LCEC
LEBANESE CENTER FOR ENERGY CONSERVATION
المركز اللبناني لحفظ الطاقة

Energy Performance Certification in Lebanon (EPC-L)

Scheme Guidelines

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1. Introduction

1.1 Purpose of the Document

This document provides an overview of the Energy Performance Certificate (EPC) Scheme in Lebanon, explaining its structure, purpose, and implementation mechanisms. It is intended for policymakers, energy professionals, building owners, and other stakeholders interested in understanding how energy performance certification is being applied in the country.

1.2 Background on Energy Efficiency in Lebanon's Building Sector

- Lebanon's building sector is a major energy consumer, accounting for over one-third of national energy use, with demand expected to rise due to population growth and evolving living patterns.
- Energy consumption in buildings continues to grow year after year, driven by changing habits and increased use of electrical appliances. For example, between 2010 and 2018, electricity and thermal energy consumption in the sector increased by over 50%, highlighting the urgency of improved energy performance.
- The economic and energy crisis triggered significant behavioural changes, including reduced demand and widespread uptake of decentralised solar solutions (over 1,000 MWp PV and 1 million m^2 of solar water heaters installed by 2023).
- Several standards and policies support energy efficiency, including the Thermal Standards for Buildings, NEEAPs, and the 2021 Energy Efficiency Guidelines for Reconstruction. Green building rating systems and financing tools like NEEREA have also encouraged adoption of efficiency measures.
- However, Lebanon still lacks a mandatory energy-efficient building code, which is essential to standardise energy-saving measures in both new construction and renovations across all building types.
- The draft Energy Conservation Law, currently under parliamentary review, aims to establish a comprehensive legal framework for energy efficiency, including minimum performance requirements, labelling, and inspection systems — all of which would support the mainstreaming of energy efficiency in buildings.
- Common technical measures already being implemented include thermal insulation, efficient HVAC and lighting systems, and on-site renewables, tailored to Lebanon's diverse climate zones.

- Ongoing efforts focus on capacity building, awareness, and energy management systems to improve building performance and ensure long-term savings.
- Energy Performance Certificates (EPCs) provide a structured framework to assess, label, and promote energy-efficient buildings, thereby supporting compliance, transparency, and behavioural change aligned with Lebanon's energy and climate strategy.

2. What is an Energy Performance Certificate (EPC)?

2.1 Definition

- An Energy Performance Certificate (EPC) is an official document that indicates the energy performance of a building or building unit, calculated using a methodology that complies with a national or regional framework.
- The EPC expresses energy performance in terms of a rating scale (e.g., A to G), where each class corresponds to a specific range of final energy consumption in kilowatt-hours per square metre per year (kWh/m².year).
- The rating is determined by comparing the building's calculated energy consumption to predefined national performance baselines, allowing standardised comparison across building types and regions.

2.2 Benefits of the EPC Scheme

For Building Owners:

- Enable informed decisions when buying, selling, renting, or retrofitting properties.
- Support access to incentive programmes, loans, or subsidies tied to energy performance.
- Encourage behavioural change and increased awareness about energy use.

For Policymakers:

- Provide reliable data to monitor compliance, enforce codes, and design energy efficiency strategies.
- Allow tracking of progress toward national energy and climate goals.
- Help identify opportunities for targeted interventions in poorly performing buildings.

For Financial Institutions:

- Improve the assessment of energy-related investment risks.
- Support green finance initiatives by linking loans or mortgages to building performance.

- Enable financing mechanisms that support the integration of energy-efficient construction practices and building systems.

3.1 Development of the EPC Scheme through the BUILD_ME Project

The Energy Performance Certificate (EPC) Scheme in Lebanon was developed as part of the BUILD_ME project (*Accelerating 0-Emission Building Sector Ambitions in the MENA Region*), which ran from 2016 to 2025.

Implemented across Lebanon, Egypt, and Jordan, the project was coordinated by Guidehouse and funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment (BMU). In Lebanon, the Lebanese Center for Energy Conservation (LCEC) served as the local implementing partner.

