BUILD_ME

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

Intermediate National WS, BUILD_ME 3rd Phase

Cairo, Egypt

May 15th, 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

1. Provide an update about the project activities and collaborations.
2. Raising awareness about the newly adopted EPC in Egypt.
3. Discussion and feedback from experts and stakeholders.
4. 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]

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New features of the BEP tool

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

1. **Eliminate remaining unclarities**
2. **Update cost related inputs**
3. **Illustrate useful energy**
4. **Allow a simpler calculation of existing buildings**
5. **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)

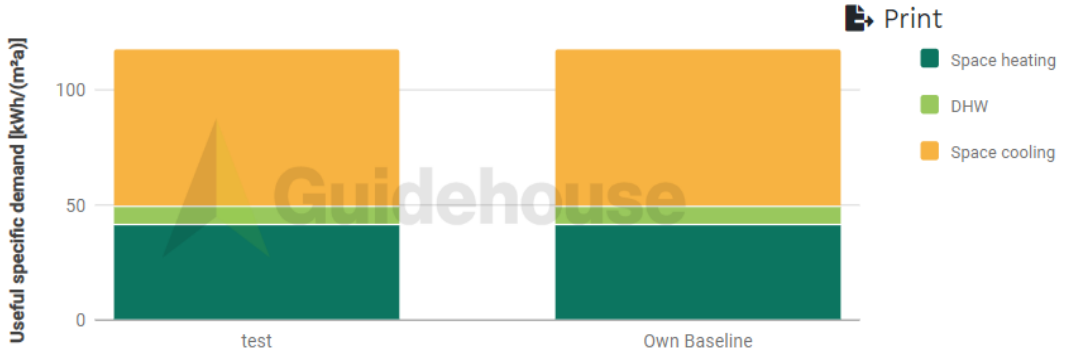
Illustration of useful energy demand in results

Heating: 45.47 kWh/(m²a) | Cooling: 26.98 kWh/(m²a) | Other: 36.29 kWh/(m²a) | 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%
Total	117.9	117.9	0%

- 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

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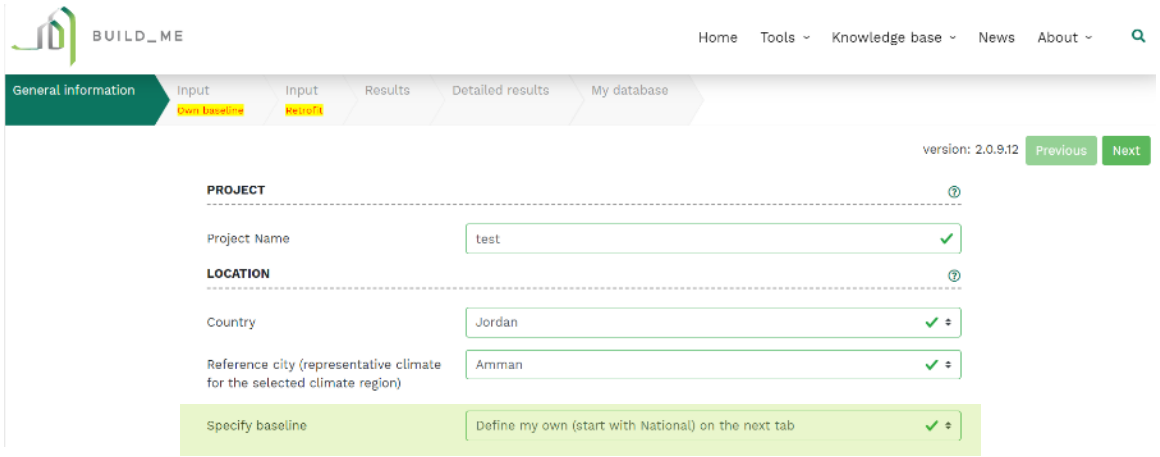
Define own baseline to calculate existing buildings

