



# BUILD\_ME

## IKI Project: Accelerating 0-emission building sector ambitions in the MENA Region

Intermediate National WS, BUILD\_ME 3<sup>rd</sup> Phase

Cairo, Egypt

May 15<sup>th</sup>, 2024



# Welcoming

Mohamed Salheen, IDG  
Riadh Bhar, GH

# Introduction of the workshop objectives and the agenda

Mohamed Salheen, IDG

# Agenda



10:30-10:45

**Welcome Remarks**

10:45-10:50

**Introduction of the workshop objectives**

10:50-12:00

**Achievements since the kick-off of the third phase**

12:00-12:10

**Cooperation within BUILD\_ME project: MoU signing**

12:10-12:30

Coffee Break

12:30-13:50

**Looking forward – what comes next**

13:50-14:00

**Closing Remarks / Group Picture**

14:00-15:00

Lunch and Networking

# Workshop objectives



**Provide an update about the project activities and collaborations.**



**Raising awareness about the newly adopted EPC in Egypt.**



**Discussion and feedback from experts and stakeholders.**



**Outline the next steps of the EPC and BUILD\_ME project.**

# Achievements since the kick-off of the third phase

Riadh Bhar, GH

# New features of the BEP tool [BEP tool 2.0]

# New features of the BEP tool

Increasing the robustness of the tool and its useability for FIs and PDs



**Eliminate remaining unclarities**



**Update cost related inputs**



**Illustrate useful energy**



**Allow a simpler calculation of existing buildings**



**Integrate the EPC process**



# Update cost related inputs

Data from 2020 have been updated in 2023

## 2020 - Input data

### Opex

- Energy costs (electricity, gas, diesel, LPG etc.)

### Capex

- Building envelope (thermal insulation, windows, shading elements)
- HVAC (heating systems, ventilation, air conditioning, hot water)
- Renewables (Solar thermal Systems, Photovoltaics)

## 2023 - Input data

### Opex

- Energy costs (electricity, gas, diesel, LPG etc.)

### Capex

- Building envelope (thermal insulation, windows, shading elements)
- HVAC (heating systems, ventilation, air conditioning, hot water)
- Renewables (Solar thermal Systems, Photovoltaics)

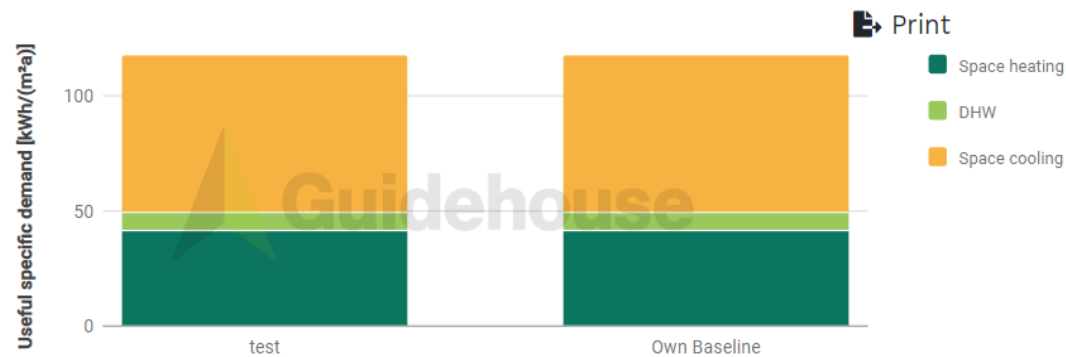
# Illustration of useful energy demand in results

🔥 Heating: 45.47 kWh/(m²a)
❄️ Cooling: 26.98 kWh/(m²a)
⋮ Other: 36.29 kWh/(m²a)
Σ Total: 108.74 kWh/(m²a)
Performance: C

## ENERGY & ENVIRONMENT

[Primary energy by energy use](#)
[Final energy by energy use](#)
[Final energy by energy carrier](#)
Useful specific demand
[Emissions](#)

Useful specific demand



	kWh/(m²*a)		
	test	Own Baseline	Delta
Space heating	41.5	41.5	0%
DHW	7.9	7.9	0%
Space cooling	68.5	68.5	0%
<b>Total</b>	<b>117.9</b>	<b>117.9</b>	<b>0%</b>

- Special request from national stakeholders
- The effect of building shell improvements are more visible
- Differentiate between building shell and HVAC system influences in the efficiency improvement

# Define own baseline to calculate existing buildings

## 1| Baseline selection

User can select from predefined baselines or define own baseline

version: 2.0.9.12 Previous Next

**PROJECT** ⓘ

Project Name  ✓

**LOCATION** ⓘ

Country  ✓ ⓘ

Reference city (representative climate for the selected climate region)  ✓ ⓘ

Specify baseline  ✓ ⓘ

## 2| New baseline input tab

Only activated if the user select own baseline in the “Specify baseline” section

version: 2.0.9.12 Previous Next

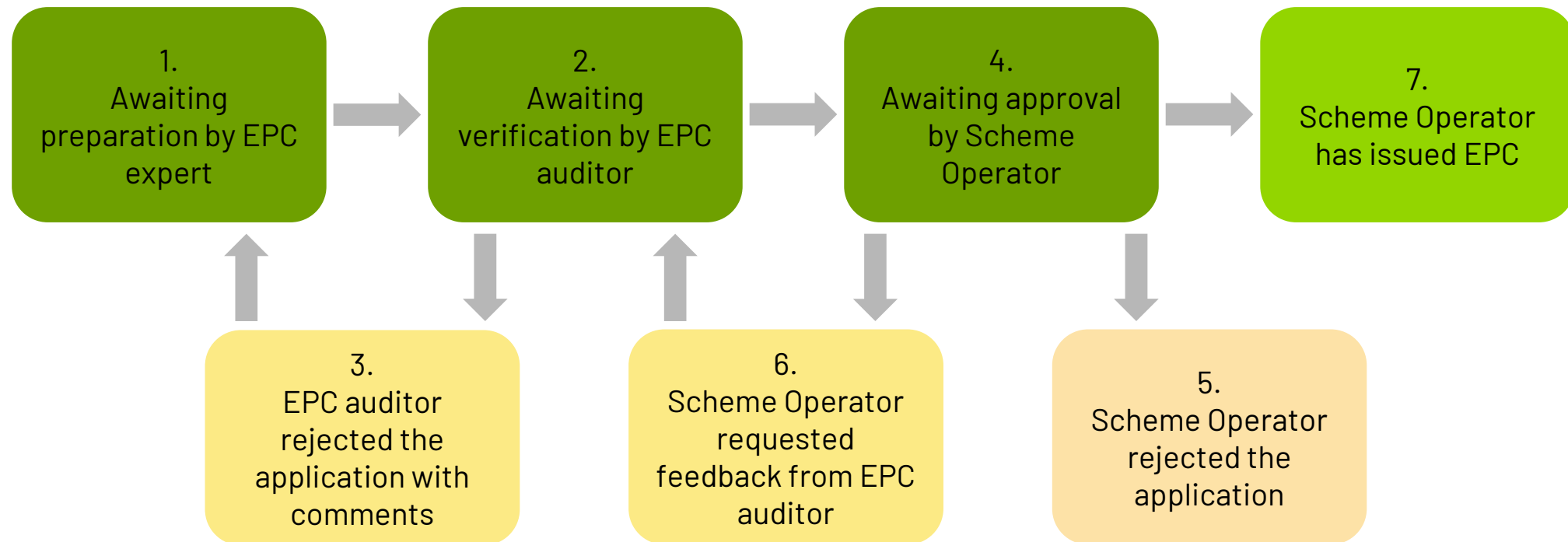
**GEOMETRY-RELATED PARAMETERS** ⓘ

Building levels (floors)	<input type="text" value="4"/> ✓ -
Number of dwellings	<input type="text" value="10"/> ✓ -
Net floor height (Floor to ceiling)	<input type="text" value="3.10"/> ✓ m
Net floor area (i.e. living area)	<input type="text" value="1,245.60"/> ✓ m²
Roof area opaque	<input type="text" value="346.00"/> ✓ m²
Façade area opaque (excluding windows)	<input type="text" value="998.88"/> ✓ m²
Window area (Total = transparent + frame)	<input type="text" value="229.92"/> ✓ m²

Easy comparison of renovation projects with existing situation and national baseline (EPC)

# Integration of EPC

## Workflow on the website



# Integration of EPC (Cont..)

## Workflow on the website

Save changes to project "EPC\_Test"    Discard changes and start new project    Jince\_Expert ▾

**PROJECTS**

Show 10 ▾ entries    Search:

Show on results tab as well	Actions	Project name	City	Last saved	Label	Delta CO <sub>2</sub>
	<a href="#">DELETE</a> <a href="#">LOAD</a> <a href="#">RENAME</a> <a href="#">COPY</a> <a href="#">Start EPC workflow</a>	EPC_Test <<<Current Project>>>	Cairo	28-Apr-2024 13:15	B	-47.0%
<input type="checkbox"/>	<a href="#">DELETE</a> <a href="#">LOAD</a> <a href="#">RENAME</a> <a href="#">COPY</a> <a href="#">Start EPC workflow</a>	Aqaba_Test	Aqaba	16-Apr-2024 19:43	B	-35.0%
<input type="checkbox"/>	<a href="#">DELETE</a> <a href="#">LOAD</a> <a href="#">RENAME</a> <a href="#">COPY</a> <a href="#">Start EPC workflow</a>	EPC_Workflow_Test_3	Amman	03-Apr-2024 17:13	B	-51.0%
<input type="checkbox"/>	<a href="#">DELETE</a> <a href="#">LOAD</a> <a href="#">RENAME</a> <a href="#">COPY</a>	EPC workflow - Test2 EPC Project Status: <a href="#">[Final]7. Scheme Operator has issued the EPC</a>	Amman	20-Mar-2024 11:12	B	-31.0%
<input type="checkbox"/>	<a href="#">DELETE</a> <a href="#">LOAD</a> <a href="#">RENAME</a> <a href="#">COPY</a>	EPC_Workflow_Test EPC Project Status: <a href="#">[Final]4. Awaiting approval by the Scheme Operator</a>	Amman	19-Mar-2024 14:19	B	-51.0%

# Integration of EPC (Cont..)

## 1| Status: Preliminary EPC

7 Steps of the preliminary EPC workflow.

## 2| Applicant's details

EPC expert need to fill the details of the applicant

## 3| EPC Expert's name

Autofill from the login.

## 4| EPC Auditor

EPC Expert need to select an auditor from the list of auditors available

## 5| Status change

Save changes and submit the application to change the status of the project.

## 6| Status: Final EPC

7 Steps of the Final EPC workflow.

## 7| Picture of the building

EPC Expert need to upload the picture of the building

The screenshot shows a web form for EPC application. At the top, there are three buttons: 'Save Changes', 'Save Changes and Submit Preliminary Application', and 'Cancel'. Below the buttons, the form is titled 'EPC Approval Workflow' and 'BUILD\_ME tool'. The 'Status' section contains two columns of radio button options. The left column is labeled 'Preliminary EPC Workflow' and lists 7 steps. The right column is labeled 'Final EPC Workflow' and lists 7 steps. Below the status section, there are two main sections: 'Persons involved' and 'Picture'. The 'Persons involved' section has three text input fields: 'Applicant Name \*', 'Applicant Email \*', and 'Building Address \*'. Below these is a dropdown menu for 'EPC Expert' with the value 'Jince\_Expert'. The 'Picture' section has a 'Building Picture' label, a 'Remove' button, a 'Replace' button, and a 'Choose File' button with the text 'No file chosen'. At the bottom, there is a dropdown menu for 'EPC Auditor \*' with the value 'Please select...' and a link 'Help me find an auditor'.

# Integration of EPC (Cont..)

[Save Changes](#) [Save Changes and Submit Preliminary Application](#) [Cancel](#)

EPC Approval Workflow BUILD\_ME tool

Below are the key inputs and outputs of this project. You have the option to edit or view additional details on the project [here](#)

### Key outputs

Rating Score	B	Emission Reduction	-47
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### Key inputs

Saved first time	2024-04-28 13:15:56	Saved last time	2024-04-28 13:15:56
Project Name	EPC_Test		
Country	Egypt	Reference City	Cairo
Building Type	SFH (Single family house)	Age Group	New construction (after 2015)
Number Of Dwellings	1	Building Levels	2
Net Floor Area	198	Advanced	No
Model Version	9.12		

\* - Required field

## 1| Key outputs

Key outputs for quick overview

## 2| Key inputs

Key inputs for quick overview

## 3| Status change

Save changes and submit the application to change the status of the project.

## 4| Open BEP tool

Link to the BEP tool for detailed verification.

# Output of new BEP tool

## Energy Performance Certificate (Preliminary)

### General building info

**PRELIMINARY ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

**LCEC** VALID UNTIL 20.03.2029 CERTIFICATION NO. PRE\_LEB202400002 CLIMATE ZONE Beirut

**\_GENERAL BUILDING INFORMATION**

BUILDING TYPE: Single Family House

ADDRESS: Musterstraße 6x 33000 Musterstadt, Musterland  
PLANNED YEAR OF CONSTRUCTION: 2024

AMOUNT OF APARTMENTS (BY MEQ): 16  
NET FLOOR AREA: 2800 [m²]

SPECIFIC BASELINE (National/City/Town/Village): National



**\_BUILDING ENVELOPE**

- WALL: 0,57 [W/m²K]
- ROOF: 0,25 [W/m²K]
- FLOOR: 1,20 [W/m²K]
- WINDOW: 1,20 [W/m²K] / 0,85 [-]

**\_HVAC SYSTEM**

- AIR CONDITIONING: Single-split
- HEATING: Portable LPG (gas) heater
- VENTILATION: Mech. vent. w/o HRV
- HOT WATER: Portable LPG (gas) heater

**\_RENEWABLES**

- PHOTOVOLTAIC: 10 [kWp]
- SOLAR THERMAL: 5 [m²]
- OTHERS: [-]
- NONE: [-]

**\_EPC EXPERT**  
NAME: Muster Name  
EPC EXPERT CERTIFICATE NO.: #EPC000025  
DATE: 03.04.2024

**\_EPC AUDITOR**  
NAME: Muster Name  
EPC AUDITOR CERTIFICATE NO.: #EPC000025  
DATE: 15.04.2024

**\_CERT. AUTHORITY**  
NAME: Muster Name  
UNIT: Musterabteilung  
DATE: 05.04.2024


### KPIs

**PRELIMINARY ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

**LCEC** VALID UNTIL 20.03.2029 CERTIFICATION NO. PRE\_LEB202400002 CLIMATE ZONE Beirut

**\_FINAL ENERGY DEMAND**  
56,78 [kWh/m²a]  
0.48 [-]

**\_CO<sub>2</sub> EQUIVALENT**  
18,06 [kgCO<sub>2</sub>/m²a]  
0.48 [-]



**\_ENERGY CONSUMERS**

Final Energy split in energy use

96,78 [kWh/m²a]

Baseline: 103,84 [kWh/m²a]

Space Heating, DHW, Space Cooling, Ventilation, Auxiliary energy

**\_ECONOMIC INDICATOR**

Very economical

INCREMENTAL COSTS: 10 [%]  
PPP: 7 [years]  
GLOBAL COST SAVINGS: 52 [%]

### Recommendations

**PRELIMINARY ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

**LCEC** VALID UNTIL 20.03.2029 CERTIFICATION NO. PRE\_LEB202400002 CLIMATE ZONE Beirut

**\_RECOMMENDATIONS TO REACH ZERO ENERGY BUILDING STANDARD [A+]**

No.	Category	Measures
1	Building Envelope	Forumt omnimittas mihiab inuipar iusam cubillare, tempore cretus utillab. Ita volorae cum quatus apidpissant pro cum est. Acceplicis verum vellistius dendustium volupta dolore nobit utatimo Lorestia voluptatin no solore es sequis aeris doluptatis mo berumet aut mod quae videla aut expigriet isanis de sed quam nitit, si dolupta velecto magnatint ea enim erum qui sequataque.
2	HVAC	Ita volorae cum quatus apidpissant pro cum est. Acceplicis verum vellistius dendustium volupta dolore nobit utatimo Lorestia voluptatin no solore es sequis aeris doluptatis mo berumet aut mod quae videla aut expigriet isanis de sed quam nitit, si dolupta velecto magnatint ea enim erum qui sequataque.
3	Renewables	Acceplicis verum vellistius dendustium volupta dolore nobit utatimo Lorestia voluptatin es solore es sequis aeris doluptatis mo berumet aut mod quae videla aut expigriet isanis de sed quam nitit, si dolupta velecto magnatint ea enim erum qui sequataque.
4	Behavior	Egildit asequi lar suante coninnie nederum, con nullar aut quibus pos exeperentem doluptae nullupat lum quo doluptatiani. Herisiant emporep esperum eate alibertat pel elur? Ciplatis aut fuga. Peri archil uptata dolorem re molongquid nonatus doluptit as simpore mianhi temporum fugtat unrhendebit veignam hari quam ipsam non none pia volas doloris lunt. Igender itore valenhiat occusam, upirach klabor apudit doluptat asequi stibus, electica monet moluptatit.

