water distribution process through the old Basatin station. This encompasses a comprehensive revaluation of distribution network components including pipelines and valves, with the overarching goal of ensuring a consistent and reliable water flow to the designated region. In aggregate, these interventions converge to realize a more streamlined, effective, and sustainable water distribution system.
Measure Cost	0.95 million JOD
Source of Funding	Self-financing by Miyahuna in addition to private sector participation (PSP)
Cost / Energy Saved	61.3 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include improved system performance, energy savings, streamlined operations, and enhanced sustainability. • A reduction in energy consumption by 2.2 GWh/year corresponds to a cost savings of approximately 0.21 million JOD/year.

Measure - ID	W3.2
Title	**Rehabilitation of Khaw Station**
Sector	Water
Timeline	2021-2024
Implementing Agency	Miyahuna Water Company (MWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ)
Target Group	Water sector in Khaw
Objective	• Optimize performance and reduce long-term maintenance costs and energy consumption. • Enhance operational efficiency and improve reliability through modern control panels, thus extending the station's operational lifespan.
Description	The upcoming rehabilitation of Khaw station represents a significant effort focused on developing its core infrastructure components. It encompasses the replacement of the station's existing pumps, control panels, and surge systems. By undertaking this comprehensive overhaul, the station's operational functionality is expected to undergo a significant enhancement, resulting in improved efficiency, reliability, and an overall advancement in performance metrics. The key facets of this rehabilitation project include the integration of advanced and more energy-efficient pump models. The replacement of outdated control panels with cutting-edge systems is another key aspect, affording operators an enhanced capacity for real-time monitoring, streamlined management, and remote-control capabilities, ultimately fostering more agile responses to varying operational dynamics. Complementing these upgrades is the refurbishment or replacement of surge systems, which are integral in mitigating pressure fluctuations and safeguarding the infrastructure from potential damage due to sudden shifts in flow conditions. Modernizing these surge systems allows the station to achieve heightened resilience. Collectively, this ambitious rehabilitation endeavour seeks to extend the station's operational lifespan and reduce maintenance overheads, optimize energy consumption, and elevate overall safety measures. The success of this initiative hinges on the thorough incorporation of innovative technologies, detailed planning, and a commitment to engineering excellence.
Measure Cost	0.9 million JOD
Source of Funding	Miyahuna Water Company
Cost / Energy Saved	31.4 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include improved operational functionality, enhanced efficiency, energy savings, and upgraded safety measures. • A reduction in energy consumption by 4.1 GWh/year corresponds to a cost savings of approximately 0.39 million JOD/year.

Measure - ID	W3.3
Title	**Rehabilitation of Zai Water Treatment Plant**
Sector	Water
Timeline	2021-2024
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Miyahuna Water Company (MWC), Japan International Cooperation Agency (JICA)
Target Group	Water Sector in Amman and Al Balqa'a
Objective	To rehabilitate the Zai station's equipment to ensure a reliable water supply for the Amman and Balqa governorates, achieved through the replacement of key components including pumps, motors, end caps, and mechanical parts.
Description	The project is designed to address both the critical need for a stable water supply to the Amman and Balqa governorates and the enhancement of the Zai station's operational capacity. The first primary aspect of the project revolves around the rehabilitation of the Zai station. This rehabilitation effort aims to revitalize and upgrade the station's equipment to ensure its optimal functionality. The rehabilitation process includes the replacement of key components such as pumps, motors, end caps, and various mechanical parts. This comprehensive approach seeks to upgrade the station's performance by replacing outdated elements with modern, high-efficiency components. Simultaneously, the project has a goal of securing a consistent water supply for both the Amman and Balqa governorates. The rehabilitation of the Zai station plays a crucial role in achieving this objective, as the station's enhanced capacity will contribute to the reliable distribution of water to these populated areas. In summary, the project stands as a holistic effort that bridges the gap between the necessity for a reliable water supply and the need for an upgraded and efficient water distribution system. Through the rehabilitation of the Zai station and the replacement of crucial components, the project aims to provide a lasting solution to the water supply challenges faced by the Amman and Balqa governorates, ensuring operational reliability and resource efficiency.
Measure Cost	7.4 million JOD
Source of Funding	Japan International Cooperation Agency (JICA) grant
Cost / Energy Saved	46.1 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include enhanced station capacity, improved water supply reliability, component replacement, and efficiency gains. • A reduction in energy consumption by 23 GWh/year corresponds to a cost savings of approximately 2.5 million JOD/year.

Measure - ID	W3.4
Title	**Rehabilitation of New Zarqa Station**
Sector	Water
Timeline	2021-2024
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Miyahuna Water Company (MWC), KfW Development Bank.
Target Group	Water sector in Zarqa
Objective	To enhance energy efficiency and optimize electrical energy consumption within the new Zarqa station and Rusayfa group.
Description	The measure involves enhancing operational efficiency and energy management within the water supply system. It revolves around two pivotal actions carried out in distinct but interrelated locations. The first significant aspect of the project involves the replacement of pumps and engines at the Rusayfa Group. The outdated pumps and engines will be replaced with modern, high-efficiency models. This shift not only reduces energy consumption but also enhances overall system reliability and effectiveness. The second key activity pertains to the new Zarqa station. Here, the focus is twofold: replacement and installation. The existing pumps and engines will undergo replacement with high-efficiency counterparts. Simultaneously, various advanced measuring devices will be installed. These devices play a pivotal role in collecting accurate and real-time operational data. This data-driven approach empowers operators to make informed decisions, optimize energy usage, and detect anomalies promptly. The project's comprehensive nature highlights its commitment to an integrated approach. By addressing energy optimization through pump and engine replacement and leveraging data through the installation of measuring devices, the project aims to revolutionize energy management within the water supply system. Furthermore, this initiative extends its impact beyond the new Zarqa station, as the replacement of pumps and engines at the Rusayfa Group further contributes to overall energy optimization efforts.
Measure Cost	0.1 million JOD
Source of Funding	Grant from KfW Development Bank
Cost / Energy Saved	6.8 JOD/ MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include enhanced station capacity, improved water supply reliability, component replacement, and efficiency gains. • A reduction in energy consumption by 2 GWh/year corresponds to a cost savings of approximately 0.19 million JOD/year.

Measure - ID	W3.5
Title	**Rehabilitation of Baqouriya Station**
Sector	Water
Timeline	2021- 2024
Implementing Agency	German Agency for International Cooperation (GIZ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ), Miyahuna Water Company (MWC).
Target Group	Water sector in Baqouriya
Objective	To improve Baqouriya station's operational efficiency, reduce energy consumption, minimize operational costs, and promote responsible and efficient water management practices.
Description	The project aims to significantly enhance the operational efficiency and sustainability of the Baqouriya station's water supply. This objective is achieved through a two-sided approach. The first facet involves the replacement of the station's current pumps with high-efficiency models. By adopting these advanced pumps, the project intends to markedly reduce energy consumption, all while ensuring the station's operational performance remains optimal. This transition to high-efficiency pumps corresponds with the overarching aim of curbing environmental impact and operational costs. The second aspect of the project focuses on the installation of modern measuring devices at the Baqouriya station. These measuring tools serve as invaluable assets by providing real-time, precise data pertaining to various operational dimensions. Thus, operators can make well-informed decisions aimed at fine-tuning energy utilization and minimizing wastage. In addition to these measures, the project also entails the replacement of no-return valves, further contributing to the station's overall efficiency enhancement. By synergizing high-efficiency pumps, advanced measuring devices, and the replacement of no-return valves, the project aspires to establish a seamlessly integrated, energy-optimized, and ecologically responsible water supply system.
Measure Cost	0.6 million JOD
Source of Funding	GIZ (Grant)
Cost / Energy Saved	73 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include energy consumption reduction, operational efficiency enhancement, sustainability improvements, successful installation of measuring devices, and replacement of no-return valves. • A reduction in energy consumption by 1.2 GWh/year corresponds to a cost savings of approximately 0.11 million JOD/year.

Measure - ID	**W3.6**
Title	**Restructuring and Rehabilitation of Water Networks in The Areas of Al-Rasheed, Al-Waha and Al-Kharabsheh DZ 19,21,46**
Sector	Water
Timeline	2020-2024
Implementing Agency	Miyahuna Water Company (MWC)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), United States Agency for International Development (USAID)
Target Group	Water sector within the areas of Kharabsha, Waha, Khazna, Arjan, Rashid and Um Uthaina.
Objective	Improving the supply and controlling the pressures of water networks within the areas of Kharabsha, Waha, Khazna, Arjan, Rashid and Um Uthaina.
Description	The project encompasses two main initiatives to enhance the water supply system in the areas of Kharabsha, Waha, Khazna, Arjan, Rashid, and Um Uthaina. Firstly, a new pumping station will be constructed in the Waha area, equipped with modern pumps. This new facility aims to improve water distribution efficiency, ensuring a consistent and reliable water supply to meet the growing demands of the community. Secondly, the project focuses on optimizing and controlling water pressure in the entire network. where pressure control systems will be installed to minimize leakages and optimize energy consumption. The overarching goal of the project is to create a more resilient and efficient water supply network, promoting water conservation and enhancing the overall performance of the system.
Measure Cost	3.35 million JOD
Source of Funding	USAID (Grant)
Cost / Energy Saved	89.7 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include water distribution efficiency improvement, consistent supply, pressure optimization, leakage reduction, and energy consumption optimization. • A reduction in energy consumption by 1.245 GWh/year corresponds to a cost savings of approximately 0.119 million JOD/year.

