NATIONAL KICK-OFF WORKSHOP: JORDAN

ACCELERATING 0-EMISSION BUILDING SECTOR AMBITIONS IN THE MENA REGION PROJECT (BUILD_ME)

21 JANUARY 2020

MÖVENPICK HOTEL AMMAN

Supported by:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

based on a decision of the German Bundestag

INTERNATIONAL CLIMATE INITIATIVE (IKI)

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Royal Scientific Society

NAVIGANT
A Guidehouse Company

WELCOME

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AGENDA

09:00 – 09:30 *Arrival and registration*

09:30 – 09:45 Welcome

09:45 – 10:45 BUILD_ME project insights

10:45 – 11:45 Presentations of three projects in the region

11:45 – 12:00 *Coffee break*

12:00 – 12:50 Discussions in small groups

12:50 – 13:00 Wrap up and final remarks

13:00 – 14:00 *Lunch and networking*

BUILD_ME PROJECT INSIGHTS

PHASE I

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SCOPE

Original Project

2016 - 2018

- Extensive analysis and research
- Identification of barriers
- Recommendations

Project Extension

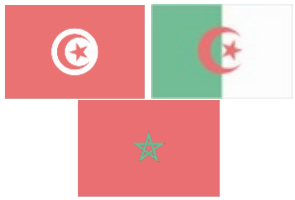
2019 – 2021

- Implementation of recommendations
- Dissemination of results
- Upscaling and consistency

PHASE I [2016-2018] IN A NUTSHELL

Countries



Partners + Client

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I D G
MATRIX

LCEC
LEBANESE CENTER FOR ENERGY CONSERVATION
المركز اللبناني لحفظ الطاقة

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Objectives

- Prepare **macroeconomic analysis** focusing on the energy sector overview
- Manage a **policy dialogue** with the concerned stakeholders to improve the political framework for EE in the building sector.
- Support **pilot projects** to increase use of EE heating and cooling systems in new multi-family buildings.

PHASE I: KEY ACTIVITIES

BUILDING ENERGY EFFICIENCY

PILOT PROJECTS

- Two pilot projects per country

Aqaba: Master plan

Zarqa: MFH for orphans

Bhamdoun: MFH

Byblos: Chalet style

Nabta Town: Master plan

Porto Pyramids, Eight large MFH

POLICY RECOMMENDATIONS & STAKEHOLDER ANALYSIS

- > 150 structured interviews with stakeholder groups
- Market analysis with >4000 questionnaires
- Policy recommendations as fact sheets discussed at roundtables

DISSEMINATION AND CAPACITY BUILDING

- Workshops and roundtables
- Regional final workshop (>100 participants) in Beirut
- Technical trainings
- www.buildings-mena.com

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PHASE I: KEY FINDINGS / RECOMMENDATIONS

Policy and decision makers

- Update/develop **Building Codes** and improve their enforcement
- Formulate benchmarks and develop a **classification scheme**
- Lack of **quantified (GHG) saving potentials** for the building sector in policy strategies

Financial institutes (FI)

- **Capacity building FI** staff: Improve the knowledge on energy efficiency
- Facilitate process to check **fulfillment of eligibility criteria**
- Merchandise **financing option for building EE** measures and incorporate in your portfolio

Project developer

- **Low cost packages** in average can already **save 30%** of energy costs.
- Investments of „nZEB variants“ **only 10-15% higher** than baseline
- **End users** are often responsible for **purchasing HVAC technologies**, separately from apartment

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BUILD_ME PROJECT INSIGHTS

PHASE II

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MAIN OBJECTIVES OF EXTENSION

1. Conception of an **EE building classification scheme** to **facilitate financing** for EE projects

2. Implementation of energy efficient buildings (**Pilot projects**)

3. Support the **policy framework** (NDCs, NEEAPs, EEBCs)

PROJECT CONSORTIUM

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LCEC
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المركز اللبناني لحفظ الطاقة