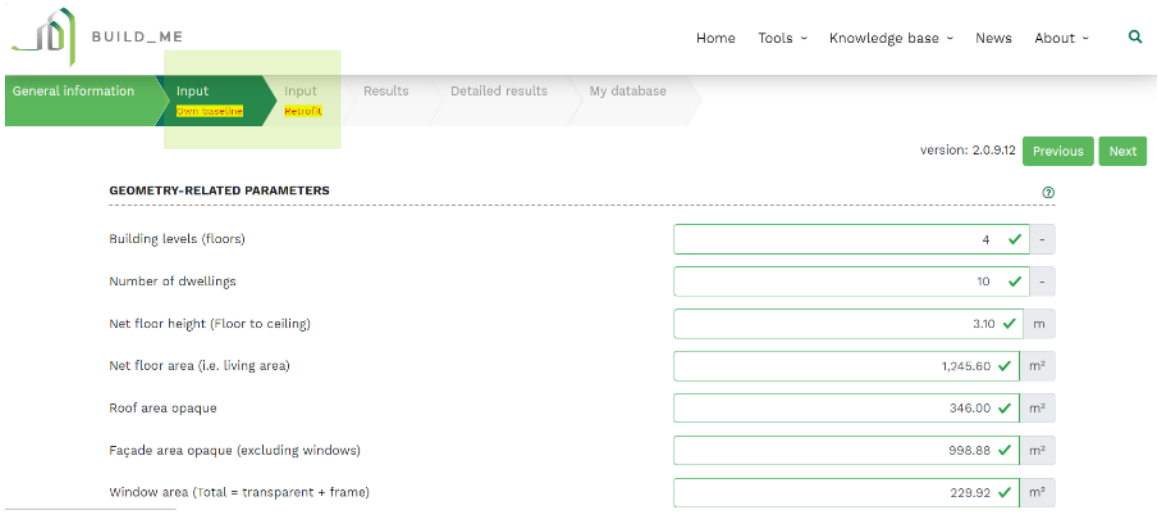
1| Baseline selection

User can select from predefined baselines or define own baseline



2| New baseline input tab

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



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

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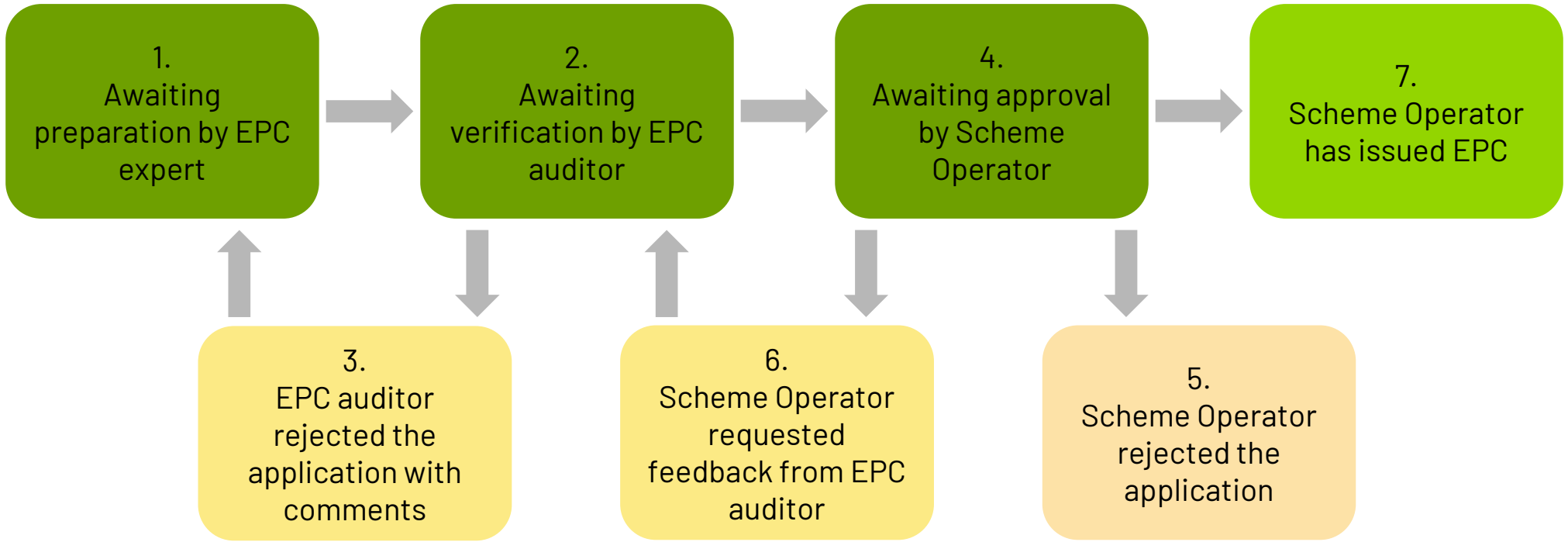
Integration of EPC

Workflow on the website



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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_2
	DELETE LOAD RENAME COPY Start EPC workflow	EPC_Test **<<<Current Project>>>**	Cairo	28-Apr-2024 13:15	B	-47.0%
☐	DELETE LOAD RENAME COPY Start EPC workflow	Aqaba_Test	Aqaba	16-Apr-2024 19:43	B	-35.0%
☐	DELETE LOAD RENAME COPY Start EPC workflow	EPC_Workflow_Test_3	Amman	03-Apr-2024 17:13	B	-51.0%
☐	DELETE LOAD RENAME COPY	EPC workflow - Test2 EPC Project Status: [Final]7. Scheme Operator has issued the EPC	Amman	20-Mar-2024 11:12	B	-31.0%
☐	DELETE LOAD RENAME COPY	EPC_Workflow_Test EPC Project Status: [Final]4. Awaiting approval by the Scheme Operator	Amman	19-Mar-2024 14:19	B	-51.0%

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Integration of EPC (Cont..)

1| Status: Preliminary EPC

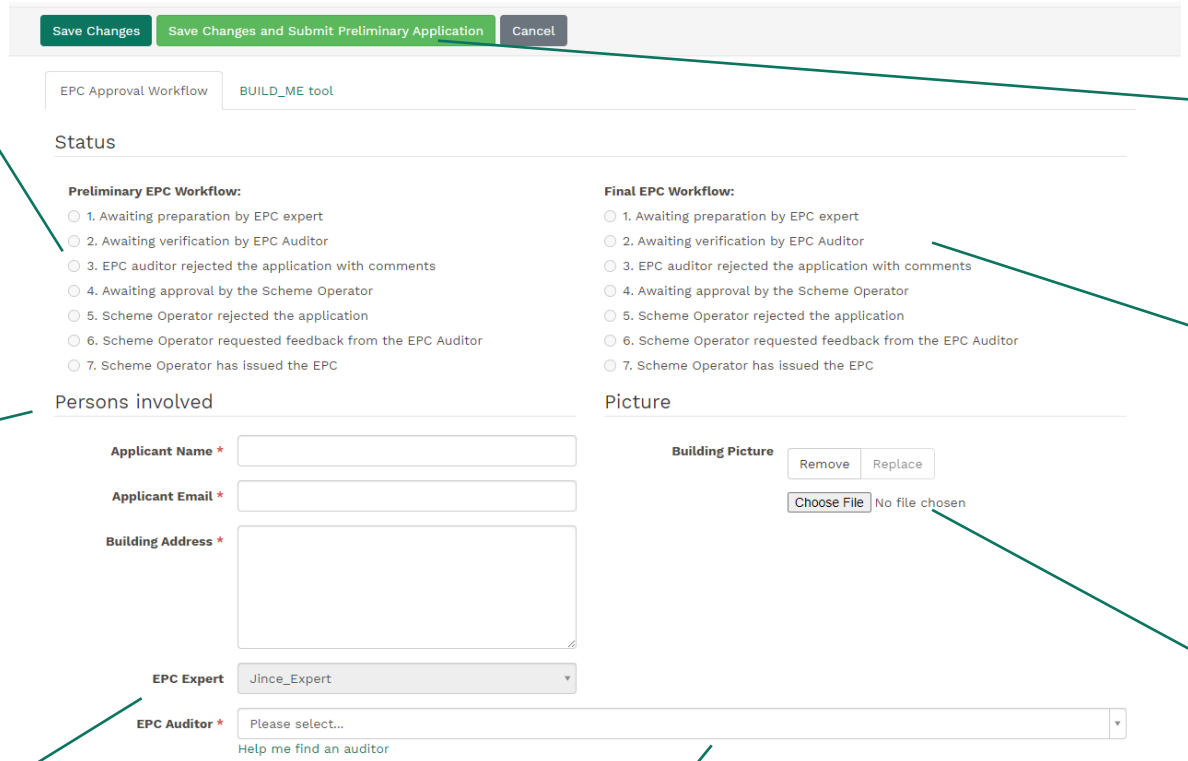
7 Steps of the preliminary EPC workflow.