**\_EXPECTED RESULTS**

ENERGY: A+ 25 [kWh/m²a] 0.2

CO<sub>2</sub>: A+ 5 [kg/m²a] 0.2

ECONOMY: Very economical PBP 7 [years] Global costs savings 58%

### Explanations

**PRELIMINARY ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

**LCEC** VALID UNTIL 20.03.2029 CERTIFICATION NO. PRE\_LEB202400002 CLIMATE ZONE Beirut

**\_EXPLANATIONS**

Reference Page	Topic
1	Building types: Six building types are available in the BEP tool including single-family house (SFM), multi-family house (MFH), office, educational building, school, and hospital. This section defines the baseline building used to compare the energy performance of the project building.
1	Net Floor Area: Entire conditioned area of the building. For MFH, building area is used, not apartment area.
1	Building Envelope: The calculation of the envelope considers the insulation of the roof, facade and surface, the windows, and the cost to increase the general appearance of the building's envelope.
1	HVAC: Heating, Ventilation, and Air Conditioning. Based on air change rate, space heating, hot water generation, space cooling, and mechanical ventilation.
1	Renewables: Capacity of the photovoltaic (PV) system described by the power output of the entire system at standard conditions.
1	EPC expert: A trained EPC expert must prepare all technical and administrative documents for building energy labels on behalf of end-users, using the BEP tool.
1	EPC auditor: A trained EPC auditor must review all technical and administrative documents for building energy labels.
1	EPC certification authority: Certifying body approved to issue the EPC.
2	Baseline: The baseline building data was collected in 2020 and reflects real constructions. By default, every project is compared to its according baseline. In the EPC, the baseline building is represented by level G.
2	Final energy: Total energy consumed by end users.
2	CO <sub>2</sub> e: Carbon dioxide equivalent represents the impact of different greenhouse gases (GHG) and their equivalent global warming impact.
2	Energy consumers: Equipment consuming the most energy in the building.
3	Economic indicators: Incremental costs represent the costs in addition to baseline for selected measures. Payback period is the amount of time required for the investment to recover its initial outlay in terms of energy savings. Global cost savings refers to the benefits realized from the energy savings actions.
3	Zero Energy Building Standard (ZEB): A new or renovated net-zero building is highly energy efficient, does not cause any on-site fossil emissions from fossil fuels, and reduces embodied carbon to a significant extent. It uses renewable energy, preferably generated on-site. If technically feasible, on-site or off-site to fully cover its remaining, very low energy use.
3	Expected results: Expected energy savings, CO <sub>2</sub> e, and economic indicators calculated from planned energy efficiency measures.



# Output of new BEP tool

## Energy Performance Certificate (Final)

### General building info

**FINAL ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

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ADDRESS: Musterstraße xx, xxxxx Musterstadt, Musterland

PLANNED YEAR OF CONSTRUCTION: 2024

AMOUNT OF APARTMENTS (Per MFH): 16

NET FLOOR AREA: 2600 [m²]

SPECIFIC BASELINE (NAGSMA/City/Town/Village): National

**\_BUILDING ENVELOPE**

- WALL: 0,57 [W/m²K]
- ROOF: 0,25 [W/m²K]
- FLOOR: 1,20 [W/m²K]
- WINDOW: 1,20 [W/m²K] / 0,85 [-]

**\_HVAC SYSTEM**

- AIR CONDITIONING: Single-split
- HEATING: Portable LPG (gas) heater
- VENTILATION: Mech. vent. w/o HR
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**\_RENEWABLES**

- PHOTOVOLTAIC: 10 [kWp]
- SOLAR THERMAL: 5 [m²]
- OTHERS: [-]
- NONE: [-]

**\_EPC EXPERT**

NAME: Muster Name  
EPC EXPERT CERTIFICATE NO. JORGE00025  
DATE: 03.04.2024

**\_EPC AUDITOR**

NAME: Muster Name  
EPC AUDITOR CERTIFICATE NO. JORDA00026  
DATE: 15.04.2024

**\_CERT. AUTHORITY**

NAME: Muster Name  
UNIT: Musterabteilung  
DATE: 05.04.2024

### KPIs

**FINAL ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

LCEC VALID UNTILL 20.03.2029 CERTIFICATION NO. PRE\_LEB202400002 CLIMATE ZONE Beirut

**\_FINAL ENERGY DEMAND**

56,78 [kWh/m²a]  
0,48 [-]

**\_CO₂ EQUIVALENT**

18,06 [kgCO₂/m²a]  
0,48 [-]

**\_ENERGY CONSUMERS**

Final Energy split in energy use

56,78 [kWh/m²a]

Baseline 103,58 [kWh/m²a]

Final Energy Demand [kWh/m²a]

- Space Heating
- DHW
- Space Cooling
- Ventilation
- Auxiliary energy

**\_ECONOMIC INDICATOR**

Very economical Economical Only conditionally recommended

Very economical

INCREMENTAL COSTS: 10 [%]

PPS: 7 [years]

GLOBAL COST SAVINGS: 52 [%]

### Explanations

**FINAL ENERGY PERFORMANCE CERTIFICATE\_for Single Family House**

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1	EPC expert, A trained EPC expert must prepare all technical and administrative documents for building energy labels on behalf of end-users, using the BEP tool.
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2	CO₂, Carbon dioxide equivalent represents the impact of different greenhouse gases (GHG) and their equivalent global warming impact.
2	Energy consumers, Equipment consuming the most energy in the building.
2	Economic indicators, incremental costs represent the costs in addition to baseline for selected measures. Payback period is the amount of time required for the investment to recover its initial outlay in terms of energy savings. Global cost savings refers to the benefits realized from the energy savings actions.
2	Zero Energy Building Standard (ZEB), A new or renovated net-zero building is highly energy efficient, does not cause any on-site GHG emissions from fossil fuels, and reduces embodied carbon to a significant extent. It uses renewable energy, preferably generated on-site, if technically feasible, and/or off-site to fully cover its remaining, very low energy use.
3	Expected results, Expected energy savings, CO₂e, and economic indicators calculated from planned energy efficiency measures.

# Acknowledgement of the new Energy Performance Certificates (EPC) Scheme

# High level view on the role of the EPC in Egypt

Ashraf Kamal, HBRC

# Egypt has formulated several strategies to promote a climate friendly future

## National Climate Change

- Sustainable Development Strategy (SDS)
- Egypt's Vision 2030
- Long Term Low Emission Development Strategy 2050 (LT-LEDS)
- National Climate Change Strategy 2050 (NCCS)
- Nat. Strategy for Disaster Risk Reduction 2030
- Nat. Strategy for Adaptation to Climate Change

## Sectoral

- Integrated Sustainable Energy Strategy 2035
- National Energy Efficiency Action Plan NEEAP II
- National Water Resources Plan (2017- 2037)
- Integrated Solid Waste Management Strategy
- Sustainable Agricultural Development Strategy (SADS 2030)

# The building sector play a major role to mitigate emissions

Mapping the strategies with a buildings sector relevance

## National Climate Change

- Sustainable Development Strategy (SDS)
- Egypt's Vision 2030
- Long Term Low Emission Development Strategy 2050 (LT-LEDS)
- National Climate Change Strategy 2050 (NCCS)
- Nat. Strategy for Disaster Risk Reduction 2030
- Nat. Strategy for Adaptation to Climate Change

## Sectoral

- Integrated Sustainable Energy Strategy 2035
- National Energy Efficiency Action Plan NEEAP II
- National Water Resources Plan (2017- 2037)
- Integrated Solid Waste Management Strategy
- Sustainable Agricultural Development Strategy (SADS 2030)