ALCOR
Développeur d'avenir durable

TRACK

NERC
National Energy Research Center

HBRC
المركز القومي لبحوث الإسكان والبناء

IDG MATRIX

EGYPT GBC
EGYPT GREEN BUILDING COUNCIL

JORDAN GBC
المجلس الأردني للأبنية الخضراء
Jordan Green Building Council

LGBC
lebanon green building council
مجلس لبنان للأبنية الخضراء

RCREEE
Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

Freelancers

European Bank
for Reconstruction and Development

Project's New Partners

WORK PACKAGES

WP1: **Preparatory Steps for Implementation**

WP2: **Support the Implementation of Pilot Projects**

WP3: **Framework Conditions to Increase the Energy Efficiency in the Building Sector**

WP4: **Capacity Building and Dissemination**

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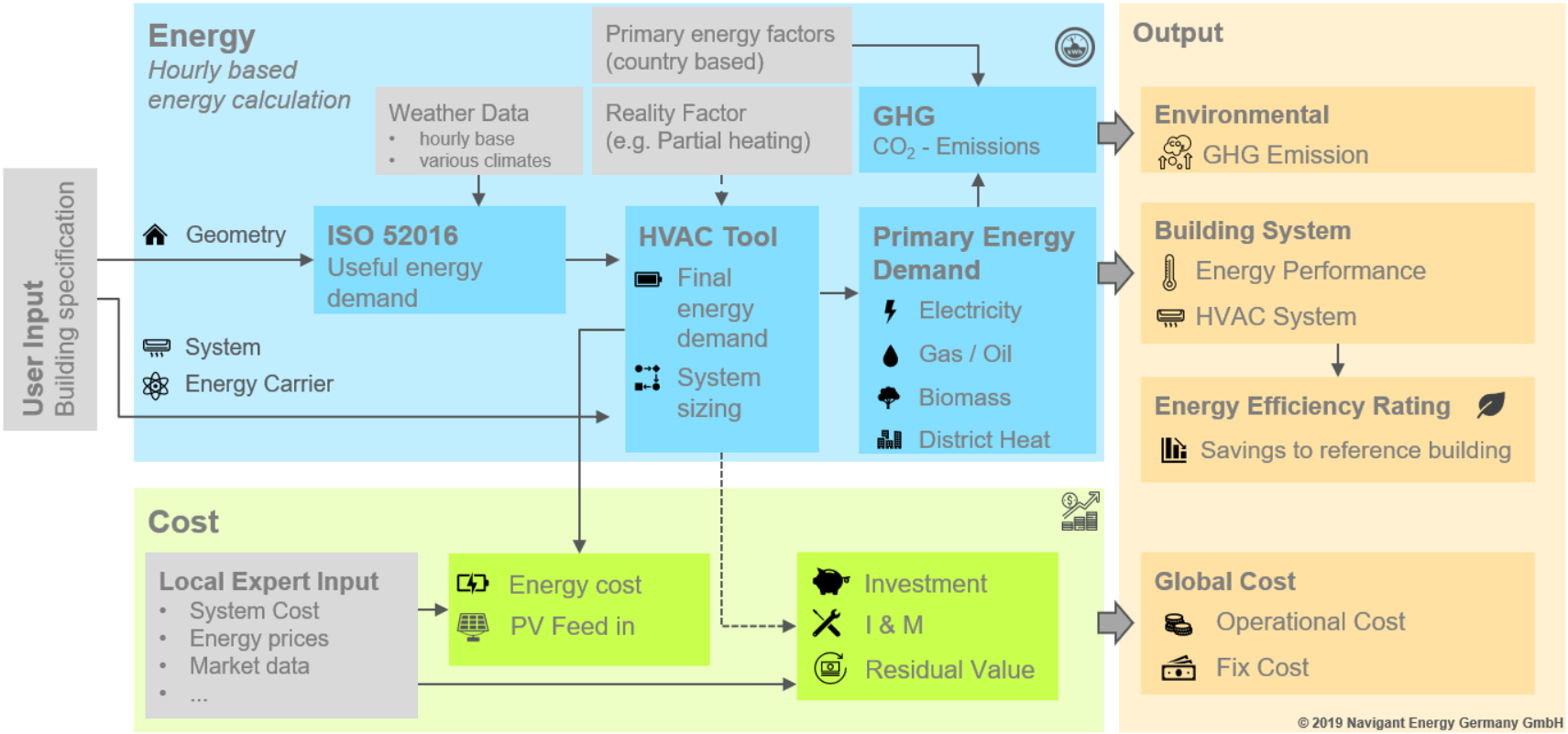
PREPARATORY STEPS FOR IMPLEMENTATION