Measure - ID	**W3.7**
Title	**Enhance Leak Detection and Repair program**
Sector	Water
Timeline	2024-2030
Implementing agency	Ministry of Water and Irrigation (MWI)
Stakeholders involved	Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA), Ministry of Energy and Mineral Resources (MEMR).
Target group	Water supply companies.
Objective	• Invest in advanced leak detection technologies and promptly repair any leaks in the water distribution system to reduce the need for additional pumping.
Description	Investing in advanced leak detection technologies and promptly repairing water distribution system leaks is a proactive strategy that enhances the efficiency and sustainability of water infrastructure. Advanced sensors and monitoring systems enable early detection of leaks, ensuring speedy action to minimize water loss. This approach conserves water resources, aligns with conservation goals, and meets the demands of growing populations more effectively. Timely leak repairs reduce the need for additional energy-intensive pumping to compensate for lost water pressure, resulting in energy savings and lower operational costs. It also lessens greenhouse gas emissions associated with water treatment and distribution, contributing to environmental sustainability. Moreover, leak detection and repair enhance infrastructure resilience, reducing the risk of service disruptions. While there may be initial investments in these technologies, the long-term benefits, including cost savings, make it a cost-effective and environmentally responsible strategy.
Measure cost	Not Available
Source of funding	Funding is not secured
Cost / Energy Saved	Not available
Monitoring and quantification of impact	Continuously collect data during the project's implementation phase. This includes monitoring the performance of leak detection technologies, the frequency and speed of leak repairs, and any associated costs.

Measure - ID	W4
Title	**Raising Energy Efficiency in the Water Sector - Big projects**
Sector	Water
Timeline	2022-2029
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Miyahuna Water Company (MWC), Aqaba Water Company (AWC), Yarmouk Water Company (YWC), Ministry of Energy and Mineral Resources (MEMR), World Bank (WB), Engicon, ILF Consulting Engineers, KfW Development Bank, Energy and Minerals Regulatory Commission (EMRC), National Electricity Company (NEPCO), Jordan Electricity Company (JEPCO), Irbid Electricity Company (IDECO), Electricity Distribution Company (EDCO)
Target Group	Water sector facilities
Objective	• Ensure sustainable and efficient water supply system and reduce operational costs associated with energy consumption. • Enhance energy efficiency in water and sewage facilities through Improving water distribution and pressure control.
Description	The project encompasses a comprehensive approach to enhance energy efficiency and sustainability across multiple water and sewage facilities in addition to networks, the activities include but not limited to the following: • Restructuring of major distribution networks • Rehabilitation plan of main pipelines (trunklines) will be conducted. • Water distribution circuits isolation and organization • Establishment of a parallel conveyor line • Solar power plants will be installed on reservoirs in key locations. • Natural flow utilization strategies • Pumps and VFD Replacement projects These important projects underscore the commitment to modernize and optimize water and sewage infrastructure, ultimately fostering sustainability and improved service delivery to communities and industries.
Measure Cost	72.2 million JOD
Source of Funding	Loans from KfW Development Bank and the World Bank
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	Progress of the sub measures.

Measure - ID	**W4.1**
Title	**Raising Energy Efficiency in the Water Sector in Al-Salt (#2)**
Sector	Water
Timeline	2022-2024
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Engicon, ILF Consulting Engineers, KfW Development Bank, Miyahuna Water Company (MWC)
Target Group	The water sector in the city of Salt in Balqa Governorate.
Objective	To achieve a 52% reduction in energy consumption in water facilities located in the city of Salt.
Description	The project in Al-Salt is a measure designed to significantly improve the efficiency and overall performance of the water supply system. One of the key components of the project involves the restructuring of major distribution networks. By assessing and reorganizing the existing networks, the aim is to enhance water flow and distribution, ensuring a more robust and efficient supply of water to the various serviced areas. In addition, water distribution circuits in the serviced areas will be isolated and organized. This isolation process seeks to minimize leakages and water losses, ensuring that water reaches its intended destinations with minimal wastage. Moreover, the optimization of water pressure control in these circuits will further enhance the efficiency of the distribution system, reducing the energy required for pumping and operation. To further enhance the efficiency of the water supply system, a rehabilitation plan of main pipelines (trunklines) will be conducted, in addition to an upgrade to five existing pumping stations with high-efficiency models. These modern pumps are designed to reduce energy consumption and operational costs while improving overall performance. As part of the project's focus on sustainability and resource optimization, a new low-pressure pumping station or booster pumping station will be introduced. This addition aims to enhance water supply efficiency, enabling a more streamlined and effective distribution of water throughout the region. Additionally, the project includes a comprehensive awareness and training program for employees working in the water sector. By providing training and raising awareness about best practices, the project seeks to ensure that the benefits of energy efficiency and optimized water supply are sustained over the long term. A well-informed and skilled workforce will play a crucial role in maintaining the system's efficiency and promoting responsible water management practices.
Measure Cost	The total cost of the project is 26.72 million JOD (34.4 million EUR) divided into two packages: • The first and original tender was 15.065 million JOD (19.4 million EUR) • After the approval of the Council of Ministers an annex to the tender was made to implement the second package at a cost of 15 million EUR.
Source of Funding	Loan from KfW Development Bank
Cost / Energy Saved	94.4 JOD/ MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators could include enhanced water flow, reduced leakages, optimized water pressure, energy consumption reduction, and successful employee training. • A reduction in energy consumption by 14.37 GWh/year corresponds to a cost savings of approximately 1.38 million JOD/year

Measure - ID	W4.2
Title	**Raising Energy Efficiency in Water Sector 4**
Sector	Water
Timeline	2023-2027
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Miyahuna Water Company (MWC), Aqaba Water Company (AWC), Yarmouk Water Company (YWC), Energy and Minerals Regulatory Commission (EMRC), National Electricity Company (NEPCO), Jordan Electricity Company (JEPCO), Irbid Electricity Company (IDECO), Electricity Distribution Company (EDCO), KfW Development Bank, Dorsch International Consultants GmbH.
Target Group	Water sector facilities
Objective	Ensure sustainable and efficient water supply system and reduce operational costs associated with energy consumption
Description	The project aims to improve energy efficiency and sustainability in the water supply and treatment systems through various initiatives. A fundamental aspect of the project involves the establishment of a parallel conveyor line, a groundbreaking move that will significantly enhance water transport efficiency from the outlet station to the Zai treatment plant in Balqa. Furthermore, the supply of Ain El Basha will be separated from the Zai Dabouq/Balqa conveyor line, thereby optimizing water distribution, and ensuring a more effective and reliable supply to the served areas. In a proactive approach towards promoting renewable energy usage, solar power plants will be ingeniously installed on reservoirs in key locations like Al-Awali (Aqaba), Abu Alanda, Al-Kharabsheh, Dabouq (Amman), Zaabda (Irbid), and Zaatari (Mafraq). This initiative extends to the Hofa/Irbid pumping station and the Wadi al-Shallala purification plant in Irbid, where solar power plants will be introduced. Emphasizing environmental responsibility, a hydroelectric power plant will be implemented at the entrance to the Sweima/Balqa reservoir, generating clean energy through the power of flowing water. Beyond renewable energy initiatives, the project also entails measures to enhance energy efficiency at the West Zarqa Treatment Plant and the New Zarqa Pumping Station. By implementing these targeted measures, the project aims to significantly reduce energy consumption and operational costs, leading to economic benefits while making a positive impact on the environment.
Measure Cost	28.21 million JOD (36.3 million EUR)
Source of Funding	KfW Development Bank (Loan)
Cost / Energy Saved	29 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators such as improved water transport efficiency, optimized water distribution, increased renewable energy usage, reduced energy consumption, and operational cost savings. • A reduction in energy consumption by 26.5 GWh/year corresponds to a cost savings of approximately 2.5 million JOD/year.

Measure - ID	W4.3
Title	**Jordan Water Sector Efficiency Program**
Sector	Water
Timeline	2023–2029
Implementing Agency	Water Authority of Jordan (WAJ)
Stakeholders Involved	Ministry of Water and Irrigation (MWI), Miyahuna Water Company (MWC), Aqaba Water Company (AWC), Yarmouk Water Company (YWC), Ministry of Energy and Mineral Resources (MEMR), World Bank (WB).
Target Group	Water sector facilities
Objective	• Enhance energy efficiency in water and sewage facilities, thus reducing the operational cost and the environmental impact. • Enhance overall performance of the facilities through Improving water distribution and pressure control
Description	The project encompasses a comprehensive approach to enhance energy efficiency and sustainability across multiple water and sewage facilities managed by Miyahuna, Yarmouk, and Aqaba companies. Several critical measures will be implemented to optimize operations and minimize environmental impact. One major aspect of the project involves the replacement of outdated pumps with modern, high-efficiency models. These new pumps are specifically designed to consume less energy while improving overall performance. Furthermore, the operation of pumps through Variable Frequency Drives (VFDs) will be adopted to enable dynamic control based on real-time water demand. VFDs provide the flexibility to adjust pump motor speed, optimizing energy consumption as per the actual requirements. To maximize energy efficiency and reduce reliance on traditional energy sources, the project will also implement natural flow utilization strategies. By harnessing natural flow patterns, the need for excessive pumping and associated energy consumption will be minimized, thus promoting a more sustainable water distribution system. In addition to focusing on the pumping system, the project will address energy efficiency within the facilities. This includes the modernization of ventilation systems to improve indoor air quality and reduce energy wastage. Upgrading outdated lighting fixtures to energy-efficient alternatives will also be undertaken, resulting in reduced electricity consumption and lower utility expenses.
Measure Cost	• 15.37 million JOD (21.7 million USD) • 2 million JOD for energy audits for 18 facilities
Source of Funding	World Bank (Loan)
Cost / Energy Saved	39.6 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to measure the progress of the project, indicators such as pump efficiency improvement, energy consumption reduction, implementation of VFDs, natural flow utilization, ventilation system modernization, and lighting efficiency enhancement. • A reduction in energy consumption by 40 GWh/year corresponds to a cost savings of approximately 3.79 million JOD/year.