# The objectives of the National Climate Change Strategy

Five distinctive goals to promote climate change in Egypt



**Achieving sustainable economic growth with low emissions through different sectors**



**Building resilience and ability to adapt with climate change while reducing negative effects of climate change**



**Improving governance and operation related to climate change**



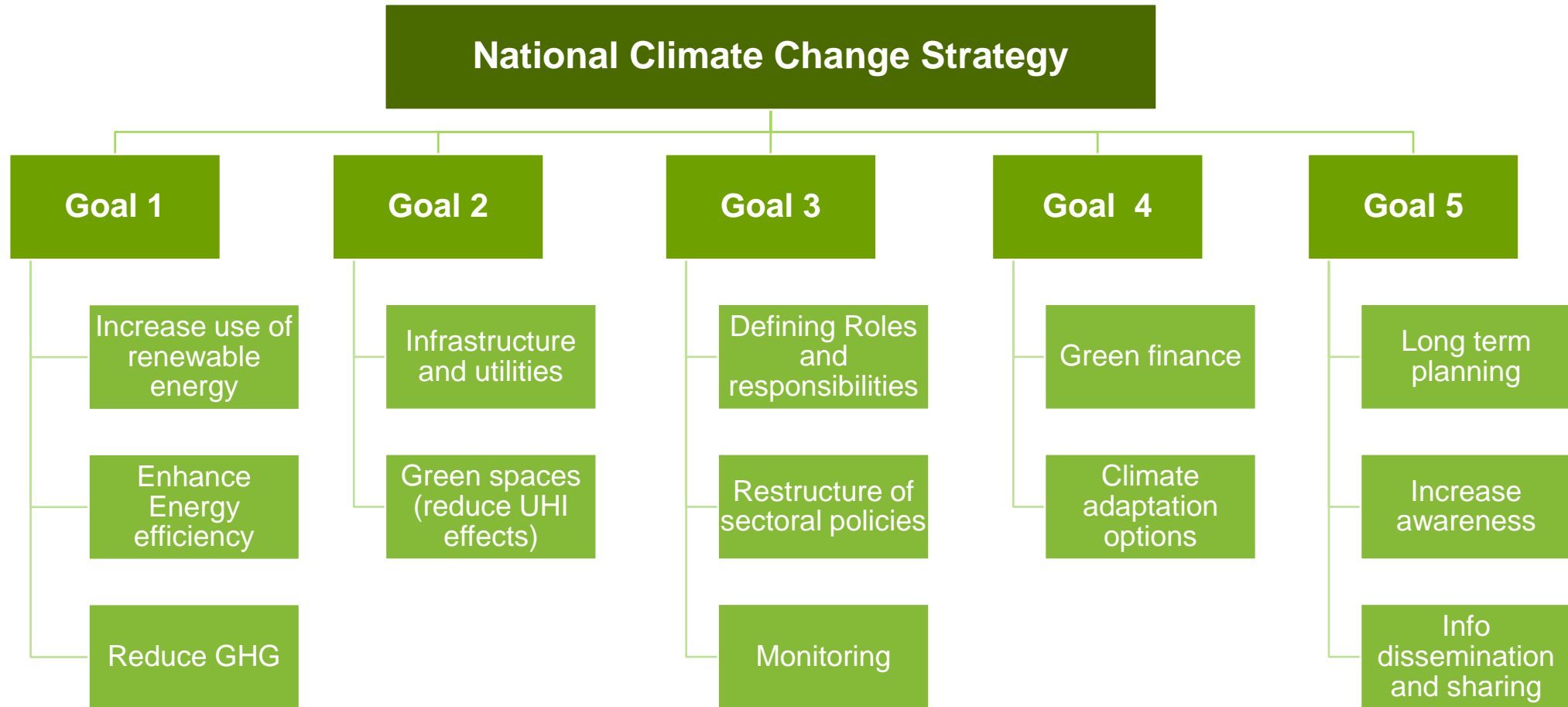
**Enhancing infrastructure and finance mechanisms for climate-related activities**



**Strengthening of scientific research and transfer of technology & knowledge management, as well as raising awareness to reduce impacts of climate change**

# The building sector captured in the strategy

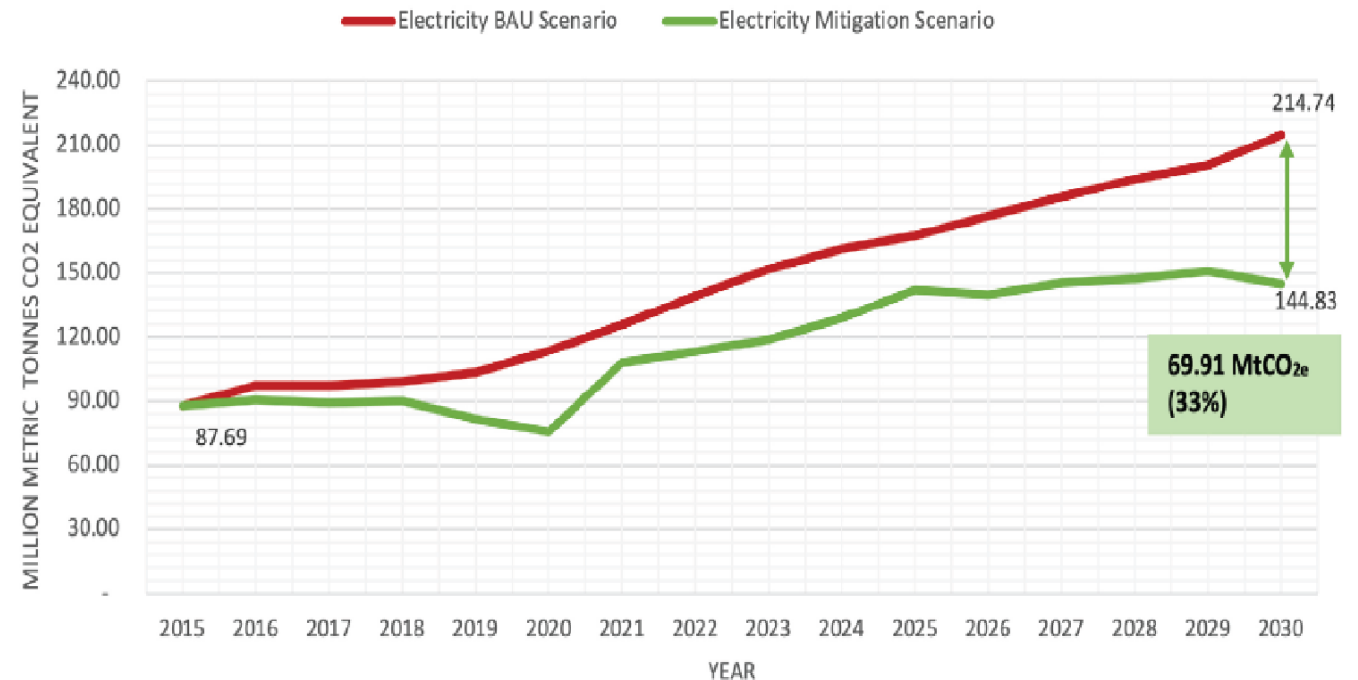
Exemplary zooming into the National Climate Change Strategy



# Quantification of mitigation potential

## Pathway to Egypt's 2030 mitigation targets (NDC)

- **GHG reduction % compared to BAU in 2030= 33%**
- **Maximize Energy Production from local resources** and diversify supply, reduce intensity of energy consumption, and transition to low carbon pathway in electricity sector, primarily through:
  - Installing additional **Renewable Energy (RE) capacities** to reach RE contribution target of 42%
  - Improve **Energy Efficiency of Electricity Generation** by maintenance, upgrade, and replacement programs for obsolete plants





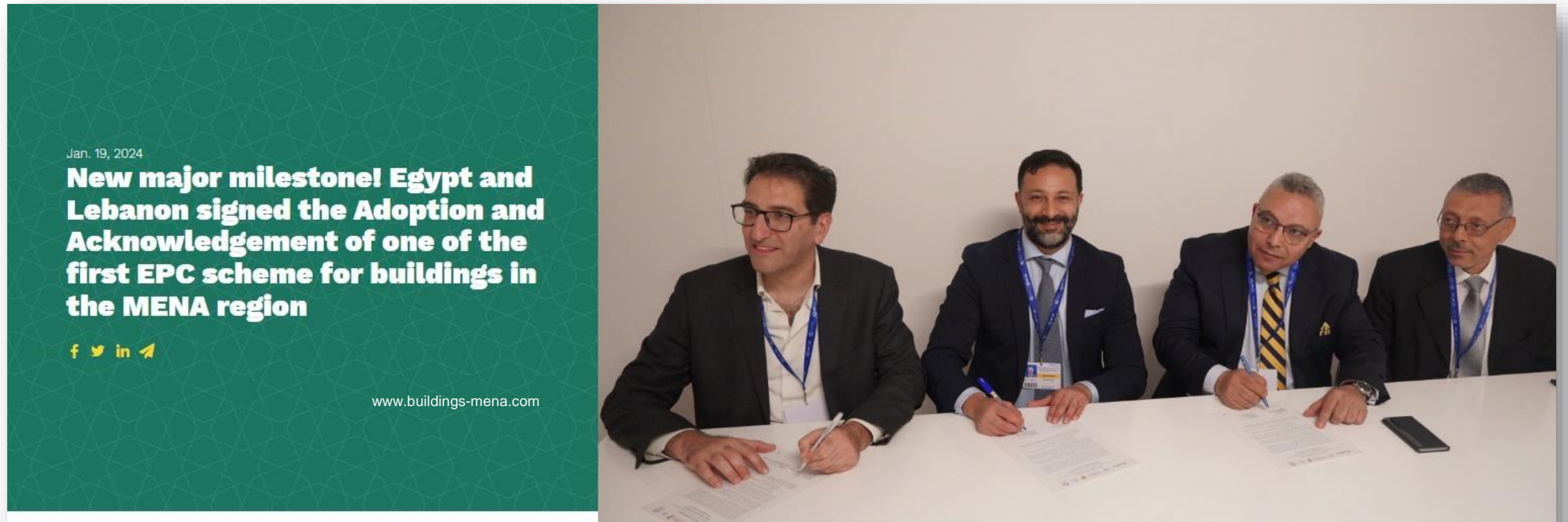
# Challenges for Buildings and Urban Cities

Promote Sustainability in existing & new buildings towards Adopting Low Carbon Standards – **Direct link with EPCs**

- **Promoting use of Renewable Energy and Energy Efficiency**
- **Expanding Energy Efficiency Labels and Specifications,**
- Promote **Green Buildings** by **activating** Energy Efficiency **Codes** for New Buildings,
- and **adopting procedures** to **renovate existing buildings** to meet energy performance standards,
- **Increase** Green Spaces and Sustainable Parks (irrigated with treated wastewater)
- Adopt **National Active Mobility** Strategy to encourage use of bicycles and walking in designated paths
- **Shift** gradually to electric vehicles and using **clean energy sources**
- Installing **energy efficient** and/or solar-operated **street lighting** and advertisements

# Acknowledgement of the BEP tool by HBRC

MoU signed at the COP 28 stating national certification recognition



Adoption and Acknowledgement of the Energy Performance Certificate (EPC) by Housing and Building National Research Center - HBRC of Egypt took place at COP28.