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

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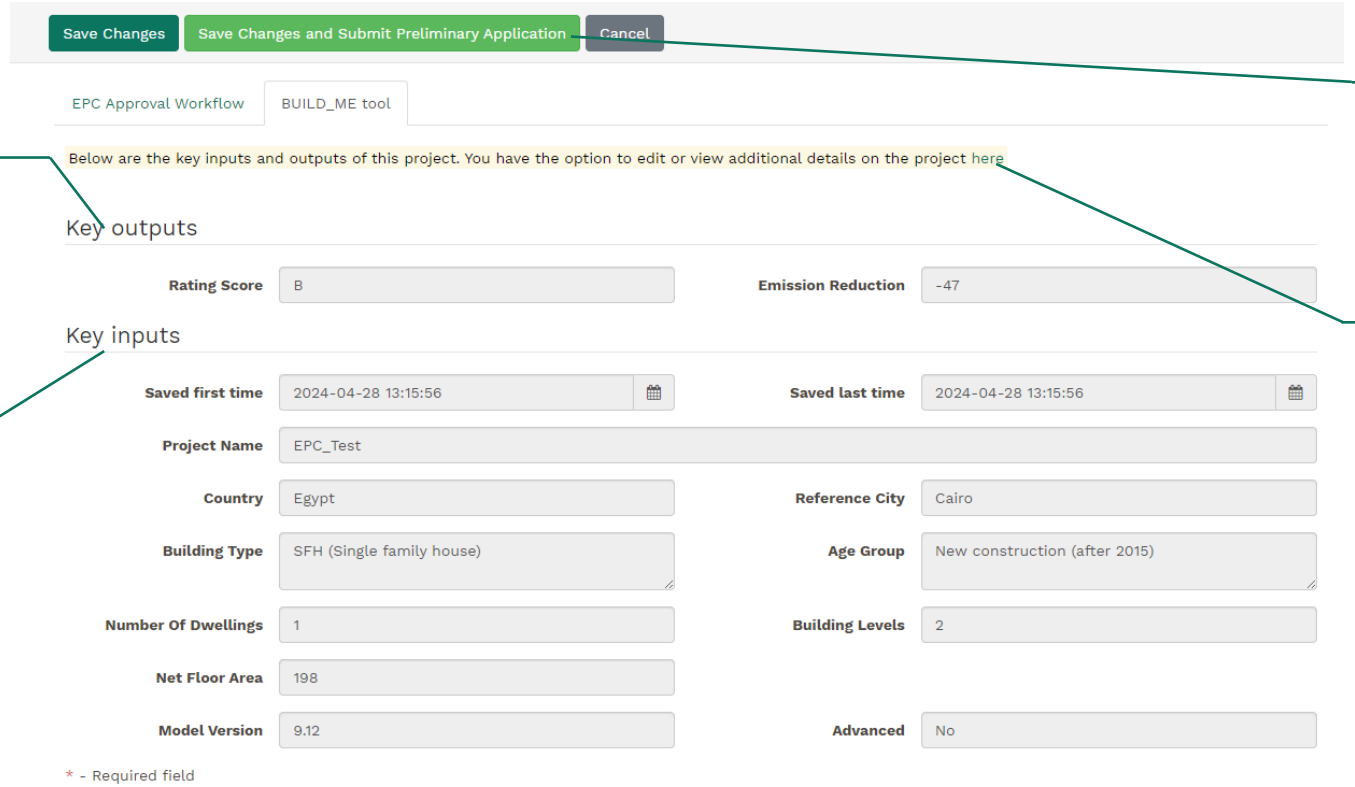
Integration of EPC (Cont..)

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.

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Output of new BEP tool

Energy Performance Certificate (Preliminary)

General building info

KPIs

Recommendations

Explanations

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Output of new BEP tool

Energy Performance Certificate (Final)

General building info

KPIs

Explanations

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Acknowledgement of the new Energy Performance Certificates (EPC) Scheme

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High level view on the role of the EPC in Egypt

Ashraf Kamal, HBRC

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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)

