International Labour Organization

Lebanon

The Employment, Environment, Climate Nexus Factsheet

August 2025

Introduction

The **Employment, Environment, Climate Nexus Factsheets** are a series produced for countries and territories in the Arab States region.[i] This Factsheet provides data on labour market and environmental sustainability performance in Lebanon, as well as on vulnerability to climate change and the potential for green job creation.

- **Labour market:** Lebanon's labour market is characterised by low labour force participation for women and high unemployment, especially for youth. For those with a job, informal employment is widespread (62.4 per cent in 2022).
- **Air quality:** The country has experienced a rapid increase in CO_2 emissions and consistently poor air quality, with 100 per cent of the population exposed to PM2.5 levels above WHO thresholds.
- **Environmental risk:** Lebanon ranks low (126th of 180) in the 2022 Environmental Performance Index and among the most climate-vulnerable in the region, with particularly poor governance and social readiness scores in the ND-GAIN index.
- **Green policies:** Despite its crisis-driven energy landscape, Lebanon updated its nationally determined contributions (NDC) in 2021, targeting a 31 per cent greenhouse gas (GHG) reduction by 2030 and aiming for 30 per cent of electricity from renewables.
- **Renewable energy:** Renewables accounted for 10 per cent of total electricity generation in 2022, with solar showing promise amid declining hydropower output.
- **Green jobs:** An estimated 6,248 people were employed in the renewable energy sector in 2023, primarily in solar photovoltaic (77 per cent).
- **Data sources:** ILOSTAT, Central Administration of Statistics, UN DESA, EPI, Climate Watch, ND-GAIN, EM-DAT, IRENA, JMP, World Bank, and national authorities.

Country overview

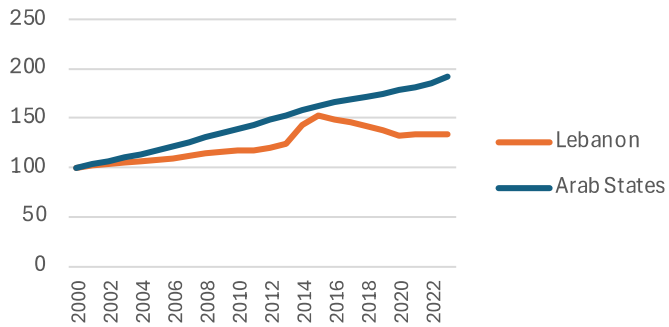
Lebanon is a country of around 10,452 km² located in the Arab States (Figure 1).[ii] With Gross National Income (GNI) of US$ 4,170 per capita in 2022, Lebanon is categorized as upper middle income according to the World Bank income group classification.[iii] Gross Domestic Product (GDP) is estimated to have shrunk -11 per cent in 2024 with growth forecast at 2.4 per cent in 2025.[iv] This compares to -6.4 per annum over the decade prior (2014-2024).

Figure 1. Location of Lebanon

Disclaimer: The boundaries shown on this map do not imply endorsement or acceptance by the ILO

The population was estimated at 5.8 million in 2023, representing annual average population growth of 0.8 per cent per annum over the last decade – lower than the regional average (Figure 2).[v] In 2022, a total of 89.3 per cent of the population lived in urban areas.[vi]

Figure 2. Population growth, Lebanon and Arab States (Index 2000 = 100)

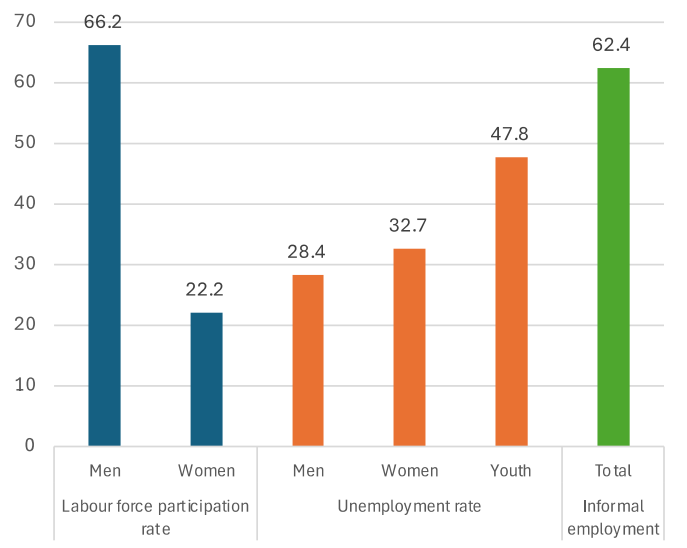


Source: United Nations Population Division's World Population Prospects: 2024 Revision.