# Planned roll-out of the EPC in Egypt

Mohamed Salheen, IDG

# Objectives and scope of the Energy Performance Certificate (EPC)

The BEP tool connected with EPC for easier facilitating of Green finance



## Customized for the local conditions

The EPC and BEP tool and the EPC will provide a new channel for project developers interested to construct EE projects. (no competition with the existing schemes).



## Energy Focused

The EPC and BEP tool focus on energy savings and the associated GHG emissions.



## Locally managed by official entities

The EPC and the tool will be managed and owned by the official entities (HBRC) responsible of implementing the codes and/or the construction sector.



## Voluntary EPC towards mandatory

The EPC will initially start as a voluntary scheme.

Ensuring a transition to mandatory scheme – relevant to become one of the key policy instruments

# Defining the EPC Scheme concept



## Target Market

E.g., New buildings

- Residential buildings: Single family houses SFH and Multi-family houses MFH.
- Offices and schools



## Rating score

Performance scale system (Labelling scheme)

- performance is labelled in a scale from A to G.



## Asset rating

two levels of verification

- Design phase.
- Post Construction phase.

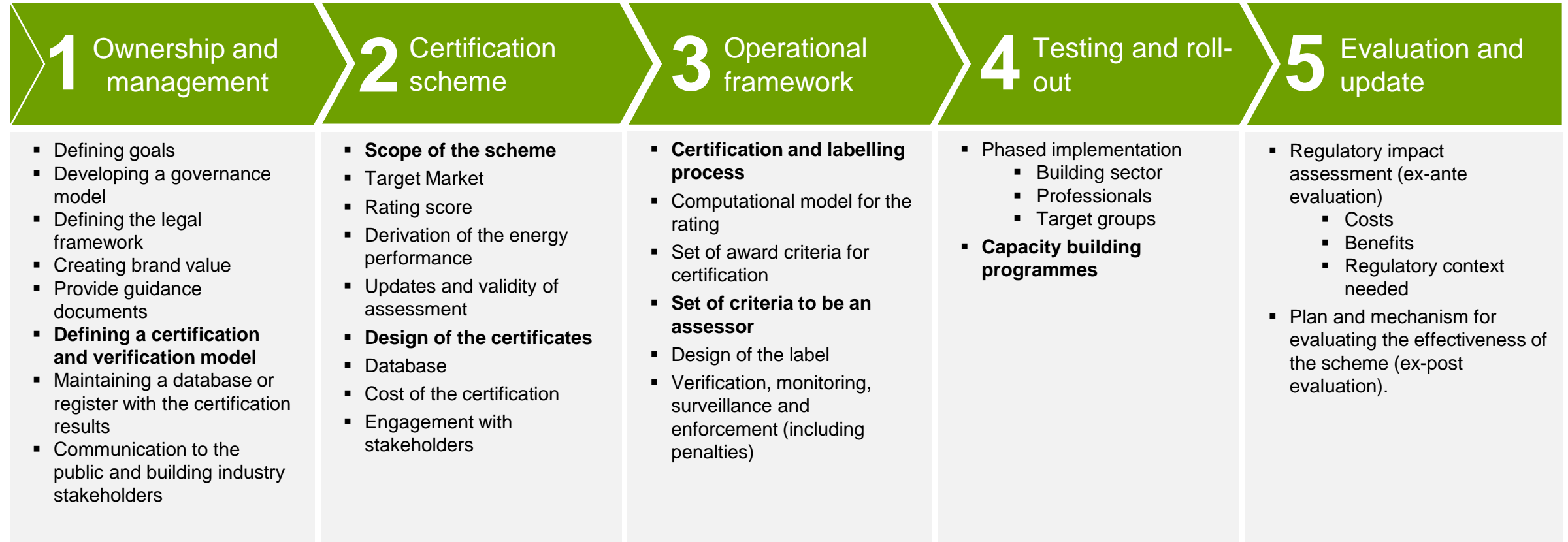
# Roadmap formulation for setting the new EPC Scheme

Steps to successfully roll-out the new scheme



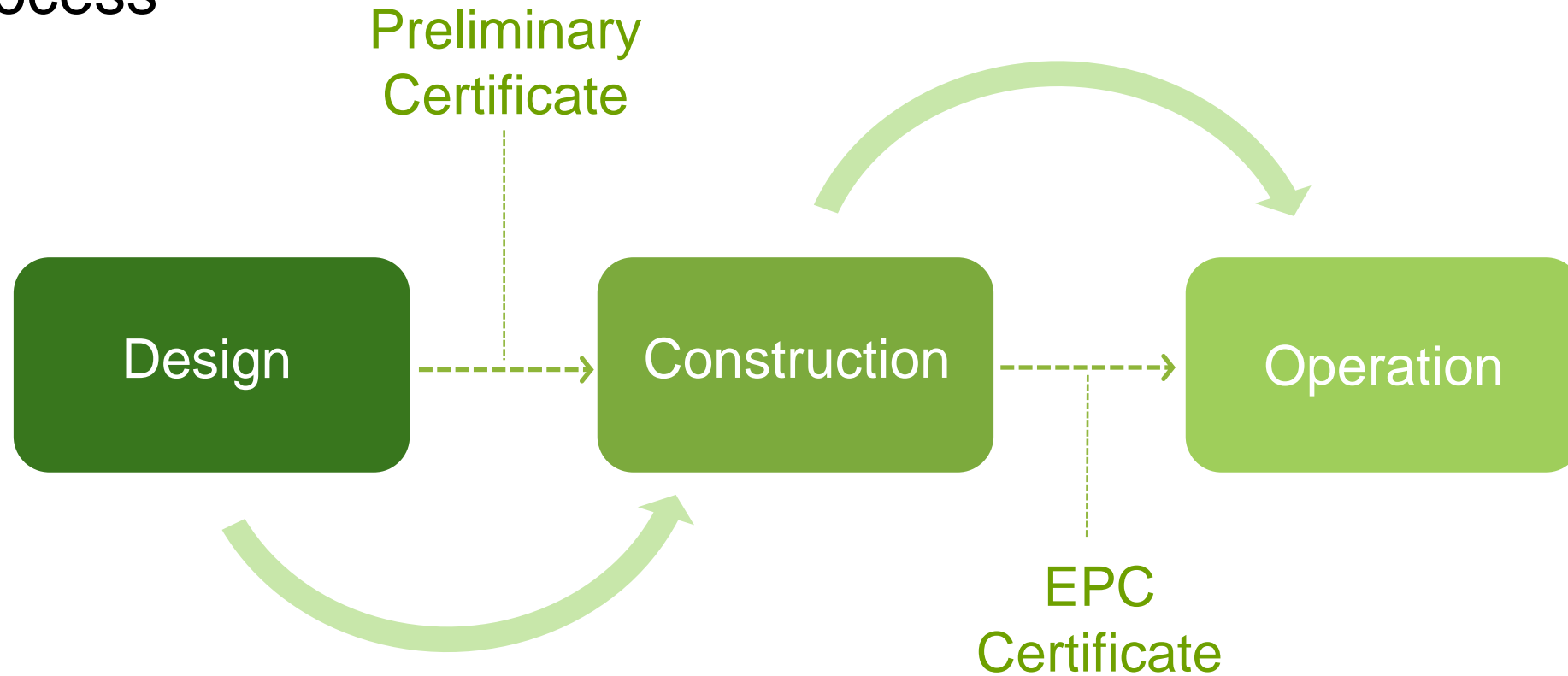
# Roadmap formulation for setting the new EPC Scheme

## Action plan for roll-out of scheme



# Scope

## EPC process

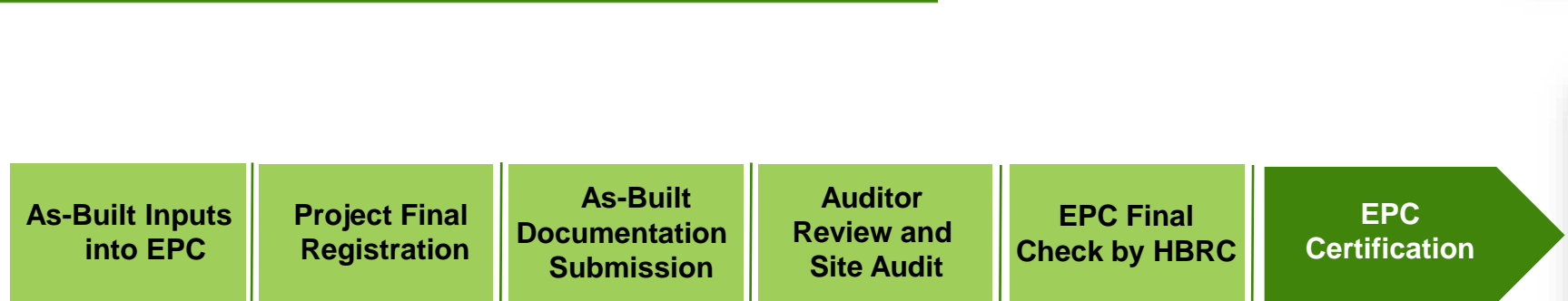


Initial **Preliminary Certificate** for design stage and a final **EPC Certificate** after construction stage. There is no EPC certificate for operation stage.



