



Executive Summary

National Energy Efficiency Action Plan (2018-2020)

Based on the decision of the Council of Ministers in its meeting held on 15/1/2018 and HE the Prime Ministers letter No. 58/11/1/3619 dated 18/1/2018, which was based on the recommendation of the Economic Development Ministerial Committee issued by its meeting held on 8/1/2018 The National Energy Efficiency Action Plan for the years (2018-2020) was adopted.

In order to achieve the strategic objectives of the energy sector in limiting energy consumption increase in all sectors and improving energy efficiency by 20% until 2020, the Jordanian government has taken many measures to develop the regulatory and legislative framework through the issuance of several laws and legislations including:

1. The Renewable Energy and Energy Efficiency Law No. (13) for the year 2012 and its amendments No. (33) For year 2014 .
2. 2By-law No. (13) of 2015 of Provisions and Conditions of Exempting Systems of Renewable Energy Sources and its Devices and Equipment and also 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 No. (13) of 2012
3. The establishment of the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) according article (12) of the Renewable Energy and Energy Efficiency Law No. (13) of 2012
4. The Bylaw No. (73) For year 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 year 2012.
5. Developed medium and short term national plans for energy efficiency to achieve this strategic objective in line with the recommendations of the Arab Economic and Social Development Summit (Kuwait 2009), which declared the necessity of raising the standard of living of Arab citizens and enhancing Arab cooperation in the field of energy, especially in improving their efficiency, rationalizing its use as a means to achieve sustainable development, the Arab Ministerial Council of Electricity (AMCE) in 2010 adopted the Arab EE Guideline which was developed based on the European Energy Service Directive of 2006 (Directive 2006/32/EC)2010.

Based on the above regional development, through the Ministry of Energy and Mineral Resources, Jordan has prepared the first National Energy Efficiency Plan (NEEAP) in 2011 for the years 2012-2014. This National Energy Efficiency Plan is considered as a national

ملخص تنفيذي

الخطة الوطنية لكفاءة الطاقة (2020-2018)

استناداً الى قرار مجلس الوزراء في جلسته المنعقدة بتاريخ 15/1/2018 وكتاب دولة رئيس الوزراء رقم 3619/1/11/58 تاريخ 18/1/2018 والذي تم بناءً على توصية لجنة التنمية الاقتصادية الصادرة عن جلستها المنعقدة بتاريخ 8/1/2018 تم اعتماد الخطة الوطنية لكفاءة الطاقة للأعوام (2018-2020).

تحقيقاً للأهداف الاستراتيجية لقطاع الطاقة في تخفيض استهلاك الطاقة في كافة القطاعات وتحسين كفاءة الطاقة بنسبة 20% حتى عام 2020، قامت وزارة الطاقة والثروة المعدنية باتخاذ العديد من الاجراءات لتطوير الاطار التنظيمي والتشريعي في هذا المجال ومن أهم هذه الاجراءات هي :

1. اصدار قانون (الطاقة المتجددة وترشيد الطاقة رقم (13) لسنة 2012 وتعديلاته لعام 2014).
2. إصدار نظام رقم (13) لسنة 2015 (أحكام وشروط اغفاء نظم مصادر الطاقة المتجددة وأجهزتها ومعداتها وترشيد استهلاك الطاقة ومدخلات انتاجها من الرسوم الجمركية واخضاعها للضريبة العامة على المبيعات بنسبة أو بمقدار (صفر) صادر بمقتضى الفقرة (ج) من المادة رقم (11) من قانون (الطاقة المتجددة وترشيد الطاقة) رقم (13) لسنة 2012 .
3. انشاء صندوق تشجيع الطاقة المتجددة وترشيد الطاقة بموجب المادة رقم (12) من قانون (الطاقة المتجددة وترشيد الطاقة) رقم (13) لسنة 2012 .
4. إصدار نظام رقم (73) لعام 2012 (نظام تنظيم اجراءات ووسائل ترشيد الطاقة وتحسين كفاءتها) صادر بمقتضى المادة رقم (18) من قانون (الطاقة المتجددة وترشيد الطاقة) رقم (13) لسنة 2012.
5. البدء بوضع الخطة الوطنية لكفاءة الطاقة متوسطة وقصيرة الامد لتحقيق الهدف الاستراتيجي، وذلك واستناداً إلى توصيات قمة التنمية الاقتصادية والاجتماعية العربية (الكويت 2009) والتي أعلنت ضرورة رفع مستوى معيشة المواطن العربي وتعزيز التعاون العربي في مجال الطاقة، ولا سيما في تحسين كفاءتها، وترشيد استخدامها كوسيلة لتحقيق التنمية المستدامة، اعتمد مجلس الوزراء العربي للكهرباء الاطار الاسترشادي العربي لتحسين كفاءة الطاقة الكهربائية في عام 2010، وقد تم تطوير هذا الاطار بالإعتماد على أساس التوجيه الأوروبي European Directive 2006/32/EC 2006 on energy end-use efficiency and energy services.