Labour market

Lebanon has a labour market characterised by low levels of labour force participation for women and high rates of unemployment, especially for youth (Figure 3). The labour force participation rate for women was 22.2 per cent in 2022, compared to 66.2 per cent for men. Women also exhibited a higher unemployment rate at 32.7 per cent compared to men at 28.4 per cent. Youth fared even worse in terms of unemployment, with nearly one in every two of youth aged 15-24 in the labour force being in unemployment.

Figure 3. Selected labour market variables, 2022 (percentages)



Source: Central Administration of Statistics, ILO, 2022. Lebanon follow-up labour force survey, January 2022

Even for those in employment, there are decent work deficits with nearly two-thirds in informal employment (62.4 per cent). This has increased from 54.9 per cent, as of the 2018-2019 labour force survey, and likely reflects the impact of multiple issues, including the COVID-19 pandemic, the Port of Beirut blast, and the 2019 revolution triggered by the economic crisis.[vii]

The ongoing uncertainty in the country, including conflict, has contributed to both internal displacement, emigration, and arrivals of migrants from neighbouring countries and territories. All of which have mixed implications on the labour market.

▶ Environment and climate

Nature and protected areas

Protected areas are a crucial means of environmental preservation and conservation. In Lebanon, 1.9 per cent of total land area were protected areas in 2022 (Figure 5), compared to 2.6 per cent in 2016.[viii] Terrestrial protected areas in this context are totally or partially protected areas of at least 1,000 hectares that are designated by national authorities as scientific reserves with limited public access, national parks, natural monuments, nature reserves or wildlife sanctuaries, protected landscapes, and areas managed mainly for sustainable use.

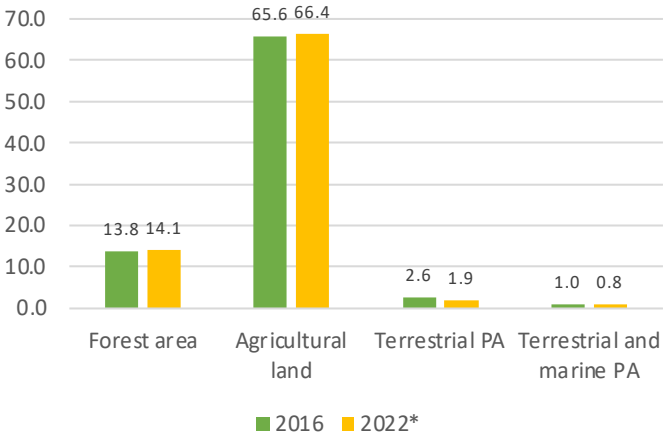
Lebanon has designated 26 areas as protected lands, including 17 nature reserves, covering almost 8 per cent of its terrestrial land and inland waters.[ix] The largest by far is the Shouf Cedar Reserve which covers almost 5 per cent of Lebanon[x] and home to wolf, wild boar, and wild cats, as well as numerous endemic birds, reptiles and plants.[xi]

Once marine protected areas are incorporated, 0.8 per cent of total territorial area were territorial or marine protected areas (a lower value due to the denominator).[xii] Marine protected areas in this context refer to areas of intertidal or subtidal terrain--and overlying water and associated flora and fauna and historical and cultural features--that have been reserved by law or other effective means to protect part or all of the enclosed environment.

Of Lebanon's total land area, 66.4 per cent is agricultural land (compared to 58.5 per cent in 2001). Agricultural land in this context refers to the share of land area that is arable, under permanent crops, and under permanent pastures.[xiii]

Forests cover around 14 per cent of Lebanon's land area and are critical to its environmental success and support of its ecosystems.[xiv] The country has a national goal of planting 40 million trees by 2030[xv] and participates in the Agadir Commitment to restore 8 million hectares of land in the Mediterranean region by 2030.[xvi]

▶ Figure 4. Forest area, agricultural land, terrestrial and marine protection areas, Lebanon, 2016 and 2022 (percentage)



*Note: PA = protected area. Terrestrial protected areas (% of total land area); Terrestrial and marine protected areas (% of total territorial area); Forest area (% of land area); Agricultural land (% of land area). *2018-2022 latest available datapoint. Source: World Database on Protected Areas (WDPA) accessed via World Development Indicators.*

