

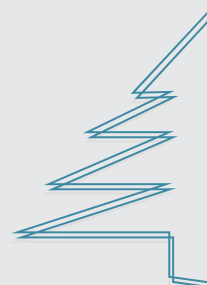
Situation Assessment

April 1, 2026



Lebanon on the Brink of Blackout

The War on Iran Exacerbates the Energy Crisis



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Introduction

For the past two weeks, an escalating war between the United States and Israel on one side, and Iran on the other, is imposing tremendous geopolitical risks affecting global energy markets. Not only is Iran a major oil producer, the country also sits near some of the world's big oil producers as well as most critical oil transport routes. Iran's strategic position near the Strait of Hormuz-through which roughly one-fifth of the world's traded oil passes-makes the ongoing war particularly dangerous for global energy supply. This military conflict is causing significant disruptions in global oil supply that are still under control. However, these disruptions would inevitably lead to volatility in international oil prices.

For countries that rely heavily on imported oil and gas products, such as Lebanon, fluctuations in oil prices can have far-reaching consequences, impacting both the energy sector of the country and the economy at large. The Lebanese energy system is particularly vulnerable being dependent almost entirely on imported petroleum products.

In view of the ongoing war and the duration it might take, this article analyzes the structure of an already-unstable Lebanese energy system and evaluates the potential impacts of oil price fluctuations under different geopolitical scenarios. The analysis covers two main key sectors: electricity generation and transportation. Using available energy consumption statistics and scenario analysis, the study explores several possible scenarios, ranging from stable oil prices to extreme price spikes, and how moderate and extreme oil price shocks could affect Lebanon's fuel consumption and electricity supply, leading to potential inflation and instability on the broader Lebanese economy.

The Strait of Hormuz and Global Energy Security: Shifting Dynamics and Market Volatility

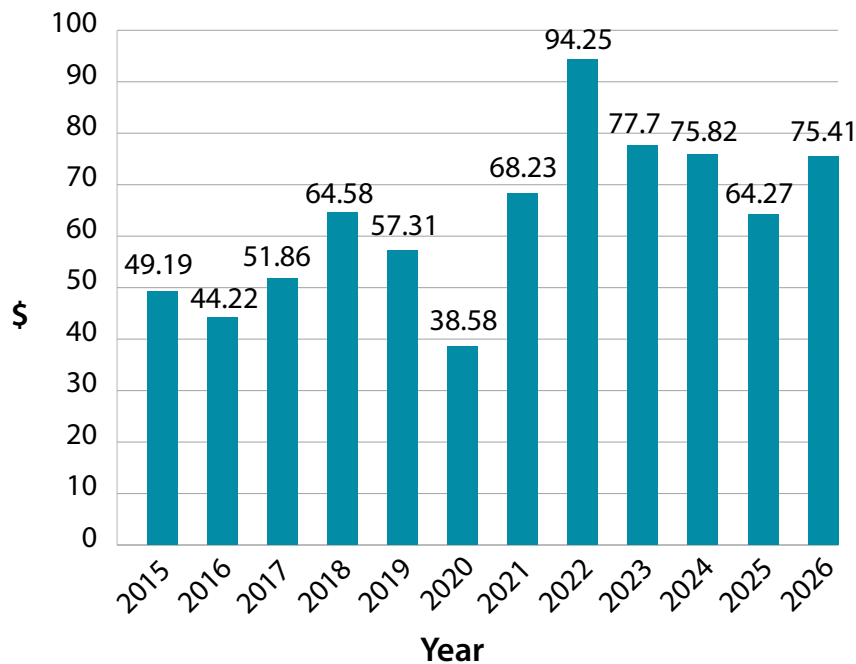
Approximately one-fifth of the world's traded oil passes through the narrow waterway of Hormuz and Iran controls territory adjacent to this critical maritime chokepoint. Any military confrontation in the region involving Iran could disrupt shipping routes, increase insurance costs for tankers, and create uncertainty in global oil markets.

In addition to being strategically located near the Strait of Hormuz, Iran occupies a strategic position in the global energy system. The country is one of the largest oil producers in the Middle East and holds some of the world's largest proven reserves.