The project was structured around four key frameworks:

- **Technical Framework**
- **Financial Framework**
- **Capacity Building Framework**
- **Policy and Regulatory Framework**

These pillars supported the creation of a nationally adapted, performance-based certification scheme for buildings in Lebanon.

The main output of the BUILD_ME project was the **Building Energy Performance (BEP) Tool**, a digital platform that enables the calculation of building energy consumption, classification into performance bands, and the issuance of both Preliminary and Final EPCs. The BEP Tool now serves as the operational backbone of the EPC Scheme in Lebanon.

3.2 Building Blocks of the EPC Scheme

The operational structure of Lebanon's Energy Performance Certificate (EPC) Scheme is anchored in several technical components that ensure reliable, consistent, and climate-adapted energy assessments. These include: the national **building typology database**, **climate zones**, an **energy performance benchmarking framework**, and the **BEP Tool** – the digital platform used for assessments and certification.

1. Building Typology Database

A dedicated **building typology database** was developed as part of the BUILD_ME project to represent typical buildings across Lebanon's residential and non-residential stock. These typologies serve as the foundation for EPC calculations and comparisons.

The database captures three key dimensions:

- **Building Typology**:
  – Single-Family Houses (SFH)
  – Small Multi-Family Houses (SMFH)
  – Large Multi-Family Houses (LMFH)
  – Office Buildings
  – Educational Buildings
- **Construction Period**:
  – Existing buildings (before 1980)
  – Existing buildings (1980–2015)
  – New constructions (after 2015)
- **Region Type**:
  – City
  – Town
  – Village

Each reference building reflects typical architecture, construction materials, and technical systems for its category. When a building is assessed using the BEP Tool, its energy label is generated in comparison to the specific reference building within this database - ensuring contextual relevance.

2. Climate Zones

To account for Lebanon's climatic diversity, the EPC Scheme incorporates predefined **climate zones**, represented by the following reference cities:

- Beirut (Coastal below 200 m altitudes)
- Bayssour (Coastal above 200 m altitudes)
- Qartaba (Western Mid Mountain)
- Haouch El Oumaraa (Inland Plateau)
- Bcharre (High Mountain)

These zones are automatically factored into the energy calculation, modifying heating/cooling assumptions and solar radiation inputs to reflect realistic conditions across Lebanon's geography.

3. Energy Performance Benchmarking

At the core of the EPC Scheme is a national **benchmarking framework** that classifies buildings into **energy performance classes**, typically ranging from **Class A (most efficient)** to **Class G (least efficient)**.

These benchmarks are defined in terms of **final energy consumption in kWh/m²·year**, and they vary by:

- **Building typology**
- **Climate zone**

The benchmark values and reference classes were developed under the BUILD_ME project and are fully integrated into the BEP Tool. This enables consistent, transparent, and comparable classification of buildings across Lebanon.

4. The BEP Tool

The **Building Energy Performance (BEP) Tool** is the official digital platform used for EPC assessments in Lebanon. It is a web-based application maintained by the national **Scheme Operator**, accessible exclusively to certified **EPC Experts** and **Auditors**.

Key functionalities include:

- Input of:
    - Building geometry
    - Envelope characteristics
    - HVAC systems
    - Renewable energy components
- Automated calculations of:
    - Annual final energy consumption
    - CO_2 emissions
- Generation of:
    - **Preliminary EPC**
    - **Final EPC**

The BEP Tool provides a streamlined and standardised workflow from project input to certification, ensuring transparency and credibility in the EPC process. Detailed explanations and guideline into the BEP Tool are included in the BEP Tool Manual.

3.3 Key Definitions in the EPC Scheme

This section clarifies the core terms and roles involved in the Energy Performance Certificate (EPC) system in Lebanon:

- **EPC Expert**

  A certified professional responsible for collecting building data, entering it into the BEP Tool, conducting the energy performance assessment, and generating Preliminary and Final EPCs.

EPC Experts are designated by the Lebanese Center for Energy Conservation (LCEC) after completing and passing a dedicated training programme announced and delivered by LCEC.