وعليه قام الاردن من خلال وزارة الطاقة والثروة المعدنية بإعداد اول خطة وطنية لكفاءة الطاقة NEEAP في عام 2011 للأعوام (2012-2014)، حيث تعتبر هذه الخطة الوطنية لكفاءة الطاقة وثيقة وطنية وخارطة طريق تتضمن كافة



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document and a road map that includes all the necessary programs and projects to be implemented in cooperation with concerned ministries and stakeholders .

The first national energy efficiency plan aimed at reducing 7.6% of electricity consumption in 2014 to approximately 806 GWh through the implementation of 11 sectorial measures (household, commercial, service, industrial, water pumping, street lighting) The percentage of completion in implementing this plan reached 45% (361 GWh)

The National Energy Efficiency Plan was evaluated by the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) in 2015, which was completed through the REEEII-TA Technical Assistance Program (REEEII-TA) funded by the European Union at the beginning of 2017. The completion rate for this plan was 45% resulting in 361 GWh over the total planned of 806 GWh.

Accordingly and based on paragraph (a) of Article (3) of Regulation No. (73) for the year 2012 (Regulating Procedures and Means of Conserving Energy and Improving Its Efficiency) issued under Article (18) of the Renewable Energy and Energy Conservation Law (No. 13) for the year 2012 for the purpose of rationalizing energy consumption and improving the efficiency of its use, which states that "The Ministry works in cooperation and coordination with the relevant entities to set the general policy of energy conservation, improvement of its efficiency, and submit it to the cabinet for endorsement and the development the plans and programs necessary for its implementation", the second national energy efficiency plan for the years 2017-2020 was prepared through the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) in the Ministry of Energy and Mineral Resources with the support from the EU-funded Technical Assistance to the Renewable Energy and Energy Efficiency Program in Jordan (REEEII TA) in consultation and coordination with relevant ministries and entities.

The second national energy efficiency action plan aims to reduce the equivalent of (2000) GWH during the period (2017-2020) a reduction of 11291 GWH which is 17.6% from in base year calculated average consumption during the years (2006-2010). As a result, GHG emissions will be reduced by the equivalent 962 ktCO₂ / year contributing to achieving the target indicators for the obligations of the Hashemite Kingdom of Jordan towards climate change and international agreements in this regard.

The National Energy Efficiency Plan for the years 2017-2020 will be implemented through 26 sectorial measures (domestic, commercial and services, industrial, water pumping, street lighting and transportation), and (9) cross-cutting measures. Upon the successful completion of the 2nd plan, Jordan will achieve its strategic target of in reducing energy consumption by 20% in 2020 .

According to paragraph (a) of Article (3) of Regulation No.

البرامج والمشاريع والاجراءات اللازمة والواجب اتخاذها ومتابعة تنفيذها لتحقيق كافة المؤشرات المستهدفة بالتعاون مع كافة الجهات المعنية.

استهدفت الخطة الوطنية لكفاءة الطاقة الاولى تخفيض 7.6% من استهلاك الطاقة الكهربائية لعام 2014 وبما يقارب (806) جيجاواط ساعة وذلك من خلال تنفيذ (11) اجراء measure موزعه على القطاعات (منزلي، تجاري وخدمي، صناعي، ضخ المياه، انارة الشوارع).

تم تقييم الخطة الوطنية لكفاءة الطاقة من خلال المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة RCREEE في عام 2015 والذي تم اكتماله من خلال برنامج المساعدة الفنية لقطاع الطاقة المتجددة وترشيد الطاقة REEEII-TA الممول من الاتحاد الأوروبي في بداية عام 2017 حيث وصلت نسبة الانجاز في تنفيذ هذه الخطة الى 45%، (361 GWh over the total of 806 GWh) .