Historically, geopolitical tensions involving Iran have led to significant fluctuations in oil prices. For instance, during the Iran-Iraq War, attacks on oil tankers in the Persian Gulf caused major disruptions in energy supply. Similarly, tensions related to Iran's nuclear program have periodically triggered spikes in oil prices. The current war is pushing the risk of oil prices fluctuations to new limits, actually shaking the energy dynamics at the international scene.

The fluctuation in oil prices could result from several mechanisms, some of which are happening today. In fact, the current war has resulted in disruptions to Iranian oil production and to some reported damages regional oil infrastructure. The war is also leading to blockage and military threat to the Strait of Hormuz. Increased geopolitical risk premiums in global markets is reported; furthermore, even if physical supply disruptions were limited, the perception of risk alone could cause oil prices to rise significantly.

With these factors taken into consideration, the average oil price today is slightly exceeding the 100 USD ceiling. Over the past ten years, the average oil price was between a minimum of 49 USD and a maximum of 94 USD as it can be shown from the below graph.

Figure 1. Annual Average Crude Oil Prices

Source: "Crude Oil Prices," *Macrotrends*, at: <https://acr.ps/1L9Ba1s>

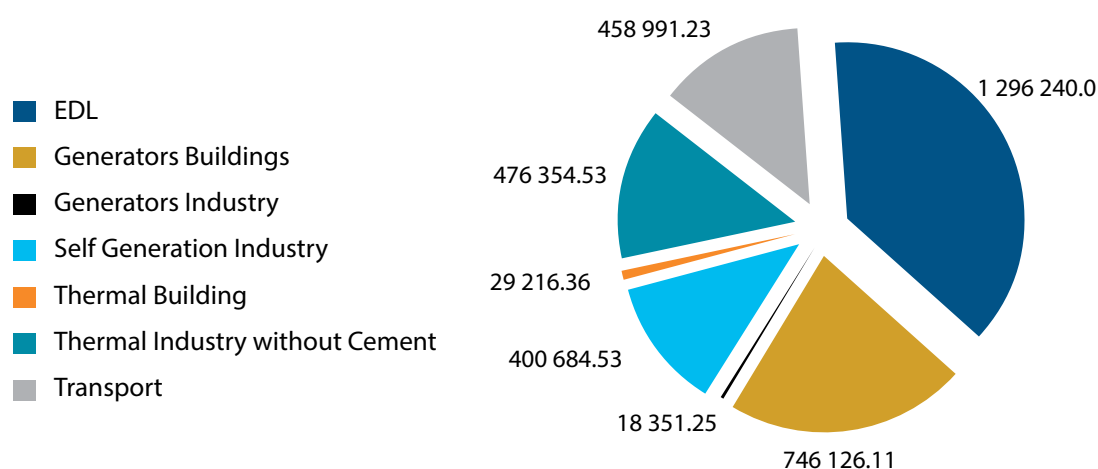
Several short-term and medium-term measures are being implemented by different countries to limit this price increase. These measures include the increase of supply in different countries around the world, reducing domestic prices, and most importantly releasing oil from strategic reserves. It is reported that the United States and many members of the International Energy Agency (IEA) agreed to release hundreds of millions of barrels from emergency reserves with the aim to stabilize global markets.

The increase in oil prices is already affecting the global markets and the economies of oil-producing countries. The impact on non-oil-producing countries is even bigger, with Lebanon being no exception. This volatile global situation is open to different scenarios, with each affecting Lebanon in a different way.

Structure of Lebanon's Energy System

In addition to being organically involved in the ongoing conflict, Lebanon has a volatile and fragile energy system. The country imports nearly all of its petroleum products, despite the fact that the country's offshore offers remarkable untapped oil and gas potential.