Measure - ID	A1
Title	**Energy Efficiency Assessment for the Agriculture Sector**
Sector	Agriculture
Timeline	2024-2025
Implementing agency	Ministry for Energy and Mineral Resources (MEMR), Ministry of Agriculture (MoA)
Stakeholders involved	National Agricultural Research Center (NARC).
Target group	Policy makers, IFIs, sector ministries, associations in agriculture sector.
Objective	• Identify and assess potential energy efficiency opportunities within the agriculture sector to gain a comprehensive understanding of its status quo. • Promote resilience and efficiency in the agriculture sector by driving widespread adoption of energy-efficient practices in the identified opportunities. • Strengthen energy efficiency policies to precisely match the distinctive characteristics and requirements of the agriculture sector, enabling the development and implementation of customized and impactful energy efficiency initiatives.
Description	The measure constitutes a comprehensive process anchored in stakeholder engagement, data analysis, and benchmarking against best practices. This measure unfolds through a series of steps to achieve its objectives: • Stakeholder engagement across the sector to obtain a holistic understanding of diverse perspectives, needs, and challenges. • Robust data analysis to identify patterns, trends, and energy-saving potential. • Barrier identification and resolution to overcome obstacles that hinder optimal energy efficiency in the sector. • Policy and regulation examination to evaluate their impact on energy efficiency within the sector. • Informs the design and deployment of tailored energy efficiency initiatives, ensuring they align with the sector's distinct characteristics and needs. The proactive adoption of energy-efficient solutions and sustainable energy management practices will reshape the agriculture sector's landscape, elevating its competitiveness.
Measure cost	Costs for study and additional stakeholder consultation; approx. 100,000 -200,000 JOD
Source of funding	Funding is not secured.
Cost / Energy Saved	Not Applicable
Monitoring and quantification of impact	• Assessments of energy efficiency in the agriculture sector and relevant subsectors. • Cost-benefit analysis and estimation of energy efficiency potential. • Stakeholder engagement events such as workshops • Strategically aligned energy efficiency initiatives in the agriculture sector

Measure - ID	A1.1
Title	**Survey of Energy Consumption on the Agriculture Sector**
Sector	Agriculture
Timeline	2024-2025
Implementing Agency	Ministry of Agriculture (MoA), Ministry of Energy and Mineral Resources (MEMR), National Agricultural Research Center (NARC).
Stakeholders Involved	Department of statistics (DOS), Energy and Minerals Regulatory Commission (EMRC)
Target Group	Agriculture sector
Objective	• Collect reliable statistical information on energy consumption in the agriculture sector. • Improve the formulation of national energy policies specific to the agriculture sector, based on accurate and up-to-date data.
Description	The agricultural sector is a vital component of the economy and plays a significant role in energy consumption. Efficiently utilizing energy resources in agriculture is essential for sustainable production. The survey seeks to gather reliable statistical information on energy consumption in agriculture, thus facilitating the development of effective energy policies tailored to the unique needs of the agricultural sector. The agriculture sector, characterized by diverse energy consumption patterns, encompasses activities ranging from mechanized farming and irrigation to food processing and transportation. The survey design will be constructed to effectively capture the required information. Moreover, the survey will identify challenges associated with collecting precise energy consumption data in this sector. The survey is expected to include the following: • Identification of typical energy-consuming technologies and appliances, along with their age. • Analysis of the intensity and duration of use of these typical technologies and appliances. • Quantification of fuel, electricity, and heat consumption in the agriculture sector. • Exploration of the potential for energy supply through sources like biomass and waste heat. The implications of the survey extend beyond immediate policy formulation. Sustainable agriculture and efficient energy use are interlinked goals. By identifying energy-intensive practices and promoting their optimization, the survey contributes to sustainable agricultural production, reducing environmental impact and conserving resources. Furthermore, the survey results can serve as a foundation for public awareness campaigns and capacity-building initiatives.
Measure Cost	The estimated cost is dependent on the scope. However, a minimum of 100k JOD is required to obtain adequate data (includes data collection and questionnaire).
Source of Funding	Funding is not secured
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Regular tracking and analysis of energy consumption data in the agriculture sector. • Assessment of changes in energy consumption patterns over time. • Evaluation of the effectiveness of energy efficiency measures implemented in the sector. • Quantification of energy savings and reduction in greenhouse gas emissions resulting from the survey's recommendations.

Measure - ID	**A2**
Title	**Support the Installation of Variable Speed Drives (VSD) On Irrigation Pumps.**
Sector	Agriculture
Timeline	2024-2026
Implementing agency	Ministry of Agriculture (MoA).
Stakeholders involved	Ministry of Finance (MoF), Agricultural Credit Corporation (ACC), Agriculture Associations. Ministry for Energy and Mineral Resources (MEMR).
Target group	Farmers.
Objective	• Promote energy efficiency and sustainable practices in the agricultural sector by encouraging the installation and adoption of variable speed drives (VSDs) on irrigation pumps.
Description	The "Variable Speed Drives (VSD) Installation Support Program" is designed to facilitate the implementation of variable speed drives on irrigation pumps within the agricultural sector. This program aims to promote energy efficiency, optimize irrigation practices, and decrease electricity consumption in farming operations. One of the program's primary objectives is to provide financial assistance, which may come in the form of grants or subsidies, to encourage farmers and agricultural entities to adopt VSD technology. Variable speed drives enable precise control of water flow and pressure in irrigation systems, leading to significant energy savings and reduced electricity costs for farmers. Furthermore, VSDs contribute to environmental sustainability by curbing greenhouse gas emissions associated with excessive energy use in agriculture. The program also emphasizes water conservation by enabling more efficient water distribution, avoiding over-irrigation, and optimizing water usage. Additionally, it may offer technical guidance and support to ensure successful VSD installations and monitor their effectiveness through rigorous evaluation processes. Ultimately, this initiative plays a pivotal role in promoting sustainable agriculture while aligning with energy efficiency and environmental conservation goals.
Measure cost	Not Available
Source of funding	Funding is not secured
Cost / Energy Saved	Not Available
Monitoring and quantification of impact	• The establishment of an incentive scheme to support the installation. • Number of beneficiaries applied to the financial assistance program. • Track progress through key performance indicators (KPIs) such as energy savings, water efficiency, crop yield improvements, and cost reductions.

Cross-sectoral Energy Efficiency Measures

Measure - ID	C1
Title	**Enhancing Energy KPI's and Associated Data Collection Processes Across Sectors**
Sector	Cross-sector
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders Involved	Energy and Mineral Regulatory Commission (EMRC), Department of Statistics (DOS).
Target Group	Jordan ministries and governmental institutions
Objective	• Compile accurate, reliable, and necessary data for each sector and corresponding subsectors to establish a dedicated and comprehensive national energy statistics repository. • Strengthen energy monitoring and evaluation mechanisms to support the energy transition and associated policy instruments. • Establish cross-sector collaboration and coordination to optimize energy-related efforts and enhance the effectiveness of energy policies.
Description	Accurate KPIs and accurate data collection are vital for effective national energy resource management. Improving energy KPIs and data processes across sectors supports the energy transition and boosts energy-related endeavours through cross-sector collaboration. This approach includes five core purposes: • Evaluation of Energy Data Repository: This involves assessing data collection methods, processing, validation, and stakeholder engagement. The goal is a credible data foundation for informed energy decisions, identifying areas for data improvement. • Standardizing Energy Data: By creating uniform templates and user-friendly formats for each sector, this objective enhances data consistency, comparability, and efficient analysis, enabling stakeholders to make informed choices. • Enhancing Energy KPIs: Selecting indicators aligned with economic modernization and energy efficiency policies is central. This objective clarifies KPI measurement, ensuring accurate reflection of energy transition priorities. • Continuous Monitoring and Evaluation: Regular audits of data collection methods and KPI performance reviews ensure data accuracy and alignment with evolving energy policy, adapting targets when needed. • Cross-Sector Collaboration Framework: Facilitating the exchange of insights, this objective fosters a platform for stakeholders to share energy management experiences and expertise, further advancing the project's goals.
Measure Cost	KPI's development estimated at 75k JOD. The cost to develop the Energy Repository depends on the scope and with analysis capabilities.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Specific KPIs to monitor the progress, these could include the percentage increase in data accuracy, the number of sectors with standardized data templates, and the extent of stakeholder participation. • Set baseline for the data to be collected for each sector. • Monitor different sectors alignment in terms of data collection methods and the adoption of standardized templates

Measure - ID	C1.1
Title	**Energy Efficiency Reporting and Accountability**
Sector	Cross-sector
Timeline	2024-2025
Implementing agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders involved	All Relevant ministries and public bodies.
Target group	Government agencies and utilities.
Objective	• Establish robust reporting mechanisms to monitor and evaluate the effectiveness of energy efficiency programs and initiatives. • Hold stakeholders accountable for meeting energy efficiency goals and targets.
Description	This project prioritizes the establishment of robust reporting mechanisms to closely monitor and evaluate the effectiveness of energy efficiency programs and initiatives. It emphasizes transparency and accountability as fundamental pillars in energy efficiency objectives. Through effective monitoring and evaluation, the project collects and analyses crucial data, including energy consumption, program participation rates, cost savings, and environmental impact. Regular reports are generated to track progress and identify areas requiring improvement. Moreover, the project holds stakeholders accountable for achieving energy efficiency goals and targets. This entails setting clear, measurable objectives, assigning roles and responsibilities, and defining performance benchmarks. Government agencies, utilities, and other stakeholders are held responsible for meeting these established targets. Transparency and public reporting play a vital role, ensuring that program performance is visible to the community and stakeholders. By promoting data-driven decision-making and fostering a culture of continuous improvement, this initiative aligns with broader sustainability goals, reducing energy consumption, mitigating greenhouse gas emissions, and advancing responsible resource management.
Measure cost	Not Available
Source of funding	Funding is not Secured
Cost / Energy Saved	Not Applicable
Monitoring and quantification of impact	• The establishments of roles and responsibilities matrix • Monitor compliance with established energy efficiency standards, regulations, and targets. • The Implementation of systematic approach to collect and analyse critical data.

