

**Setting Lebanon's Electricity Sector
on a Sustainable Growth Path**

Policy Statement

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**LEBANESE REPUBLIC
MINISTRY OF ENERGY
AND WATER**

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Executive Summary

This national policy statement and plan to set Lebanon's electricity sector on a sustainable growth path adopts a pure technical approach, without any political or electoral prejudice. It rather entails practical, transparent and clear initiatives to reform the sector, absent which, the current dire situation limiting daily electricity supply to three hours will persist. Any delay in approving its terms and starting its implementation adds monthly losses amounting to US\$ 70 million approximately, or more than US\$ 800 million per year.

The reform plan is based on the Least Cost Generation Plan prepared by Électricité de France EDF in September 2021, and on "Lebanon Power Sector Emergency Action Plan" developed by World Bank in 2020. It also builds on policy papers and plans previously approved by the Council of Ministers. This plan prioritizes quick and efficient solutions to secure additional supply hours for residents in Lebanon, some already initiated over the last 5 months, i.e. as soon as the government was formed. Such initiatives include signing agreements with Jordan and Syria for the supply and wheeling of electricity from Jordan, finalizing terms of contract with Egypt, Jordan, and Syria for the supply and transportation/swap of natural gas from Egypt, awarding the Egyptian company TGS a contract for the repair of the Lebanese portion of the Arab gas pipeline (AGP) and issuing order to proceed the works, agreeing with the Iraqi government on the possibility of extending the term of the Iraqi fuel supply agreement while fixing the imported quantities at a minimum of 75,000 tons per month as well as fixing the delivery dates, coordinating and continuously communicating with the World Bank and its institutions, completing the environmental and social safeguards documents related to the AGP to fulfill one of the financing conditions for the gas imports from Egypt, in addition to taking other executive measures aimed at putting this sector on the path to recovery.

This plan will gradually and quickly increase supply of electricity, to achieve 24 hours per day within four years, it will put Electricité du Liban (EDL) on the path to financial recovery within two years, it will establish the Electricity Regulatory Authority (ERA), and will implement Public Private Partnerships (PPP) in the generation and distribution sectors.

The plan rests on the following main pillars:

- 1- Increasing supply hours while preparing to increase generation capacity on the grid.** In the first half of 2022, the plan entails providing 8-10 hours of electricity supply per day through electricity imports from Jordan and natural gas imports from Egypt. During this period, works will also include preparation of the Terms of Reference (TORs) for the construction of new power plants that will be commissioned at a later stage in accordance with the EDF Least Cost Generation Plan. In 2023, around 800 MW additional capacity will be secured by supplying gas to Zahrani power plant through a floating storage and regasification unit (FSRU), and adding temporary power capacity at the Deir Amar power plant site, to achieve a total generation capacity of approximately 2,000 megawatts (MW), providing 16-18 hours of electricity supply per day.
- 2- Increasing generation by commissioning three new power plants with the participation of the private sector.** The plan includes completion of the projects mentioned in the EDF Least Cost Generation Plan during the years 2024-2026, i.e. building three power plants with a

nominal capacity of 825 MW each, whereby the locations of these plants will be determined according to need and necessity, taking into consideration the environmental conditions, while locating one of the plants on the northern coast of Lebanon, using public financing (Special Drawing Rights (SDRs) or others) and/or PPPs (contracting under Power Purchase Agreements (PPA), or Engineering, Procurement, Construction and Financing agreements (EPC & Financing) or through other creative financing methods) and the decommissioning of the old Zouk and Jieh power plants. In addition, it entails building renewable energy power plants using PPPs and ensuring a 15% share of the energy mix from renewable energy sources by the end of 2026, with the aim of reaching 30% by 2030.

MoEW remains ready to adopt a faster timetable by preparing tender documents for the development of power plants and associated network upgrades, in accordance with the Least Cost Generation Plan and its relevant updates.

- 3- Improving performance of the network, reducing losses and enhancing collection** through a comprehensive plan covering installation of smart meters, restoring illegal connections removal campaigns escorted by the security forces and supported by serious political cover, enhancing collection, and promoting domiciliation of electricity bills. Immediate commitment from the public sector and international custodians of the displaced settlements and refugee camps to pay their due electricity bills is required, otherwise credit transfers, estimated at around US\$ 120 million would have to be secured to cover this cost for 2022. Moreover, the plan entails transitioning to a new and advanced PPP model for the distribution sector starting from the year 2023, following the expiry of the Distribution Service Provider (DSP) agreements.
- 4- Achieving financial sustainability** through implementing a new tariff, indexed to international oil price and USD exchange rate as per SAYRAFA platform, covering the cost as of 2023. New tariff will take effect in a gradual manner once daily supply hours are increased to 8-10 hours while ensuring cost recovery, and supporting with a special tariff limited income households consuming less than 500 kWh per month as well as relevant productive sectors. The new tariff will provide approximately 70% savings for moderate consumption households, compared to the cost of private generators.
- 5- Addressing the regulatory and legislative frameworks as soon as possible** including launching immediately the recruitment process of the ERA commissioners as per law 462/2002 and nominating them in compliance with international standards and in line with the roadmap proposed by the WB. In addition, a comprehensive review of law 462 will be conducted, a draft law (without precluding its application in its current version) specifying proposed amendments will be prepared and discussed with the ministerial committee, formed as per article 2 of CoM decision no. 1 dated February 25, 2022, prior to submitting it to CoM for review and adoption before elevation to Parliament for ratification. In addition, the newly developed Energy Conservation law and the Distributed Renewable Energy law will be ratified and the initiative to corporatize EDL to increase transparency in the sector will be rolled out.

Conditions for the successful implementation of the plan include the following main factors:

- Securing with Arab partners the arrival of gas from Egypt and electricity from Jordan through Syria, and the final approval from the international partners
- Commitment of all stakeholders, including ministries, institutions, military and security forces, each according to its responsibilities, to support the successful implementation of the plan
- Serious and diligent escort by the concerned parties to the illegal connections removal campaigns
- Security protection for substations, EDL and DSPs facilities and personnel as well as the Lebanese portion of the AGP
- Payment of due electricity bills by the public sector
- Metering the energy consumption of the displaced Syrians and the Palestinian refugees and collecting their corresponding bills
- Securing sustainable access to US dollars using SAYRAFA platform exchange rate to enable EDL to settle its financial dues in foreign currency
- Provision of public/private financing for the investments mentioned in the plan, along with all associated legislations as required

This ambitious and integrated plan considers all technical aspects and aims at a quick restoration of the sector's sustainability. It enhances the financial transparency of EDL and seeks to attract investments from the private sector. Moreover, it will sustainably provide electricity in 2025 and reduce the burden of the deficit on public treasury to finally eliminate it and achieve the desired sustainable development of the sector.

INTRODUCTION

This Policy Statement is underpinned by a long-term vision for the Electricity Sector and depicts a global framework including initiatives to reform the Sector. Its global objective is to overcome the deadlock where the country currently is, ensure a sustainable balance in the sector's fiscal budget and provide sustainable electricity to Lebanese inhabitants.

The plan laid out in this Policy Statement is significantly based on the World Bank report from 2020¹, the Least Cost Generation Plan by EDF issued in September 2021, and the previous Policy Papers for the Electricity Sector in Lebanon (June 2010 and March 2019 mainly) that were previously endorsed by the Council of Ministers.

The Ministry of Energy and Water (MoEW), and since the government had obtained confidence in September 2021, deployed significant efforts to both lay down the path towards a sustainable future for the electricity sector in Lebanon and address immediate problems.

The five-year horizon contemplated by the plan will see the electricity sector in Lebanon:

- Provide an affordable and reliable supply of electricity to the Lebanese inhabitants
- Contribute to fighting global warming by significantly scaling up electricity generation from renewable resources
- Be spearheaded by a restructured, streamlined, profitable Électricité du Liban (EDL)
- Encourage private sector participation under the supervision of an efficient regulatory authority

More so, this plan was developed to achieve three critical objectives in the short-term

- Restore as soon as possible a reasonable supply of electricity to the Lebanese inhabitants
- Maintain fiscal rigor to avoid jeopardizing the electricity sector 's future
- Explore every effective opportunity

The plan would not have been possible without the work of the Ministry and EDL's teams who worked under the need for total transparency. The current situation results from not only the confluence of multiple crises hitting the country, but also long-standing structural inefficiencies in the sector that remained unaddressed for decades despite many past attempts to resolve them.

Now that solutions are identified, designed and formulated, all public authorities, politicians and private partners should be mobilized in the utmost urgency and necessity to apply this recovery plan for the electricity sector.

¹ World Bank Lebanon Power Sector Emergency Action Plan, 2020 (<https://documents1.worldbank.org/curated/en/500281593636676732/pdf/Lebanon-Power-Sector-Emergency-Action-Plan.pdf>)

MoEW'S VISION FOR THE POWER SECTOR

Current state of the sector

Lebanon's power sector has been at the heart of its economic development and macro-fiscal framework for decades. While there is universal access to electricity in the country, Lebanon's Electricité du Liban (EDL), a vertically integrated utility with exclusivity over electricity generation (except for hydroelectric concessions), transmission and distribution in the country, has been unable to meet prevailing demand in the country while significant annual Government budget support was mainly focused on fuel and operational expenditures without effectively remedying to the generation capacity gap.