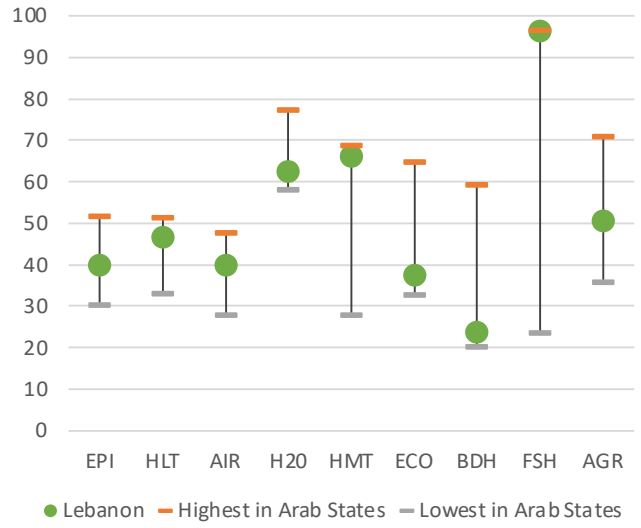
Environmental performance

Lebanon ranks 126th of 180 countries in the latest Environmental Performance Index (EPI), 2022 – where top ranking means the best environmental performance.[xvii] The EPI assesses countries on 40 different performance indicators and ranks them according to their national efforts towards environmental health, ecosystem vitality and climate change mitigation.

According to the assessment criteria, Lebanon scores 39.9 points on a scale of 0-100 (where 0 is worst and 100 best performing). For reference, the highest-ranking countries globally were in Europe, and included Estonia, Luxembourg, Finland and Germany, with scores of over 70. At the lower end it included Viet Nam, Pakistan, Lao PDR and Myanmar, with scores of below 30. For the Arab States, the highest rank was for United Arab Emirates with a score of 51.6 and lowest in Iraq with a score of 30.3. Lebanon ranks 7th of the nine Arab States with a score in the database.

Figure 5 shows a selection of indicators for Lebanon and how it compares to the highest and lowest scores for the Arab States, thereby allowing a gauge of where the country performs better or worse in relative terms.

▶ **Figure 5. Environmental performance index and selected indicators, Lebanon and Arab States, 2022**

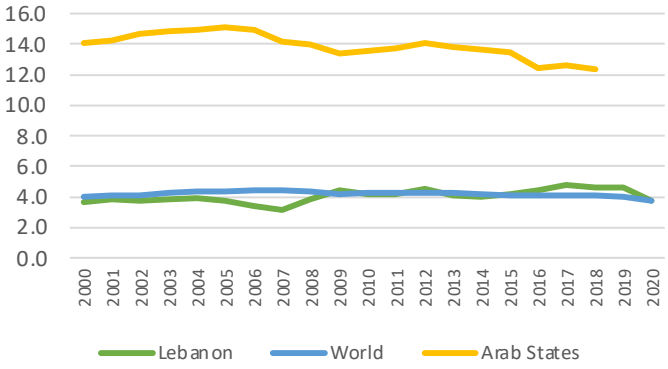


Note: EPI = Environmental Protection Index; HLT = Environmental health; AIR = Air quality; H20 = Sanitation and drinking water; HMT = Heavy metals; ECO = Ecosystem vitality; BDH = Biodiversity and habitat; FSH = Fisheries; AGR = Agriculture. Score 0 (worst) – 100 (best). Values of zero reflect absent data and are not included in the highs and lows. Source: EPI Score 2022. Available at: https://epi.yale.edu/downloads [20 March 2025]

CO2 emissions and decarbonization

The carbon dioxide (CO2) emission levels for Lebanon were estimated at 21,475 kt in 2020.[xviii] This marks a significant increase from 15,673 kt in 2002, representing annual average growth in CO2 emissions of 1.4 per cent from 2000-2022. While total CO2 emissions are largely related to the size of the economy, a per-capita metric serves as a relative measure for comparing countries (Figure 6). In 2020, the unweighted average across countries in the Arab States region was estimated at 12.4 metric tonnes per capita. In Lebanon it was estimated at 3.8 metric tonnes per capita for the same year, more than twice the regional average.

▶ **Figure 6. CO2 emissions, 2000-2020, Lebanon, Arab States and World, (metric tonnes per capita)**

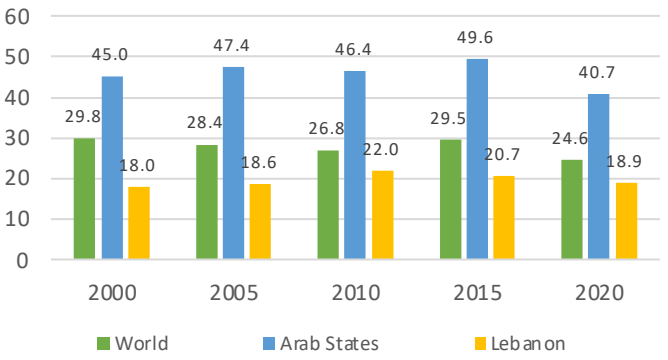


Note: Arab States and World are unweighted averages. Source: Climate Watch. 2024. GHG Emissions. Washington, DC: World Resources Institute [20 March 2025].