# Process in detail

## EPC process



# Discussion



# Coffee break



# Looking forward – what comes next

Moderator: Sandy Grant, IDG

# Strategic partnerships (I): Financial Institutions

Eslam Mahdy, GH

# 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 **US\$ 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....



# Why are climate-friendly buildings relevant for financial institutions?

FI and Banks to design financial products for green and sustainable buildings



## Regulation and compliance

To comply with the progressive sustainability regulations that requires more transparent disclosure on environmental indicators.



## Construction Market size

To meet the growing demand on financing real estate and construction projects.



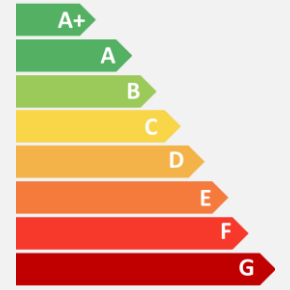
## International Mega-trends

The enormous environmental and sustainability trends will create a lot of opportunities and risks.

**The financial sector is globally-bounded.  
Changes in regulations at the international and European levels will influence MFPs globally.**

# What is the Energy Performance Certificate for buildings?

Energy Performance Certificate EPC for a building is an important policy and regulatory instruments that help improve the energy performance of the buildings. EPC shows the level of the energy efficiency of the building explained in a label, the building energetic characteristics, and includes recommendations about the potential energy-saving measures for a property.



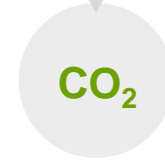
Energy [kWh/m<sup>2</sup>a]



Energy costs



Indoor Comfort



Emissions [kgCO<sub>2</sub>/m<sup>2</sup>a]

Energy [kWh/m <sup>2</sup> a]	Energy costs	Indoor Comfort	Emissions [kgCO <sub>2</sub> /m <sup>2</sup> a]
0.76 – 1 <b>C</b>	Baseline	Baseline	50
0.51 – 0.75 <b>B</b>	≈ 25 - 50% less	Improved comfort level	25-36
0.26 – 0.5 <b>A</b>	≈ 50 – 75 % less	High comfort level	13-24
≤ 0.25 <b>A+</b>	≤ 25 less	Very high comfort	12

\*results of an exemplary MFH in Cairo



# How EPC maybe used to accelerate the transition

## German example: KfW programmes

- Supported more than 4 million dwellings since.
- Energy efficient refurbishment inc. single energy efficiency measures and Energy efficient new construction meeting the requirements of KfW Efficiency House **70, 55, or 40**.
- The programme helped to reduce the CO2 emissions by around **600,000** tonnes per year, accounted for **1,726 GWh** less annual final energy consumption, **700,000** jobs created, strong generation of investment with mean **leverage factor of 10** for the KfW (1€ spent activated 10€).



- Sources: achportal Energieeffizientes Bauen und Sanieren
- BMWi Federal Ministry for Economic Affairs and Energy, 2015
- IWU and Fraunhofer IFAM, 2016

- The institutional structure in Egypt can adopt such a policy instrument.
- All key stakeholders are functioning already in Egypt.

# Matchmaking between FIs and project developers

One of the BUILD\_ME's objective



## FIs and Banks sustainable finance offerings for green buildings

- Survey to list the financial products available.
- Identify the target groups of the financial products.
- Identify the conditions of the sustainable finance offerings.
- Summarize the finance conditions for pilot project developers.

## Matchmaking



**BUILD\_ME team will facilitate and coordinate the collaboration between project developers and FIs to use the EPC and the BEP Tool.**



## Project developers of green buildings

- Identify a long list of green buildings project developers.
- Identify the key characteristics of the projects including size, building types, and ownership structure.
- Understand finance-related decisions

# BUILD\_ME engagement with Banks and FIs.

Banks and FIs offering finance for green and energy efficient buildings.

## Examples of International Funders

- French Development Agency AFD.
- European Bank for Reconstruction and Development EBRD.

## Examples of National Funders

- Commercial International Bank CIB.
- National Bank of Egypt.
- The National Bank Of Kuwait, in Egypt.



Key criteria to receive the finance require to reach a threshold of energy efficiency i.e., 30% comparing with the baseline, or to receive an international certification i.e., LEED, BREEAM.

# BUILD\_ME engagement with Banks

EBRD



BUILD\_ME scheme and the BEP Tool have received the official approval from EBRD to be used to qualify projects for green finance in Egypt and Jordan. More details to be announced soon.

# Questions and discussions



BUILD\_ME project aims to enable the Financial institutions to use the BEP tool and the EPC rating system for evaluating the building projects and hence facilitating finance for green and EE buildings.

**What are the key actions may recommend? This may include additional regulatory or policy instrument, raising awareness, and coordinating between FIs and Pilot projects.**

# Strategic partnerships (II): Project developer

Mohamed Salheen, IDG

# BUILD\_ME engagement with project developers

Supported 6 tested pilot projects

Cairo West Residence



Beverly Hills - 229



New Mansoura university



Palm Hills, Badya



Palm Hills, Alexandria



Misir Alghad



# BUILD\_ME engagement with project developers

## Technical support for pilot projects

### Technical support for pilot projects

New Mansoura university



Cairo West Residence



#### Policy work

To connect the challenges and lessons learnt with the policy frameworks activities



#### Test the tool

To test and improve the BEP tool with real-life examples



#### Test the classification scheme

The national classification scheme will allow for better access to the available green finance programs



#### Facilitating finance

Support the PP in their application (if any).



#### Capacity building

Provide training on EE and RE



# Benefits for project developers

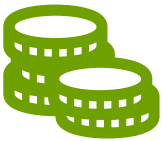
## Why engage with BUILD\_ME?