Currently, Lebanon is at the center of multiple crises that are significantly compounding the power sector's historical challenges. Although EDL has installed generation capacity of around 2,300 MW excluding hydro power plants (of which only around 2,000 MW can be effectively generated due to aging), the utility's ability to meet electricity demand, which was already limited before the crises, has further deteriorated because of lack of imported fuel supply. From mid-2021, EDL's electricity supply dwindled to an average of 3–4 hours per day largely because of insufficient cash flow, exacerbated by sector's structural currency mismatch (EDL's retail tariffs, which are in Lebanese pounds (LBP) have fallen to less than US\$ 1 per kilowatt hour (kWh) because of the significant depreciation of the currency in the past 1-2 years) and challenges in securing foreign currency to pay for the bulk of EDL's costs denominated in USD. In this respect, the sector's performance was and continues to be inextricably linked with the broader macro-fiscal challenges currently facing the country, and its conditions will continue to deteriorate until a comprehensive agreement is reached to stabilize the broader macro-fiscal environment. In the meantime, consumers continue to be forced to rely more on costly and inefficient private generators (>US\$ 31/kWh), which require diesel imports at a much higher cost than EDL's generation, to close the supply gap.

EDL has been hampered by high operating costs due to operating inefficiency and reliance on expensive liquid fossil fuels for generation, as well as low revenue resulting from woefully low non-cost-reflective electricity tariffs that have not changed since 1994 and high network and collection losses (which accounted for over 42 percent of EDL's generation in 2021). Budget transfers to bridge EDL's revenue gap averaged 3.8 percent of Lebanon's Gross Domestic Product (GDP) per year over the past decade.

At the center of the sector's challenges have been its governance structure, its inability to recruit new employees, (engineers, technicians and others) and to sustain its own operations, and political interventionism crippling decision making and progress in the sector. The Ministries of Energy and Water (MoEW) and Finance (MoF) have administrative and financial oversight of EDL respectively, but overall responsibility and reform of the sector rests with the Council of Ministers (CoM).

In 2002, Law 462 included restructuring and unbundling the sector and creating an Electricity Regulatory Authority (ERA). This restructuring was intended to liberalize the generation and distribution segments of the sector under private sector management while ensuring independent oversight by ERA under the policy guidance of MoEW, to regulate and set tariffs, issue licenses and authorizations, and ensure transparency and competition. Implementation of this vision, however, remains stalled.

In 2011, a comprehensive revision of Law 462 was supposed to be undertaken under Law 181/2011 to remedy to the gaps in the existing legislative framework, but the CoM never completed the procedure. This has to be carried out starting now.

The sector is on the verge of full collapse, unable to supply electricity or independently meet most of its operating costs, thereby accumulating arrears to most of its suppliers. The current crises facing the country only exacerbated preexisting challenges in the sector that resulted from historical structural inefficiency, and financial bankruptcy. This question becomes existential and should be overcome forthwith. The solution provided will set the example for other devastated sectors in the Country.

Policy statement's vision and objectives

This Policy Statement aims to present MoEW's comprehensive 5-year plan (2022-2026) to address the sector's current and historical challenges. Given the increasing urgency for immediate action, the plan includes short-term action to increase electricity supply in the country within the context of a long-term vision to tackle entrenched structural, operational, institutional and financial deficiencies in the sector. This plan presents a comprehensive and interconnected framework to address sector challenges as a whole to increase the sector's transparency, operational efficiency and financial sustainability to a level on par with regional and international best practice.

Increase Supply of Cheaper, more Sustainable Electricity Supply

The first policy objective is ensuring reliable, affordable, and sustainable (24/7) electricity services across Lebanon in an efficient, fiscally balanced, and environmentally friendly manner. This goal should be achieved while accelerating the transition to a sustainable energy future for Lebanon that prioritizes affordable renewable energy solutions, enabled by accelerated transition of baseload generation from liquid fuels to cheaper, cleaner natural gas.

As part of this objective, the plan outlines immediate action that will help improve electricity supply in the short-term to reduce consumers' continued reliance on expensive, polluting private diesel generation. This interim solution aims to bridge a transition period while the sector undertakes wider structural reforms, which will take several years to complete.

Immediate goals comprise the following points:

- Diversify the energy mix towards affordable renewables sources
- Switch from liquid fuel to cheaper and cleaner gas for baseload generation
- Strengthen regional integration to rapidly increase supply in a least cost manner

Improve the Sector's Operational and Financial Performance

The second policy objective is ensuring efficient and transparent functioning of the sector's generation, transmission, and distribution operations. The goal is to:

- Reduce losses to levels consistent with best utility practices in coordination with all relevant stakeholders (MoIM, MoD, MoF, MoJ and others)
- Adopt and implement a tariff methodology to ensure recovery of the sector's efficient costs that are determined through a transparent and well-governed pricing methodology, adjust tariff to ensure the sector's financial sustainability, and eliminate public subsidies to ensure recovery of the country's macro-fiscal stability and remove inefficient pricing distortions

- Enable private sector participation through investment and operation in generation and distribution, to improve service delivery in a transparent, cost effective and fiscally sustainable manner

Improve Sector Governance and Transparency

The third policy objective is to reform the sector’s governance and operating framework to achieve long-stalled Law 462’s overarching vision of a more liberalized sector through a series of structural reforms in the sector’s operating and oversight model. The goal is to:

- Reform the governance structure by unbundling public generation assets into a separate generation company; mandating the bulk of future generation capacity to be implemented through public private partnerships while maintaining government control over a share of generation portfolio for energy security and market stabilization reasons; modernizing EDL’s core competency to establish a Transmission System Operator (TSO, sole owner and operator of the transmission system) and, during a transition period, a single buyer from public and private power suppliers; and adopting a public-private partnership model (whether concession, concession-like or other) for distribution, with the long-term objective of a fully liberalized and regulated electricity market
- Establish an independent Electricity Regulatory Authority (ERA), under the policy guidance of MoEW, for the sector to provide technical and economic oversight over a largely privatized generation and distribution subsectors
- Modernize and consolidate the legislative framework governing the sector, based on best practices, recent technology breakthrough and climate change agenda, to address current gaps and enable distributed RE generation scale up and incentivize energy conservation

The plan laid out in this policy statement follows actions from the Emergency Action Plan World Bank report, the Least Cost Generation Plan by Électricité de France (EDF)², and previous sector Policy Papers (primarily, those adopted by the CoM in June 2010³ and March 2019⁴) that were not implemented.

It is vitally important to note that success or failure of this plan will depend on uniform public and political support in the country to provide a firm foundation to implement the plan and the support of the international community to address current gaps and secure the financing needed for the initiatives and actions to achieve the plan’s objectives. As sector challenges are entwined, they must be tackled together, with the ambitious aspiration that in doing so, continuous, reliable and affordable electricity services would be achieved within the next 4 to 5 years.

The following table summarizes the actions needed to achieve MoEW’s three policy objectives outlined above subject to available financing:

² EDF Least Cost Generation Plan, September 2021

³ MoEW, Policy paper for the electricity sector, 2010

⁴ MoEW, Policy paper for the electricity sector, 2019

Action	Responsibility	Milestones	
Generation			
Electricity imports from Jordan	EDL	2022	
Fuel switching to gas for Deir Amar Power Plant (AGP)	MoEW - EDL	2022	
Temporary generation capacity (at Deir Amar III – 520 MW), as a transition before permanent solutions are deployed	MoEW - EDL	2023	
RE additional capacity : <ul style="list-style-type: none"> • Wind: 226 MW • Solar: 180 MW • Solar: 200 MW • Wind: 520 MW • Hydro: 282 MW (rehab.) • Hydro: 112 MW (greenfield) • Solar: 300 MW (+ 210 MW storage) 	MoEW - EDL	<i>Procurement</i> 2022 2022 2023 2022 2023 2023 2023	<i>Commissioning</i> 2024 2023 2026 2028 2025 2025 2026
Adopt a faster timetable for the development of the new power plants and associated transmission upgrades by preparing the tendering documentation as per approved practices	MoEW - EDL	2022	
Permanent power plant (CCGT1): 825 MW	MoEW - EDL	2022	2025
Permanent power plant (CCGT2): 825 MW	MoEW - EDL	2023	2026
Permanent power plant (CCGT3): 825 MW	MoEW - EDL	2024	2027
Transmission			
Commissioning of EDL rehabilitated National Control Center and EDL main building	MoEW - EDL	2022-2024	
Completing additional investments in the transmission infrastructures	MoEW - EDL	2023-2024	2024-2026
Distribution			
Secure extension of the DSP contracts with improved performance targets	DSP - EDL - MoEW	immediate	
Implement a comprehensive non-technical loss reduction plan, including campaigns for illegal connections and infringements, escorted by the ISF, the military and the judiciary, and a program for collection enhancement including rollout of smart meters	Mol - MoJ - MoD - MoEW - EDL - DSPs	2022-2023	

	Action	Responsibility	Milestones	
	Deploy Advanced Metering Infrastructure system and AMI center	EDL - MoEW	2022-2024	
	Award of Advanced PPP Agreements in Distribution	EDL - MoEW	2023	2024
Finance				
	Base tariff adjustments + indexation to fuel price and FX concurrently with increase in supply hours	EDL - MoEW - MoF - CoM	2022	
	Establish cash waterfall mechanism	EDL - MoEW - MoF - BDL	2022	
	Define tariff methodology and enforceable instruments	ERA - MoEW	2023	
	Implement tariff methodology as per business plan laid out by/for ERA	EDL - MoEW - ERA	2023-2027	
Governance				
	Disclose EDL audited financial statements on yearly basis + quarterly non-audited financial statements	EDL	From 2022	
	Finalize EDL's functional unbundling of Generation (G), Transmission (T), and Distribution (D)	MoEW - EDL	2023-2024	
	Complete legal unbundling (G, T and D)	MoEW	2025	
	Corporatize EDL and establish TSO	MoEW	2024	
	Launch recruitment process for commissioners of ERA in accordance with law 462/2002 and international best practice	MoEW	immediately	
	Adopt time-bound plan to fully operationalize the sector's regulatory framework (preparation of legislations, implementation decrees, and interim arrangements for sector oversight) until ERA is fully functional	CoM	2022	
	Establish ERA (commissioners' appointment, budget approved and funded)	CoM	end of 2022	
	Set up internal organization and status, staff recruited	MoEW - ERA	2023	
	Operationalize ERA	CoM – MoEW - ERA	2023	