Air quality

The level of PM2.5 (atmospheric particulate matter with a diameter of less than 2.5 micrometres) emissions for Lebanon is estimated at 18.9 (micrograms per cubic metre) in 2020, compared to 18.0 in 2000 (Figure 7).[xix] It is more than double an unweighted average across countries in the Arab States of 40.7 in 2020. Notably, the World Health Organization's Air Quality Guideline threshold level emission is stated at 10 micrograms per cubic metre. The percentage of the population exposed to ambient concentrations of PM2.5 that exceed the WHO guideline (the lower end of the range of concentrations over which adverse health effects due to PM2.5 exposure have been observed) has been estimated at 100 per cent for Lebanon for all years with available data since 2000.

▶ **Figure 7. Air quality PM 2.5 emissions, 2000-2020, Lebanon, Arab States and World (micrograms per cubic metre)**

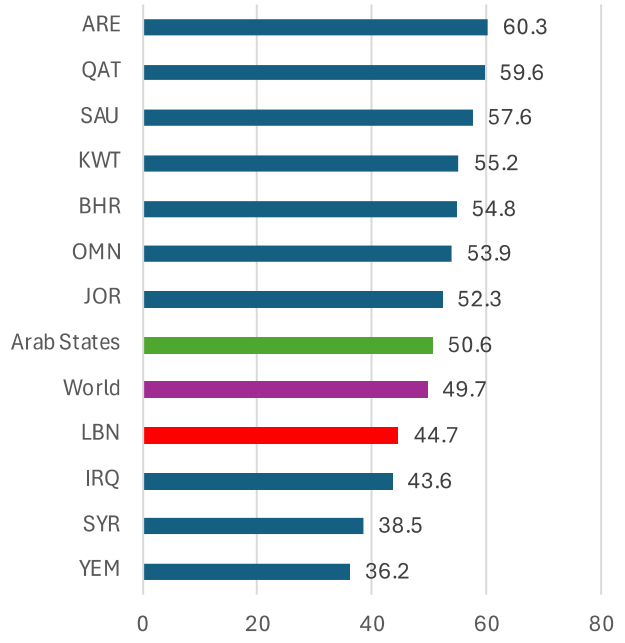


Note: Regional averages are unweighted averages. Source: Global Burden of Disease Collaborative Network. 2021. Global Burden Study 2019.) Air Pollution Exposure Estimates 1990-2019 [20 March 2025].

▶ Vulnerability to climate change

The Notre Dame Global Adaptation Index (ND GAIN) considers vulnerability to climate change and related global challenges as well as resiliency and preparedness.[xx] As shown in Figure 8, Lebanon ranks amongst the worst in the Arab States, which means it has amongst the highest risk to climate change of the Arab States.

▶ Figure 8. ND GAIN Index, Lebanon, Arab States and World, 2022

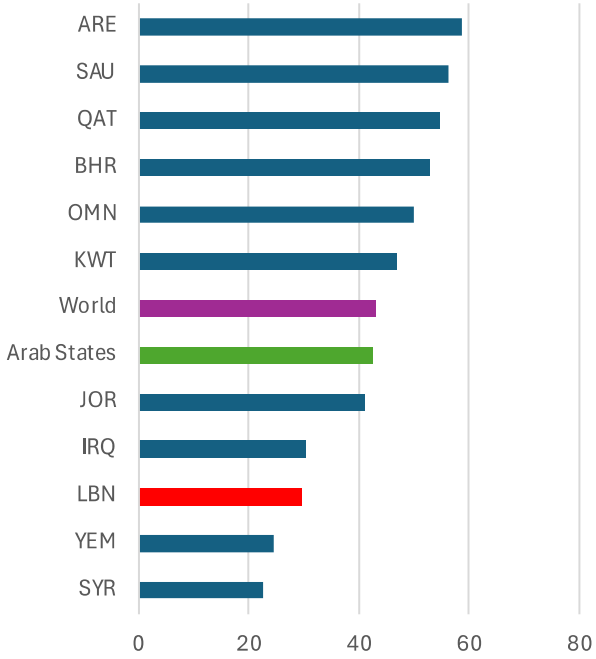


Note: Arab States and World are unweighted averages. Source: ND-GAIN Country Index. No data available for PSE. Available at: https://gain.nd.edu [20 March 2025]

The risk score (where 100 denotes lower risk, and 0 highest risk) is only worse only in Iraq, Syria and Yemen. With a score of 44.7, it scores lower than the Arab States average. The score represents a mix of vulnerability to climate change and readiness to adapt.