- **EPC Auditor**

  A technical reviewer assigned to verify the submitted EPC assessment by the Expert, ensuring completeness, compliance, and accuracy before a Final EPC is issued.

EPC Auditors are also designated by LCEC after successful completion of a specialised training and evaluation process.

- **EPC Scheme Operator**

  The national authority or designated entity in charge of managing the EPC scheme. This includes maintaining the BEP Tool, accrediting Experts and Auditors, and ensuring procedural and technical compliance. In Lebanon, this role is coordinated by LCEC under the guidance of relevant national authorities.

- **Preliminary EPC Certificate**

  An EPC generated in the design or planning stage of a new building or renovation project. It reflects expected performance based on proposed inputs and is often used for permitting or advisory purposes.

- **Final EPC Certificate**

  The official EPC is issued after the building is constructed or renovated. It is based on verified as-built conditions and serves as the legally valid demonstration of the building's energy performance.

3.4 Application Process

To obtain an Energy Performance Certificate (EPC) under the national EPC scheme in Lebanon, the following steps must be followed:

1. **Engage an EPC Expert**

   The project owner hires a certified EPC Expert who will handle the application on their behalf using the BEP Tool platform.

2. **Notify the Scheme Operator**

   The Project Owner completes the *EPC Project Submission Form* and sends it by email to the Scheme Operator via epc@lcec.org.lb, providing project details, owner information, and confirmation of the assigned EPC Expert. Supporting documents—including a copy of the owner's ID, proof of ownership, and the EPC Expert's proof of payment—must also be attached.

3. **Assignment of EPC Auditor**

   The Scheme Operator forwards the *EPC Project Submission Form* to all Auditors listed in the *List of Auditors*, requesting that they submit their offers within **three (3) days** of notification. The Auditor offering the **lowest bid** will be selected. If two or more Auditors submit equal bids, the Auditor who is geographically the closest to the project location will be assigned.

4. **Enrolment of Scheme Operator and Auditor**

   The Scheme Operator informs the Project Owner of the selected EPC Auditor and shares the invoices for both the Scheme Operator and the EPC Auditor. These invoices must be settled by the Project Owner before the application can be initiated on the BEP Tool.

5. **Submission of Application**

   The EPC Expert submits the EPC application through the BEP Tool, uploading all required supporting documents as listed on the platform and selecting the assigned EPC Auditor within the workflow.

6. **Auditor Verification**

   The EPC Auditor performs a technical and procedural review of the submitted information through the BEP Tool. If clarifications or revisions are required, the Auditor returns the application to the EPC Expert for update and resubmission.

7. **Scheme Operator Final Review**

   Once the EPC Auditor approves the application, it is forwarded to the Scheme Operator for final validation. The Scheme Operator may:

   - request further feedback from the EPC Auditor,
   - reject, or
   - approve the application for issuance of the Preliminary EPC.

8. **Preliminary EPC Issuance**

   Upon approval by the Scheme Operator, the Preliminary EPC is automatically generated through the BEP Tool. The EPC Expert receives a notification and may download the certificate directly from the platform.

9. **Final EPC Issuance**

   At the end of the construction stage, the EPC Expert continues the process within the same application on the BEP Tool and submits the final-stage documentation for Auditor review.

   Once this stage is submitted, the Scheme Operator issues the outstanding invoices for the Scheme Operator and the EPC Auditor. After the Project Owner settles these invoices, Steps **6–8** are repeated until the **Final EPC** is issued.

Important Notes

- The list of certified EPC Experts and EPC Auditors is published and regularly updated on the LCEC website.
- The EPC Auditor is required to conduct up to **three (3) rounds of review** with the EPC Expert. If further comments remain after the third round, the Auditor must notify the Scheme Operator, who will decide on the appropriate course of action.
- The official fee structure is available on the LCEC website and provides a detailed overview of the fees applicable to the EPC Expert, the EPC Auditor, and the Scheme Operator under the national EPC scheme.