	Action	Responsibility	Milestones
	Prepare a draft law specifying the proposed amendments to law 462/2002 with a comparative table and needed rationale, in consultation with sector's stakeholders and as per international best practices, and submit it to the CoM for approval	MoEW - CoM	2022
	Ratify Distributed Renewable Energy Law and Energy Conservation Law	MoEW – CoM - Parliament	2022
	Ratify required amendments and specially amendments to law 462/2002 in compliance with law 181/2011	MoEW-CoM-Parliament	2023

1. INCREASE AND DIVERSIFY POWER SUPPLY

1.1. CURRENT SITUATION

The sector is plagued by a severe mismatch between supply and demand, resulting from long-standing capacity deficit and exacerbated by fuel shortages, leading to extending rolling blackouts and power outage. Lebanon depends exclusively on imported fuel to generate electricity, apart from a small and variable hydropower supply (100 MW). Only a limited influx of swapped fuel oil from Iraq is reaching the power plants operating at a fraction of their capacity (60 kT/month amounting to 400-500 MW). Under these circumstances, the total power supply (500 MW) caters for only 4 hours of electricity per day delivered at the absurd price between 0.5 and 1 c/KWH. The Lebanese people – at least those who can afford it – rely on alternative, expensive and polluting private generators (31 c/kWh) to meet their essential electricity needs.

Expensive and polluting liquid fuel-based generation limit further electricity supply while generation assets could run with cheaper and cleaner natural gas, for which supply should be secured. Lebanon is only connected to the Arab Gas Pipeline (AGP) through Egypt, Jordan and Syria. This pipeline can supply gas to the Deir Amar power plant. The ongoing rehabilitation of the pipeline section within Lebanon is expected to be completed by April 2022. Switching other power plants to natural gas requires installation of a Floating Storage and Regasification Unit(s) (FSRU) and supply of liquified natural gas (LNG), unless a dedicated extension of AGP linking Deir Amar in the north with Zahrani in the south is built in the future. Securing fuel supply would double electricity supply from existing efficient generation assets and triple electricity supply if existing old Zouk and old Jieh power plants are also included in the mix.

Electricity imports from Jordan could also increase supply in the short-term. The connection between the Lebanese and Jordanian grids (though the connection through Syria was damaged during Syria's civil war but was recently repaired) is another existing channel that can be tapped. Jordan has a surplus electricity that Lebanon can buy to increase its power supply.

In the medium- to long-term, however, EDL must increase its generation resources. EDF's Least Cost Generation Plan clearly indicates the need to significantly increase gas-fired generation capacity and Renewable Energy (RE) generation in the country. In 2019, Lebanon ratified the Paris agreement and committed itself to increase its share of renewable energy generation to 20% by 2030, this commitment could be increased to 30% with international commitments in line with the national renewable energy action plan developed by the International Renewable Energy Agency (IRENA) and the Least Cost Generation Plan. With an existing 100 MW average generation from hydropower, the key to reaching the Paris agreement's target is to scale up utility scale RE generation as well as distributed RE system to increase the share of RE in the generation mix. To enable this scale-up and to ensure reliability and stability of the electric system, there is also a need to increase gas-fired generation. Because of the current severe lack of generation capacity, the initial gas-fired power plants need to urgently be developed and commissioned to provide a solid baseload capacity to meet demand and expand the transmission system's capacity to integrate more intermittent RE generation and energy storage.

1.2. ACTION PLAN

The main objective is to increase supply to meet national demand in a cost-effective, fiscally balanced, and sustainable manner, with RE to account for at least 30 percent of the energy mix by 2030 in accordance with EDF’s Least Cost Generation Plan expansion analysis (September 2021). MoEW’s plan aims to provide all customers with reliable 24h electricity services in 2026. This requires a multi-faceted program to initiate short-, medium- and long-term solutions in parallel to transition the sector from expensive liquid fuel-based generation towards a generation mix that combines cheaper, cleaner gas for existing and new power plants with RE generation. Regional connection is a strategic option that will provide immediate access to affordable gas for Deir Amar through the existing Arab Gas Pipeline, while electricity imports from Jordan would rapidly increase supply. Temporary generation capacity will be used for a transition period until permanent capacity is commissioned through building new power plants in locations to be determined according to need and necessity, taking into consideration the environmental conditions, while locating one of the plants on the northern coast of Lebanon. In parallel, utility-scale RE projects will be scaled up across the country, whereby competitive and transparent approaches will be used to mobilize private sector investments in a timely and cost-effective manner.

In 2018, the Government committed to undertake future generation investments in the sector through private sector led independent power generation. This remains the policy of this Government. However, mobilization of the private capital needed for these investments will require a macro-fiscal stabilization program to enable commercial financing and provide the confidence needed for investors to commit the sizable investments needed for both thermal and RE power plants. In this respect, the urgency of the initial power plant investments needed may necessitate alternative financing approaches to ensure timely implementation, while, at the same time, recognizing the limitations on public debt expansion within the current macro-fiscal environment. This may include considering public, development finance, or other innovative solutions to ensure availability of the capital investments needed to start construction in the short-term.

	Action	Responsibility	Milestones	
	Electricity imports from Jordan	EDL	2022	
	Fuel switching to gas for Deir Amar Power Plant (AGP)	MoEW - EDL	2022	
	Temporary generation capacity (at Deir Amar III – 520 MW), as a transition before permanent solutions are deployed	MoEW - EDL	2023	
	RE additional capacity:	MoEW - EDL	<i>Procurement</i>	<i>Commissioning</i>
	• Wind: 226 MW		2022	2024
	• Solar: 180 MW		2022	2023
	• Solar: 200 MW		2023	2026
	• Wind: 520 MW		2022	2028
	• Hydro: 282 MW (rehab.)		2023	2025
			2023	2025

	Action	Responsibility	Milestones	
			2023	2026
	<ul style="list-style-type: none"> Hydro: 112 MW (greenfield) Solar: 300 MW (+ 210 MW storage) 			
	Adopt a faster timetable for the development of the new power plants and associated transmission upgrades by preparing the tendering documentation as per approved practices	MoEW - EDL	2022	
	Permanent power plant (CCGT1): 825 MW	MoEW - EDL	2022	2025
	Permanent power plant (CCGT2): 825 MW	MoEW - EDL	2023	2026
	Permanent power plant (CCGT3): 825 MW	MoEW - EDL	2024	2027

Short-term (< 1 year)

Secure electricity imports from Jordan. In line with MoEW's effort to secure a fast, affordable electricity from neighboring Arab countries, MoEW and EDL have concluded an agreement with Jordan to import an average of 200 MW surplus Jordanian electricity, equivalent to around two hours of additional electricity supply per day on EDL's grid. Purchased electricity would be transported to Ksara substation in the Bekaa region, therefore keeping transportation costs to a minimum. The agreement is defined on a one-year renewable basis, and, therefore, should ensure an additional stable source of supply.

Secure gas imports from Egypt through AGP. With the help of the World Bank and the Egyptian authorities, a ten-year agreement with Egypt (with a clause allowing its extension for another five years) is being finalized to supply Deir Amar with natural gas through the AGP. The gas would be channeled through the pipeline at a rate of around 650 million cubic meter per year, allowing the generation of an average of approximately 400 MW in Deir Amar. This solution will ramp up Deir Amar's capacity and increase daily supply by about 4 hours, while, at the same time, free up available fuel resources that would otherwise be used at Deir Amar instead to be used at Zahrani to increase its electricity supply.

Short- to Medium-term (1-2 years)

Provide natural gas to existing plant and build gas-fired combined cycle power plant at Zahrani. To cover the natural gas needs of the existing power plant at Zahrani, MoEW intends to competitively procure natural gas through an FSRU infrastructure/gas access allowing fuel-switching of Zahrani I in 2023, while addressing the legal implications from the latest FSRU tender, such that the Zahrani I generation cost post switching to natural gas does not exceed the overall improved average generation cost according to this plan.

Moreover, and as per the recommendations of EDF's Least Cost Generation Plan (September 2021) that include building a power plant at Zahrani of 825 MW capacity (Zahrani II), MoEW will launch

competitive procurement for the design, construction and operation of a new power plant using a creative PPP approach, and by considering the site location and tender documents already prepared by MoEW and approved by CoM earlier, after technical verification that the proposed land area and transmission grid could readily accommodate the planned power plant capacity. In this regard, the CoM approval is needed to formally allocate the proposed land at Zahrani to MoEW for the purpose of developing Zahrani II power plant. Initial public financing may also be contemplated (possibly using IMF's extra SDR allocation), with possible subsequent (built-in) divestment to the private sector after commissioning.

Temporary generation capacity at Deir Amar. Given the contemplated availability of natural gas through AGP at Deir Amar (or international LNG gasified in Jordan and channeled to Deir Amar), and the readiness of the existing transmission network to evacuate additional generation capacity as per EDF confirmation⁵, it is expected that gas-fired temporary generation units of up to 520 MW at Deir Amar (Deir Amar III land belonging to MoEW, under the disposal of Tripoli Oil Installations) would be supplied during 2023-24 until the permanent Deir Amar II plant is constructed and commissioned. Active market sounding efforts have already identified interests from Egypt, US and others to supply such temporary infrastructure late 2022/early 2023.