The ND GAIN index evaluates the readiness and the vulnerability of countries. The **readiness** factor of the ND GAIN index (see Figure 9), which refers to the 'ability to leverage investments and convert them to adaptation actions' is assessed in terms of economic readiness, governance readiness and social readiness and their ability to enhance the application and mobility of investment to promote adaptation. Economic readiness captures the ability of a country's business environment to accept investment that could be applied to adaptation that reduces vulnerability (reduces sensitivity and improves adaptive capacity). Governance readiness reflects the institutional factors that enhance the application of adaptation investments. Social readiness indicates the social factors that enhance the mobility of investment and promote adaptation actions. In this regard, Lebanon ranks poorly, behind only Yemen and Syria (Figure 9). This suggests a lack of economic, governance, and social readiness factors in place to facilitate climate change mitigation.

▶ Figure 9. ND GAIN Readiness Index, Lebanon, Arab States and World, 2022



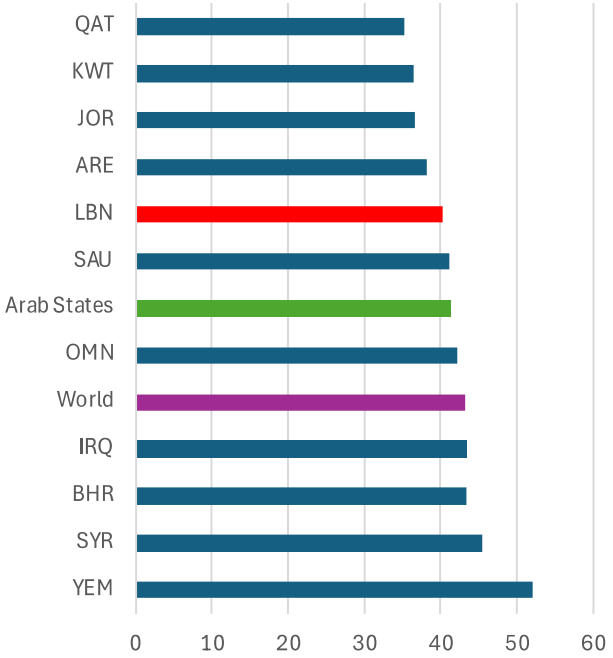
Note: Arab States and World are unweighted averages. Source: ND-GAIN Country Index. No data available for PSE. Available at: https://gain.nd.edu [20 March 2025]

The relative high readiness score reflects the country's high-income status and relatively high GDP. Other factors including the provision of basic services are widely available, reducing the impact even on vulnerable populations. Almost all of the population had access to at least basic sanitation services in 2022, basic drinking water services, access to electricity and access to clean fuels and technologies for cooking.[xxi]

The **vulnerability** components of the ND GAIN index looks at 'exposure, sensitivity and capacity to adapt to the negative effects of climate change' (see Figure 10). Accordingly, this is analyzed based on three dimensions: i) Exposure - the degree to which a system is exposed to

significant climate change from a biophysical perspective, capturing the physical factors external to the system that contribute to vulnerability; ii) Sensitivity - the extent to which a sector is affected by climate-related hazards; and iii) Adaptive Capacity - the ability of a sector to cope with or adapt to the impacts of climate change.

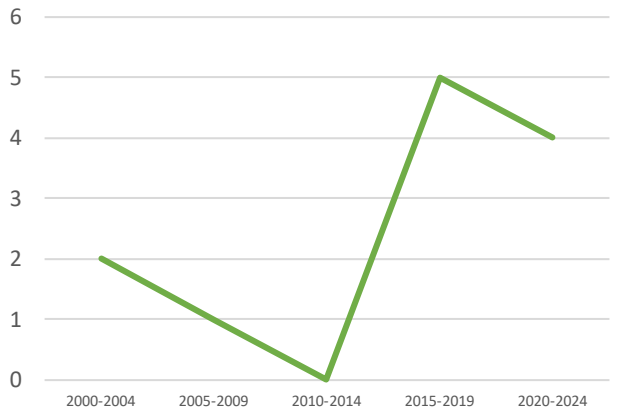
▶ **Figure 10. ND GAIN Vulnerability Index, Lebanon, Arab States and World, 2022**