Measure - ID	C2
Title	**National Campaign for Energy Efficiency**
Sector	Cross-sector
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR)
Stakeholders Involved	Relevant ministries, chambers, associations of industry and commercial sector, media platforms.
Target Group	Citizens, services sector, public sector, industry sector, transport sector
Objective	• Inform and sensitize the public and specific target groups about the profound benefits of energy efficiency, driving action and empowerment. • Foster lasting change in consumer behaviour through tailored information and actionable recommendations, promoting a culture of energy consciousness. • Amplify the impact of other energy efficiency measures through joint campaigns and coordinated efforts, driving positive market transformation.
Description	A multi-faceted national energy efficiency campaign is designed to be comprehensive, dynamic, and impactful. A dedicated campaign team will spearhead the efforts, ensuring efficient coordination and execution of joint initiatives with key stakeholders. Leveraging a wide range of communication tools and approaches, including information/educational materials, interactive online tools, and data on energy-efficient appliances and equipment. Specialized events and workshops will be organized to create meaningful interactions with the specific target groups, while energy efficiency networks will be utilized to disseminate information across various channels. The centrepiece of the campaign is an interactive and user-friendly website, providing individuals and businesses with access to valuable information on energy-efficient technologies, funding programs, and expert advisory services. Through these collaborative efforts, the campaign will foster a culture of informed decision-making, empowering individuals and businesses to adopt sustainable practices. The campaign's comprehensive approach and focus on engagement will drive lasting change in consumer behaviour and contribute to positive market development, advancing our journey towards a more sustainable and energy-conscious future.
Measure Cost	The cost varies depending on the size and scope of the campaign which translate to resources such as the campaign team, website, communication channels, events, information material, and expert speakers.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Concept for the Energy Efficiency National Campaign. • Specific campaign KPIs depends on the concept, but might include: the number of participants in workshops, website engagement metrics (visitors, page views), and surveys measuring changes in public perception of energy efficiency, etc.

Measure - ID	C2.1
Title	**Promotion of Energy Efficiency Networks**
Sector	Cross-sector
Timeline	2023 - 2025
Implementing Agency	Jordan Chamber of Industry (JCI), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Chambers and associations of industry and commercial sector, Municipalities.
Target Group	Companies from industry and commercial sector, public sector such as municipalities, and local companies in energy, water or transport sector
Objective	• Foster a collaborative environment that encourages knowledge exchange among stakeholders, enabling the sharing of best practices and innovative ideas and benefiting from success stories. • Empower network members with up-to-date expertise in energy-efficient technologies, energy management practices, and sustainable energy solutions to enhance their skills and capacity. • Encourage partnerships between companies and organizations to actively engage in policy discussions, providing valuable feedback and recommendations to promote energy efficiency and sustainability, which will determine the optimal investment options based on practical experiences. • Avoid investment risk, as the selection of suppliers and investment details will be discussed with the rest of the participants that have made similar investments.
Description	Energy efficiency networks are instrumental in promoting collaboration and joint efforts among their members, leading to tangible improvements in energy efficiency levels. Currently, two well-established networks operate in the industrial sector: a sectorial network targeting specific industries and a regional network addressing local energy efficiency challenges. The success of these networks underscores their potential to significantly impact energy conservation and sustainability. Efforts are underway to extend the reach of energy efficiency networks into other sectors, with a particular focus on the commercial sector, particularly hotels. Collaborating with representative institutions from this sector is crucial in forming an effective network that can address the unique energy efficiency requirements and challenges within the hospitality industry.
Measure Cost	The cost for organisation of networks, experts, and meetings.
Source of Funding	Funding is not secured. However, networks member will cover partly share of costs.
Cost / Energy Saved	49.7 JOD/MWh
Monitoring and Quantification of Impact	Monitoring by the organization of the network initiative with support of participants Reports by participants to realised implementing measures. EE Networks are driver to realize EE measures by all participating companies. Thus, energy savings are expected if energy efficiency measures are implemented.

Measure - ID	C3
Title	**Capacity Building for Green Building Refurbishment**
Sector	Cross-sector
Timeline	2024-2030
Implementing Agency	Ministry of Public Works & Housing (MoPWH), Jordanian National Building Council (JNBC), Ministry of Energy and Mineral Resources (MEMR).
Stakeholders Involved	Jordan Engineers Association (JEA), Association of Architects, Urban Planners and Civil Engineers, National institute For Training (NIT), Construction and Sustainable Buildings Center (CSBC), Jordan Green Building Council (JGBC), German Energy Academy in Jordan (GEA)
Target Group	Consulting firms (e.g., architecture, engineering, and specialists), Building contractors (general and specialised construction companies), Facility managers, municipalities, Energy Service Companies (ESCOs)
Objective	• Enhance the knowledge, skills, and capabilities of individuals and organizations involved in the construction and renovation of buildings to make them environmentally friendly and energy efficient. • Develop a comprehensive training program and establish a network of educational institutions on Green Building Refurbishment to advance sustainable construction.
Description	Green building seeks to minimize the environmental impact of construction and operation by utilizing innovative technologies, resource-efficient materials, and eco-conscious design principles. One of the key tenets of green building is energy efficiency. To effectively establish and strengthen the capacity-building programme, the following steps can be taken: • Design a comprehensive training program on green buildings including energy efficiency in buildings. • Conduct train-of-trainer (ToT) to empower skilled trainers who can effectively deliver energy efficiency training programs. • Establish a system of training certificates as formal recognition of graduates' expertise. • Develop a network of educational institutions that provide comprehensive energy efficiency training to foster collaboration among stakeholders. • Implement quality assurance and monitoring protocols to track training performance and improve it. This measure will enhance the implementation of energy efficiency in buildings and achieve significant greenhouse gas (GHG) emission reduction. A dedicated Competence Center for energy efficiency can play a pivotal role as a central point of contact for stakeholders. This centre would offer independent advice and facilitate capacity-building initiatives to drive advancements in the green building sector.
Measure Cost	Estimated cost for developing the capacity building program is 1 million JOD.
Source of Funding	Funding is not secured
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Training programme development and ToT delivery. • Green building certification established and recognised. • Number of the green building program graduates. • Raise the number of green or energy-efficient buildings.

Measure - ID	C4
Title	**Energy Efficiency Award in the Academic Sector**
Sector	Cross-sector
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Royal Scientific Society (RSS), Ministry of Higher Education and Scientific Research (MoHE), Universities, Committee of Partnership between the public sector and the academic sector in the RE & EE fields.
Target Group	Students, Universities, Academic sector
Objective	• Stimulating research and innovation to advance energy efficiency in all sectors. • Raising awareness about efficient and responsible use of energy throughout the academic sector. • Evaluation and dissemination of success stories and recognizing consumers who have implemented exemplary energy efficiency measures.
Description	In a rapidly evolving world, the importance of sustainable practices and energy conservation cannot be overstated. The academic sector, as a hub of knowledge and innovation, has a vital role to play in leading the way towards a more energy-efficient future. To encourage and recognize the efforts of educational institutions in this regard, the award will be developed. The award's primary purpose is to acknowledge, motivate, and strengthen groundbreaking research and innovation in the field of energy efficiency. The award is open and inclusive to wide spectrum of researchers and research areas. While encompassing diverse aspects of energy efficiency, the award also focuses on specific themes that address critical challenges in the field. An evaluation committee comprising experts in energy, sustainability, and education will review the submissions. A holistic evaluation criterion will be developed by the committee based on technical, economic, environmental, innovation, and behavioural change aspects. The award encourages partnerships between public, private, and academic in implementing scientific research on energy efficiency. It acts as a platform for evaluating and disseminating solutions that lead to success stories in energy efficiency. It sets benchmarks and inspires others to adopt energy-saving strategies.
Measure Cost	Not Available
Source of Funding	Funding is not secured.
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• The numbers of submitted proposals yearly. • Consultation, dissemination, and stakeholder engagement events through the partnership committee

Measure - ID	C5
Title	**Amendment and Implementation of the Energy Conservation By-law No. (73) of 2012**
Sector	Cross sector
Timeline	2022-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR),
Stakeholders Involved	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), Energy and Minerals Regulatory Commission (EMRC), Public institutions, and Energy Service Companies (ESCOs)
Target Group	Government institutions (public sector), Private sector consumers and businesses
Objective	• Amend By-law No. (73) of 2012 on Regulating Procedures and Means of Conserving Energy and Improving Its Efficiency. • Strengthen the existing energy efficiency framework and enhance the implementation of energy conservation measures.
Description	• The measure aims to enhance and strengthen the existing energy efficiency framework in Jordan by amending By-law No. (73) of 2012 on Regulating Procedures and Means of Conserving Energy and Improving Its Efficiency, issued by virtue of article (18) of the Renewable Energy and Energy Efficiency law No. (13) for the year 2012. MEMR seeks to coordinate and streamline energy efficiency activities through the revised by-law. • Key aspects of the amendment include: • Energy Efficiency Steering Committee (SC): This high-level committee will offer guidance on energy efficiency matters and oversee the National Energy Efficiency Action Plan (NEEAP) implementation. • Technical and Sectorial Working Groups: These groups will coordinate NEEAP's development, formulate sector-specific policies, and plan future NEEAP measures. • Private Sector Voluntary Commitments: Encouraging energy efficiency among private consumers, this provision urges energy audits and gradual consumption reduction through voluntary action plans. • Mandatory Energy Audits for Public Sector: Governmental bodies will conduct energy audits and adopt energy-saving measures, showcasing the public sector's leadership in energy efficiency. • ESCO Market Development: A specialized Energy Service Company (ESCO) unit will drive public sector energy efficiency projects, advancing the ESCO market. including the establishment of a specialized EE unit to oversee EE projects.
Measure Cost	Not available
Source of Funding	It will be funded through national budget
Cost / Energy Saved	Not applicable.
Monitoring and Quantification of Impact	• The outcome of the new legislation will be monitored by the Energy Efficiency Steering Committee (SC), the Sectorial Working Groups (SWG), MEMR, and EMRC energy efficiency monitoring team/unit. • Set KPIs to monitor the progress, these could include the number of energy audits conducted, private sector commitments, public sector energy savings, and ESCO projects initiated.