Learn how to **conceive low energy buildings**



**Assess cost benefits** of energy efficiency and renewable energy measures



Potential **financial support**



Enhance **project visibility**



**manage energy use,  
costs and productivity in  
your buildings**

# Introduction to tailored trainings

Rana Mohamed, IDG



# Trainings

Concept of target orientated capacity building – 4 target groups

**Finance &  
Project  
Developers**

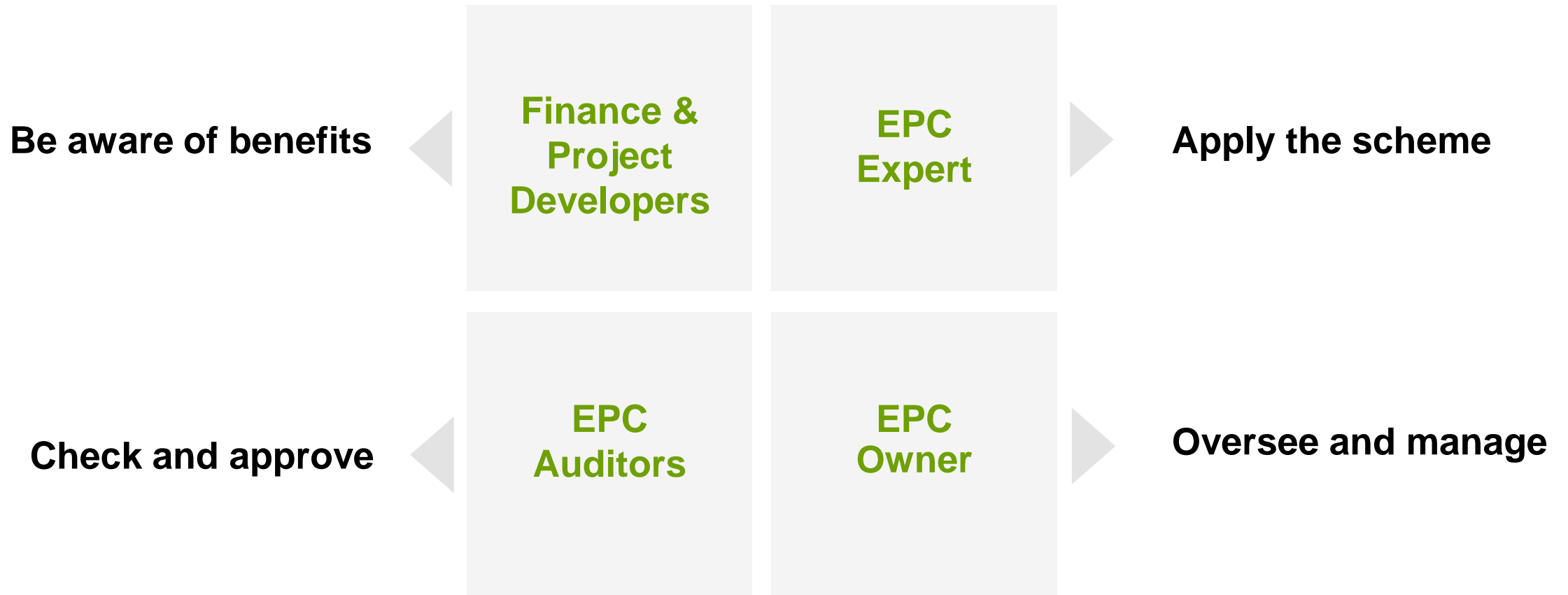
**EPC  
Expert**

**EPC  
Auditors**

**EPC  
Owner**

# Trainings

Concept of target orientated capacity building – 4 target groups



# Trainings

## Target audience

- Financial Institutions
- Architects & engineers
- Municipalities
- Project developer

Academic title in relevant field  
(EPC Expert +3 years of  
practical work experience with  
low energy buildings)

**Finance &  
Project  
Developers**

**EPC  
Expert**

Academic title in relevant field

**EPC  
Auditors**

**EPC  
Owner**

Certification authority  
representatives

# Trainings

## Objectives

- Increase awareness of the importance and financial attractiveness of investing in EE measures
- General understanding of the BEP tool and EPC scheme

**Finance &  
Project  
Developers**

**EPC  
Expert**

- Basic understanding of EE/RE measures and their impact on buildings energy performance
- Enable the utilization of the tool and reporting formats

- Understand the Audit process
- Enable utilization of the tool and reporting formats
- Assess whether the building meets the EPC requirements

**EPC  
Auditors**

**EPC  
Owner**

- Reporting and issuing of the EPC
- Supporting tools
- Issue and review tests / exams

# Trainings

## Eligibility criteria

**EPC  
Expert**

**EPC  
Auditors**

# Trainings

## Eligibility criteria

### EPC Auditors

- An EPC Expert or other equivalent certificates (e.g., EDGE, LEED and BREEAM) or +1 year of practical work experience with a qualified ESCO
- Hold a higher education qualification in a construction industry related field.
- +3 years of practical work experience in the construction industry.

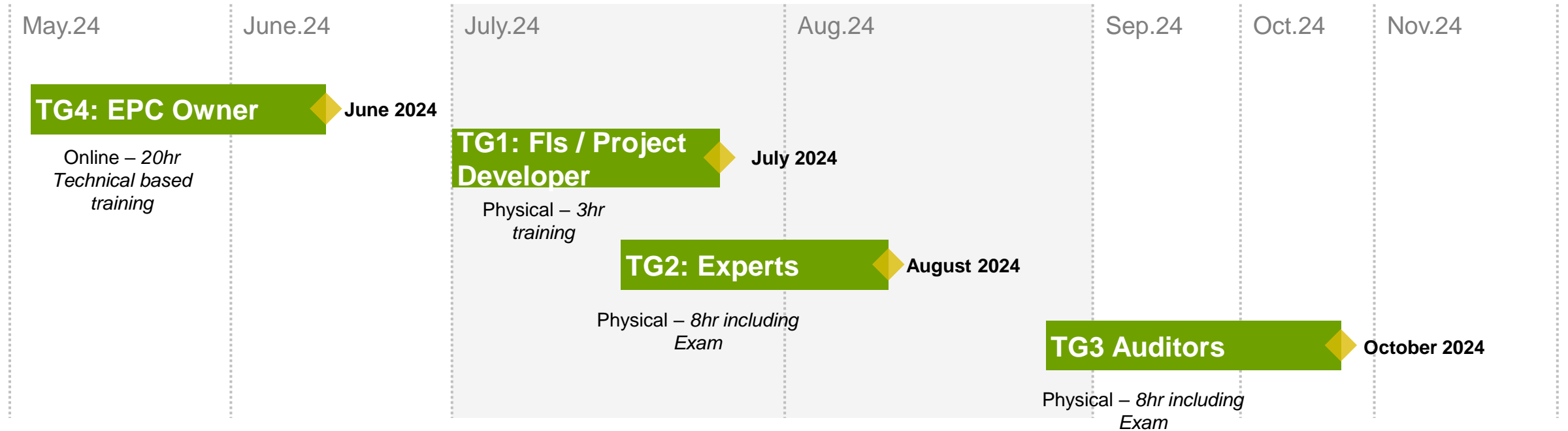
### EPC Expert

- Hold a higher education qualification in a construction industry related field.
- +3 years of practical work experience in the construction industry.



# Trainings

## Planned dates and duration











- Exam held two weeks after taking the training

# Outlook: What are our next steps

Ashraf Kamal, HBRC  
Riadh Bhar, GH

# Status of BUILD\_ME 3 progress

	Outputs	Indicators	Status
 <p>1. Technical Framework</p>	National building classification system is operational in target countries and the BEP tool is expanded.	I.1 further developed BEP tool I.2 National building classification schemes	 <p><b>Almost done</b></p>
 <p>2. Financial Framework</p>	Financial institutions can assess, and finance low-energy buildings based on the BEP tool and/or the classification system	II.1 The BEP tool is adapted by financial institutions. II.2 The exchange between project developers and FIs is established.	 <p><b>About 50 %</b></p>
 <p>3. Dissemination &amp; Capacity Building</p>	Knowledge of "local" interest groups for low-energy buildings is expanded in the target countries	III.1 Online seminars, national and regional workshops. III.2 Training on the BEP tool and classification scheme.	 <p><b>About 50 %</b></p>
 <p>4. Regulatory Framework</p>	The political and regulatory framework for energy efficiency in buildings has been improved	IV.1 Demand-oriented support of national strategies IV.2 The macro-level benefits of EE buildings have been analyzed.	 <p><b>To be started</b></p>