وبناءً على ذلك واستناداً الى الفقرة (أ) من المادة رقم (3) من نظام رقم (73) لعام 2012 (نظام تنظيم اجراءات ووسائل ترشيد الطاقة وتحسين كفاءتها) الصادر بمقتضى المادة رقم (18) من قانون (الطاقة المتجددة وترشيد الطاقة) رقم (13) لسنة 2012 لغايات ترشيد استهلاك الطاقة وتحسين كفاءتها استخداماً والتي تنص على "تعمل الوزارة بالتعاون والتنسيق مع الجهات المختصة على وضع السياسة العامة لترشيد استهلاك الطاقة وتحسين كفاءتها ورفعها الى مجلس الوزراء لإقرارها ووضع الخطط والبرامج اللازمة لتنفيذها"؛ تم إعداد الخطة الوطنية لكفاءة الطاقة الثانية للأعوام (2017-2020) وذلك من خلال صندوق تشجيع الطاقة المتجددة وترشيد الطاقة في وزارة الطاقة والثروة المعدنية JREEEF وبالتعاون برنامج المساعدة الفنية لقطاع الطاقة المتجددة وترشيد الطاقة REEEII-TA الممول من الاتحاد الأوروبي وبعد الرجوع الى كافة الجهات المعنية بتنفيذها وعقد عدة جلسات تشاورية معهم.

تستهدف الخطة الوطنية لكفاءة الطاقة الثانية تخفيض ما يعادل (2000) جيجاواط ساعه خلال الفترة (2017-2020) وذلك بالرجوع الى متوسط الاستهلاك خلال الأعوام (2010-2006) كسنة اساس والتي تبلغ (11291) جيجاواط ساعه وبنسبة تخفيض تصل الى 17.6% ، كما سيتم تخفيض انبعاثات غازات الدفينة GHG بما يعادل (962 CO₂ emission reduction) ktCO₂/year (by 2020) كيلوطن من انبعاثات غاز ثاني اكسيد الكربون سنوياً؛ وهذا سوف يساهم في تحقيق المؤشرات المستهدفة للالتزامات المترتبة على المملكة الأردنية الهاشمية تجاه ظاهرة التغير المناخي والاتفاقات الدولية بهذا الخصوص.

سيتم تنفيذ هذه الخطة الوطنية لكفاءة الطاقة للأعوام (2017-2020) من خلال (26) اجراء والتي تغطي القطاعات (المنزلي، التجاري والخدمات، الصناعي، ضخ المياه، انارة الشوارع وقطاع النقل) بالإضافة الى (8) اجراءات تتقاطع بين هذه القطاعات، وإذا تم اضافة ما تم تحقيقه في الخطة الوطنية الاولى من تخفيض استهلاك الطاقة (361) جيجاواط ساعة سيتم الوصول الى المؤشر المستهدف في الاستراتيجية الوطنية لقطاع الطاقة في تخفيض استهلاك الطاقة بنسبة 20% في عام 2020.



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(73) for the year 2012 (Regulating Procedures and Means of Conserving Energy and Improving Its Efficiency) issued under Article (18) of the Renewable Energy and Energy Efficiency Law No. (13) for the year 2012 which states that "The Ministry works in cooperation and coordination with the relevant entities to set the general policy of energy conservation, improvement of its efficiency, and submit it to the cabinet for endorsement and the development the plans and programs necessary for its implementation", the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) in the Ministry of Energy and Mineral Resources will follow up on evaluating the implementation of the plan in a consultative way with all relevant entities.

واستناداً الى الفقرة (أ) من المادة رقم (3) من نظام رقم (73) لعام 2012 (نظام تنظيم اجراءات ووسائل ترشيد الطاقة وتحسين كفاءتها) الصادر بمقتضى المادة رقم (18) من قانون (الطاقة المتجددة وترشيد الطاقة) رقم (13) لسنة 2012 لغايات ترشيد استهلاك الطاقة وتحسين كفاءتها استخدامها والتي تنص على "تعمل الوزارة بالتعاون والتنسيق مع الجهات المختصة على وضع السياسة العامة لترشيد استهلاك الطاقة وتحسين كفاءتها ورفعها الى مجلس الوزراء لإقرارها ووضع الخطط والبرامج اللازمة لتنفيذها" فسوف يقوم صندوق تشجيع الطاقة المتجددة وترشيد الطاقة في وزارة الطاقة والثروة المعدنية بمتابعة وتقييم تنفيذ هذه الخطة وبشكل تشاركي مع كافة الجهات المعنية.