Oil imports are mainly used in the electricity sector, the transportation sector, the industrial sector, and as importantly in the residential heating sector. It is no doubt that the current global dynamics would directly affect the domestic energy costs in the country. The following graph shows the different uses of diesel oil in Lebanon during the year 2018 (source: LCEC, Lebanon's National Renewable Energy Action plan 2025-2030). The importance of this graph is in the fact that while diesel oil use is of extreme importance in the transportation, industrial, and heating sectors, it is also used almost equally for electricity generation by EDL and by the hundreds of neighborhood generators all over the country.

Figure 2. Different Uses of Diesel Oil in Lebanon During the Year 2018

Source: Lebanese Ministry of Energy and Water, Lebanese Center for Energy Conservation (LCEC), "The National Renewable Energy Action Plan of Lebanon 2025-2030".

Energy security is therefore one of the most critical vulnerabilities of the Lebanese economy. Petroleum derivatives -particularly diesel, gasoline, and fuel oil- have dominated and are still dominating the Lebanese energy mix. These fuels are essential for electricity generation, private generators, transportation, industry, and residential space heating.

Labeled Fragile: The Centralized Electricity Sector of Lebanon

Lebanon's electricity sector is characterized by structural inefficiencies and chronic shortages, fully deserving the label "fragile". Over the years, the management of Electricité du Liban (EDL) has long struggled with financial deficits and operational limitations, failing dramatically to ensure a minimum of consistent electricity supply.

Most of the country's electricity is generated using oil-based fuels, primarily fuel oil and diesel. Lebanon operates several thermal power plants, including the two main power plants in Deir Ammar (North Lebanon) and Zahrani (South Lebanon). Both plants are operated using imported diesel oil. Other older power plants include the power plants in Zouk and Jiyeh, both operated using fuel oil. These plants rely on imported fuel shipments, making the electricity sector highly sensitive to international oil prices. Following the 2019 crisis, the electricity generation by EDL dropped to extremely low values, reaching in some cases 1 to 2 hours of daily supply. Currently, electricity supply by EDL is around 4 to 8 hours per day.

As EDL fails to supply electricity in a reliable manner and a consistent way, households and businesses rely heavily on private generator networks. These generators, often called "neighborhood generators", run primarily on diesel oil and represent a parallel electricity system that fills the gaps created by the EDL's national grid. Neighborhood generators use diesel oil supply by a handful number of Lebanese private companies specialized in the oil import industry.

On the other hand, Lebanon has an operational hydro power plants system. Historically built with a capacity exceeding 315 MW, electricity production from the hydro power plants of Lebanon is decreasing constantly due to many reasons, reaching as low as 30 MW. In 2026, the Litani Water Authority (LWA), the largest publicly-owned operator of hydro power plants, announced that the Karaoun Lake is filled with around 90 Million cubic meters out of a total capacity of 220 Million cubic meters, noting that rainfall in this current year is way below average. Using the available quantity of water, the LWA is committed to generate 40 MW of electricity.

Despite the fact that hydro power plants could generate a small share of the country's total energy demand (estimated at 2,000 MW to 2,400 MW), the importance of this hydro network is in its capability to offer electricity to critical loads in the country in case of a total collapse of the EDL supply capabilities. In fact, and as reported by the LWA during the 2019-2021 crisis, hydro power plants were able to supply constant and reliable electricity to critical loads in the country, including the Beirut International Airport, the main water pumping stations supplying the capital, in addition to other critical governmental entities.

Table 1. Renewable Energy Installed Capabilities and Energy Consumption 2018-2024