Solar PV IPPs. To introduce on-grid solar energy, MoEW through the Lebanese Center for Energy Conservation (LCEC) is piloting a project aiming to deploy solar farms throughout Lebanon with a total generation capacity of 180 MW in 2023 divided into 15 MW per solar farm. Private investors have already answered the call for tenders, but implementation, however, awaits required financial guarantees. The program prioritizes medium-size units which are simpler to structure and locate geographically without a major re-design of the transmission system.

Wind Farms. MoEW has committed to develop an RE program. Power Purchase agreements (PPA) were signed for three wind energy projects with a total capacity of 226 MW in 2024, with wind farms located in Akkar, with implementation pending financial guarantees. The three companies committed to execute these projects following negotiations with the MoEW that secured the right of the government to renegotiate to decrease the kWh price at the time of financial close.

The ministry remains ready to adopt a faster timetable for the development of the new power plants and associated transmission upgrades by preparing the tendering documentation as per approved practices.

Medium- to Long-term (3-5 years)

Renewable Energy scale-up. MoEW will scale up utility-scale RE projects (solar, wind and hydropower) towards an objective of reaching at least 30 percent of generation capacity from renewable sources in the energy mix by 2030, as per EDF's Least Cost Generation Plan. Projects will be developed and procured through fully structured competitive process and supported by credit enhancement mechanisms. They would notably include:

- **Finalizing the agreements for Solar PV IPPs with storage.** To introduce on-grid solar energy, the LCEC under the supervision of MoEW is piloting a long-term project involving additional Solar Farms with storage. Private investors have already answered the call for tenders, but implementation, however, awaits financial guarantees. The Lebanese Center for Energy

⁵ EDF letter addressed to EDL dated October 21, 2021

Conservation (LCEC) launched the study phase for these solar parks but is waiting for financial guarantee and foreign currency liquidity to continue with the project. The program prioritizes medium-size units which are simpler to structure and locate geographically without a major re-design of the transmission system. Additional tenders will be prepared to increase supply to 2,180 MW of solar PV and 50 MW CSP storage by 2030, as per EDF's Least Cost Generation Plan

- **Wind farms.** Ongoing tender for four wind projects are prepared by the LCEC to increase supply to 746 MW by 2028, with the aim of around 1,000 MW by 2030, as per EDF's Least Cost Generation Plan
- **Hydropower.** MoEW intends to rehabilitate the existing 282 MW hydroelectric capacity and develop 112 MW of potential greenfield projects financed and operated by the private sector

Decommission old plants at Zouk and Jieh. Aside from being inefficient and operating at high costs, these old plants have significant environmental impacts using HFO-fired steam turbines that cannot be switched to natural gas; hence, the plan includes decommissioning old Zouk and Jieh plants once commissioning new power plants and completing related transmission network to ensure stability of the grid. The resulting loss in electricity supply will be compensated by the newly operational gas-fired power plants constructed under IPP

Build gas-fired combined cycle power plants. As per the recommendations of EDF's Least Cost Generation Plan (September 2021) that include building a power plant at Deir Amar of 825 MW capacity (Deir Amar II), MoEW will launch competitive procurement for the design, construction and operation of a new power plant and using additional Egyptian gas supply to be secured (or international LNG gasified in Jordan and channeled to Deir Amar). This would entail taking the following measures:

- Confirm outcome of preliminary assessment that available land areas can accommodate simultaneously permanent 825 MW Deir Amar II power plant and temporary gas-fired generation units up to 520 MW to be deployed on Deir Amar III plot area
- Obtain confirmation from law office representing Lebanon in ICSID arbitration currently underway with the private company previously retained for the power plant development, that terminating J&P Avax contract would not significantly adversely impact the arbitration proceedings and outcome
- Obtain CoM decisions to terminate J&P Avax contract and cancel old CoM decisions in this regard namely CoM decision #17 dated 12/03/2013 (approval to contract J&P Avax as per Central Tender Board bidding result) and decision #84 dated 21/05/2018 (approval to transform J&P Avax contract from EPC contract form to PPA agreement form)

As per the recommendations of EDF's Least Cost Generation Plan (September 2021) that include building a power plant at Selaata of 825 MW capacity (Selaata I), MoEW will launch competitive procurement for the design, construction and operation of a new power plant, and build corresponding transmission lines and substations by considering the site location and tender documents already prepared by MoEW and approved by CoM earlier, and provide natural gas supply/FSRU, through the PPP mechanism.

Table 1. Installed capacity expansion plan (MW)

	Name	Type	2022	2023	2024	2025	2026
Thermal Plants	Deir Amar	Gas (AGP)	490	490	490	490	490
	Zahrani	Gas	485	485	485	485	485
	New Zouk	HFO	194	194	194	194	194
	New Jieh	HFO	78	78	78	78	78
	Old Zouk ⁶	HFO	380	380	380	380	380
	Old Jieh ⁷	HFO	190	190	190	190	190
	Hrayche	HFO	50	50	50	50	50
	Sour	LFO	70	70	70	70	70
	Baalback	LFO	74	74	74	74	74
Hydro plants	Litani	RE	199	199	199	199	199
	Nahr Ibrahim	RE	32	32	32	32	32
	Bared	RE	17	17	17	17	17
	Kadisha	RE	21	21	21	21	21
	Richmaya - Safa	RE	13	13	13	13	13
Renewable	Naameh	Landfill gas	7	7	7	7	7
Temp. Solutions	Jordan ⁸	Wheeling	250	250	250	250	250
	Deir Amar onshore	Gas (AGP)	-	520	520	-	-
Permanent Solutions	Solar farm	RE	-	180	180	430	680
	Wind farm	RE	-	-	226	226	426
	New Hydro	RE	-	-	58	112	112
	CCGT1	Gas	-	-	561	825	825
	CCGT2	Gas	-	-	-	561	825
	CCGT3	Gas	-	-	-	-	561
Total			2,550	3,250	4,095	4,704	5,979
Hours			8-10	16-18	16-20	20-24	24

⁶ Original installed capacity of old Zouk power plant 607 MW, to be decommissioned only when corresponding electricity supply can be compensated by commissioning of new power plants

⁷ Original installed capacity of old Jieh power plant 343 MW, to be decommissioned only when corresponding electricity supply can be compensated by commissioning of new power plants

⁸ Jordan electricity to be used only when cheaper alternatives are not available to meet the demand

2. REDUCE TRANSMISSION LOSSES

2.1. CURRENT SITUATION

The rehabilitation of EDL’s National Control Center and EDL main building is critically needed. A network loss of around 6 percent is attributed to the instability of the transmission network grid. Destruction of EDL’s National Control Center (NCC) and EDL main building during the August 4, 2020’s Port of Beirut explosion weakened control over the transmission grid and its capabilities. Rebuilding the NCC and EDL building is a fundamental priority to ensure the proper functioning of EDL’s transmission system and the EDL overall operations.

EDL’s transmission network is not able to meet increasing demand and support planned increases in power generation. EDL needs to transition from a 150 kV network to higher voltages to ensure capacity to integrate more generation. EDL’s transmission network includes an old 66 kV grid, with country-wide coverage; some 150 kV transmission lines in the central coastal area around Beirut were built when the 66 kV network started experiencing severe congestion as the transmission system grew; and the newer limited 220 kV backbone that stretches from north to south in the coastal areas and loops through the northern Bekaa Valley toward Beirut. EDL’s long-term technical strategy is to transition away from the 150 kV voltage network and base the transmission system on 220 and 66 kV equipment as standard transmission/sub-transmission voltages. This will require both rehabilitating and strengthening the 66-kV grid and significantly expanding the 220-kV network.

2.2. ACTION PLAN

MoEW’s overall objective is to ensure reliable supply to demand centers by reinforcing the transmission grid across the country in parallel with planned additional generation capacity. The rehabilitation of EDL’s NCC and main building is a priority, regardless of progress in developing new generation capacity. This is closely followed by needed transmission investments with a timeline that matches progress of planned thermal and RE generation capacity additions.

	Action	Responsibility	Milestones	
	Commissioning of EDL rehabilitated National Control Center and EDL main building	MoEW - EDL	2022-2024	
	Completing additional investments in the transmission infrastructures	MoEW - EDL	<i>Procurement</i> 2023-2024	<i>Commissioning</i> 2024-2026

Short-term (<1 year)

Rehabilitation of the National Control Center and EDL main building. The first step in rebuilding the NCC is to:

- Assess the extent of the related infrastructure damage
- Design the renovation plan
- Assess the requisite budget and timeline to complete the work

EDL needs the required tools and resources, a structured and centralized information center, and solid control capabilities to better monitor the transmission network. In this regard, MoEW, through the Council for Development and Reconstruction (CDR), initiated negotiations with the Arab Fund for Economic and Social Development to finance the renovation works through re-allocation of an existing US\$15 million zero-interest loan, targeting rehabilitation of the NCC and EDL main building.

Moreover, the terms of reference for the rehabilitation works of Achrafieh substation has been prepared by EDF in coordination with EBRD, and bidding is ready to be launched for works to be completed as soon as possible.

Medium- to Long-term (2-5 years and onwards)

Undertake planned transmission reinforcement projects. MoEW will competitively procure transmission network reinforcement projects. Bidding documents will be prepared based on transmission grid reinforcements as outlined in EDF transmission studies (“Étude du Schéma Directeur Transport du Secteur Electrique au Liban, Plan d’investissement”, Août 2013 and Version Finale “République du Liban, Electricité du Liban (EDL): Update of the Transmission Master Plan”, EdF, Final Report, May 2017).), and any necessary updates to these plans based on the Least Cost Generation Plan, knowing that tender documents for some these projects have already been completed and bidding is ready to be launched once funding is secured.