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Distribution of EE Measures based on NEEAP 2017–2020

Table 1: Summary of EE measures in residential sector

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE Working Group	Source of Funding
1	Replacement incandescent lamps with LED for low and medium households income classes (<600 kWh/month)	1 million LED targeting 250000 consumers	2017-2020	155	10	12	MEMR/JREEEF	JREEEF	JREEEF & Households
2	Enforcement of Energy Label and standards program for 4 home appliances	Air conditioning - Refrigerators - Freezers - W machines	2017-2020	400	NA	21	JSMO	Quality control & assurance of products & services	NA
3	EE building codes enforcement in residential sector (just insulation)	About 66000 new households during the next 5 years.	2017-2020	401	259	75	MoPWH/JNBC, Municipalities	Buildings	NA
4	Program for roof insulation of existing building in residential sector	15000 houses with around 2 million m ² of roof	2017-2020	41	32	7	MEMR/JREEEF	JREEEF	JREEEF, and donors (still NA)
Total				998	301	116			



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Table 2: Summary of EE measures in commercial and Services sector

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE WG	Source of Funding
5	Jordan public building energy efficiency program	Government program of public building retrofitting	2015-2017	36	12	7	MoPWH	Buildings	Loan from KfW of 15 million Euro
6	Replacement of Fluorescent Tubes in public buildings	80,000 of 10-watt Tube- LED Lamps	2017-2020	2	1	1	MEMR, MoPWH, Sector Ministries..	Buildings	Public Budget
7	Energy efficiency in health centers	300 to 400 small and medium hospitals in all Jordan.	2017-2020	12	5	2	JREEEF	JREEEF	JREEEF, commercial banks and health sector
8	Replacement of Fluorescent Tubes in commercial buildings by LEDs	Replacement of 250.000 units of Fluorescent Tubes 4x18 watt with LED 60 cm Tubes.	2017-2020	66	15	10	Chamber of Commerce, MEMR/JREEEF & NERC	JREEEF	NA
9	Energy efficiency in existing small and medium hotels	100 to 120 small and medium hotels in all Jordan.	2017-2020	11	5	2	JREEEF	JREEEF	JREEEF, Hotels, and donors
10	EE building codes enforcement in tertiary sector (Just insulation)	About 5700 new units during the next 5 years.	2017-2020	249	95	19	MoPWH/JNBC, Municipalities & developers	Buildings	Governmental of Public Buildings, private sector for private buildings & Banks
	Total			376	133	41			



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Table 3: Summary of EE measures in industrial sector (1project)

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE WG	
11	EE program in industrial Sector	Energy Efficiency measures implementation 50 industries annually	2017-2020	383	105	53	JREEEF, Chamber of Industry, Industries, Energy Auditors, NERC	JREEEF	JREEEF, Banking Sector, Self-financing for industries
	Total			383	105	53			



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Table 4: Summary of EE measures in water pumping sector (11 projects)

No	Measures	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE WG	Source of Funding
12	EE for Wala-Lib pump operations outsourcing	2015-2020	3.6	0.6	0.3	MoWIr	Water	GIZ / EBRD
13	WWTP Wadi Shalala	2017-2020	3.5	45	0.3	MoWIr	Water	KfW + Water Sector
14	Energy Efficiency Program I	2018-2020	34.8	25.6	3.3	MoWIr	Water	KfW + Budget Support
15	WWTP Irbid Central+ Wadi Arab Digesters	2019-2020	57.1	11.3	5.4	MoWIr	Water	KfW + Budget Support
16	Energy Efficiency Program II	2020	11.8	19.5	1.1	MoWIr	Water	KfW + Budget Support
17	Improving EE in water supply/ Regular energy Audits	2018-2020	4	2.3	0.4	MoWIr	Water	GiZ + Budget support
18	Aqeb Conveyor Project/ Gravity supply Mafraq area	2018-2020	5.6	2.3	0.5	MoWIr	Water	KfW + Budget Support
19	EE for Baqorieh pumping station	2015-2020	1.5	0.6	0.1	MoWIr	Water	KfW + Budget Support
20	EE at Zarqa Governorate pumping stations	2013-2018	8.7	12	0.8	WAJ	Water	JICA + Public funding
21	Replacement of 25 pumps for Zara Ma'en pumping stations	2019-2020	14.9	16.3	1.4	WAJ	Water	USAID
22	EE at Zai pumping station	2018-2020	17.7	5.6	1.7	WAJ	Water	NA
	Total		163	141	15.3			



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Table 5: Summary of EE measures in street lighting