Development of a software tool	Development of a MENA building typology	Definition of building baselines & energy benchmarks
Energy performance of buildings	Better understanding of building habits and categorization in building types	Transparent overview of energy consumption patterns of selected building types
Certification of energy efficiency measures		
Global Cost Calculation		

Source Icons: Flaticons.com

ENERGY & GLOBAL COST TOOL

Development of a software tool → Development of a MENA building typology → Building baselines & energy benchmarks



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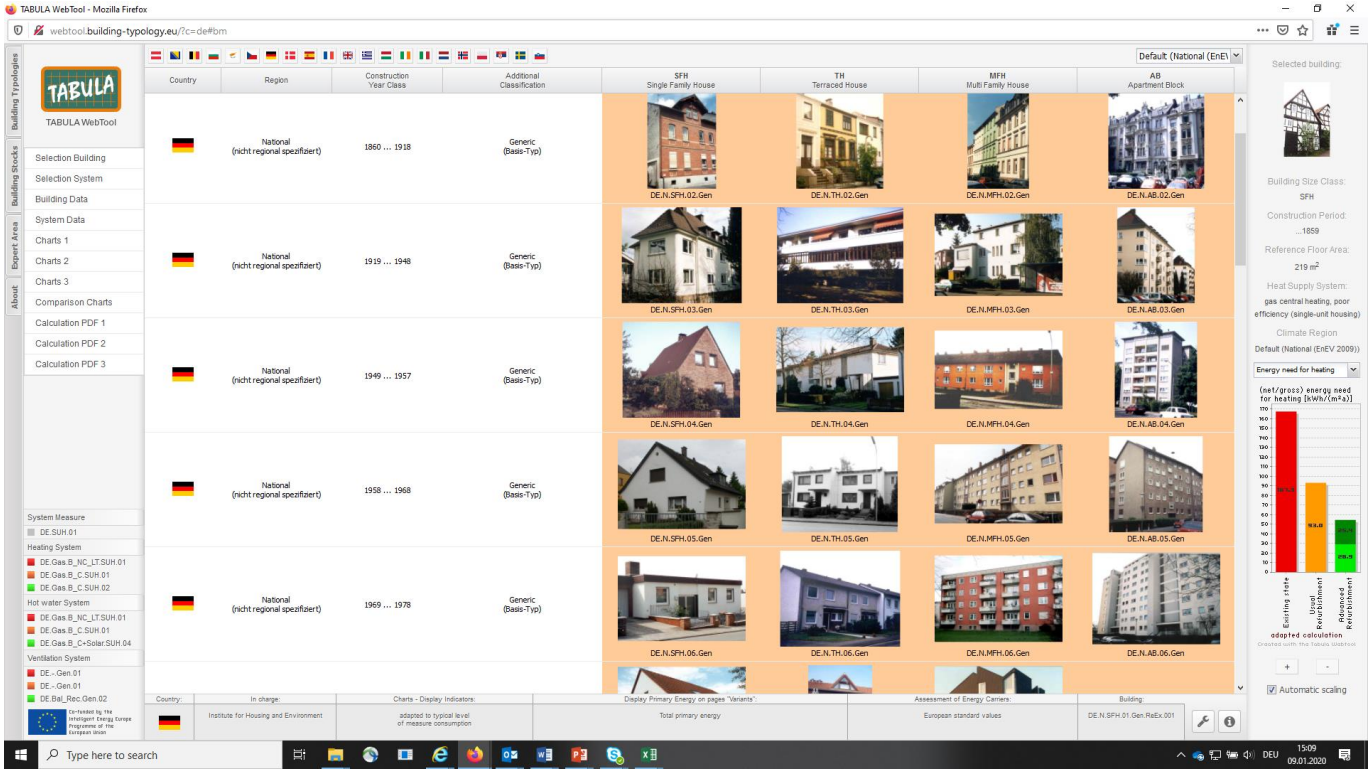
DEVELOPMENT OF A MENA BUILDING TYPOLOGY