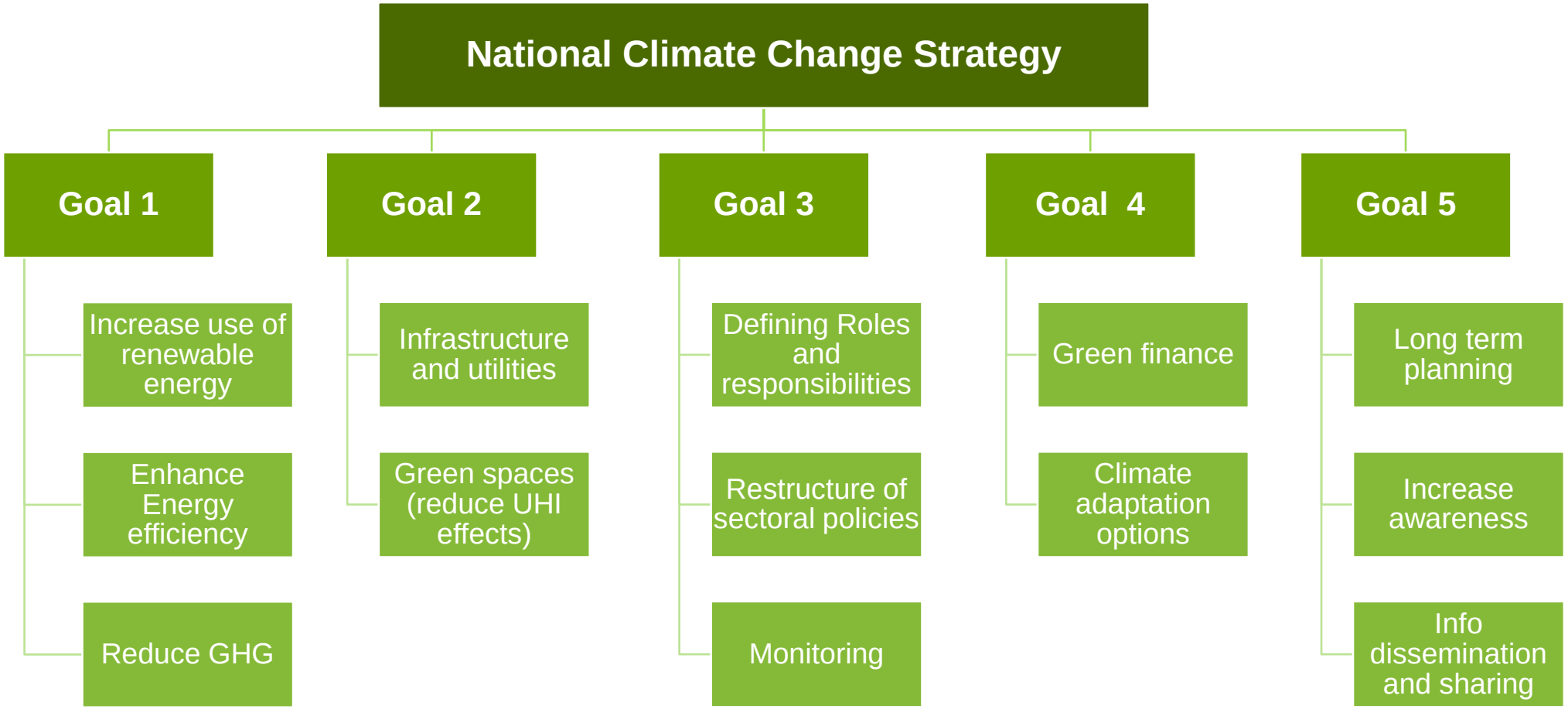
The objectives of the National Climate Change Strategy

Five distinctive goals to promote climate change in Egypt

1. Achieving sustainable economic growth with low emissions through different sectors
2. Building resilience and ability to adapt with climate change while reducing negative effects of climate change
3. Improving governance and operation related to climate change
4. Enhancing infrastructure and finance mechanisms for climate-related activities
5. 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



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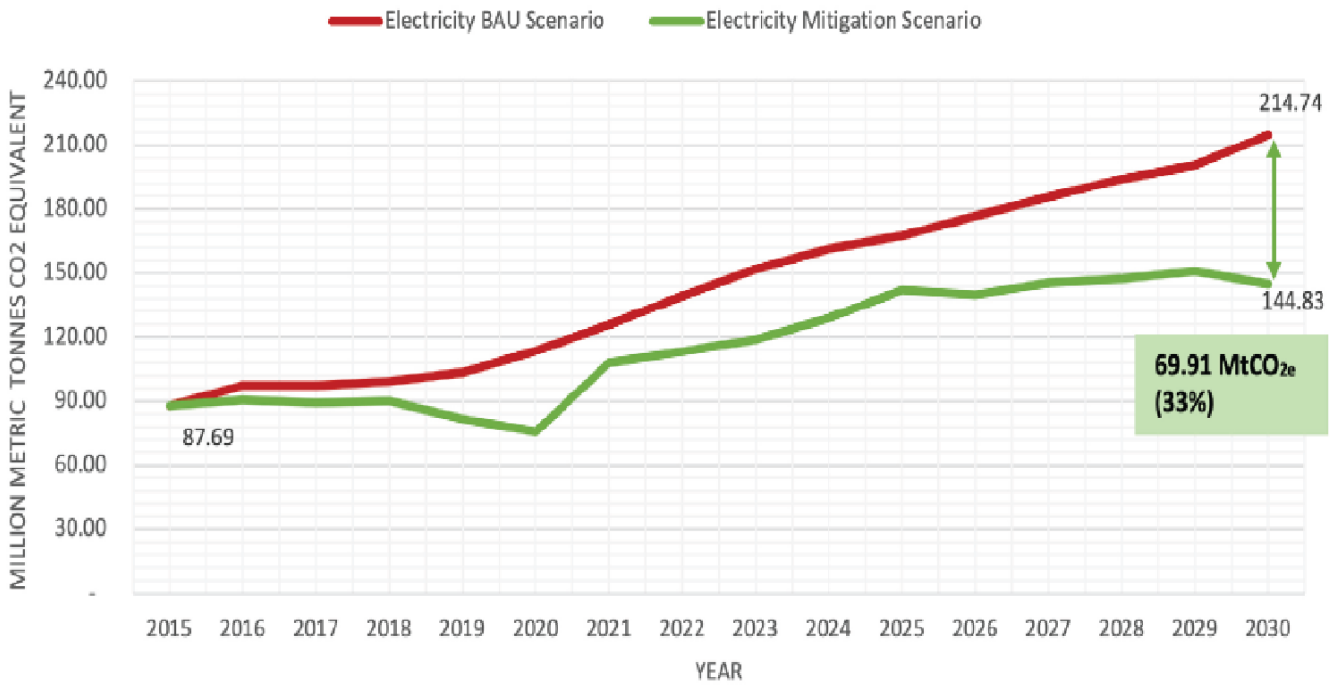
Quantification of mitigation potential