Measure - ID	C6
Title	**Promote Sustainable Cooling and Using of Natural Refrigerants**
Sector	Cross-Sector
Timeline	2020-2027
Implementing Agency	Ministry of Environment (MoEnv), Royal Scientific Society (RSS), Jordan Standards and Metrology Organization (JSMO)
Stakeholders Involved	Ministry of Industry and Trade (MIT), Ministry of Energy and Mineral Resources (MEMR), Jordan Chamber of Industry (JCI), Ministry of Finance (MoF), Customs Department, Research & Academia, Jordan Standards and Metrology Organization (JSMO).
Target Group	Residential refrigeration and air conditioning and commercial refrigeration sectors.
Objective	• Upscale the deployment of sustainable cooling technologies in the Jordanian market • Promote accelerated technological change and early implementation of the Kigali Amendment to the Montreal Protocol and the Paris Agreement. • Reduce cooling demand in the refrigeration and air conditioning sectors and introduce energy efficient technologies using natural refrigerants
Description	Jordan's energy consumption has steadily increased across all sectors. There are approximately 1113 cooling degree days in Jordan a year. More than 60% of energy consumed in households is used for heating and cooling, and the residential sector is the single largest electricity consumer in Jordan. Cool Up's policy work strengthens the institutional capacity to monitor and regulate the refrigeration and air conditioning market and leads to the accelerated implementation of the Kigali Amendment, it also provides technical assistance on developing overarching national strategies such as national cooling action plans or roadmaps. Jordan is developing minimum energy performance standards and is expected to release a series of technical labelling regulations in line with European Union standards. It has not yet developed a National Cooling Plan, though it is currently working to develop a cooling strategy for the air conditioning sector. The overall market for cooling continues to grow due to increasing economic development, population, and rising temperatures. Jordan has strong local refrigeration and air conditioning manufacturing sectors. All refrigerants for domestic use are imported. Natural refrigerants are available in Jordan though their uptake has been limited. Thus, the project focuses on building awareness and trust by developing country-specific technology catalogues and deploying demonstration projects to showcase the economic, social, and environmental benefits of sustainable cooling. The project focuses also on supporting financial institutes in leveraging existing financial models or developing new ones that can support the cooling market and improve access to finance for sustainable cooling technologies.
Measure Cost	Not available
Source of Funding	Funding available through cool Up Project which is part of IKI
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	Progress of the sub measures.

Measure - ID	**C6.1**
Title	**Certification Scheme for Technicians in Refrigeration, Air Conditioning and Cooling (RAC) Sector Related to Natural Refrigerant**
Sector	Cross-Sector
Timeline	2023 – 2027
Implementing Agency	Ministry of Labour (MOL), Technical and Vocational Skills Development Commission.
Stakeholders Involved	Ministry of Industry and Trade (MIT), Ministry of Energy and Mineral Resources (MEMR), Ministry of Environment (MoEnv), United Nations Development Programme (UNDP), Royal Scientific Society (RSS), Guidehouse, Vocational Training Center and training providers, Öko-Recherche Gmbh).
Target Group	Technicians working in RAC sector (Installation, operation and maintenance)
Objective	• Improve energy efficiency within the RAC sector, by equipping technicians with the skills to work on energy-efficient equipment and systems. • Ensure the safe handling and utilization of natural refrigerants. • Contribute to a more sustainable RAC industry through increasing the installation of new energy efficient technologies • Include the natural refrigerant topics in the courses provided by the training centres.
Description	This capacity-building activity seeks to address critical challenges in the RAC sector, with a primary focus on optimizing energy efficiency and promoting environmentally conscious practices. The plan involves an in-depth assessment of the current state of the RAC industry, encompassing an evaluation of the existing certification scheme and training centre infrastructure. By identifying gaps in qualifications and equipment necessary for handling emerging technologies that employ natural refrigerants, the initiative paves the way for a targeted strategy. Building upon this evaluation, a thorough update of the certification scheme to incorporate the newfound qualifications and skills imperative for RAC practices. Concurrently, training centres' infrastructure will be modernized with the latest technologies. The development of comprehensive training materials, spanning installation, operation, and maintenance procedures, will serve as a cornerstone of knowledge dissemination. The enforcing of the revised certification standards involves creating a robust system for certifying technicians, thereby guaranteeing their proficiency in handling energy-efficient equipment and natural refrigerants. To catalyse industry-wide adoption, awareness campaigns will be arranged. Additionally, the initiative emphasizes collaboration and partnerships. Industry associations, governmental bodies, educational institutions, and manufacturers of energy-efficient RAC equipment will be engaged to collectively drive the initiative's success. This collaborative work will ensure that the program remains adaptable and up to date.
Measure Cost	Not Available
Source of Funding	Funding is partially secured by Cool Up project, with approximately 11,500 JOD allocated for support in the form of expert person-days.
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Gap analysis for the qualifications and equipment required to handle new technologies using natural refrigerants. • The development of new certification scheme and training material. • The number of technicians who have completed the training and received the updated certification.

Measure - ID	**C6.2**
Title	**Capacity Building and Awareness Raising About Sustainable Cooling and Using of Natural Refrigerants**
Sector	Cross-sector
Timeline	2023 – 2026
Implementing Agency	Ministry of Environment (MoEnv)), Royal Scientific Society (RSS), Vocational Training Center (VTC)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Jordan Standards and Metrology Organization (JSMO), Royal Scientific Society (RSS), Skills Development Authority, Vocational Training Center (VTC), Training Providers.
Target Group	Suppliers, manufacturers, consumers, policy makers, supermarket owners, food industries, technicians, Financial Institutions.
Objective	• To raise awareness and promote the adoption of sustainable cooling practices among a wide array of stakeholders. • Disseminate comprehensive knowledge about sustainable cooling strategies, encompassing passive building measures, energy-efficient RAC appliances, adherence to building codes, and the utilization of natural refrigerants.
Description	This initiative is dedicated to elevating awareness surrounding the concept of "sustainable cooling" across a spectrum of stakeholders, including policymakers, project developers, and end users. Through a strategic combination of targeted awareness-raising measures and comprehensive capacity-building activities. The awareness programs and capacity-building activities are arranged for diverse actors, including manufacturers, importers, service providers, policymakers, and financial institutions. The objective is to disseminate in-depth insights about the various dimensions of sustainable cooling, ranging from the building codes to the tangible benefits of employing energy-efficient appliances and the inherent advantages of natural refrigerants. A cornerstone of the initiative is the establishment of comprehensive Training of Trainers (TOT) programs, and to facilitate the exchange of knowledge and insights, the initiative advocates the organization of regional conferences, study tours, and webinars to transfer both technical and theoretical knowledge. Recognizing the fundamental role of end users, the initiative target end users through diverse communication channels, including social media platforms, publications, informative guides, brochures, TV and radio spots, and interactive seminars. This initiative operates in synergy with the implementation of Minimum Energy Performance Standards (MEPS) for cooling appliances and the certification of technicians. the project indirectly augments the efficacy of MEPS enforcement and contributes to the sustained growth and development of certified technicians.
Measure Cost	Not available
Source of Funding	Funding is partially secured by CoolUp project, with approximately 150k JOD allocated for support in the form of expert person-days, materials for capacity building and communication.
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• The number of stakeholders reached, the percentage increase in awareness among target groups, the number of technicians and trainers trained, and the adoption rate of sustainable cooling practices. • Monitor the engagement and reach of awareness campaigns on different media platforms.

Measure - ID	**C6.3**
Title	**Minimum Energy Performance Standards (MEPS) and Energy Labelling Program for Commercial Refrigeration**
Sector	Cross Sector
Timeline	2023-2027
Implementing Agency	Jordan Standards and Metrology Organization (JSMO)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry and Trade (MIT), Ministry of Finance (MoF), Ministry of Environment (MoEnv), Chambers of Industry and Trade, Customs department, Royal Scientific Society (RSS).
Target Group	Suppliers (importers), End users, Commercial refrigeration manufacturers.
Objective	• Implement MEPS and Energy Labelling Program for Commercial Refrigeration (process chillers and commercial stand-alone refrigerators and freezers) • Establish a foundational threshold of minimum energy efficiency that products must meet to qualify for sale in the market and stimulate the adoption of efficient systems. • Protect the commercial sector from making mis-investments in unsustainable and energy-draining appliances.
Description	The project's foundation lies in establishing legal and regulatory frameworks which involves crafting regulations that outline the minimum energy performance levels that commercial refrigeration products must adhere to in order to enter the market. In parallel, the preparation of enforcement plans and mechanisms is undertaken to ensure the successful implementation of the labelling and eco design scheme. The assessment of testing capabilities forms a critical phase of the project. By identifying the required testing laboratories and effective testing procedures, the project endeavours to create a streamlined and efficient testing regime that underpins the MEPS and labelling programs, the project then progresses to design and implement the MEPS and labelling programs themselves. These programs are accompanied by a comprehensive monitoring and verification scheme, strategically aligned with established international models. the establishment of criteria for certifying commercial refrigeration in a manner that is equitable, consistent, and practically feasible. The project is devoted to capacity building which extends to inspectors, market surveillance staff, and those responsible for the enforcement of the developed lab and eco schemes. A strategic communication campaign is designed to target traders, end-users, and manufacturers.
Measure Cost	The cost of implementation is estimated to be 4.8 million JOD.
Source of Funding	Funding for the development of the MEPs is partially secured by CoolUp project, with approximately 23k JOD allocated for support in the form of expert person-days.
Cost / Energy Saved	115.4 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators to monitor the progress: the number of products complying with MEPS, the energy savings achieved, consumer awareness levels, and industry adoption rates. • Implement a robust market surveillance program to monitor compliance with MEPS and energy labelling requirements. Random product sampling and testing can help identify non-compliant products and enforce penalties as necessary.