Development of a software tool | **Development of a MENA building typology** | Building baselines & energy benchmarks



webtool.building-typology.eu/?c=de#bm

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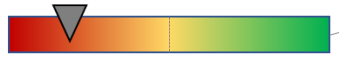
DEFINITION OF BUILDING BASELINES AND BENCHMARKS

Development of a software tool → Development of a MENA building typology → **Building baselines & energy benchmarks**

General Information | Input | Results | Overview

Heating: 112.4 kWh/m² | Cooling: 112.4 kWh/m² | Total: 112.4 kWh/m²

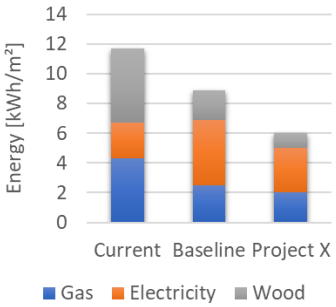
Energy



Energy Rating: D

EBRD | Bank 2 | Bank 3

Primary energy demand



	Current	Baseline	Delta
Unit	kWh/m²	kWh/m²	kWh/m²
Total	**85.4**	**68.0**	**+ 17.4**
Useful heating	55.0	40.0	+ 15.0
Final heating	62.4	44.2	+ 18.2
Useful cooling	36.1	40.0	- 3.9
Final cooling	14.2	15.0	- 0.8
Hot Water	8.8	8.8	0.0

Financial

Local | EUR

Global Cost

	Current	Baseline	Delta
Global Cost	**9,500 €**	**8,000 €**	**+ 1,500 €**
Investment Cost	4,000 €	4,500 €	- 500 €
Energy Cost	5,000 €	3,000 €	+ 2,000 €
I & M	2,000 €	1,000 €	- 1,000 €
Residual Value	-1,000 €	0 €	+ 1,000 €
PV Feed in	-500 €	-500 €	0 €

Save Project | Export results

Disclaimer: ...

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OBJECTIVES

- Demonstrate technical and financial feasibility of energy efficient buildings
- Better understand the barriers of implementing energy efficient building
- Communicate the lessons learnt with policy dialogue
- Test the newly developed classification scheme
- Provide training(s) for the staff implementing EE/RE measures

BENEFITS FOR PROJECT DEVELOPER

Free technical assistance

- Economic assessment including cost-benefit analysis
- (Optional) Dynamic thermal simulation
- Support the implementation, on-site checks

Potential financial support

- Calculation of economic performance
- Support with application to funds
- Partnering with EBRD: offering loans and grants

Enhance your projects visibility

- Market your project as green building
- Disseminate your project via BUILD_ME website and regional conference
- Share your experiences with other developers from the region

EXPECTED RESULTS

Case study 1: office building

Location: Sharm El Sheikh, EGY
Building Type: Existing Office Building
Energy specification:
- Reduce cooling energy demand, shading and reflective coating
- Solar cooling with absorption chiller

Case study 2: new multi-family house

Location: Ramallah, Palestine
Building Type: Multi-family house
Energy specification:
- Thermal insulation, double glazing, solar thermal collectors
- Ground source heat pump
- Award: Energy Globe

Case study 3: Hospital

Location: Zgharta, LEB
Building Type: Existing hospital
Energy specification:
- EE lighting, thermal insulation on the roof, building management system

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ENERGY EFFICIENCY IN BUILDING CODES, NDC, STRATEGIES

Starting situation

- Building code update ongoing
- Second NDC due by COP in November
- NEEAP to be updated

Goal in Phase 2

- Support the improvement of the **building code** and national / municipal **efficiency strategies**
- Support the inclusion of ambitious buildings EE into **NDC**

Our activities

- Report for building code improvement
- Report and workshop on national or municipal efficiency strategies
- Workshop on buildings EE in NDCs
- Assist political stakeholders with ad hoc support

VOLUNTARY EE CLASSIFICATION SCHEME

Starting situation

Lack of buildings efficiency classification that is easy-to-use, Jordan-specific and accepted by international donors