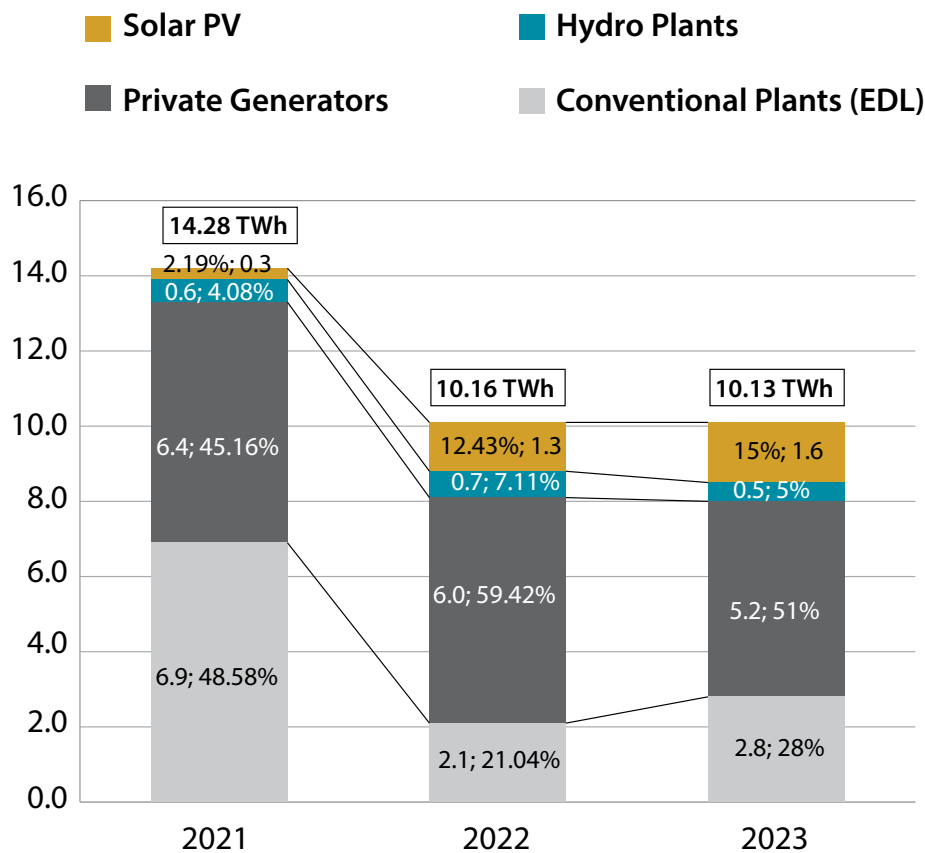
Year	2018	2019	2020	2021	2022	2023	2024
Solar PV - Distributed (MW)	56	78	92	206	869	1,081	1,190*
Solar PV - Distributed (GWh)	85	112	133	309	1,262	1,550	1,706
Hydro (MW)	282	282	282	282	282	282	282
Hydro (GWh)	347	968	1019	576	722	517	517
Biogas (MW)	7	7	7	7	7	7	7
Biogas (GWh)	83	35	22	-	-	-	-
Total RE (MW)	345	367	381	495	1,158	1,370	1,479
Total RE (GWh)	515	1,115	1,173	885	1,985	2,067	2,223
Demand (GWh)	22,880	23,566	24,273	21,846	16,385	16,775	17,278
Total Generated RE Share from Electricity Demand	2.3%	4.7%	4.8%	4.0%	12.1%	12.3%	12.8%
Actual Supply (GWh)	20,127	20,066	21,104	14,283	10,159	10,134	10,290
Total Generated RE Share from Actual Electricity Supply (%)	2.6%	5.6%	5.6%	6.2%	19.5%	20.4%	21.6%

source: the Lebanese Center for Energy Conservation- LCEC.

Another interesting element in the Lebanese electricity mix is the outstanding surge in the use of solar systems for electricity generation. While the country has witnessed a steady increase in the use of solar power since 2010, the severe economic crisis in 2019 and the following collapse of EDL in supplying the basic electricity needs have pushed for a mushrooming effect in the use of solar power. Between 2010 and 2020, the installed solar capacity in Lebanon increased from 0 MW to 98 MW. Between 2020 and 2022, the installed solar capacity increased by around 980 MW, with cumulative solar installations exceeding 1,200 MW by the end of 2024. A large share of those decentralized rooftop applications include batteries, making them ideal backup systems in case of lack of centralized electricity supply.

Solar use of Lebanon now covers around 15% to 20% of the country's electricity generation as it can be depicted from the graph here below, making this sector a reliable backup in terms of crises.

Figure 3. Electricity Generation Mix :TWh, %



Another interesting note from the graph above is that while EDL is responsible for ensuring around 28% of the country's electricity generation, "neighborhood" private generators cover around 51%, twice of what EDL is supplying.