Measure - ID	C6.4
Title	**Minimum Energy Performance Standards (MEPS) and Energy Labelling Program for Commercial Air Conditioning**
Sector	Cross Sector
Timeline	2023-2027
Implementing Agency	Jordan Standards and Metrology Organization (JSMO)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry and Trade (MIT), Ministry of Finance (MoF), Ministry of Environment (MoEnv), Chambers of Industry and Trade, Customs department, Royal Scientific Society (RSS).
Target Group	Suppliers (Importers), consumers, central air conditioning manufacturers
Objective	• Implement MEPS and Energy Labelling Program for Commercial Air Conditioning (comfort chillers, rooftop units and VRF- and multisplit-systems) • Establish a foundational threshold of minimum energy efficiency that products must meet to qualify for sale in the market and stimulate the adoption of efficient systems. • Protect the commercial sector from making mis-investments in unsustainable and energy-draining appliances
Description	The project's foundation lies in establishing legal and regulatory frameworks which involves crafting regulations that outline the minimum energy performance levels that commercial air conditioning must adhere to enter the market. In parallel, the preparation of enforcement plans and mechanisms is undertaken to ensure the successful implementation of the labelling and eco design scheme. The assessment of testing capabilities forms a critical phase of the project. By identifying the required testing laboratories and effective testing procedures, the project aims to create a streamlined and efficient testing regime that underpins the MEPS and labelling programs, the project then progresses to design and implement the MEPS and labelling programs themselves. These programs are accompanied by a comprehensive monitoring and verification scheme, strategically aligned with established international models. The establishment of criteria for certifying commercial refrigeration in a manner that is equitable, consistent, and practically feasible. The project is devoted to capacity building which extends to inspectors, market surveillance staff, and those responsible for the enforcement of the developed lab and eco schemes. A strategic communication campaign is designed to target traders, end-users, and manufacturers.
Measure Cost	The cost of implementation is estimated to be 12.7 million JOD
Source of Funding	Funding for the development of the MEPs is partially secured by CoolUp project, with approximately 23k JOD allocated for support in the form of expert man-days.
Cost / Energy Saved	76.9 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators to monitor the progress: the number of products complying with MEPS, the energy savings achieved, consumer awareness levels, and industry adoption rates. • Implement a robust market surveillance program to monitor compliance with MEPS and energy labelling requirements. Random product sampling and testing can help identify non-compliant products and enforce penalties as necessary. • Monitoring of rebound effects by market surveys

Measure - ID	**C6.5**
Title	**Development of Financial Incentives for Energy-Efficient Appliances with Natural Refrigerants**
Sector	Cross sector
Timeline	2024-2025
Implementing Agency	Ministry of Environment (MoEnv), Ministry of Finance (MoF), Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Jordan Standards and Metrology Organization (JSMO), Royal Scientific Society (RSS).
Target Group	Air conditioning and Refrigeration systems manufacturers, Importers, Traders, and End users.
Objective	• Establish and implement a comprehensive financial incentive scheme aimed at promoting energy efficiency in the commercial refrigeration and air conditioning systems.
Description	The core objective of this initiative is to establish a financial incentive scheme aimed at promoting energy efficiency within commercial refrigeration and air conditioning systems. This involves a collaboration with (JSMO) to determine a comprehensive list of internationally recognized technical references for commercial refrigeration and air conditioning. This list serves as a benchmark for performance standards, ensuring that the incentive scheme rewards systems that adhere to the highest energy-efficient and environmental standards. Furthermore, a critical aspect involves updating the existing Energy Efficiency tax reduction and exemption bylaw to encompass energy-efficient commercial refrigeration and air conditioning systems that employ low Global Warming Potential (GWP) and natural refrigerants. To calculate the appropriate subsidization ratio, meticulous consideration is given to the costs incurred during the introduction of eligible equipment. This entails comparing the incremental cost associated with adopting energy-efficient systems that utilize natural refrigerants to the cost of comparable Hydrofluorocarbon (HFC)-based equipment, encompassing installation expenses. By quantifying these costs and calculating a subsidization ratio, a fair and practical framework is established to support and incentivize businesses to embrace sustainable solutions. Integral to the initiative's success is the alignment with JREEEF.
Measure Cost	Not Available
Source of Funding	Funding for the development of the incentives is partially secured by CoolUp project, with approximately 11,500 JOD allocated for support in the form of expert man-days.
Cost / Energy Saved	Not Available
Monitoring and Quantification of Impact	• The two main criteria chosen to evaluate the performance of tax incentives are environmental effectiveness and economic efficiency, measuring the number of applications and qualifying investments awarded, Sales of qualifying products, and what is the cost-effectiveness of the programme. <u>Quantification of Impact in the NEEAP period (2023-2025):</u> • No direct energy savings during the NEEAP period, however, expected savings in the future. Savings could start in 2027 and will have rising impact: (AC Systems, 2027: 0.7 GWh 2030: 3.1 GWh; commercial refrigeration systems: 2027: 0.8 GWh, 2030: 3.2 GWh)

Measure - ID	C7
Title	**EIB's Initiative - Improving Jordan's Energy Efficiency and Renewable Energy**
Sector	Cross-Sector
Timeline	2024-2029
Implementing Agency	European Investment Bank (EIB)
Stakeholders Involved	The German International Climate Initiative (IKI), Banks Association
Target Group	Financial Intermediaries (banks, microfinance institutions), Private equity funds, final beneficiaries (micro, small and medium enterprises) and Mid-Caps in Jordan.
Objective	• Increase energy efficiency financing with selected financial intermediaries across Jordan for eligible beneficiaries through risk-sharing and/or financial incentives. • Source funds for MSMEs and Mid-Caps, aiming to harness their high energy-saving potential, yet constrained by inadequate access to finance. • Contribute to Jordan's NDC objective by saving energy and the associated reduction in GHG emissions.
Description	In the first phase, the EIB carried out a study "Green Financing Approaches for the EU Southern Neighbourhood", which besides a component dedicated to Jordan also covers Egypt, Morocco, Lebanon, Palestine, and Tunisia. The study analysed the institutional environment, and the shortfalls in promoting energy efficiency in Jordanian through investments by micro, small, and medium enterprises (MSME) and Mid-Caps. It also identified sectors and technologies with the highest potential. The study also explores best practices and lessons learned in the region and beyond. In the second phase, EIB is developing products and approaches in support to green finance based on the study results. The proposed Green Transition Facility is expected to include a combination of a loan, a portfolio guarantee, technical assistance, and potential incentive payments. The different components form an integrated package that supports the intermediaries on multiple levels and throughout all stages of the credit cycle. Following the completion of pre-testing of the product with selected banks, the EIB is currently fine-tuning the design of the Facility before seeking internal and external approvals. The EIB will roll out the Facility at scale during the coming years across the region, with Jordan being a pilot country. The Facility using resources from Germany International Climate Initiative (IKI) will provide support to Jordanian financial intermediaries to provide financing for energy efficiency investments in MSMEs and Mid-Caps. Targeted sectors include energy efficiency improvements in various sectors but may also include other types of green investments.
Measure Cost	The investment component has a grant component of EUR 9 million and is expected to support EE investments of at least EUR 50 million.
Source of Funding	• The regional study phase is funded from EIB's own resources (EUR 900,000) and German IKI resources (EUR 300,000) • For the investment phase, the grant component of EUR 8.7 million for Jordan is provided by the IKI. • EIB aims to make available loans of indicatively EUR 50 million, via financial intermediaries in Jordan, alongside the IKI contribution.
Cost / Energy Saved	85.2 JOD/MWh (to be confirmed during due diligence of the investment component)
Monitoring and Quantification of Impact	Monitoring and evaluation of the success of the initiative will take place in line with EIB standards and as per the requirements of the IKI Fund.

Measure - ID	C8
Title	**Minimum Energy Performance Standards for Motors**
Sector	Cross Sector
Timeline	2024
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Standards and Metrological Organization (JSMO)
Stakeholders Involved	German Agency for International Cooperation GmbH (GIZ), Jordan Chamber of Industry (JCI), Ministry of Environment (MoEnv), Ministry of Industry and Trade (MIT), National Energy Research Center (NERC), Jordan Customs Department, Income & Sales Tax Department (ISTD), Renewable Energy Establishments Society (REES), EDAMA Association.
Target Group	Manufacturers, importers, distributors and users of industrial electric motors.
Objective	• Establish and enforce regulations that define the minimum energy performance standards allowable for motors particularly in the industrial sector. • Phase out less efficient motor models from the market by setting maximum energy consumption levels for product classes.
Description	The Jordan Standards and Metrology Organization (JSMO), in collaboration with the Ministry of Energy and Mineral Resources (MEMR) and the German Agency for International Cooperation (GIZ), is engaged in revitalizing the Minimum Energy Performance Standards (MEPS) for motors, which was previously put on hold in 2016 due to objections, with a primary focus on the industrial sector where motors contribute significantly to energy consumption. This initiative seeks to enhance energy efficiency by reinstating regulations that establish the maximum energy consumption levels for motors, thereby promoting the phased-out adoption of less efficient models. To achieve this, the project involves a comprehensive approach: starting with the examination of the motor market landscape, encompassing motor types, sizes, and energy efficiency levels, serving as a foundation to craft effective MEPS. A rigorous assessment of the existing regulatory framework follows, aiming to identify gaps and areas for refinement that would facilitate the successful integration of MEPS. After that, an array of incentive mechanisms is conceived to incentivize the widespread adoption of energy-efficient motors, encompassing tax incentives, subsidies, rebates, and other financial inducements. The Regulatory Impact Assessment (RIA) examines the potential implications of implementing MEPS, traversing economic, environmental, and societal dimensions, thereby affording a panoramic perspective on the benefits and challenges that lie ahead. The analysis will explore innovative instruments and assess the potential for transformational change in the sector, as well as identify possible synergies between mitigation and adaptation. Successful implementation may open avenues for climate finance projects, such as the National Appropriate Mitigation Action (NAMA)
Measure Cost	The cost of the study is estimated to be 53K. The cost of the implementation: 18 million JOD, including the cost for motors replacement
Source of Funding	GIZ for the study
Cost / Energy Saved	23.2 JOD/MWh
Monitoring and Quantification of Impact	• Market study and assessment dissemination • Define and monitor KPIs that will help gauge the progress of implementation, these could include the number of compliant motors in the market, energy savings achieved, stakeholder engagement levels, and adoption of innovative technologies.