Priority will be given to strengthening the North Beirut Loop (Bouchrieh, Chebbak, Marina and Bsalim substations and interconnecting 220 kV cables), South Beirut Loop Phase 1 (Airport, Jamhour, Hazmieh and Choueifat substations and interconnecting 220 kV cables) and South Beirut Loop Phase 2 (Unesco, Basta, and Ain Mreiseh substations and interconnecting 220 kV cables) to ensure reliable supply to the Greater Beirut area and integration of new generation capacity.

Other substations will be also implemented or expanded in miscellaneous areas (Nabatieh, Halat, Zahrani, Aramoun, Selaata, Adma, Jounieh, Damour, Qobeyat, Halba, Iqlim Al Kharroub, Marjouyoun, Bikfaya and others) including installation of new high voltage overhead transmission lines and underground cables and upgrading existing overhead transmission lines (Bsalim-Deir Nbouh, Jieh Aramoun, Zahrani-Nabatieh, Zahrani-Aramoun, Selaata-Asia, Zouk-Jounieh-Adma, Jieh-Iqlim Al Kharroub, Nabatieh-Marjouyoun and others).

Above infrastructure works are estimated at a budget of US\$ 450 million required during the 5 year duration envisaged in this plan (and would exceed US\$ 650 million for all required investments that cover the period till 2030) in addition to approximately US\$ 50 million for associated expropriation expenses.

3. IMPROVE PERFORMANCE OF DISTRIBUTION SERVICES

3.1. CURRENT SITUATION

Distribution losses account for 37 percent of energy generated in 2021, which is well above international sector standards and dooms the sector to financial imbalance. As per EDF report, distribution losses reached 33% in 2020; however, and initially estimated at 37% for 2021. The staggering level of these losses means that more than a third of EDL's expenditure on generation and transmission do not result in any revenue for the utility, even at the woefully low, non-cost reflective electricity tariffs currently in place. Improvements in distribution losses between 2018 and 2019 were reversed after the Port of Beirut explosion in 2020 and the current financial and economic crisis. Structural inefficiencies in the distribution subsector, including complex arrangements between EDL and the DSPs, lack of fraud prevention, a protracted billing cycle, collection challenges and political and external factors have severely limited sector revenues. The root causes of this problem include governance challenges, capability gaps, delayed and lack of payment by some customer segments (public administrations and institutions, Palestinian camps, and others) with arrears accounting more than US\$ 113 million by end of 2021 (assuming 1\$ = LBP 20,000). Delays due to rigid processes are exacerbated by inadequate IT infrastructure further set back by the August 4th blast and near absence of automation for key processes.

The electricity distribution system relies on both EDL and the DSPs under the oversight of MoEW. EDL is responsible for approving distribution network investment and O&M plans proposed by the DSPs, under MoEW's guidance. It is responsible for issuing and centralizing bills while the DSPs are responsible for meter reading and collecting the bills for onward transmission to EDL. The DSPs contracts were issued in 2012 to manage the distribution network on EDL's behalf. These contracts were initially designed as a first step towards increased private sector participation in the distribution network, but have been repeatedly prorogated in the absence of shared vision for subsequent reform. It is important to note, however, that the DSP contracts are due to expire in May 2023.

3.2. ACTION PLAN

MoEW's objective is to improve performance of distribution network and structurally reduce its losses by moving away from the unnecessarily complex DSP arrangements to establish advanced PPP agreements in distribution designed to mobilize private investments in distribution, while aligning incentives towards loss reduction and improving service quality. Ownership of the distribution network assets remains in public hands, while their control transfers to competitively selected private partners for the period of the agreements. The process of designing the Advanced PPP model will require securing the underlying statutory basis in Law 462 through an amendment to the law.

	Action	Responsibility	Milestones	
	Secure extension of the DSP contracts with improved performance targets	DSP - EDL - MoEW	immediate	
	Implement a comprehensive non-technical loss reduction plan, including campaigns for illegal connections and infringements, escorted by the ISF, the military and the judiciary, and a program for collection enhancement including rollout of smart meters	MoI – MoJ - MoD - MoEW - EDL - DSPs	2022-2023	
	Deployment of Advanced metering Infrastructure system and AMI center	EDL - MoEW	2022-2024	
	Award of Advanced PPP Agreements in Distribution	EDL - MoEW	<i>Procurement</i> 2023	<i>Commissioning</i> 2024

Short-term (<1 year)

Extension of DSP contracts with improved performance at no additional cost. Ensure that DSP contracts extended until the end of 05/2023, following laws 160 and 185, benefit from streamlined business processes aimed to aggressively reduce losses and improve collection. Lower losses (and shortened billing cycle) would automatically lead to reduced subsidy/tariff adjustment requirements, which are challenged by fiscal constraints and customers’ limited ability to pay. To do so, and in addition to transferring some activities to DSPs at no extra cost, EDL will implement key measures identified under discussed-upon MOU3, including promoting domiciliation of electricity bills and taking measures to enforce (and delegate) some authority to DSPs (DSPs sworn officers, issuance of fines, cancellation of the monetary values of bills, billing on behalf of EDL, transfer of cashiers’ duties to DSPs, collection, disconnection, customers’ services, replacement of customers electromagnetic meters by smart meters M5 without pre-approvals from EDL sworn officers, etc...) so that DSPs would commit and be accountable for achieving ambitious non-technical loss reduction (from 27% in 2021 to 13% in 2023). Time-bound commitment to implement agreed-upon revisions of EDL processes is a condition for DSPs to deliver expected targets for loss reduction and will be memorialized accordingly in the contract.

In response to EDL request, the Court of Audit opinion ref. 65/21 dated December 14, 2021 concluded that modification of the allocation of roles and responsibilities among EDL and DSPs in order to perform additional activities and provide them more autonomy, shall require ratification of new laws and/or modification of EDL's regulations, EDL decree 13537 and others. Hence, EDL had previously approved a less ambitious reduction plan, decreasing non-technical losses from 27% to 19% in 2023.

Further legal due diligence by MoEW and EDL are underway, including the State Council, to ascertain whether the above activities may be enabled more readily and quickly through a simpler change in EDL bylaws, without any legislative change to implement the ambitious loss reduction plan.

Table 2. Loss reduction trajectory under ambitious loss reduction plan⁹

	2019	2020	2021	2022	2023	2024	2025	2026
Transmission Losses	5.7%	5.7%	5.7%	5.7%	5.7%	5.5%	4.8%	4.0%
Distribution Losses	26.8%	32.9%	36.6%	29.9%	24.0%	20.6%	17.7%	16.5%
Technical Losses	13.2%	13.2%	13.2%	13.2%	12.8%	12.4%	12.0%	11.6%
Non-Technical Losses	15.7%	22.7%	26.9%	19.2%	12.8%	9.4%	6.5%	5.6%
Total Network Losses	31.0%	36.7%	40.2%	33.9%	28.4%	25.0%	21.6%	19.9%

Table 3. Loss reduction trajectory under EDL approved loss reduction plan¹⁰

	2019	2020	2021	2022	2023	2024	2025	2026
Transmission Losses	5.7%	5.7%	5.7%	5.7%	5.7%	5.5%	4.8%	4.0%
Distribution Losses	26.8%	32.9%	36.6%	32.2%	29.6%	27.0%	24.3%	22.6%
Technical Losses	13.2%	13.2%	13.2%	13.2%	12.8%	12.4%	12.0%	11.6%
Non-Technical Losses	15.7%	22.7%	26.9%	21.9%	19.3%	16.6%	14.0%	12.4%
Total Network Losses	31.0%	36.7%	40.2%	36.1%	33.6%	31.0%	27.9%	25.7%

Short- to medium-term (1-2 years)

Distribution loss reduction plan. Under the extended DSP contracts, MoEW and EDL, in close cooperation with the DSPs, will implement the ambitious loss reduction plan, while achieving at least the EDL approved plan. Such would include campaigns to remove illegal connections, and once these connections are identified and not paid after several reminders, Ministry of Interior (MoI) Ministry of Defense (MoD) and Ministry of Justice (MoJ) will support MoEW, EDL and the DSPs in the process of disconnecting the infringing connections.

It is worth mentioning that loss reduction plan is a multi-stakeholder responsibility where objectives cannot be achieved except with each one playing their role:

- **Ministry of Interior & Municipalities** to provide security escort during campaigns to disconnect infringements on the electrical network on all Lebanese territories and protect EDL facilities and personnel

⁹ Estimation based on Électricité de France (EDF) reports from 2019 and 2020 dated November 29 2021

¹⁰ Estimation based on Électricité de France (EDF) reports from 2019 and 2020 dated November 29 2021

- **Ministry of Defense** to provide security escort by the army on an ongoing basis during campaigns to disconnect infringements on the electrical network in specific areas on all Lebanese territories
- **Ministry of Justice** to expedite the law cases related to the fine records resulting from the infringement disconnection campaigns, and support EDL in amending certain regulations and bylaws to enhance the role of the DSPs in accordance with the relevant Cabinet decision and the recommendations of the World Bank
- **Public administrations, refugees and displaced Syrians, water establishments** and other entities to pay their overdue and future electricity bills

Deploy the Advanced Metering Infrastructure system. The AMI program provides for, among others, improved billing, loss and network outage reduction, and improved load management. Smart meters, which are an integral part of the AMI Program, would allow for timely and accurate billing and detect location of distribution losses. These meters would allow remote disconnect/reconnect of customers to strengthen enforcement actions for theft and nonpayment, which will result in increasing collection rates. They also allow the implementation of Time of Use tariff, a key tool in demand-supply management and reduction of overall costs on the consumer as well as on EDL. The AMI Center, that consists of head meter management and Commercial Management System (CMS), would provide control over EDL's revenue cycle and customer service activities.