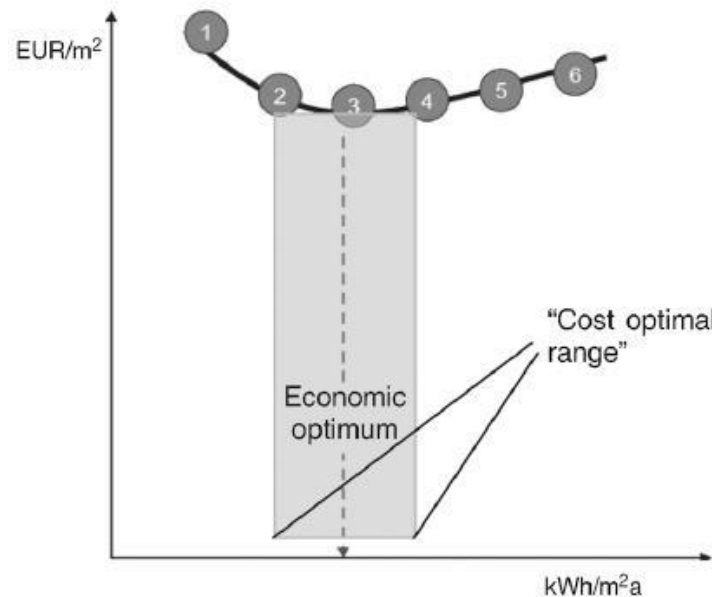
# Next steps in BUILD\_ME 3

## 1. Technical studies supporting regulative framework

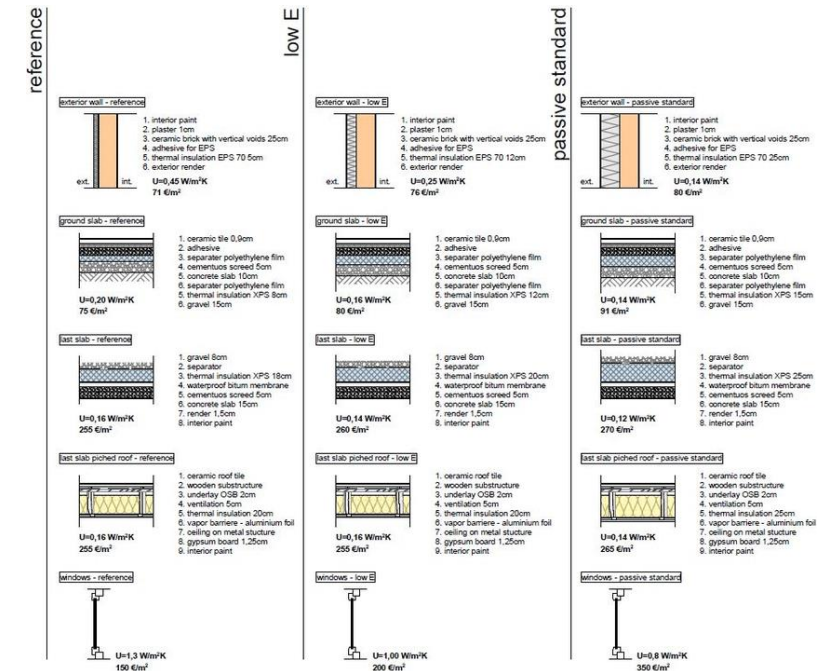
### ZEB definition



### Cost Optimality Study

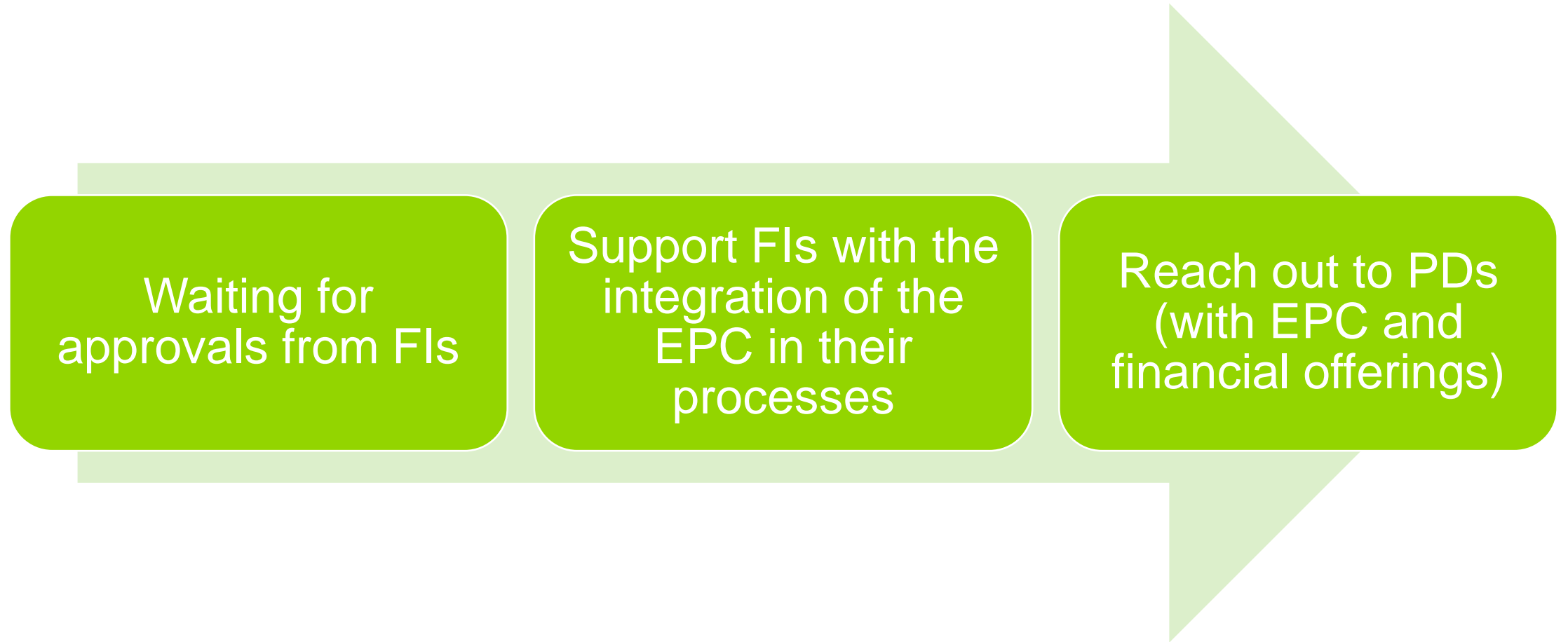


### Building Component Database



# Next steps in BUILD\_ME 3

## 2. Financial Framework



# Next steps in BUILD\_ME 3

## 3. Dissemination and (Capacity building)



3<sup>rd</sup> webinar: 6<sup>th</sup> June 2024



4<sup>th</sup> webinar: Nov/Dec 2024

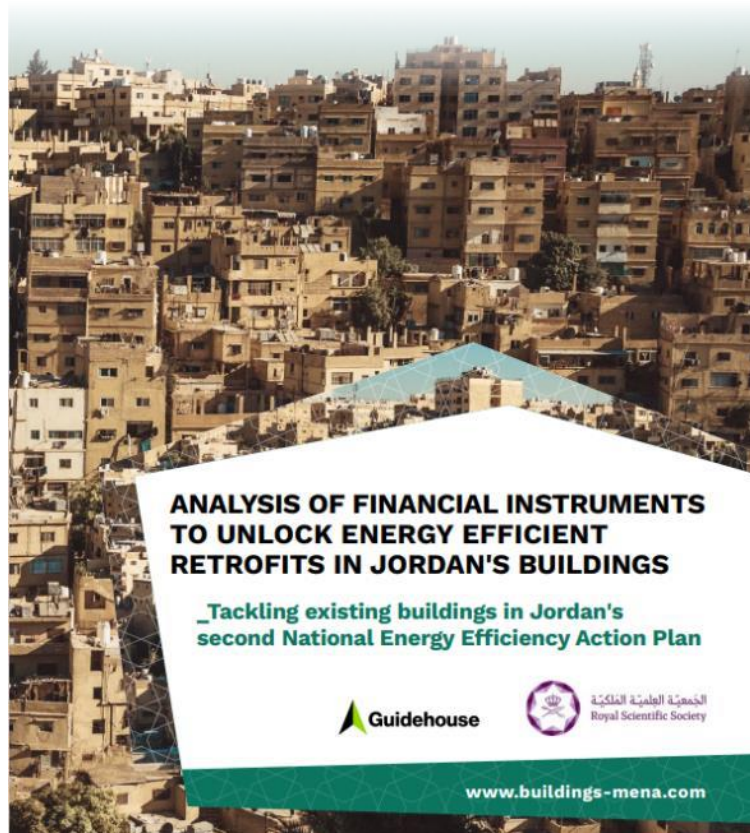


Regional conference: Q1/2025

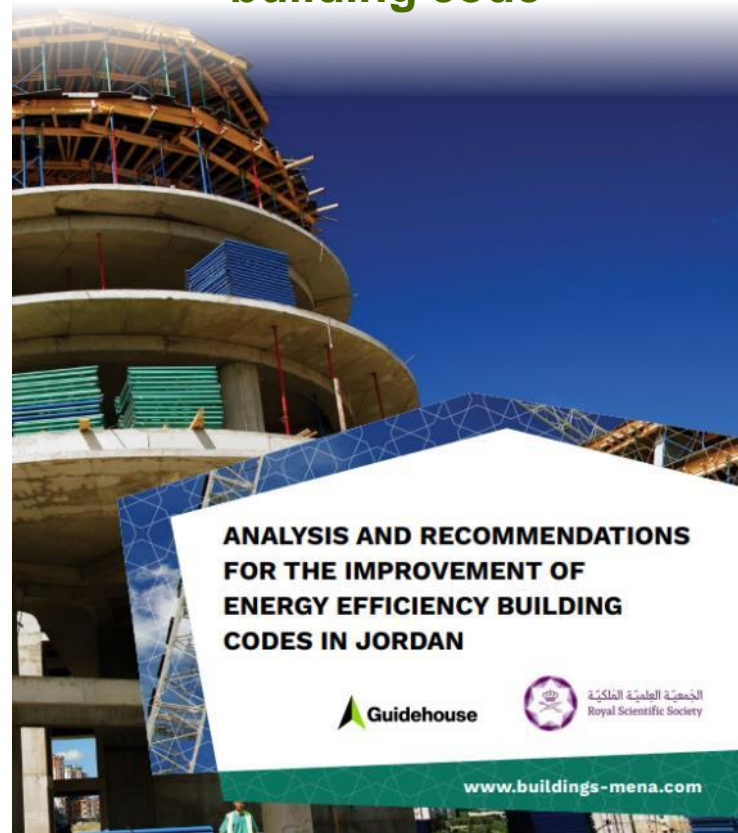
# Next steps in BUILD\_ME 3

## 4. Political and regulatory framework

### Support national strategies



### Support energy efficiency building code



### Demand driven consultancy /e.g. Macro economic study

#### Stakeholder Report: Jordan

IKI Project: Accelerating 0-emission building sector ambitions in the MENA region (BUILD\_ME)

Prepared on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety under the International Climate Initiative



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BUILD\_ME National WS - Cairo,  
Egypt



# Survey

<https://forms.office.com/r/ffMs0GeNvf>



# Closing Remarks

Mohamed Salheen, IDG  
Riadh Bhar, GH

# Group picture

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