Introduction of the BUILD_ME Project and the BEP Tool
Huge construction activity and increasing energy demand

The energy consumption of the buildings sector in Egypt is and will stay highly relevant.

- **30%** share for the building sector (energy consumption)
- **4%** yearly increase of energy consumption
- **3%** future yearly growth of new buildings

Source: IEA energy balances 2021

All energy carriers included
Why are climate-friendly buildings relevant for financial institutions?
Green buildings becoming more and more a billion dollar market

“Green buildings represent a major global investment opportunity, with buildings making up the largest segment of the $231 billion energy efficiency market.”

“During the next decade, green buildings represent a significant low-carbon investment opportunity in emerging markets $24.7 trillion by 2030.”...

“Global green building materials market size is expected to reach $377,029 million by 2022 from $171,475 million in 2015 with a CAGR of 11.9% from 2016 to 2022….
Lack of baseline and enforced EE building codes

Creates a bottleneck for FI’s to finance climate-friendly buildings

- Lack of enforcement of EEBCs
- Lack of data about BaU constructions
- No benchmarking of buildings’ energy performance

Lack of energy consumption baseline

Bottleneck
To finance energy efficient buildings
Introduction of the BUILD_ME Project
Introduction to the BUILD_ME Project
The main objectives of the BUILD_ME project

1. Easier access to financing for energy efficient buildings
2. Support the reform & transitions of political frameworks
3. Support the implementation of EE measures in pilot projects
4. Increase awareness and capacities [EE/RE in Buildings]
The main objectives of the BUILD_ME project

1. Easier access to financing for energy efficient buildings

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4. Increase awareness and capacities [EE/RE in Buildings]
1. Easier access to financing for energy efficient buildings

How to design and finance an energy efficient project?

BEP Tool shows:

- [25]% energy saving in comparison with baseline
- Financing available at local bank

Intermediating bank grants credit based on trusted classification scheme

Project is realised as energy efficient building
Building Energy Performance (BEP) tool
Logic of the BEP tool
Customisable, transparent, adapted to the MENA region

Performance of energy efficiency measures & RE
- Calculate energy demand of building
- Compare it to the country’s baseline buildings or other personal projects
- Determine the energy savings of single or multiple efficiency measures and the use of renewable energies

Calculation of monetary savings
- Identify cost savings resulting from the energy efficiency measures and get the cost-optimal case
- Local market data is already available for Egypt, Jordan and Lebanon (investment cost, energy prices) ...
- ...or enter the real investment cost and energy prices of the specific project (not in beta)

Free web application
- Tool is free to use as browser application
- Optimized for mobile devices
- Provides default input values for faster application, but also advanced mode for experienced user

Proven methodology
- Energy calculation is based on the international norm for modelling thermal building performance (EN ISO 52016)
- The BEP-Tool was already successfully applied in various projects and countries
- Full transparency with a detailed user manual, incl. all calculation steps and internal assumptions.
Calculation methodology

Input

User input
- Building
  - Type (e.g. office)
  - Geometry
  - Renovation / new build
  - Envelope specifications
  - HVAC systems
  - Renewable energies
  - Operational parameters
  - Location (city, country)

Internal database
- Financial
  - Investment cost
  - Energy prices
- Energy
  - Baseline buildings
  - User profiles
  - HVAC system specification
  - Climates

Calculation engine

Energy
- Useful energy demand
  - ISO 52016
- Sizing HVAC & RE systems
  - HVAC Tool
- Final energy demand
  - HVAC Tool
- Primary energy demand
  - GHG Emissions

Financial
- Investment cost
  - Envelope (e.g. insulation)
  - HVAC systems
  - Renewable energies
- Other cost
  - Inspection and maintenance
  - Replacement
- Energy cost
  - Energy carrier (e.g. gas)

Output

Energy & Emission
- Final & primary energy demand...
  - per energy carrier (e.g. gas)
  - per energy use (e.g. cooling)
  - specific (kWh/m²) and total
- GHG Emissions
  - CO₂ equivalent

Global Cost
- Global cost
  - Investment
  - Energy cost
  - Inspection and maintenance
  - Replacement
Online Web App - Input

1. General Information
   - Project Name: Building_1
   - Age group: Renovation
   - Country: Jordan
   - Reference city (representative climate for the selected climate region): Amman
   - Specify region (e.g. urban): East

2. Input
   - Building levels (floors): 5
   - Number of dwellings: 5
   - Net floor height (Floor to ceiling): 2.70 m
   - Net floor area (i.e. living area): 770.00 m²
   - Roof area opaque: 154.00 m²
   - Façade area opaque (excluding windows): 734.00 m²
   - Window area (Total = transparent + frame): 225.00 m²
   - Area floor slab (ground plate): 154.00 m²
   - Wall renovation: No
   - Type (material): Single wall
   - U-value (wall): 0.5 W/(m²K)

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Online Web App – Results
Online Web App – Results detail

1. Quick overview
   The main facts.

2. Output selection
   4 tabs to select the energy performance indicator.

3. Overview chart
   Comparison to the baseline building.

4. Results table
   Detailed results in numbers.

5. Baseline building
   Detailed results of the baseline building.

6. Comparison
   Difference to the baseline buildings.

7. Performance rating
   \(C = \text{equal to baseline}\)
Tested BEP Tool with 13 supported pilot projects
Project developer confirmed convincing result illustration and user friendliness
Conclusions
Conclusion of BEP Tool

Database from local partners & international calculation methodology

Baseline buildings
Focus is on the countries: Egypt, Jordan and Lebanon

Local investment cost & energy prices
Baseline reflects the country specific building standard

Tool was successfully applied in building projects in the MENA region

International calculation methodology: ISO 52016
Methodology is applicable worldwide

Climate data of all countries in the MENA region
Local PEF and CO₂ emission Factors
All data input is collected and verified by local partners and project developers

The calculation standard is internationally acknowledged.

Internal market data is collected from local partners for Egypt, Jordan and Lebanon.

International energy calculation methodology.

Country specific climate data, incl. multiple climate zones within each country.
Final discussions
Feedback and ideas
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