Selection of distribution Partners in Advanced PPP Agreements in Distribution. MoEW will start preparing bidding documents to select private partners that will take over from the DSPs and clarify roles and responsibility in financing and operating the distribution network. These strategic partners will be competitively and transparently selected based on the applicable procurement process and international best practices. The procurement process is expected to be launched in 2022 to award the contracts for Advanced PPP Agreements before the closing of the extended DSPs contracts. Partners would be in charge of managing investments, operation and maintenance of distribution assets and of customer service over the Agreements period, while ownership would ultimately remain public.

4. RESTORE FINANCIAL SUSTAINABILITY

4.1. CURRENT SITUATION

The sector's financial deficit stems from the consistently low electricity tariffs and high sector costs, which reflect both underpricing and the sector's operational inefficiency. Its deficit has increased significantly with the devaluation of the Lebanese pound given that its revenues are collected in LBP while almost all of its costs are in US dollars. Today's EDL revenue is only around US\$ 26 million at the estimated exchange of LBP 20,000 per US dollar, covering only 3 percent of its total operating costs amounting to about US\$ 860 million. At this stage, the deficit can only increase, preventing EDL from undertaking basic maintenance of its infrastructure and putting at risk the continuity of today's minimum service delivery, reducing furthermore the incentives for future investments in more efficient and less polluting infrastructures. Under the current crisis, EDL is on the verge of financial collapse, unable to secure cash and foreign exchange from BDL for any fuel payment.

Aside from system inefficiencies, there is no systematic, transparent process for determining just and reasonable tariffs that ensure the utility's financial equilibrium. There is also no mechanism to adjust tariffs to align with the fluctuations of external factors such as international oil prices or exchange rates. Lebanon had the largest gap by far between cost and end-user tariffs, according to the World Bank's report of 2019. Moreover, no audit has been conducted since 2010 for reasons beyond EDL's control and no investment plan was issued. Hence the risks for local and international investors are drastically high, thus posing a serious impediment to sector investments. This situation is no longer sustainable and must be addressed as soon as possible.

The solutions put in place in this plan require significant public and private capital investments that would require the sector to generate enough revenues to efficiently cover its costs. It also demands a financially sustainable and more transparent EDL as a TSO and single buyer. The sector will also contribute to the macro-social situation of the country as the electricity deficit historically weighed heavily on the budget.

4.2. ACTION PLAN

The long-term objective aims to rapidly restore the sector financial viability and improve EDL's financial transparency to ease Lebanon's macro-fiscal situation from the burden of the deficit and attract private investment. This challenge will be tackled through the following chronological actions to ensure improved tariff methodology and increased predictability in payments to sector stakeholders:

	Action	Responsibility	Milestones
	Base tariff adjustments + indexation to fuel price and FX concurrently with increase in supply hours	EDL - MoEW - MoF - CoM	2022
	Establishment of cash waterfall mechanism	EDL - MoEW - MoF - BDL	2022
	Define tariff methodology and enforceable instruments	ERA - MoEW	2023
	Implement tariff methodology as per business plan laid out by/for ERA	EDL - MoEW - ERA	2023-2027

Short-term (<1 year)

Tariff adjustments with systematic indexation to fuel price and FX. Tariffs have been maintained since 1994 at the same levels (averaging US¢ 0.5/kWh - US¢ 1/kWh at present exchange rate). In 2022, once supply hours are increased to an average of 8-10 hours, through gas imports from Egypt and electricity from Jordan, and efforts to reduce losses and improve collection are initiated, EDL will raise the tariff to levels suitable for residential customers with moderate consumption, whilst securing breakeven tariff and full-cost recovery by 2023-2024. As such, EDL will be able to provide electricity to around 75% of the residential customers at a cost 70% less than that of the private generators. The proposed tariff structure would follow a tiered pattern (that is, an increasing block structure) to secure affordable tariff for the most vulnerable households (whose consumption levels are likely to fall within the first blocks) and grow proportionately to consumption.

EDL will also adopt an indexation mechanism to reflect fluctuations in global oil price and foreign exchange rate as per SAYRAFA platform. In view of the uncertain political and financial situation in Lebanon, tariffs will be reviewed on a monthly basis to reflect at least fluctuations in foreign currency costs. This indexation will also consider affordability and, to the extent possible, limit shocks for consumers. It will subsequently be applied on a regular basis based on a transparent mechanism.

The reforms mentioned above, which include adding efficient generation capacity, including RE, fuel switching, reduction of losses, will not only increase supply but also reduce costs. It is estimated that the breakeven tariff will decrease from around US¢ 18/kWh in 2023 to around US¢ 15/kWh by 2026 based on the ambitious loss reduction plan.

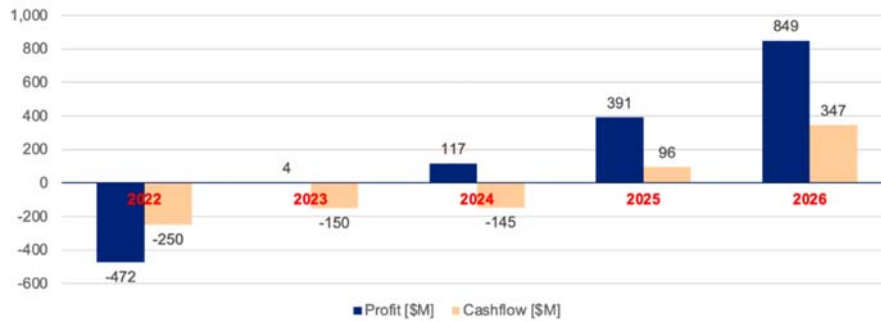
The ongoing economic crisis requires that such tariff adjustments be introduced in parallel with tangible macro-economic measures aimed at reviving economic activity, incentivizing the industrial sector (e.g. tax rebate for industrials associated with efficient use of electricity), protecting vulnerable households (e.g. targeted cash transfer through social safety system), and stabilizing the continuing erosion of purchasing power of Lebanese households. Such conditions would ultimately lead to worse energy poverty levels, thus making it even harder to materialize the significant capital investments envisaged herein.

Establishing a cash waterfall mechanism for the sector. The sector will require significant investments to finance both operating and capital expenditures. Towards that end, the sector's sound financial condition and creditworthiness are critical prerequisites to attracting this support. As such, there is an urgent need to establish a cash waterfall and liquidity support mechanism to govern sector revenue through a unified account with Banque du Liban (BDL), Lebanon's central bank, to ensure availability of funds to cover EDL's critical capital and operating expenses (including debt service payments or payments for purchases of fuel and electricity purchased from the private sector) and provide MoF predictability for any necessary budget transfers during a transition period while reforms are implemented. MoEW will establish this mechanism (in consultation with and engagement from all the relevant stakeholders) to determine where EDL's cash collections from electricity sales will be deposited and how payments will be made. The mechanism will define priorities by payments categories, and EDL cash outflows will be executed accordingly. MoF will provide budget transfers to cover any deficit in forecasted payment obligations. The cash waterfall mechanism requires systematic access to US dollars from revenues collected in Lebanese pounds in a collection account, at prior agreed-upon conditions with MoF and BDL. The cash waterfall mechanism is expected to provide clarity and transparency in terms of payments received by EDL from electricity sales, as well as predictability in terms of payments to suppliers and budget transfer requirements to cover sector cash shortfall. It will also, looking forward, be instrumental in reducing risks perceived by prospective private sector (O&M operators, service providers, IPPs, Distribution PPP Agreements partners, and so on) seeking to engage in the sector.

Figure 1 below shows EDL's expected profit and loss and cash flows by adopting the ambitious loss reduction plan, based on an average tariff of approximately 18.4 US¢/kWh, adopted in the second quarter of 2022, that achieves revenues covering most of the costs incurred in 2022, while achieving cost recovery between 2023 and 2024. The figure shows a direct cash deficit of US\$ 250 million in 2022, resulting from not adopting a higher tariff level, that needs to be financed from public treasury and immediate payment, to EDL through MoF, of all arrears from the public administrations and institutions amounting US\$ 113 million calculated at the rate of 20,000 LL per US\$.

Moreover, figure 1 shows that during 2023-2024 EDL starts setting itself on a financial recovery path by covering all its costs; hence, improving its credit worthiness thus enabling EDL to borrow money to finance its yearly cash gaps and ultimately its future investment projects. In this regard, and as a result of EDL's improved performance in the coming years (economies of scale), it would be possible to decrease the tariff based on the expected financial performance.

Figure 1. EDL P&L and Cash Flow (according to the ambitious loss reduction plan)



Medium- to Long-term (2-5 years)

Tariff methodology definition and implementation. Once operationalized, one of ERA’s mandates will be the definition and the setting of the tariff methodology based on the determination of allowed revenue to be earned by EDL and other market participants, looking forward. The methodology will account for all the capital and operational costs of the sector (fuel costs, IPP payments, generation, transmission, and distribution CAPEX and OPEX, service costs, and financing costs) and also the efficient levels of these costs based on techno-economic analysis. This methodology will analyse the various cost components and determine their relevance, which will help to eventually determine the allowed revenues of the sector, as well as its adjustment mechanism (period of adjustments, adjustment factors). The ERA will also propose the tariff structure to ensure the different tariff components reflect the different types of costs (e.g. fixed versus variable, time of use, etc.) and differentiate the tariff between the different consumer segments, with the possibility of including targeted social tariffs (e.g. lifeline tariffs) to ensure affordability and prevent from drastic market fluctuations. It will also establish the process for determining tariffs, including the public consultation procedures. ERA will be responsible for applying this tariff methodology according to sector policy objectives as set by MoEW. In addition to the final consumer tariffs, ERA will also determine tariffs for access to the network (e.g. wheeling charges) and transmission tariffs as the sector become more liberalized.