Measure - ID	C9
Title	**Energy Service Companies (ESCOs) Market Development**
Sector	Cross Sector
Timeline	2022-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Energy and Minerals Regulatory Commission (EMRC), Energy Service Companies (ESCOs), Jordan Chamber of Industry (JCI), Local Industrial Chambers
Target Group	Manufacturers, importers, distributors, and users of industrial electric motors.
Objective	• Provide a roadmap to outline the strategic steps and milestones required for the development of the ESCO market in Jordan. • Establish a clear and effective licensing scheme for ESCOs, defining the requirements and regulations for their operations. • Launch pilot projects on base of ESCO mechanism.
Description	The development of a roadmap for ESCO market growth involves a strategic approach including stakeholder engagement, comprehensive market analysis, regulatory framework enhancement, financial mechanism establishment, capacity building, technology integration, project identification, awareness campaigns, and robust monitoring. The measure also includes the preparation of an ESCO Licensing scheme, and the development of standard Energy Performance Contract (EPC) contracts and technology-specific baseline. To ensure financial support for the ESCO market, the measure focuses on securing cooperation agreements with relevant stakeholders from the public and private sectors. Capacity building initiatives are also a key aspect, targeting ESCOs, energy companies, banks, public institutions, and other private stakeholders. Training and certification programs will be offered to engineers, auditors, and energy consultants, focusing on baseline development, and measurement and verification (M&V) techniques.
Measure Cost	Not available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• Roadmap for ESCO market development and growth • Progress monitoring of ESCO market development roadmap. • Issuing standard Energy Performance Contract (EPC) contracts and ESCO Licensing scheme. • Quantification of energy savings achieved by implementing energy efficiency measures. • Evaluation of ESCO pilot projects through measurement and verification (M&V) measures. • Number of graduates of the capacity building program.

Measure - ID	C9.1
Title	**Developing Energy Performance Contracts (EPCs) for the Industrial Sector**
Sector	Cross Sector, Industry
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
Stakeholders Involved	Jordan Standards and Metrological Organization (JSMO), Jordan Chamber of Industry (JCI)
Target Group	Industrial sector entities, Energy Service Companies (ESCOs)
Objective	• Introduce EPC as a new contracting mechanism to scale up energy efficiency projects. • Foster ESCO market development in the industrial sector • Reduce energy consumption through EPC projects in industry. • Decrease reliance on public subsidies for private sector energy efficiency.
Description	Energy Performance Contracts (EPCs) offer a means to reduce financial risks, providing protection to parties involved in energy services. The measure will introduce EPC to the industrial sector as an innovative tool to enhance contractual relationships between energy consumers and ESCOs. However, the industrial sector will lay the foundation for EPC contracts practice to be extended to other sectors. The development of EPC involves four main phases: • EPC model and legal framework concept • Draft legal framework and EPC template for the industrial sector • Pilot projects (up to 10) in the industrial sector based on the developed EPC model and template. • Development of EPC based on the feedback from pilot. The development of the EPC will involve analysis of best practice and implementation to conclude lessons learnt. All phases will include consultation with relevant stakeholders in the energy market. Pilot EPC based projects will be launched under the supervision of experts to assess feasibility and monitor performance. Awareness and capacity-building activities will be provided to ESCOs, the finance sector, and energy managers in the industry to facilitate their understanding and adoption of EPC. Information on EPCs, including their fundamental principles, advantages, and other relevant details, will be made accessible to ensure widespread knowledge among relevant stakeholders.
Measure Cost	• 75K to 120K JOD estimated cost for EPC developing EPC model and template, and stakeholder consultation, training and information events. • 7 million JOD is the estimated cost for the EPC pilot project (up to 10) and their measurement and verification (M&V).
Source of Funding	Funding is not secured.
Cost / Energy Saved	49.7 JOD/MWh
Monitoring and Quantification of Impact	• EPC model and contract template for industrial sector. • Consultation process events and results • Number of signed EPCs pilot projects in the industrial sector • The expected and actual energy savings and emission reduction (CO_2 equivalent) of the pilot EPC projects resulting from the implementation. • Evaluation and Feedback from the EPC pilot projects in the industrial sector.

Measure - ID	C10
Title	**Study on Tax and Customs Exemptions for Energy Efficiency Solutions**
Sector	Cross Sectors
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Ministry of Finance (MOF), Jordan Customs, Income and Sale Tax Department (ISTD)
Stakeholders Involved	Jordan Standards and Metrology Organization (JSMO), Chambers of Commerce, Jordan Construction Contractors Association, EDAMA, Renewable Energy Establishments Society (REES).
Target Group	Building and Household Sector, Private Sector, Service Sector
Objective	• To assess the existing tax and customs targeted exemptions for the energy efficiency systems, products, and services in terms of the impact on the affordability and accessibility of energy-efficient solutions for end users. • Develop a scheme that offers incentives to individuals and businesses across various sectors to promote the adoption of systems and appliances with higher energy efficiencies.
Description	The collaborative initiative aimed at evaluating the effectiveness and impact of current tax and customs exemptions pertaining to energy-efficient systems and products for end users. It seeks to ascertain how these exemptions influence the accessibility and affordability of energy-efficient solutions. At its core, the project aims to design a structured framework that provides incentives to both individuals and businesses spanning various sectors. These incentives are intended to stimulate the widespread adoption of energy-efficient appliances and systems. A thorough examination of existing tax laws and regulations, coupled with an in-depth analysis of the tax exemption bylaw laid out by MEMR will be conducted, to draw insights into the effectiveness of the current tax and customs exemptions, followed by the formulation of an innovative incentive scheme, tailored to cater the diverse needs of both individuals and businesses. Through planning and design, this scheme aims to offer tangible benefits, thereby motivating a larger segment to embrace energy-efficient solutions. In conducting this study, the attention will be directed toward assessing the fiscal implications associated with the proposed incentive scheme. The analysis will delve into potential revenue impacts, economic viability, and alignment with the broader financial landscape. the most effective methodologies for rolling out the incentives across diverse sectors will be included in the study.
Measure Cost	Not Available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• The assessment of tax exemptions and development of incentive schemes. • Legal recommendations and implementation methodologies.

Measure - ID	C10.1
Title	**Establishment of a Database/Registration Platform for Energy-Efficient Electrical Appliances**
Sector	Cross Sector
Timeline	2024-2025
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Customs Department, Income and Sales Tax Department (ISTD)
Stakeholders Involved	Jordan Standards and Metrology Organization (JSMO), Jordan Chamber of Industry (JCI), Jordan Chamber of Trade (JCT).
Target Group	Electrical Appliances Owners (Manufacturers, Importers, Distributer Users)
Objective	• Establish a comprehensive database that tracks quantities of energy-saving devices available in the local market and utilize it to disseminate reliable information about energy-saving devices, empowering consumers to make informed choices. • Automate the registration process for energy-saving electrical appliances. • Support the entry of the most efficient devices while predicting and minimizing electrical waste.
Description	The overarching objective of this project is to establish a comprehensive and integrated database or registration system compatible with the exemption bylaw that is dedicated to managing energy-efficient electrical appliances. To achieve this goal, the project involves the development of a centralized database that serves as a repository for detailed product information, encompassing specifications, energy efficiency metrics, compliance data, and other relevant aspects. verification procedures are put in place to ensure the accuracy and reliability of the data submitted by manufacturers and suppliers. An integral side of this effort involves standardizing and categorizing appliances based on their energy efficiency levels. This categorization fosters easy comparison and identification of high-efficiency products, simplifying the decision-making process for both consumers and industry stakeholders. Crucially, the project's success hinges on the integration of this database with the existing exemptions platform. This integration not only streamlines the process of evaluating product eligibility for incentives or exemptions but also automates the compatibility checks to ascertain that only qualified products access these benefits. The project envisions a user-friendly interface that facilitates efficient data submission and updates for manufacturers, suppliers, and authorities. Regular updates are incorporated to ensure the database remains up to date, reflecting new market entrants and evolving efficiency standards. The project's outcomes are multifaceted. By providing a streamlined and transparent mechanism for the registration, verification, and management of energy-efficient appliances, the initiative facilitates informed consumer choices, promotes the adoption of high-efficiency technologies, and contributes to energy savings.
Measure Cost	Not Available
Source of Funding	Funding is not secured
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• Database design and integration with exemption platform.

Measure - ID	C11
Title	**Energy Efficiency in the Power Sector**
Sector	Cross sector
Timeline	2022-2025
Implementing Agency	Energy and Mineral Regulatory Commission (EMRC)
Stakeholders Involved	Ministry of Energy and Mineral Resources (MEMR), Companies in the Power sector (Generation, Transmission and Distributions)
Target Group	Power sector
Objective	• Enhancing energy efficiency in the power sector by improving generation, transmission, and distribution, optimizing power generation, setting performance standards for equipment. • Implementing energy management systems and identifying effective energy-saving measures.
Description	This measure aligns with updated Arab Energy Efficiency Guidelines, focusing on integrating energy efficiency into power generation, transmission, and distribution via National Energy Efficiency Action Plans. The goal is to enhance the power sector's efficiency through strategies like optimized transmission, improved generation, developed distribution systems, and energy management systems. For this reason, Jordan is gradually transforming into smart grids networking, by incorporating smart meters to enhance energy efficiency and data monitoring in the power sector. These smart meters enable real-time consumption tracking, promoting efficient energy use and conservation. The implementation of smart meters can be beneficial for the utility companies, such as improved billing accuracy, and the ability to detect and respond to outages more quickly, which can lead to increased energy efficiency, and reduced losses. Additionally, introducing storage projects into the power system is an essential step to avoid the disruption of the power generated and transmitted that can negatively affect the efficiency of the grid. The measure also covers diverse areas, such as studying the impact of expanding renewable energy integration on systems, grid stability, and installing energy storage systems.
Measure Cost	Not Available
Source of Funding	Through energy savings achieved mechanisms
Cost / Energy Saved	Not Available
Monitoring and Quantification of Impact	• Annual report of the sector efficiency. • Collect relevant data on various aspects of the study, such as efficiency improvements, cost analysis, system stability, and renewable energy impact.