Goal in Phase 2

Create a simple classification system that can be filled online

Our activities

- List and evaluate existing schemes in the region
- Engage development banks to identify needs
- Develop classification scheme, continuously discuss with local stakeholders in workshops

ACCESS TO ENERGY EFFICIENCY FINANCING

Starting situation

Funds by development banks not used sufficiently

Goal in Phase 2

Increase the uptake of energy efficiency financing vehicles

Our activities

- Engage stakeholders to deepen understanding on barriers and develop workable solutions
- Publish guidelines for simple, transparent and effective energy efficiency financing
- Conduct train-the-trainer sessions
- Conduct trainings for project developers and local banks

BUILD_ME EXTENSION

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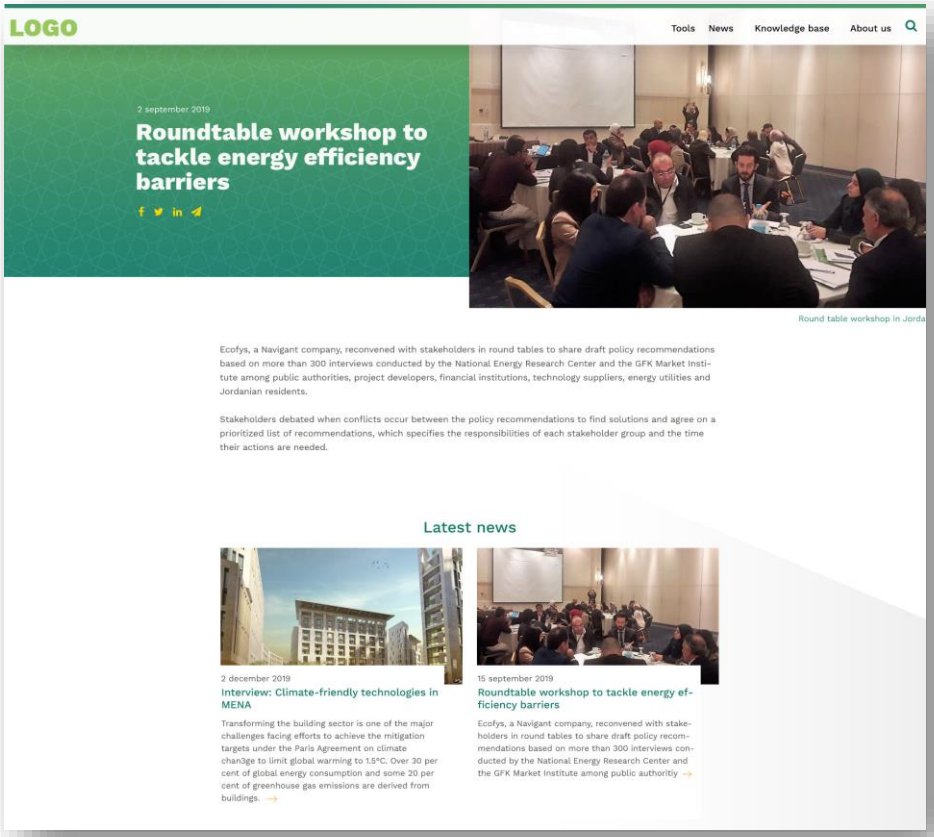
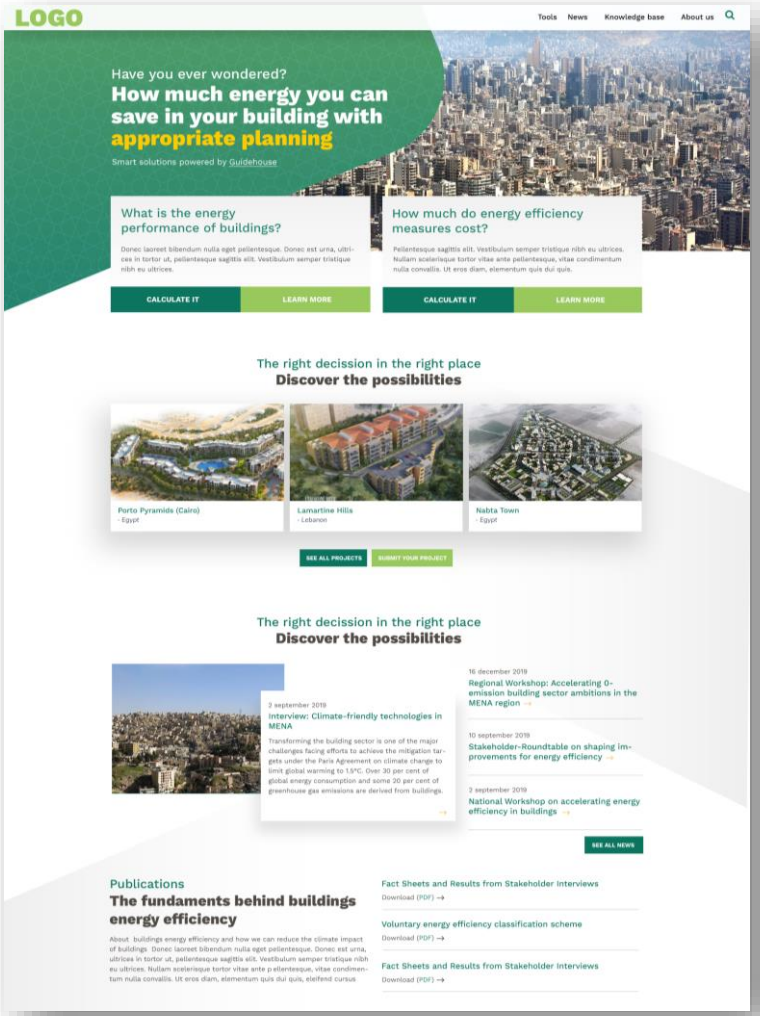
NEW PROJECT WEBSITE