The implementation of MoEW’s plan would require an estimated US\$ 3.5 billion of capital investments over 2022-26. Acknowledging fiscal constraint and as per envisioned market structure, investments in the generation (IPPs) as well as in the distribution segments (Distribution PPP agreement partners) would primarily be privately financed, which would require EDL to become a creditworthy off-taker and/or relying on the cash waterfall mechanism as a credit enhancement mechanism to mitigate perceived off-taker risk. Investments to strengthen the transmission network are expected to be mainly publicly funded. Given the sector’s current imbalance, and lead time to develop urgent generation capacity needed under IPP arrangements, creative PPP approaches will be explored, including initial public financing with subsequent divestment to the private sector post commissioning.

Table 4. Capital Investments to accompany the capacity expansion plan (\$M)

Investment	Financing	2022	2023	2024	2025	2026
Transmission	Public financing / EDL Revenues	-	-	50	150	300
Greenfield Hydro	Private financing	-	-	-	-	-
Brownfield Hydro	Private financing	-	-	110	60	-
CCGT1	Public or private financing	-	220	220	220	-
CCGT2	Public or private financing	-	-	220	220	220
CCGT3	Public or private financing	-	-	-	220	220
Wind Farm	Public or private financing	-	-	275	-	240
Solar Farm	Public or private financing	-	127	-	169	165
Total		-	347	875	1,039	1,145

5. ENHANCE GOVERNANCE

5.1. CURRENT SITUATION

Currently, EDL is a vertically integrated establishment subject to State tutelage, operating under Law 16878 Article 4 replaced by Law 462, with exclusivity over generation, transmission and distribution in the country (except for long-standing hydropower and DSPs Contracts that have not yet expired). EDL's operations are significantly hampered by governance challenges. Delays due to rigid and arcane processes are exacerbated by significant deficiencies in EDL's information systems and the almost complete absence of process automation that have become standard in many utilities around the world for decades. The resulting confluence of the above combined with political factors and capability gap, create an inefficient system that leads to bureaucratic management at EDL's highest level and disincentives initiative and accountability at the staff level.

On the regulatory level, the power sector suffers from the absence of an independent and autonomous Electricity Regulatory Authority that would become essential to provide technical and economic oversight over largely privatized generation and distribution subsectors. Such body will be vital to engage in the implementation of the reform vision while, at the same time, providing needed stability and transparency for sector operations. Nonetheless, since 2002, ERA's Law 462 authority to grant licenses and permits was transferred to MoEW by Law 288/2014 for a period of two years, then by Law 54/2015 for another period of two years and finally by Law 129/2019 for another two years, expiring at the end of 2022.

In parallel, on the legislative front, there remain gaps which need to be immediately addressed through a comprehensive review of Law 462 through additional legislation enabling distributed RE and energy efficiency (EE). There is an important and urgent need for a comprehensive review of Law 462/2002 in order to make the sector operational. Synergy between renewable technologies and EE measures is required to increase the country's energy sustainability and exploit opportunities for development. Although the first National Energy Efficiency Action Plan (NEEAP) developed EE measures (standards and labels, financial incentives for EE appliances, banning imports of non-efficient appliances and equipment, incentivizing imports of efficient equipment, and mandating energy audits), they were not implemented. Hence, it is necessary to adopt an energy conservation law that offers a legal framework for EE measures and a Distributed Renewable Energy Law that allows greater distributed RE exchanges using bi-directional meters, introduced in 2011 by EDL.

5.2. ACTION PLAN

Modernizing sector governance towards market-based model would encompass (i) unbundling EDL, (ii) establishing and operationalizing ERA and (iii) modernizing the sector's legal framework. The process to functionally and legally unbundle and corporatize EDL becomes more than necessary. Towards this end, a first step on the financial, legal, technical, and organizational levels will be required to separate the utility's functions into business units, develop an asset registry and distribute these assets among those business units, recast its accounts to ring-fence costs and revenues of these business units, propose new laws and decrees that will govern the new structure,

design the Advanced PPP model for EDL’s distribution sector and launch the process to competitively select partners to operate it, etc. EDL, MoEW, MoF, and the regulatory authority will be at the center of this process, which is expected to take 4-5 years to complete.

Reformed governance structure and sector’s unbundling would be conducive to an incremental approach for privately financed and operated generation (Independent Power Producers). EDL will be modernized to establish a state-of-the-art TSO, with the single wholesale buyer responsibility in an intermediary phase, before moving, in the long-term, towards a fully liberalized electricity market. The process to establish ERA as an independent and autonomous regulator will start immediately to have fully functioning arrangements for sector oversight by the time private participants enter the market. Finally, the legislative framework governing the sector will be modernized to be aligned with best practices, recent technology innovation and Lebanon’s climate agenda.

Action	Responsibility	Milestones
Disclosure of EDL audited financial statements on yearly basis + quarterly non-audited financial statements	EDL	From 2022
Finalize EDL’s functional unbundling of Generation (G), Transmission (T), Distribution (D)	MoEW - EDL	2023
Complete legal unbundling (G, T and D)	MoEW	2025
Corporatization of EDL and establishment of TSO	MoEW	2026
Launch recruitment process for commissioners of ERA in accordance with law 462/2002 and international best practice	MoEW	immediately
Adopt time-bound plan to fully operationalize the sector’s regulatory framework (preparation of legislations, implementation decrees, and interim arrangements for sector oversight) until ERA is fully functional	CoM	2022
ERA establishment (commissioners’ appointment, budget approved and funded)	CoM	end of 2022
Set up internal organization and status, staff recruited	MoEW - ERA	2023
ERA fully operationalized	CoM – MoEW - ERA	2023
Prepare a draft law specifying the proposed amendments to law 462/2002 with a comparative table and needed rationale, in consultation with sector’s stakeholders and as per international best practices, and submit it to the CoM for approval	MoEW - CoM	2022
Ratify Distributed Renewable Energy Law and	MoEW – CoM -	2022

Action	Responsibility	Milestones
Energy Conservation Law	Parliament	
Ratify required amendments and specially amendments to law 462/2002 in compliance with law 181/2011	MoEW-CoM-Parliament	2023

Short-term (1-2 years)

The institutional framework governing the sector will begin to be modernized. As an immediate step, EDL will develop financial reporting practices and procedures in line with good practices and international financial reporting standards. EDL will produce and disclose on yearly basis audited financial statements and will also release unaudited quarterly financial statements. In addition, the functional unbundling of EDL will be initiated.

On the regulatory front, ERA will be established and MoEW will launch immediately the recruitment of its commissioners. A fully functioning independent and autonomous regulator would be critical to ensure a conducive environment to cost-effectively attract private sector participation in a fully unbundled sector as envisioned by Law 462. International experience demonstrates that, under circumstances where autonomous regulatory regimes lack tradition (such as in Lebanon), a transition period during which the regulator formulates and adopts its necessary enabling internal rules and procedures is essential to provide an orderly transfer of powers and allow the nascent regulator to communicate its objectives and new functions to the public to build trust and credibility. Therefore, ERA establishment will be initiated immediately with 18 months estimated lead time to be fully functional. MoEW will launch the competitive recruitment for commissioners of the ERA by early 2022, that would be subsequently appointed by a COM decree upon MoEW's proposal (no later than by end of 2022). The ERA panel will then set up its bylaws and administrative laws, as well as personnel statute and budget. Operationalization of the regulator, however, will require time to complete. Formal (*de jure*) regulatory independence requires, as a prerequisite, formal independence from the political process, while *de facto* independence depends on factors such as the frequency of contacts with political parties, political influence on the regulator's budget, the regulator's internal organization, partisanship of nominations of regulators, independence of the regulators themselves, external influence on the regulatory process, etc.

Once established, ERA will need to establish its own budget, recruit its own staff, set up its own rules and procedures to ensure its independence and autonomy within its statutory scope, develop its public consultation and rule-making methodologies, among other things. As such, it is important to establish the regulator quickly so work on these issues can begin to avoid further delays in this process.

Additionally, MoEW will adopt a time-bound plan to fully operationalize the sector regulatory framework, including ERA's preparation of legislations and implementation decrees and delineation of responsibilities for sector oversight until the orderly transfer of authority to a fully functioning ERA (by the end of 2023), that is, when ERA would have adopted its internal regulations on key regulatory issues, including tariffs, licenses, and public consultations.

In parallel, a comprehensive review of Law 462 will be carried out immediately. Such review was supposed to be undertaken under Law 181/2011 but the CoM never completed the procedure. This

has to be carried out starting now through a draft law to be submitted to CoM for approval prior to sending it to Parliament for ratification. Law 462 does not currently provide for a transition period to allow for an alternative to the exercise of ERA's authority while it continues the process of operationalization. In this respect, Law 462 needs to be amended to allow for such a transition mechanism. Furthermore, since Law 462 does not currently allow for Advanced PPP Agreements in distribution and does not provide a clear and comprehensive picture of the future functioning of the sector and market model to apply, work on revising it will be carried out in parallel to address these issues.

The updated legal framework should be enacted through CoM decisions and Parliament ratifications within 2022. Its operationalization should be ensured by 2023.

Additionally, the legislative framework for RE distributed generation and energy efficiency will be rolled out. The Government will propose for ratification by Parliament two draft laws to improve penetration of RE in the generation mix in Lebanon and incentivize energy conservation, to enable meeting the Government's previous engagement regarding RE. The draft laws were submitted to COM on January 21, 2022. The Energy Efficiency Law includes provisions to enhance energy efficiency, especially auditing environmental standards, applied by the industrial sector, related to energy efficiency of industrial products, among others. The distributed RE law will allow greater distributed RE exchanges using bi-directional meters, introduced in 2011 by EDL.