Note: Arab States and World are unweighted averages. Source: ND-GAIN Country Index. No data available for PSE. Available at: https://gain.nd.edu [20 March 2025]

In terms of vulnerability, Lebanon ranks slightly above the regional average, suggesting slightly lower than average vulnerability to climate change than its regional counterparts (Figure 10). Despite this, there were climate-change related disasters over the 2000-2024 period (Figure 11). These include flooding, wildfires and drought. Estimates suggest that up to 60 per cent of the country is exposed to desertification due to reduced rainfall and rising temperatures.[xxii]

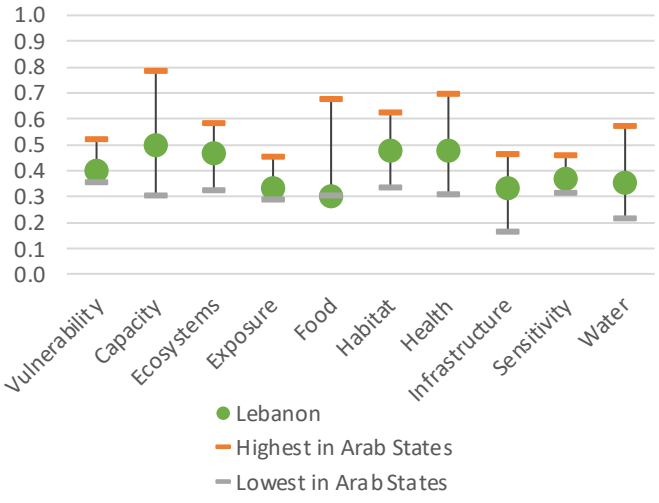
▶ **Figure 11. Number of natural disasters per 5-year period, Lebanon, 1992-2022**



Source: ILO compilation using EM-DAT. Available at: https://www.emdat.be [25 March 2025]

Figure 12 provides other comparisons of how the country fares relative to other countries and territories in the Arab States region with respect to different composite indicators of the vulnerability component of the index. For instance, it shows that for ecosystems – i.e. that which provides the natural capital upon which human society builds its economy and social system and include natural resources that are at the foundation of all almost all product value chains – Lebanon has a score of 0.47, relative to highs (least vulnerable) in the region of 0.58 and lows of 0.32. Shifting geoclimes due to changed temperature and precipitation cause stress within ecosystems unable to respond as quickly as these shifts require.[xxiii]

▶ **Figure 12. Notre Dame Global Adaptation Index, Vulnerability and composite indicators, 2023, Lebanon and Arab States (index score)**



Note: Arab States is an unweighted average. Source: ND-GAIN Country Index. Available at: https://gain.nd.edu [20 March 2025]

▶ Climate policies and plans

In 2021 Lebanon updated its climate targets to the UNFCCC, with 2030 targets[xxiv] of a 31 per cent GHG emission reduction compared to baseline, 30 per cent of electricity demand met by renewables and a 10 per cent reduction in power demand through energy efficiency.[xxv]

However, the current energy and environmental situation in Lebanon is complex, in the context of years of economic and political crisis. Following significant damage of the conventional electricity generation system and fuel shortages, Lebanon has seen a huge rise in personal generator use, which tend to run on fossil fuels and are highly polluting. The value of imported diesel for generators more than doubled between 2017 and 2022.[xxvi]

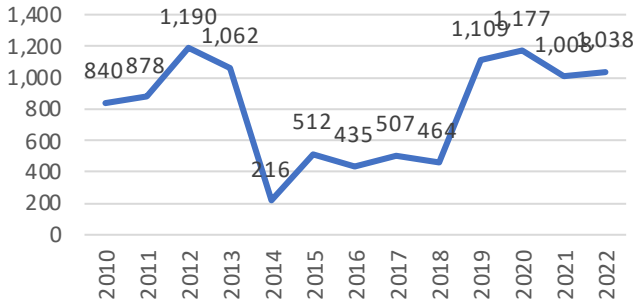
This negative environment has, however, incentivised the development and increased uptake of renewables. The IEA shows that Lebanon has already experienced large increases in domestic electricity production from renewables, with production from wind and solar increasing five-fold since 2011.[xxvii] This is partly in response to electricity also making up 11 per cent of Lebanon's energy consumption in 2023, with most of the energy still coming from oil, and Lebanon imports a significant amount of fossil-fuel generated electricity.[xxviii]

▶ Jobs in renewable energy

The Government of Lebanon has taken steps to encourage the growth of green energy projects, with solar energy being the most promising. In 2024, it put out several tenders to develop or expand solar plant that feed into the grid, including the Beirut River Solar Snake project[xxix]. The Lebanese Centre for Energy Conservation (LCEC)[xxx] has supported the installation of solar panels on public buildings and is working with the private sector to promote solar energy adoption.