NATIONAL AND REGIONAL WORKSHOPS

Starting situation

The project requires a platform to collect input from local stakeholders and present the tools to be used in the region.

Goal in Phase 2

- Obtaining input from stakeholders on their needs and perspectives
- Present the BUILD_ME project and its results to local stakeholders

Our activities

- National kick-off workshops (today!) to continue in Q1
- Second round of national workshops to discuss preliminary results
- Regional workshop in Q4

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PRESENTATIONS

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COFFEE BREAK

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GROUP DISCUSSION

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GROUP DISCUSSION

PLEASE GO TO THE TABLE THAT IS OF MOST INTEREST TO YOU

Each table will discuss one focus topic, but also the other topics

Table 1:
Building Typology

Table 3:
Classification Schemes

Table 2:
Energy Efficiency Building Code

Table 4:
Financing & Dissemination

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QUESTIONS FOR GROUP DISCUSSION - 1

WP 1: Preparatory steps, building typology

A. Are you aware of a building typology in your country (e.g. list of reference buildings)?

B. Would you expect significant regional differences in technical building specs within your country?

C. What are the most relevant building types and do they have different characteristics?

RESULTS OF GROUP DISCUSSION - 1

- **Building types:**
  - Residential buildings have a high share in new construction in Jordan. Important non-residential buildings types include: offices, public sector, education, health care, services, malls and hotels.
  - There are large differences in the standard of construction depending on target group (lower income vs. higher income), there are even large differences between Eastern and Western Amman, also due to the economic disparities.
- **Baseline insulation:**
  - The group agreed that most of the new, larger constructions comply with minimum legally binding requirements ("building code can be used as baseline in this case"). Though there were also several contradicting statements as many construction companies do not comply with the officially approved planning of the buildings.
- **Baseline HVAC:**
  - ACs are installed not only for cooling but to be partly used for heating. Diesel, oil burners and sometimes gas-based heating systems are available in the market.
- **Climate zones:**
  - Jordan has three different climate zones: Northern ("in the mountains"), Amman, and Southern (Aqaba). Some participants stated that even between Western and Eastern Amman there are differences.

QUESTIONS FOR GROUP DISCUSSION - 2

WP 3: Framework conditions, Energy Efficiency Building Code [EEBC]

A. From your perspective: What are the major obstacles for a successful implementation? And what elements are working well?