Medium- to long-term (3-5 years)

Sector unbundling and EDL's modernization. The heart of the envisioned reforms is the unbundling of EDL's generation, transmission and distribution operation, with generation and distribution largely in private sector control and transmission remaining in the public sector. This vision would transform EDL into a TSO and a single buyer that would act as a conduit between private sector-owned generation plants, as suppliers, and distribution companies, as beneficiaries, as a transitory step toward a liberalized market.

MoEW's overall objective is to incrementally move, over a five-year timeline, from the current vertically integrated structure, towards a competition structure for generation and distribution functions. EDL core functions would evolve towards a modernized TSO (initially and during a transition period aimed at improving generation capacity investment conditions as a single wholesale-buyer), while existing generation and distribution assets would be owned by newly created state-owned generation and distribution enterprises (which could possibly be privatized over the long term). Single buyer arrangements would be a transition mechanism to achieve, over the long term, a full market-based structure where generators and distribution companies can directly enter into bilateral arrangement. This transition is needed to allow newly established distribution companies to become sufficiently creditworthy to enter into power purchasing arrangements directly with generators.

On the basis of EDL's fixed assets registry and opening balances, EDL will proceed with account unbundling (that is, separate bookkeeping of activities in Generation, Transmission and Distribution activities) to increase transparency and to allow the regulatory authority to better exercise oversight. EDL's functional unbundling will then be introduced to organize internal structures by sub-segment. Ultimately, legal unbundling would separate transmission functions which would ultimately be EDL's core functions under the modernized sector governance structure.

6. CONDITIONS FOR THE SUCCESSFUL IMPLEMENTATION OF THE PLAN

Success of MoEW's plan is contingent on fulfilment of several critical tasks in each of the following four pillars:

Supply and Generation

- Finalization of 300 \$M initial loan from the World Bank to support Egypt gas, solar systems for water pumping stations for water establishments and provision of technical assistance for MoEW and EDL
- Final agreement from Egypt to supply the required quantities of natural gas for Deir Amar (650 million m³/year)
- Provision of additional contemplated 300 \$M loan from the World Bank and/or other IFIs to support electricity imports from Jordan
- Provision of additional quantities of natural gas at Deir Amar and FSRU at Zahrani to support additional electricity supply starting 2023
- Availability of public/private financing along with associated expedited legislations as required to support addition of permanent generation capacity

Transmission and Distribution

- DSP performance improvement at no additional cost through contract extension as per laws 160 and 185 regarding suspension of delays
- Success in realizing the conditions that enable achievement of the ambitious loss reduction plan
- Adoption of a reformed PPP based distribution model post 2023

Financial

- Adoption of tariff adjustment as proposed
- Development of EDL financial reporting practices and procedures in line with good practices and international financial reporting standards

Governance (Institutional, Legislative and Regulatory)

- Ratification of Energy Conservation Law and Distributed Renewable Energy Law
- Issuance of relevant decrees to appoint ERA's commissioners and provision of their corresponding budget
- Undertaking a thorough review of Law 462 according to international best practice, in consultation with CoM, sector's stakeholders and with the assistance of international consultants, and submit a draft law of the proposed amendments to CoM for approval prior to sending it to Parliament for ratification

Moreover, the full engagement of key stakeholders is crucial to achieve the plan objectives as follows:

Support from institutional stakeholders

- **Council of Ministers** to approve:
 - Improvement of the DSPs contract through the transfer of some additional activities to the DSPs, without any additional cost, during the contract extension period, based on the applicability of laws 160 and 185 regarding suspension of delays

- Decree allocating the proposed land at Zahrani to MoEW for the purpose of developing Zahrani II power plant
- Termination of J&P Avax contract assuming outcome of arbitration underway not adversely impacted
- Cancellation of old CoM decisions related to Deir Amar II (Decision #17 dated 12/03/2013 - approval to contract J&P Avax as per Central Tender Board bidding result, and decision #84 dated 21/05/2018 - approval to transform J&P Avax contract from EPC contract form to PPA agreement form) assuming outcome of arbitration underway not adversely impacted
- **Ministry of Finance** to bridge the financial gap for the coming 3 years until full cost recovery from tariff revenues is achieved
- **Ministry of Interior & Municipalities** to provide security escort during campaigns to disconnect infringements on the electrical network on all Lebanese territories and protect EDL facilities and personnel as well as the Lebanese portion of the AGP
- **Ministry of Defense** to provide security escort by the army on an ongoing basis during campaigns to disconnect infringements on the electrical network in specific areas on all Lebanese territories
- **Ministry of Justice** to expedite the law cases related to the fine records resulting from the infringement disconnection campaigns, and support EDL in amending certain regulations and bylaws to enhance the role of the DSPs in accordance with the relevant Cabinet decision and the recommendations of the World Bank
- **Central Bank** to secure sustainable access to USD from EDL collections
- **Public administrations, refugees, water establishments** and other entities to pay their overdue and future electricity bills

Support from the public

- Achieve broad based stakeholders buy-in to adjusted tariffs by conducting proactive awareness campaigns, getting support from parliamentary groups, civil society, public and local authorities to promote proposed tariff increase, loss reduction and timely bill collection in close coordination with the media

Support from the international community

- Financing support via loans, credit enhancement and others for sector's infrastructure investments needs and associated technical assistance to implement the contemplated plans in generation, transmission and distribution and achieve 30% share in the energy mix from renewable resources by 2030 as detailed in the national renewable energy action plan developed by the International Renewable Energy Agency (IRENA).

7. PROGRESS TOWARD SHORT-TERM OBJECTIVE AND BROADER VISION

Several milestones of the outlined MoEW's plan have already been either initiated, advanced or fully implemented including but not limited to the following:

Supply and Generation

- Finalized the Least Cost Generation Plan with EDF and the World Bank
- Finalized the last stage of the tender for the installation of 180 MW of solar farms across Lebanon, negotiated and selected 12 private companies to install these solar farms at a price of 5.7 US¢/kWh for the Bekaa region and 6.27 US¢/kWh for the other Lebanese regions
- Reached agreements with the 3 private successful tenderers for the generation of 226 MW of wind farms to proceed with the execution of the contracts and to grant the Lebanese Government the right to renegotiate the price per kWh upon the project reaching financial close
- Established a partnership project with the International Finance Corporation (IFC) for the rehabilitation of the existing hydro power plants and add more than 120 MW of installed generation capacity
- Initiated and advanced negotiations on Gas Purchase Agreement with Egypt, on Gas Transport and Swap Agreement with Syrian, Jordanian, and Egyptian counterparts and pursued efforts to resolve hampering obstacles
- Negotiated with the Jordanian Government the supply of electricity power and signed the corresponding Agreement on January 26 2022
- Coordinated with the Syrian Government and signed Agreement for the transmission of the Jordanian electricity through the Syrian grid on January 26, 2022
- Initiated the negotiations with Iraqi government for the extension of existing agreement to possible additional fuel supply of Lebanon by Iraqi fuel, the stabilization of the delivered quantities so they will be no less than monthly 75,000 tons and the locking of the delivery dates
- Awarded to the Egyptian TGS Company the contract for the rehabilitation of the AGP pipeline in its Lebanese section and gave the service order to TGS to commence the relevant works
- Maintained coordination with international partners and mainly World Bank to facilitate access to needed financing for electricity and gas imports and other sector needs
- Completed Environmental & Social Safeguards documents related to the AGP rehabilitation works, and publicly disclosed them on the Ministry and the World Bank websites, this being a condition for the financing of the supply of natural gas from Egypt
- Initiated work with UNDP on component 2 of the WB loan related to provision of solar water pumping systems for water establishments and rehabilitation of the existing Hrache-Jeita Hydro Plant

Transmission and Distribution

- Advanced discussions with the Center for Development and Reconstruction (CDR) to benefit from a contemplated loan from Arab Fund for Economic and Social Development to rehabilitate the National Control Center and EDL main building
- Concluded operating frameworks between EDL and the DSPs to improve scope and process efficiency and decrease non-technical losses
- Finalized Terms of Reference for the rehabilitation works of Achrafieh substation that was prepared by EDF in coordination with EBRD

Financial

- Launched procurement process and received offers for EDL audit, a condition for WB financing
- Launched procurement process to hire a consultant for designing Cash Waterfall Mechanism, a condition for WB financing
- Obtained confirmation from MoF and Central Bank that enables EDL to exchange its collected revenues in Lebanese pounds to USD at SAYRAFA rate in order to pay its foreign currency dues, a condition for WB financing
- Launched preparation of Terms of Reference to hire a consultant for updating and supporting EDL's financial department in coordination with the World Bank
- Finalized the credit enhancement mechanism to support the tenders for solar and wind farms with the support of the European Bank for Reconstruction and Development (EBRD)

Governance (Institutional, Legislative and Regulatory)

- Advanced legal due diligence regarding transfer of some additional activities to the DSPs, without any additional cost, during the contract extension period, based on the applicability of laws 160 and 185 and obtained the opinion of the *Legislation and Consultation Board* and the opinion of *the Court of Audit* in this regard
- Finalized the draft "Decentralized Renewable Energy" law and draft "Energy Conservation" law and submitted these to the Council of Ministers for approval in January 2022 prior to submittal to parliament for ratification
- Set up a national plan and guiding procedure to facilitate the installation of rooftop solar photovoltaic systems, resulting in more than 100 MW of installations all over Lebanon during 2021 alone and still on the rise during 2022