

Training workshop "Studying international practices in implementation of innovative energy efficiency technologies in the electric power industry. Methodology, goal and objectives of electricity and heat consumers energy survey" SEIT building, 62 Bayram Khan st, Mary, 13-18 March 2024 Review of international experience in setting up regulatory framework for introduction of innovative energy efficiency technologies in residential and public buildings

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# Legal and regulatory framework for promotion of EE in buildings

- Legal and regulatory framework depends largely on the country – status of existing legal/ regulatory framework, including standards, application practice of norms, etc., and institutional set-up
- Examples presented are based on experience/ practice in EU countries and also

Energy Community Contracting Parties (namely Georgia and Moldova)







### **Building stock**

- Public buildings, incl. Central Government Buildings
- Commercial sector buildings (offices, etc.)
- Industrial Buildings
- Residential buildings Multi-apartment buildings Family houses







# **Key elements for promotion of EE in buildings**

- Minimum energy performance requirements
- Energy performance certification of buildings
- Inspection of heating and cooling systems in buildings
- Energy audits of buildings





# Key tools for promotion of EE improvement in Building life cycle







# **Minimum Performance Energy Requirements (MEPRs)**

- MEPRs have been introduced into the national legislation of EU countries since the 90s to reduce the energy consumption in <u>new and existing buildings</u>, <u>first</u> as stricter energy parameters in the building components, <u>then</u> on the building's overall energy consumption
- To reduce the non-uniformity among EU countries, the EU Commission was asked to develop a standard method to verify if the governments were applying the most energy-efficient values being still cost-effective

#### Example of EnC CP - Georgia

- The Law on EE of Buildings states that the investments in energy efficiency to be applied to existing buildings are obligatory if demonstrated as cost-effective in the lifetime of the building, considering investment, maintenance and energy consumption costs
- The calculation made to identify the MEPRs has to be compliant with cost-effectiveness criteria
- A study is being conducted to verify the cost "optimality" of MEPRs, using a European methodology





### **Obligations impacting the public sector (1)**

• The buildings owned by the public sector, like schools, offices, health facilities, etc., need refurbishment plans, which include many aspects, like

structural strength hygienic services safety of users, *and* energy efficiency

 For energy efficiency, the refurbishment must comply with the Minimum Performance Energy Requirements (MEPRs)





### **Obligations impacting the public sector (2)**

Complying with MEPRs means achieving specific values for the parameters defining the energy quality of building components, for example:

improving the deteriorated facades adding **external insulation** replacing old inefficient boilers with **condensing boilers in colder climatic zones, or heat pumps in milder climatic zones** replacing single-glazed and draughty windows with **double-glazed**, **low** 

emittance, airtight windows





### How the MEPRs are enforced?

• Enforcement usually is ensured by issuing Resolution of the Government

#### Example of EnC CP - Georgia

This Resolution on enforcement of MEPRs stipulates that "the <u>architectural project and the</u> <u>construction scheme/project</u> shall be accompanied by an <u>expert opinion on the compliance</u> of the architectural project and the construction scheme <u>with the MEPRs</u>"

It concerns buildings, parts of buildings or building elements

The Resolution applies also in case of the <u>major refurbishment</u> of the existing building *(the reconstruction of more than 25% of the surface of a building envelope & the upgrade of a building envelope or technical systems, the value of which exceeds 25% of the value of the building)* 

Therefore, plans for the refurbishment works will need to show that the refurbishment will achieve the MEPR standard/s in order to obtain the <u>construction permit</u>





#### Example of EnC CP - Georgia

- Energy performance certification (EPC) is compulsory for new buildings when the building is sold or rented out, and for all public buildings whose surface area exceeds 500 m<sup>2</sup> (250 m<sup>2</sup> after June 2026) and are frequented by citizens
- A copy of the EPC shall be shown to the prospective new tenant or buyer and handed over to him
- According to the Georgian secondary legislation a building complying with the levels set by the law (MEPRs) is classified in Class D, while buildings having better levels will be classified from A to C, and existing buildings, below the legal levels, will be classified from G to E
- Class A building represents a so-called nearly zero energy building, where very low energy demand is further reduced using renewable energy, like solar thermal and solar photovoltaic