As a result, oil price fluctuations affect Lebanon's electricity sector through two channels: the cost of fuel oil and diesel oil for state-run power plants and the cost of diesel oil used by private generators. It is definite that any increase in the international oil prices would reflect directly in an increase in electricity prices for the end consumers with private generators since the prices are set monthly by the Ministry of Energy and Water.

However, the risky part is the ability -and willingness- of EDL to increase the electricity prices to the end consumers. In fact, since February 2024, the Government of Lebanon has set an average price of 27 USC per kWh to be paid by consumers for the electricity supplied by EDL. This price represents the break-even point for EDL and it is calculated based on a crude oil price of 68.11 USD per barrel.

Use Of Oil Products in the Transportation and Other Sectors: The Back-to-Back Effect

Lebanon's transportation sector depends almost entirely on gasoline. Unlike some countries that have developed extensive public transportation networks or electrified mobility systems, Lebanon relies heavily on private vehicles. Gasoline is used by the majority of cars, taxis, and delivery vehicles operating in the country. Larger vehicles (trucks and buses) use diesel oil, though in remarkably smaller quantities. The transportation sector is therefore one of the most sensitive components of Lebanon's economy to oil price shocks.

Since the transportation system in Lebanon lacks diversification, any increase in global oil prices translates almost immediately into higher gasoline prices at the pump. This has several economic consequences, some of which with immediate effects. Those consequences would include increased transportation costs, higher food and goods prices due to transport expenses, ultimately leading to rising inflation and reduced household purchasing power.

An increase in oil prices would also affect the residential heating sector in Lebanon, whereas a large number of households use diesel oil for space heating purposes. Any increase in international oil prices would directly be reflected in the price paid by end consumers. Luckily at this stage of the year, heating demand is decreasing as we get close to springtime.

The industrial sector will witness a different kind of challenge in case of an increase in oil prices. Many industries in Lebanon use conventional fuel sources for electricity generation and industrial processes. In most cases, energy costs represent between 15% and 50% of the total production costs in the Lebanese industrial sector. Severe consequences on the ability of industrial facilities to export outside Lebanon can be envisaged.

The Probable Scenarios and the Potential Impacts

The ongoing large-scale regional conflict that involves Iran is surely amplifying the existing vulnerabilities of the Lebanese energy system. For the purpose of this assessment, three scenarios are considered in terms of oil prices fluctuations, each of which presents different challenges for the Lebanese energy system. Those scenarios are the following:

- Oil prices remain relatively stable.
- Oil prices increase moderately.
- Oil prices surge dramatically.

Scenario 1: Oil Prices Remain Relatively Stable

In this first scenario, geopolitical tensions escalate but do not significantly disrupt global oil supply. Markets may react temporarily, but prices eventually stabilize. As per the rapid changes at the international energy scene, this scenario is effectively the least probable to today.

Under such circumstances, Lebanon would experience only limited direct effects on its energy system. If oil prices remain stable, the operational costs of power generation would remain largely unchanged. However, Lebanon's electricity sector would still face structural challenges that are unrelated to oil prices, including financial insolvency and infrastructure limitations.

Fuel imports for power plants would continue at similar costs, allowing EDL to maintain current levels of electricity production, and most importantly keep a positive financial balance. Private generator operators would also face relatively stable diesel prices, preventing sudden increases in generator subscription fees. The country would remain dependent on costly oil-based generation, and the risk of future price shocks would persist.

On the other hand, stable oil prices would help maintain current gasoline prices in Lebanon. While transportation costs would remain high by international standards, households and businesses would avoid additional financial pressure. Inflationary pressures related to fuel costs would also remain limited.

Scenario 2: Moderate Oil Price Increase

In the second scenario, -which is currently the actual situation- the war and the ongoing regional conflict disrupts some oil supply or increases geopolitical risk premiums, causing global oil prices to rise moderately. As mentioned today, the average oil price has reached around 100 USD per barrel, with an increase of around 25% to the pre-crisis period.