B. Who are the main stakeholders responsible in the implementation and development of EEBC?

C. Are you aware of any **new** policy developments in the field of energy efficient in buildings?

RESULTS OF GROUP DISCUSSION – 2

- **Building Codes Enforcement:**
  - The EEBCs are enforced in the public and large buildings (hospital, hotels, malls, etc.), but not in the case of the small and residential buildings. This could be attributed to the lack of inspectors, the culture, and the awareness (or lack thereof) among several stakeholders.
  - Other reasons are the limited number of qualified technicians to implement EE measures. Additionally, implementation of EE measures is time-consuming and increases the total construction cost.
- **Main stakeholders involved :**
  - Development: RSS (Royal Scientific Society) is responsible of the preparation of the codes. JNBC (Jordan National Building Council) is responsible of the revision and official issuing of the codes.
  - Implementation: Jordan Engineers Association is involved in the revision of the designs and plans. Municipalities grant the building permits (design phase) and occupancy permit (end of construction).
  - Ministry of Energy and Mineral Resources is also involved in terms of electricity requirements.
- **Ongoing relevant projects and initiatives:**
  - Several relevant international initiatives by UNDP, EU (REEE project), JREEEF, WB and ESCWA.
  - A new amendment of the national building law will give the JNBC the judicial authority to halt construction in case of noncompliance with the EEBCs.

QUESTIONS FOR GROUP DISCUSSION - 3

WP 3: Framework conditions, classification schemes

A. Are you aware of labelling schemes on product level in your country (e.g. following European example - Eco Directive)?

   Are they accepted and recognized by end-users?

B. What certification / classification / rating schemes are in place in your country / MENA region (mandatory / voluntary)?

C. Are you aware of any success story?

RESULTS OF GROUP DISCUSSION - 3

- **Labelling Schemes**
  - There are currently labelling schemes for appliances. Additionally, more MEPS (minimum energy performance standards) have been formulated for several appliances.
  - To some extend, the labelling schemes for appliances are accepted and recognized by the end users in Jordan. Yet, they are hardly any awareness available to opt for the high efficient products and that even the state (public buildings) is not playing a leading role in this.
- **Certification and Rating Schemes**
  - LEED: around 10 buildings in Jordan that have been certified
  - DALEEL (Jordan Green Building Guideline) developed by RSS: 4 certified and 11 buildings registered.
  - Sawsanah developed by Jordan Green Building Council.
- **Success Story**
  - There are several guidelines and codes that are technically well-elaborated and have been recognized by other Arab countries (e.g. Saudi Arabia) and LAS (League of Arab States). But proper enforcement of the building codes is still missing, so that the green buildings are still limited to a few projects.

QUESTIONS FOR GROUP DISCUSSION - 4

WP 3: Framework conditions, financing

A. Are low energy buildings financially supported and how (e.g. reduced loans, grants, etc.) ?
B. What possible funds are existing?
C. What could be improved in the financial support of low energy buildings?

WP 4: Dissemination, demonstration buildings database

A. Are you aware of interesting low energy building projects that can be illustrated in our demonstration buildings (pilot projects) database?

RESULTS OF GROUP DISCUSSION - 4

- **Finance Institutions**
  - There are a number of organisations providing finance and/or support for energy efficiency in buildings in Jordan such as the Central Bank of Jordan, JREEEF, GEFF/EBRD, EIB, AFD and KfW.
- **Opportunities for improvement**
  - Inform bank officials that efficiency measures are not just consumption, but rather an added value to the asset (i.e. the building), making lending more feasible. Also, consumers should see efficiency measures not just as a cost increase for higher comfort, but rather an investment that saves energy costs and increases the value of their real estate. These points can be covered through a reliable, yet easy-to-understand classification system.
  - Energy subsidy phase out (already announced by government) could contribute to awareness as consumers will look for ways to reduce energy consumption in response to energy price hikes.

WRAP UP AND FINAL REMARKS

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LUNCH AND NETWORKING

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[1] On October 11, 2019, Guidehouse LLP completed its previously announced acquisition of Navigant Consulting Inc. In the months ahead, we will be working to integrate the Guidehouse and Navigant businesses. In furtherance of that effort, we recently renamed Navigant Consulting Inc. as Guidehouse Inc.