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



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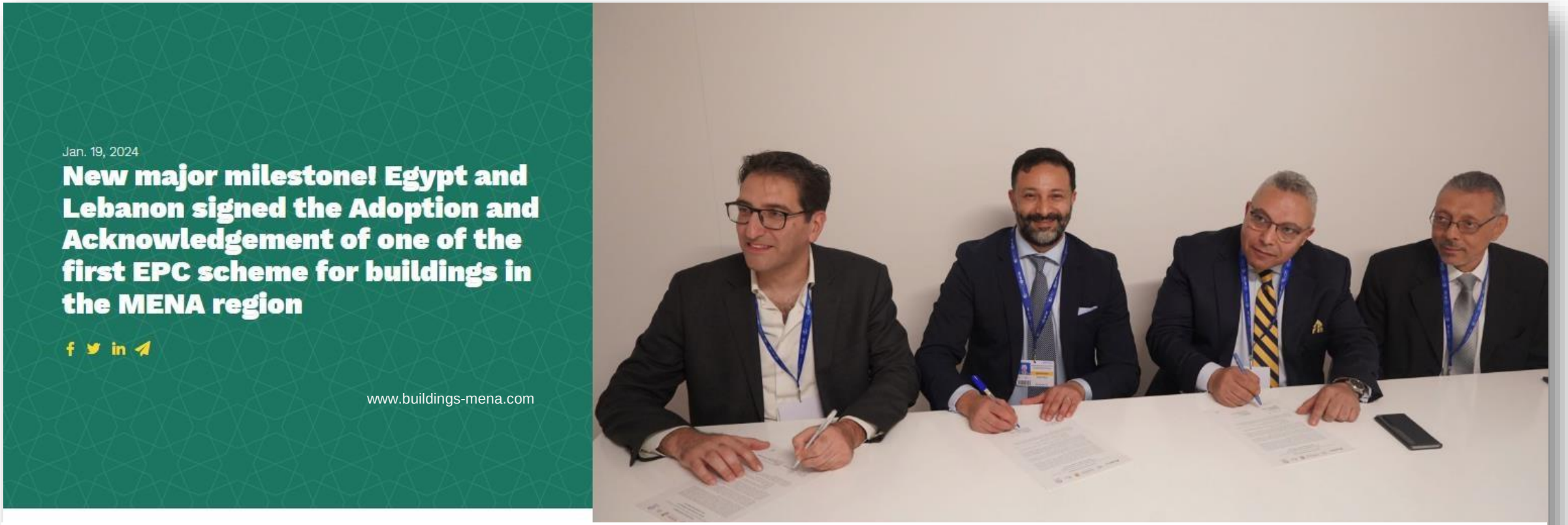
Challenges for Buildings and Urban Cities

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.

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Planned roll-out of the EPC in Egypt

Mohamed Salheen, IDG

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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 well 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

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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.

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Roadmap formulation for setting the new EPC Scheme

Steps to successfully roll-out the new scheme

1. Ownership and management
2. Certification scheme
3. Operational framework
4. Testing and roll-out
5. Evaluation and update

Roadmap formulation for setting the new EPC Scheme

Action plan for roll-out of scheme

1 Ownership and management

- Defining goals
- Developing a governance model
- Defining the legal framework
- Creating brand value
- Provide guidance documents
- **Defining a certification and verification model**
- Maintaining a database or register with the certification results
- Communication to the public and building industry stakeholders

2 Certification scheme

- **Scope of the scheme**
- Target Market
- Rating score
- Derivation of the energy performance
- Updates and validity of assessment
- **Design of the certificates**
- Database
- Cost of the certification
- Engagement with stakeholders

3 Operational framework

- **Certification and labelling process**
- Computational model for the rating
- Set of award criteria for certification
- **Set of criteria to be an assessor**
- Design of the label
- Verification, monitoring, surveillance and enforcement (including penalties)

4 Testing and roll-out

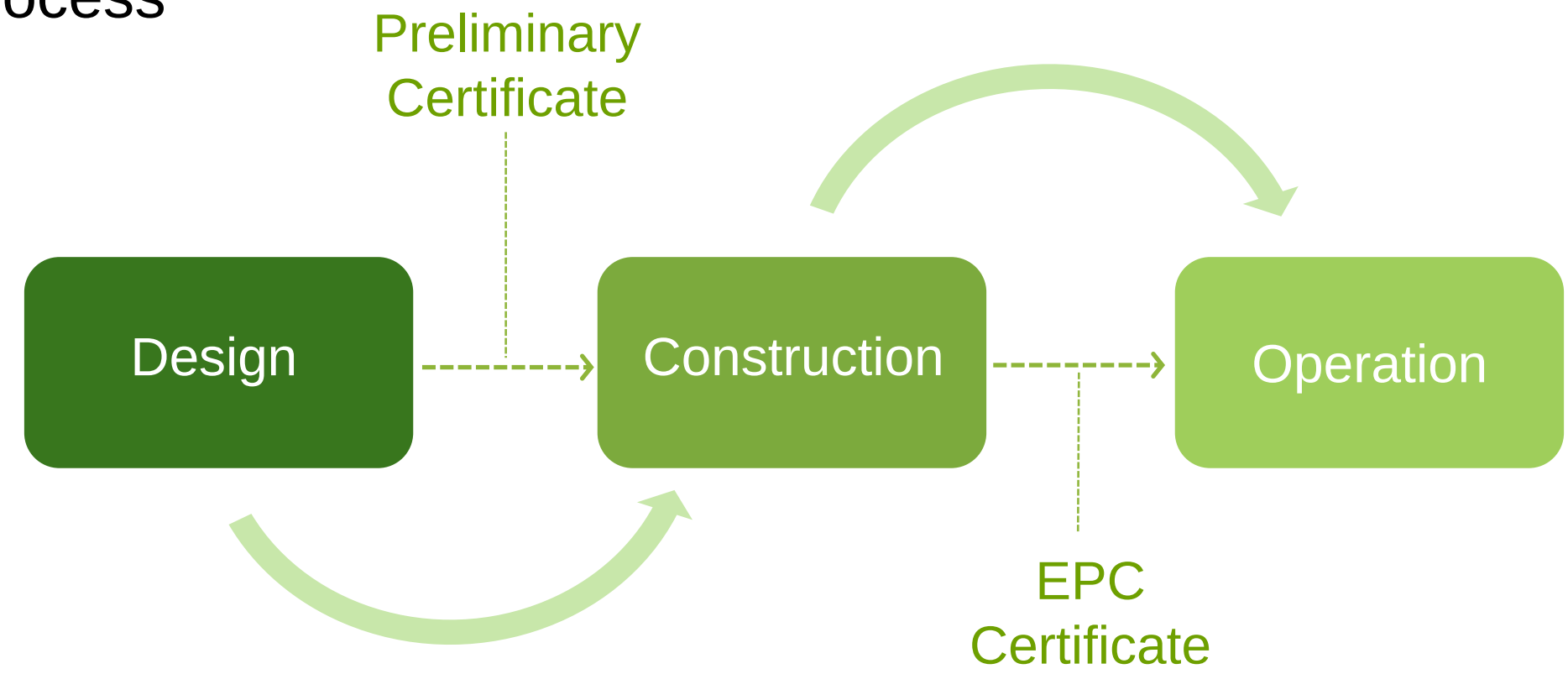
- Phased implementation
  - Building sector
  - Professionals
  - Target groups
- **Capacity building programmes**