Renewable energy accounted for nearly 10 per cent of total energy generation in 2022. This is equivalent to 1,038 GWh and compares to 1,190 GWh a decade earlier in 2022. This does not, however reflect the significant oscillation in renewable energy output over the last decade (Figure 13). There have been significant challenges in renewable hydropower projects, including cancellation of the Bisri Dam project in 2020 and intermittent rainfall affecting other projects.

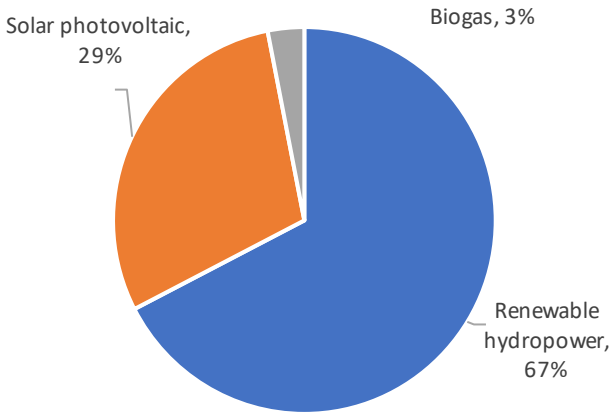
▶ **Figure 13. Total renewable energy generation (GWh), 2001-2022**



Source: ILO compilation using IRENA Renewable Energy Statistics 2025. Available at: https://www.irena.org/Data [20 March 2025]

The challenges in renewable hydropower affect total renewable energy generation as it accounts for the largest share. In 2022, renewable hydropower accounted for 67 per cent of total renewable energy generation, followed by solar photovoltaic at 29 per cent and biogas at 3 per cent (Figure 14).[xxxi]

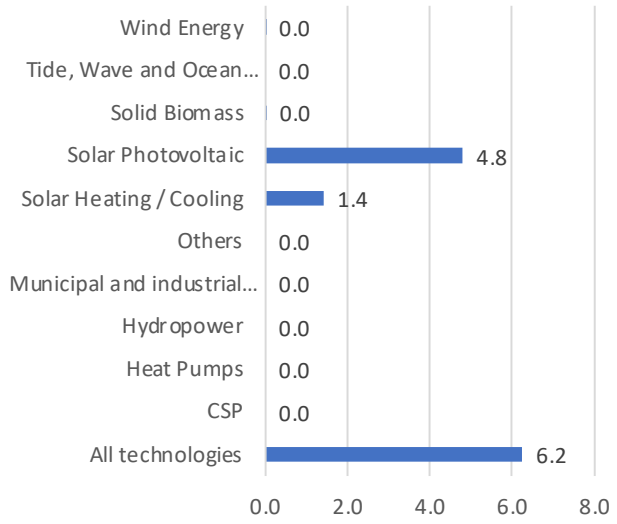
▶ **Figure 14. Renewable energy generation (GWh) by technology, 2022**



Source: ILO compilation using IRENA Renewable Energy Statistics 2025. Available at: https://www.irena.org/Data [20 March 2025]

According to estimates by the International Renewable Energy Agency (IRENA), 6,248 people in Lebanon were employed in the renewable energy sector in 2023. 'Solar Photovoltaic' accounted for the highest share (76.8 per cent) of total employment in renewable energy in the country (Figure 15).[xxxii]

▶ Figure 15 Renewable energy employment, by energy source, 2023 (thousands)



Note: 'Others' include jobs which are not technology specific. Source: IRENA and ILO (2024), Renewable energy and jobs: Annual review 2024, International Renewable Energy Agency, Abu Dhabi and International Labour Organization, Geneva. Data available at: https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country [20 March 2025]

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▶ References and technical information