Measure - ID	C11.1
Measure	**Study for Power factor management in the Private Sector including industries**
Sector	Cross sector
Timeline	2024-2025
Implementing agency	Ministry for Energy and Mineral Resources (MEMR), National Electricity Company (NEPCO) Electricity distribution companies (JEPCO, IDECO, EDCO), Energy and Mineral Regulatory Commission (EMRC)
Stakeholders involved	Jordan Chamber of Industry (JCI), Jordan Standards and Metrology Organization (JSMO), National Energy Research Center (NERC).
Target group	Private sector; especially industrial facilities
Objective	• Explore the feasibility of introducing a bonus-malus billing system for power factor in Jordan. • Perform cost-benefit evaluation of the adoption of the billing system.
Description	This study represents a comprehensive exploration of the potential introduction of a bonus-malus approach to power factor billing in Jordan's electricity grid. This billing system holds the promise of significantly enhancing the overall power factor of the grid, thereby reducing resistive losses, including transmission and distribution losses. This, in turn, can lead to improved energy efficiency and sustainability. The project's success relies on extensive stakeholder involvement, ensuring that the perspectives and needs of all relevant parties are considered. The study includes several critical components, starting with a detailed analysis of the feasibility and applicability of a bonus-malus billing system for power factor in Jordan. Numerical indicators will be calculated to quantify the expected benefits of implementing such a billing system, including energy savings and reductions in carbon dioxide emissions. A comprehensive cost-benefit analysis will be conducted to assess the financial viability and long-term sustainability of the proposed system. The study will result in an in-depth assessment of the current power factor of the electricity grid, based on real measurements spanning approximately a year. With these measurements as a foundation, and by making reasonable assumptions, the study will provide a quantifiable assessment of the advantages associated with implementing a bonus-malus billing system in Jordan. Ultimately, the project seeks to promote energy efficiency, reduce environmental impact, and enhance the sustainability of the electricity grid in the region
Measure cost	Costs for study and additional stakeholder consultation; approx.300k JOD
Source of funding	Funding is not secured
Cost / Energy Saved	Not Available
Monitoring and quantification of impact	• Study publication, including indicators that quantify the expected benefits of the billing system, such as energy savings, reduced transmission and distribution losses, and decreased carbon dioxide emissions.

Measure - ID	C11.2
Measure	**Minimum Performance Standards for Transformers**
Sector	Cross Sector, Energy
Timeline	2024-2025
Implementing Agency	National Electricity Company (NEPCO), Electricity distribution companies (JEPCO, IDECO, EDCO), Energy and Mineral Regulatory Commission (EMRC).
Stakeholders Involved	Jordan Standards and Metrology Organization (JSMO), National Energy Research Center (NERC).
Target group	Manufacturers, utilities and grid operators.
Objective	• Prioritize energy efficiency in transformers. By implementing MEPS for transformers which aims to reduce energy losses during power transmission and distribution
Description	The implementation of minimum performance standards for transformers is a crucial project aimed at improving the efficiency, reliability, and environmental sustainability of these electrical components. These standards establish specific technical requirements that transformers must meet to be considered compliant. By doing so, they achieve several key objectives. Firstly, these standards prioritize energy efficiency, ensuring that transformers operate with minimal energy losses during power transmission and distribution. This not only results in significant energy savings but also reduces greenhouse gas emissions associated with electricity generation. Secondly, minimum performance standards enhance transformer reliability and safety, reducing the likelihood of failures and outages. This reliability is essential for maintaining the stability of electrical grids and preventing disruptions. Furthermore, these standards contribute to environmental sustainability by promoting the use of energy-efficient transformers, which in turn lowers carbon emissions and other pollutants. In addition to the environmental benefits, more efficient transformers translate into cost savings for both electricity providers and consumers, as less energy is wasted.
Measure Cost	Costs for study and additional stakeholder consultation; approx. 200-300k JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	Not Applicable
Monitoring and Quantification of Impact	• The number of involved facilities. • MEPs for transformers study publication.

Measure - ID	C12
Title	**Energy Management Systems (EMS)**
Sector	Public, Commercial
Timeline	2024-2026
Implementing Agency	Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable and Energy Efficiency Fund (JREEEF).
Stakeholders Involved	Ministry of Public Works and Housing (MoPWH), Jordanian National Building Council (JNBC), Energy Service Companies (ESCOs), chambers and associations of commercial sector, training providers.
Target Group	Public and commercial entities
Objective	• Increase the number of trained energy auditors. • Increase the number of audits, certified ISO 50001 factories, and EMS implementation in Jordan. • Increase and verify the quality of audits.
Description	The project seeks to drive tangible and lasting impacts through targeted training programs and collaborations with international development partners, the project aims to amplify the ranks of proficient energy auditors, equipping them with the skills necessary to conduct rigorous assessments and identify areas for efficiency improvements. The project envisions a landscape with increased energy audits and Energy Management System (EMS) implementations across commercial and public sectors targeting 10 pilot projects in the first phase, thereby generating a notable reduction in energy consumption. Integral to its success, the project is committed to enhancing audit quality and accuracy. This measure also includes the refinement of regulatory frameworks to create an enabling environment for energy efficiency initiatives. Moreover, the project's scope includes the establishment of a certification process for new auditing professionals, promoting a higher level of competence and credibility. A central component of the initiative involves setting up a robust quality assurance and monitoring system for energy audits, ensuring their effectiveness and alignment with established benchmarks.
Measure Cost	0.13 million JOD
Source of Funding	Funding is not secured
Cost / Energy Saved	81.3 JOD/MWh
Monitoring and Quantification of Impact	• Key performance indicators (KPIs) to quantitatively track progress for the following aspects: number of trained auditors, number of audits and installed EMS, frequency of audits, improvements in energy efficiency, accreditation rates, and audit quality scores, post-training evaluations. • Evaluate energy efficiency improvements in terms of reduction in energy consumption, and environmental impact.

Measure - ID	C13
Measure	**Training courses in Energy Efficiency**
Sector	Cross-sector
Timeline	Q2/2024 – Q4/2026
Implementing Agency	German Energy Academy (GEA) with the support of GIZ Jordan (IKI-project)
Stakeholders Involved	GEA, HTU, GJU, ACI, MEMR, JREEEF, GIZ
Target group	Fresh engineering graduates, technicians, energy professionals
Objective	• Provide technical and practical training on energy efficiency topics to qualify engineers and technicians to work in this domain • Building partnership programs with the industry and ESCOs to provide job opportunities to GEA trainees • Upskilling professionals and decision-makers in industrial sector with topics related to energy efficiency

Description	• Since its inception, the German Energy Academy in Jordan has focused on Energy efficiency as main stream of trainings provided by the academy.
	• The academy developed a comprehensive Energy Efficiency course, with 240 hours of practical and theoretical training; this course has been accredited by the German-Arab Chamber of Industry and commerce, and has been conducted so far 4 times.
	• Over 50 young energy professionals have attended this course and they are now certified as Energy Efficiency Professionals.
	• Additionally, GEA has developed special training on energy efficiency in Industrial motors, and offered the course for around 35 engineers from the industry.
	• In the next Phase II, GEA would develop new course related to energy efficiency, which include:
	  • Energy Efficiency in Water application
	  • Financing of Energy Efficiency projects
	  • Facility Management with Energy Efficiency
	  • Lead Auditor ISO50001
	• In the next Phase, GEA aims to train and certify over 500 professionals in Energy efficiency topics and provide additional services to its industrial partners including energy auditing and measuring and verification of energy management.

Measure Cost	Not applicable
Source of Funding	Funding request is submitted to BMWK in Germany
Cost / Energy Saved	Not applicable
Monitoring and Quantification of Impact	• In the next Phase, GEA aims to train and certify over 500 professionals in Energy efficiency topics. • GEA would support its trainees by providing them with job opportunities through its network in the industry. • Additionally, GEA aims to provide additional services to its industrial partners including energy auditing and measuring and verification of energy management.

Measure - ID	C14
Title	**Capacity Building for Resilience and Environmental adaptation through the Circular Economy: Green innovations in Refugee-hosting Communities and the Azraq Camp – (Barakeh).**
Sector	Cross-sectoral
Timeline	July 2023 – December 2025
Implementing Agency	Royal Scientific Society (RSS)
Stakeholders Involved	The Hashemite University (HU)
Target Group	Industry, Agriculture, Municipalities, Households, Civil Society Associations, and Students in refugee-hosting communities and the Azraq Camp.
Objective	• Improve resource efficiency across various sectors, shifting behaviours towards efficient and environmentally friendly resource practices, and supporting the transition towards a circular economy.
Description	The project activities are implemented collaboratively with relevant stakeholders, and the target group is selected based on specific criteria, including opportunities for resource consumption savings and support in implementing conservation measures. Project Activities: • Implementing cleaner production and resource efficiency methodologies in 30 small and medium-sized industrial facilities in the north. • Implementing resource efficiency assessment and practices in 100 houses in Amman, Azraq, Ramtha, and Karak. • Developing Sustainable Energy and Climate Action Plans in the municipalities of Al-Giza and Azraq. • Training industrial facility employees and service providers on cleaner production and resource efficiency methodologies, and training homeowners and civil society associations on resource efficiency assessment in houses. • Conducting awareness workshops and training programs on resource efficiency, and collaborating with Hashemite University to develop a training program for students that includes the concept and strategies of resource efficiency.
Measure Cost	
Source of Funding	European Union
Cost / Energy Saved	Not quantified.
Monitoring and Quantification of Impact	• Raising the efficiency of resource consumption in facilities. • Raise awareness and training on strategies and practices to improve resource efficiency (energy, water and materials) in various sectors.