5 Evaluation and update

- Regulatory impact assessment (ex-ante evaluation)
  - Costs
  - Benefits
  - Regulatory context needed
- Plan and mechanism for evaluating the effectiveness of the scheme (ex-post evaluation).

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.

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Process in detail

EPC process

Expert Hiring

- Project Registration
- Design Inputs into EPC
- Design Documentation Submission

Auditor Review

EPC Check by HBRC

Preliminary Certification

As-Built Inputs into EPC

Project Final Registration

As-Built Documentation Submission

Auditor Review and Site Audit

EPC Final Check by HBRC

EPC Certification

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Discussion

Coffee break

Looking forward – what comes next

Moderator: Sandy Grant, IDG

Strategic partnerships (I): Financial Institutions

Eslam Mahdy, GH

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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."

European Bank for Reconstruction and Development

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

IFC International Finance Corporation WORLD BANK GROUP

" 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….

Allied Market Research

Why are climate-friendly buildings relevant for financial institutions?

FIs 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.

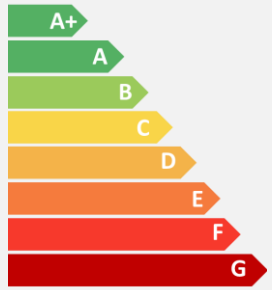
International Mega-trends

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/m²a]	Energy costs	Indoor Comfort	Emissions [kgCO2/m²a]
0.76 – 1 C	110	Baseline	Baseline	50
0.51 – 0.75 B	56-83	≈ 25 - 50% less	Improved comfort level	25-36
0.26 – 0.5 A	28-55	≈ 50 – 75 % less	High comfort level	13-24
≤ 0.25 A+	≤ 27	≤ 25 less	Very high comfort	12

*results of an exemplary MFH in Cairo

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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.

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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

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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

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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

Misr Alghad

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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