[i] Arab States in this context refer to the countries and territories covered by the ILO Regional Office of the Arab States: Bahrain, Iraq, Jordan, Kuwait, Lebanon, the Occupied Palestinian Territory, Oman, Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates, and Yemen.
[ii] Source: Central Administration of Statistics. "About Lebanon". http://www.cas.gov.lb/index.php/about-lebanon-en#:~:text=Area:%2010%2C452%20sq.,of%20whom%2050.6%25%20are%20females
[iii] World Bank national accounts data, and OECD National Accounts data files. Accessed via World Development Indicators [20.03.25]
[iv] International Monetary Fund, World Economic Outlook, October 2024.
[v] Source: (1) United Nations Population Division. World Population Prospects: 2019 Revision. (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme. Accessed via World Development Indicators [20.03.25]
[vi] United Nations Population Division. World Urbanization Prospects: 2024 Revision [20.03.25]
[vii] Central Administration of Statistics, ILO, 2022. Lebanon follow-up labour force survey, January 2022
[viii] Source: World Database on Protected Areas (WDPA) where the compilation and management is carried out by United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC) in collaboration with governments, non-governmental organizations, academia and industry. The data is available online through the Protected Planet website. Accessed via World Development Indicators [20.03.25].
[ix] Protected Planet. "Lebanon." https://www.protectedplanet.net/country/LBN
[x] Shouf Biosphere Reserve. "Home." https://shoufcedar.org/
[xi] International Union for Conservation of Nature (IUCN). "The Wonders of the Shouf Biosphere Reserve, Lebanon." April 2018. https://iucn.org/news/protected-areas/201804/wonders-shouf-biosphere-reserve-lebanon
[xii] Source: World Database on Protected Areas (WDPA) where the compilation and management is carried out by United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC) in collaboration with governments, non-governmental organizations, academia and industry. The data is available online through the Protected Planet website. Accessed via World Development Indicators [20.03.25].
[xiii] Source: Ibid.
[xiv] Food and Agriculture Organization (FAO). "Forest and Landscape Restoration Mechanism: Activities in Lebanon." https://www.fao.org/in-action/forest-landscape-restoration-mechanism/activities/countries/lebanon/fr.
[xv] Ibid.
[xvi] FAO. "The Agadir Commitment Five Years After Its Adoption." https://www.fao.org/silva-mediterranea/resources/news/detail/the-agadir-commitment-five-years-after-its-adoption/en.
[xvii] The 2022 Environmental Performance Index (EPI) provides a data-driven summary of the state of sustainability around the world. Using 40 performance indicators across 11 issue categories, the EPI ranks 180 countries on climate change performance, environmental health, and ecosystem vitality. These indicators provide a gauge at a national scale of how close countries are to established environmental policy targets. The EPI offers a scorecard that highlights leaders and laggards in environmental performance and provides practical guidance for countries that aspire to move toward a sustainable future. Source: EPI Raw Data, available at: https://epi.yale.edu [20.03.25]
[xviii] Source: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Accessed via World Development Indicators [20.03.25].
[xix] Global Burden of Disease Collaborative Network. 2021. Global Burden of Disease Study 2019 (GBD 2019) Air Pollution Exposure Estimates 1990-2019. Accessed via World Development Indicators [20.03.25].
[xx] The Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index is a measurement tool that helps governments, businesses and communities examine risks exacerbated by climate change, such as over-crowding, food insecurity, inadequate infrastructure, and civil conflicts. The Country Index uses 20 years of data across 45 indicators to rank over 180 countries annually based on their level of vulnerability, and their readiness to successfully implement adaptation solutions. Available at: https://gain.nd.edu [22 September 2023]
[xxi] Source: WHO UNICEF Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene (washdata.org). Accessed via World Development Indicators [20.03.25].
[xxii] Anera. "A Climate Change Wake-Up Call." https://www.anera.org/blog/a-climate-change-wake-up-call/.
[xxiii] ND-GAIN, Our Work. Ecosystems. Available at: https://gain.nd.edu/our-work/country-index/methodology/sectors/#ecosystems [22 September 2023]
[xxiv] Conditional on sufficient external financial support.
[xxv] Lebanon's 2020 Nationally Determined Contribution Update. https://unfccc.int/sites/default/files/NDC/2022-06/Lebanon%27s%202020%20Nationally%20Determined%20Contribution%20Update.pdf.
[xxvi] AgriBusiness Intelligence. "Lebanon Energy Crisis." July 2023. https://www.agbi.com/analysis/energy/2023/07/lebanon-energy-crisis/.
[xxvii] International Energy Agency (IEA). "Lebanon: Energy Mix." https://www.iea.org/countries/lebanon/energy-mix.
[xxviii] IEA. "Lebanon: Electricity." https://www.iea.org/countries/lebanon/electricity
[xxix] Lebanese Center for Energy Conservation (LCEC). "Building Rating System for Sustainability (BRSS)." https://lcec.org.lb/our-work/MEW/BRSS.

[xxx] LCEC. "Home." https://lcec.org.lb/.
[xxxi] Ibid.
[xxxii] IRENA jobs database 2024. Figures provided are the result of a comprehensive review of primary information sources by national entities such as ministries and statistical agencies, and secondary data sources such as regional and global studies. For more details refer to IRENA's report 'Renewable Energy and Jobs - Annual Review 2024'.