This increase will be having noticeable, yet manageable consequences for Lebanon. The current high oil prices will increase the cost of fuel imports required for electricity generation.

For EDL, which already operates at a financial deficit, rising fuel costs would exacerbate fiscal pressures, with no witnessed appetite at the Government level to increase electricity tariffs to final consumers. The Government might be willing to offer price subsidies, which is also quite improbable. Most probably, EDL will be forced to increase its financial deficit, adding more pressure to its operation.

On the other hand, private generator operators are now facing higher diesel prices. These increased costs will almost certainly be passed on to consumers in the form of higher generator subscription fees. As a result, Lebanese households could face rising electricity costs from both the national grid and private generators. An initial survey with owners of private generators shows that electricity bills will increase by around 140% pre and post-war.

Gasoline prices have also increased proportionally with global oil prices. Since Lebanon imports refined petroleum products, domestic prices tend to track international market movements closely. The current high gasoline prices would affect consumers directly and indirectly. Direct effects include increased costs for commuting and transportation. Indirect effects would include rising prices for food, goods, and services due to higher transportation expenses. The current increase in oil prices would therefore contribute to higher inflation across the Lebanese economy.

Scenario 3: Severe Oil Price Surge

The most dramatic scenario involves an additional escalation of the regional war that disrupts major oil supply routes or significantly damages production infrastructure. If the Strait of Hormuz is to be blocked or if Iranian oil exports were halted entirely, global oil prices could surge dramatically, with prices exceeding 150 USD or even 200 USD per barrel. Such a scenario would have profound consequences for Lebanon.

A dramatic surge in oil prices would place enormous strain on Lebanon's electricity system. Fuel imports for power plants would become significantly more expensive. Given the financial weakness of EDL, the government might struggle to secure sufficient fuel supplies. The capacity of EDL to supply electricity would be reduced drastically, probably reaching as low as 1 to 2 hours of supply per day. A remarkable reliance on private generators will be witnessed despite the fact that the price per kWh could increase from an average of 33 USC per kWh to more than 60 USC per kWh. Since diesel prices would rise sharply, generator electricity will become extremely expensive.

The risky part is that for many households, electricity costs could become unaffordable, pushing a large number of families to reduce consumption in an unhealthy way. In extreme cases, parts of the country could experience prolonged electricity shortages if fuel imports become financially unsustainable.

On a brighter note, having an oil price in the range of 150 USD to 200 USD per barrel will be another golden opportunity for the already-flourishing solar market. In that case, another "green revolution" might be witnessed, with an estimated capacity of around 100 MW to 200 MW to be installed in less than a year.

The major surge in oil prices would cause gasoline prices in Lebanon to increase dramatically as well. Transportation is essential for economic activity, and higher gasoline prices would affect nearly every sector of the economy. Households would face higher commuting costs, businesses would face higher logistics expenses, and food prices could increase significantly.

A direct result would include a rise in the demand on public transportation, but Lebanon's limited transport infrastructure might struggle to accommodate this shift. The result could be a combination of economic hardship, inflation, and reduced mobility. An opportunity for electric mobility using solar powered systems will be witnessed to replace gasoline consumption in the transportation sector.

Oil price shocks would not affect only the energy sector. They would also have broader macroeconomic implications. Lebanon's economy already suffers from currency instability and high inflation. Rising fuel prices could further weaken purchasing power and increase the cost of living.

It is also essential to note that industries that depend on transportation such as agriculture, retail, and logistics would experience rising operational costs. In addition, the government's fiscal burden could increase if authorities attempt to subsidize energy imports to protect consumers.