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Trainings

Concept of target orientated capacity building – 4 target groups

Finance & Project Developers

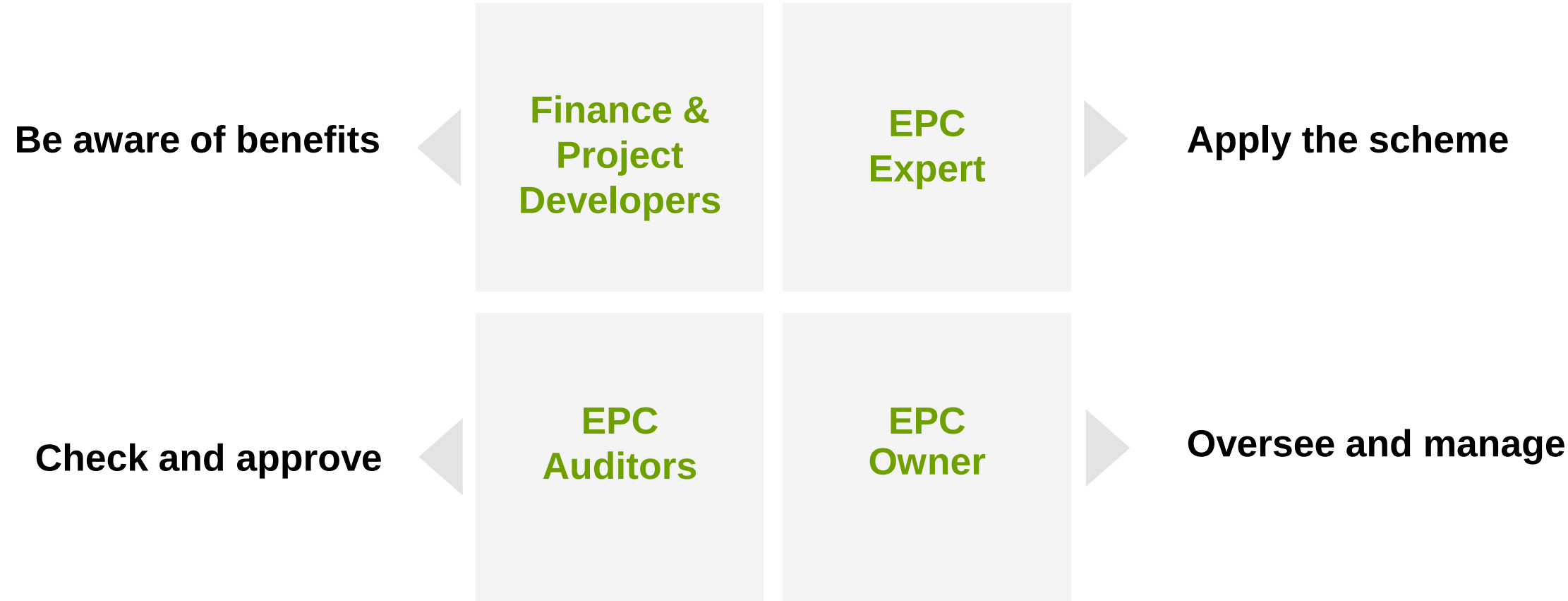
EPC Expert

EPC Auditors

EPC Owner

Trainings

Concept of target orientated capacity building – 4 target groups



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Trainings
Target audience

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

Finance & Project Developers

EPC Expert

Academic title in relevant field

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

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

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Trainings

Eligibility criteria

EPC Auditors

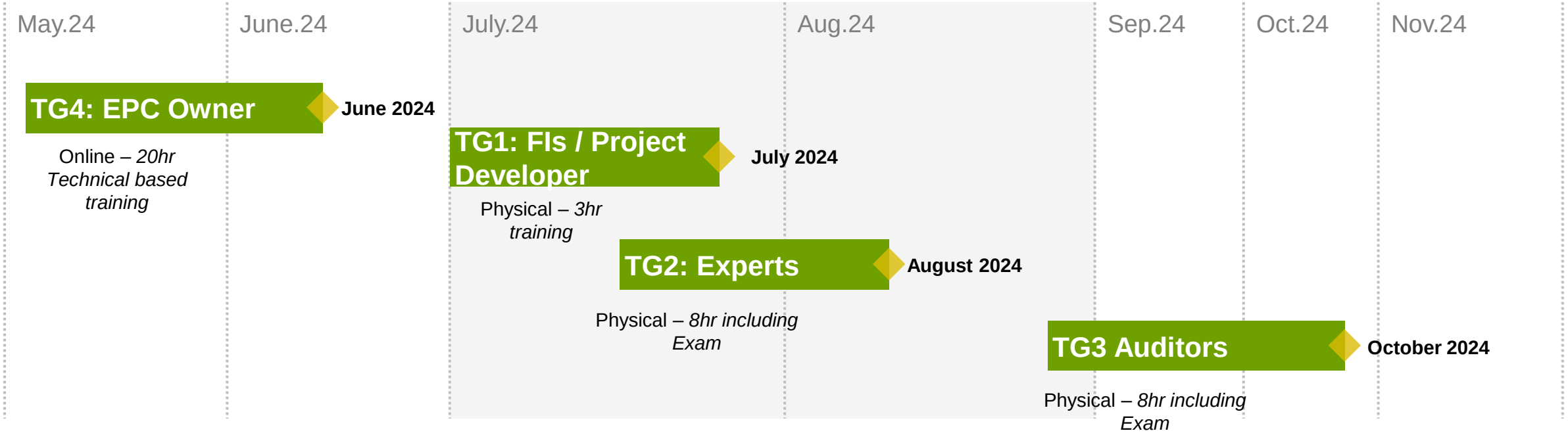
- An EPC Expert or other equivalent certificates (e.g., EDGE, LEED and BREEAM) or +1 year of practical work experience with a qualified ESCO
- Hold a higher education qualification in a construction industry related field.
- +3 years of practical work experience in the construction industry.

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

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Status of BUILD_ME 3 progress

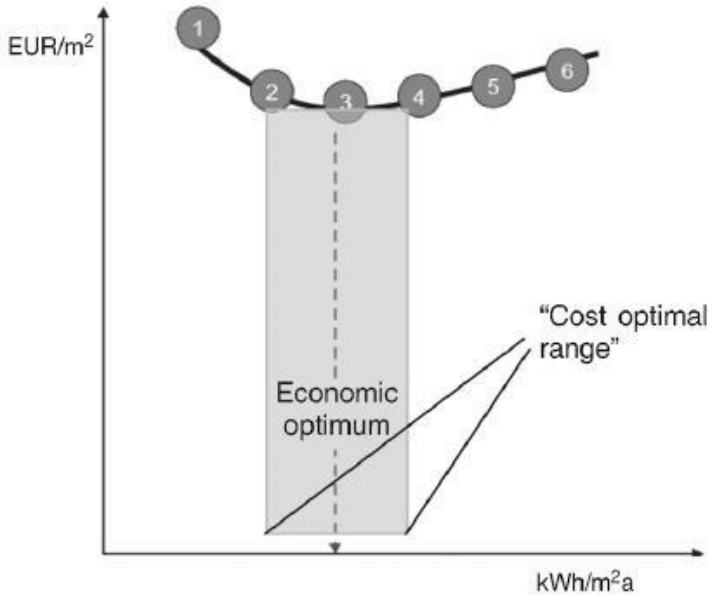
	Outputs	Indicators	Status
1. Technical Framework	National building classification system is operational in target countries and the BEP tool is expanded.	I.1 further developed BEP tool I.2 National building classification schemes	Almost done
2. Financial Framework	Financial institutions can assess, and 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.	About 50 %
3. Dissemination & Capacity Building	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.	About 50 %
4. Regulatory Framework	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.	To be started