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE Working Group	Source of Funding
23	Replacement of Mercury lamps by efficient lamps and use Automatic street lighting controls and voltage regulators	The project includes a replacement of 230,137 units of mercury lamps of 125 watt with 70-watt high pressure sodium.	2017-2020	55	11	4	MoMa & Municipalities	MoMA	Municipalities and Multi Donors
	Total			55	11	4			



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Table 6: Summary of EE measures in municipal sector

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE WG	Source of Funding
24	Improve the energy performance of Al-Karak municipality Buildings to reduce energy consumption and its associated costs.		2017-2020	0.8	0.08	0.16	RSS/NERC	RSS/NERC	SIDA
25	Reduce the consumption of street lighting for Al-Karak Municipality.		2017-2020	0.055	0.03	0.065	RSS/NERC	RSS/NERC	SIDA
	Total			0.9	0.11	0.225			



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Table 7: EE measure in Transport Sector

No	Measures	Description	Period	Electricity saving (GWh)	Program Cost (MJD)	Bill saving for users (MJD)	Implementing Agency	EE Working Group	Source of Funding
26		<p>To develop the needed EE in the transport sector strategies and plans with focus on:</p> <ul style="list-style-type: none"> - Developing a detailed action plan for the potential EE projects. - Performing Carbon Reduction Studies for the highest consumptions areas. -Developing Master EE Strategy for the whole sector to facilitate funds extraction. - Implementing Pilot EE projects. - Developing a transformation plan (hybrid & Electric vehicle replacements). - Developing transportation routes master plan to reduce the emissions. 					MoT, MEMR / JREEEF	Transport	EU funded REEEII TA+ needed additional support



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Table 8: Summary of main cross-cutting measures

No	Measures	Description	Implementing Agency	EE Working Group	Source of Funding
27	RE and EE Custom Duties and Sale Taxes exemption	On-going since 2014 and updated in 2015	MEMR, Custom Department & Sales Tax Department	MEMR	Public Budget
28	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)	Since May 2015	MEMR/JREEEF	JREEEF	Public Budget, Donors, Banks...
29	Energy Efficiency Buildings Codes (7 codes)	- 2 of them adopted in 2014 - All to be enforced starting in 2017	- MoPWH, MoMA & Municipalities	Buildings	Building Owners
30	European Commission- (REEE II) Program	2017-2020	MEMR	MEMR	EU
31	Minaret project	2017-2020	RSS/NERC	RSS/NERC	SIDA
32	CES-MED project	2014-2020	RSS/NERC	RSS/NERC	EU
33	SUDEP/Sahab project	2015-2017	NERC/RSS	RSS/NERC	EU
34	National Green Growth Plan-GGGI-	2017-2020	MoEn	MoEn	Public Budget, Beneficiaries, Donors and TA
35	Implementation of the Energy Conservation By-Law 73 of 2012	2017-2020	MEMR/JREEEF	JREEEF	EU funded REEEII TA+ needed additional support



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Glossary:

AMCE	Arab Ministerial Council of Electricity
CEMP	Certified Energy Management Professional
DSM	Demand Side Management
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EDCO	Electricity Distribution Company
EE	Energy Efficiency
EU	European Union
GHG	Greenhouse Gas
GIZ	German Agency for International Cooperation
GWH	Gigawatt Hour
IDECO	Irbid District Electricity Company
JEA	Jordan Engineers Association
JEPCO	Jordan Electric Power Company
JICA	Japan International Cooperation Agency
JNBC	Jordan National Building Council
JREEEF	Jordan Renewable Energy and Energy Efficiency Fund
JSMO	Jordan Standards and Metrology Organization
KfW	German Development Bank
ktCo2	kilo-tons carbon dioxide
kWh	kilowatt hour
LED	Light Emitting Diode
MEMR	Ministry of Energy and Mineral Resources
MJD	Million Jordan Dinars
MoEn	Ministry of Environment
MoMA	Ministry of Municipal Affairs
MoPWH	Ministry of Public Works and Housing
MOT	Ministry of Transport
MoWIr	Ministry of Water and Irrigation
NEEAP	National Energy Efficiency Action Plan
NERC	National Energy Research Centre
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RE	Renewable Energy
REEEII TA	Technical Assistance to the Renewable Energy and Energy Efficiency Programme in Jordan
RSS	Royal Scientific Society
SHAMCI	Solar Heating Arab Mark and Certification Initiative
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Program
USAID	U.S. Agency for International Development
WAJ	Water Authority of Jordan
WB	World Bank



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