Conclusion: Adding Imbalance to an Unbalanced System

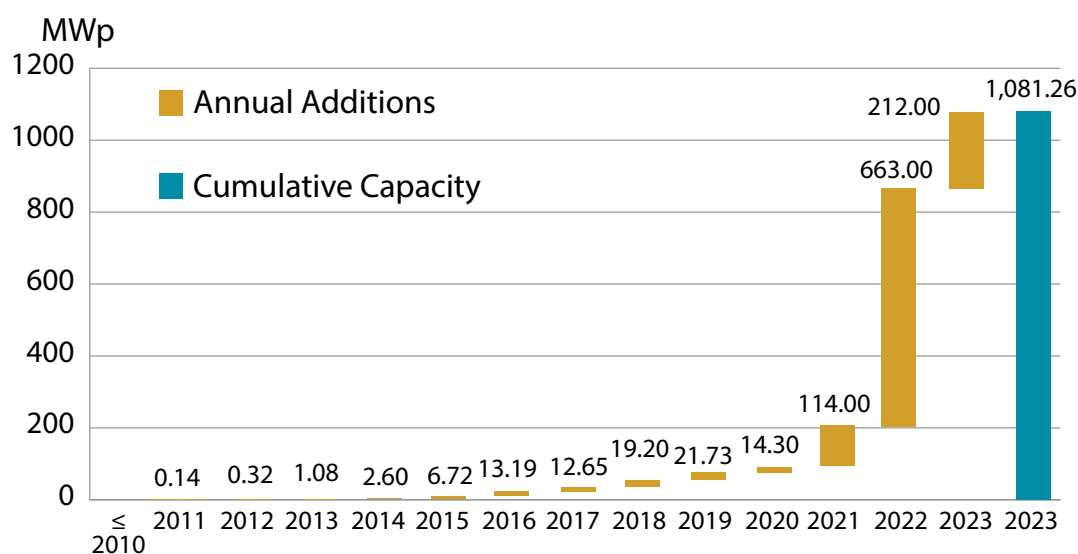
The current war with Iran represents a major geopolitical risk with potentially significant implications for global oil markets. Many countries in the region are witnessing its direct impact, especially oil-exporting countries in the Gulf area. For Lebanon, which depends almost entirely on imported petroleum products, fluctuations in oil prices could have profound consequences.

If oil prices remain stable at around 75 USD per barrel, Lebanon's energy system would continue operating under its current structural constraints. Moderate price increases would raise electricity and transportation costs, contributing to minor inflation and economic pressure.

In the event of a severe oil price surge which the markets are expecting, Lebanon's already fragile energy system could face serious disruptions. The already weakened ability of EDL to provide reliable electricity will be increased. EDL has struggled with fuel shortages, financial insolvency, and aging infrastructure. Electricity generation costs could rise dramatically, private generator prices could become unaffordable, and gasoline prices could place heavy burdens on households and businesses. The consequences on EDL could be devastating, resulting in a severe financial deficit.

Ultimately, Lebanon's vulnerability to oil price shocks reflects deeper structural weaknesses in its energy system that could be translated into a green energy transition. Reducing this vulnerability will require diversification of energy sources, investment in renewable power, and reforms aimed at strengthening the resilience of the country's electricity and transportation sectors. In 2025, the country's total energy bill amounted to around 4.3 Billion USD. A sudden surge in oil prices would increase the energy bill to more than 5 Billion USD in 2026.

As it can be seen from the graph here below, the economic crisis in 2019 has resulted in a historical spike in solar installations in the country. A severe price surge in oil prices would definitely open the door for a second solar revolution.

Figure 4. Installed Solar Power Capacity Over Time (MWp)

A large-scale regional conflict involving Iran could therefore amplify existing vulnerabilities in the Lebanese energy system. The consequences would likely be felt most strongly in two critical sectors: electricity generation and transportation. In conclusion, while oil price shocks present serious risks, they could also create incentives for structural reform in Lebanon's energy sector. Higher fossil fuel prices often accelerate the adoption of alternative energy technologies. Investment in solar generation could reduce dependence on imported fuel and strengthen energy security.

The current war will surely have outstanding and long-lasting geopolitical effects. Nevertheless, the unbalance in the oil prices resulting from this war is affecting a large number of countries, with Lebanon being no exception. Although Lebanon is known for its resilience, the persistence of those fluctuations could be devastating. The hopes are for this war to have an end soon. Only in an environment of peace and cooperation would national economies prosper. The Lebanese energy sector needs such an environment.