Next steps in BUILD_ME 3

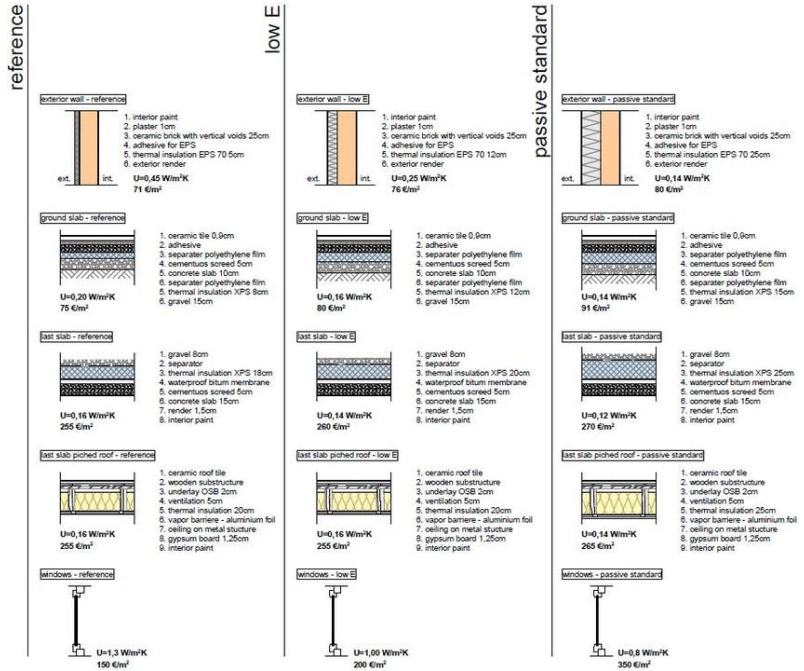
1. Technical studies supporting regulative framework

ZEB definition

Cost Optimality Study



Building Component Database



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Next steps in BUILD_ME 3

2. Financial Framework

Waiting for approvals from FIs

Support FIs with the integration of the EPC in their processes

Reach out to PDs (with EPC and financial offerings)

Next steps in BUILD_ME 3

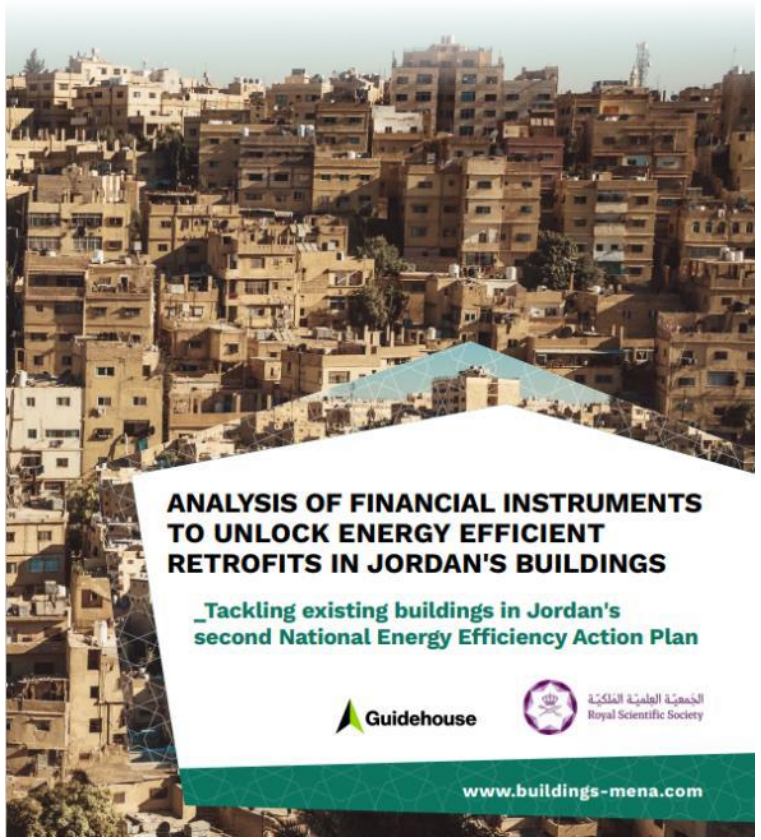
3. Dissemination and (Capacity building)

- 3rd webinar: 6th June 2024
- 4th webinar: Nov/Dec 2024
- Regional conference: Q1/2025

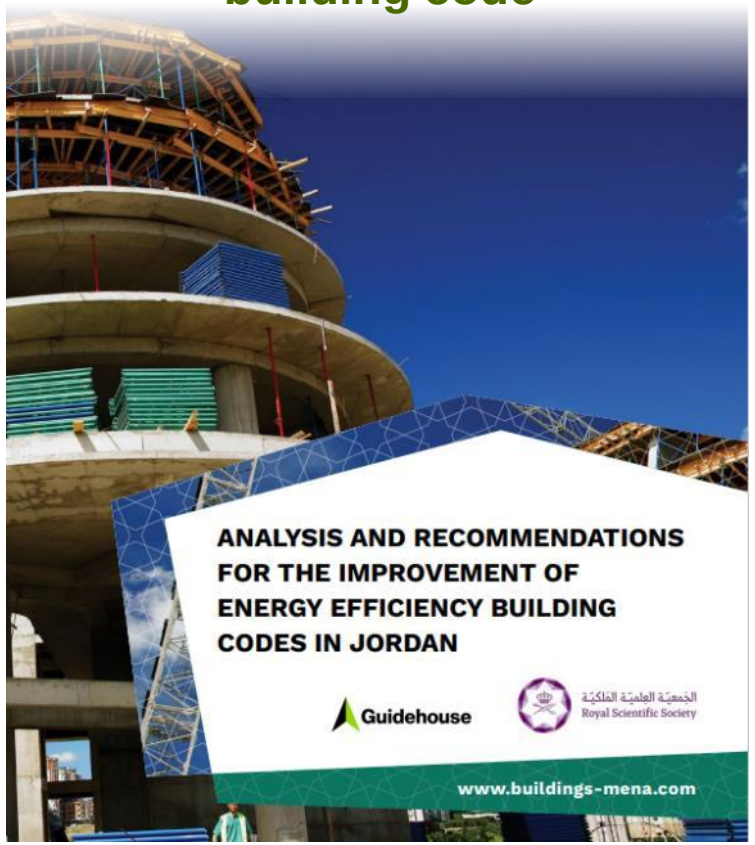
Next steps in BUILD_ME 3

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

BUILD_ME

By:
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in cooperation with RSS and NERC

February 2020 (status August 2018)

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Closing Remarks

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Group picture

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