# **Energy Performance Certification of Buildings (2)**

eference number of certificate	:			xpiration date: 14.07.32	PR	OR PUBLIC	
ENERAL INFORMATION	ABOUT THE	BUILDING	G				
- 10	-	Cadaster pa	rcel:	1234			
<b>HIRI</b>	THE	Location / A	ddress:				
		Owner:		Not Simon Wössner No	ot Simon Wö	ssner	
		Year of cons	struction:	2033			
	VI	Type / Purpo building:	ose of the				
and the sector was an	STORAGE .	Building part	t / Zone:	7 4			
uilding	New York Concerning of the Concerning	Climate zon	e:	Zone 1	Record	in loted	
ross floor area (m²):	3743.82 m <sup>2</sup>	iten	Gross buildin	ig volume (m²):	12347.00	auteu	
seful floor area	3182.25		Net building	volume [m³]:	11500.00	11500.00	
ermally conditioned [m <sup>a</sup> ]:		Building sh		pe factor [m <sup>-1</sup> ]:	0.29	0.29	
IFORMATION ON ENER	GT PERFORI	MANCE			_		
A			Energy class	of the building:	D		
B			Primary ener floor area the [kWh/m³-a]:	gy per useful ermally conditioned	133.61	Notional Building: 141.13	
с С					-	Notional	
D		D	floor area thermally conditioned [kWh/m²-a]:		44.59 Building: 43.85		
E			Annual emis: [kg CO <sub>2</sub> /m³·a	sion CO <sub>2</sub> a]:	5.35	Notional Building: 05.26	
G			Share of ren	are of renewable energy sources		71.59%	
NERGY DEMAND OF TH	E BUILDING	[kWh/(m²a	)]				
140				2.22	Heatir	ng	
120				29.97		DHW demand	
100				37/75	Aux lia	ary energy	
80				22.51			
60							
40		1.23		68.95			
20 44.59		6.90					
		14.27					
-							

#### The energy performance certificate shall be displayed in a prominent place, clearly visible to the public in buildings where

- a total useful floor area of over 500 m<sup>2</sup> of a building for which an energy performance certificate has been issued is occupied by public authorities and frequently visited by the public. On June 30, 2026, this threshold shall be lowered to <u>250 m<sup>2</sup></u>;
- a total useful floor area of over 500 m<sup>2</sup> of a building for which an energy performance certificate has been issued and is <u>frequently visited</u> by the public.





### **Regulatory and enabling environment for EPCs**







## Inspection of heating and cooling systems in buildings

- The heating and cooling systems of significant size often lack suitable maintenance and have defects in their design or installation which produce a loss of energy efficiency
- The inspection concerns only heating and cooling systems having a rated output larger than a certain threshold, practically excluding all single-family boilers and AC systems, therefore obliging mostly <u>public buildings</u>, <u>health and educational facilities</u>, <u>large</u> <u>commercial establishments</u>, <u>centralized residential systems</u>, and similar.
- The obligation to inspect falls on the building owner; when the system serves a multiplicity of buildings or building units, the inspection cost will be shared among the system users, in the same way as for system maintenance cost.
- The larger public buildings will be required to have a system inspection
- The inspector will assess the energy performance of the heating and AC systems and will recommend measures to improve energy efficiency, in the direction of approaching the level of performance fixed in the MEPRs.
- The building owners are not obliged to implement the recommendations, but these suggestions will be the basis for future energy refurbishment initiatives





# **Supporting infrastructure for EE policy implementation**

Energy efficiency targets could not be achieved without **supporting infrastructure needed for policy implementation** 



Energy Professionals Tools and methods supporting preparation of energy audit

Quality assurance framework for energy auditing Reporting procedures (need for international recognition of efforts to improve energy efficiency) Monitoring and verification procedures

The supporting infrastructure is needed as a background process to ensure that energy efficiency measures will ensure energy savings





# Actions and outcomes from different professions (1)







# Actions and outcomes from different professions (2)



![](_page_15_Picture_3.jpeg)

### **Monitoring procedures of Energy Professionals**

![](_page_16_Figure_1.jpeg)

![](_page_16_Picture_2.jpeg)

![](_page_16_Picture_3.jpeg)

### Procedure for keeping registers and monitoring work quality

![](_page_17_Figure_1.jpeg)

Funded by the European Union

### Legal framework for EE and EEiB in Georgia

Law on EE and 19 bylaws, incl. ones related to supporting infrastructure Bylaw on Energy professionals Bylaw on Energy audit procedure Bylaw on Training program

Law on EEoB and 11 bylaws, incl.

Bylaw of energy performance certification of buildings Bylaw on regular inspection of heating and air-conditioning systems in buildings

![](_page_18_Picture_4.jpeg)

![](_page_18_Picture_5.jpeg)

### Key elements of the Bylaw on Independent experts - Georgia

IMPORTANT PRE-REQUISITES	PATHWAY OF ENERGY PROFESSIONAL	IMPLEMENTATION ASPECTS
DEFINITIONS	QUALIFICATION REQUIREMENTS	REGISTRIES AND LISTS
	REGISTRATION AND CONTINUOS TRAINING	ADDITIONAL TOOLS
RESPONSIBILITIES OF STAKEHOLDERS	RULES OF CONDUCT	IMPLEMENTATION BODY
GENERAL PRINCIPLES	QUALITY SUPERVISION	TEMPORARY REGISTRATION
	SUSPENDING, REVOKING AND REMOVAL	ENTRY TO FORCE

![](_page_19_Picture_2.jpeg)