



*EU4Energy activities in
Moldova, Georgia, and Ukraine*

20th EECG Meeting and Workshop

Vienna, 17 June 2019

EU4Energy activities in Moldova, Georgia, and Ukraine

- 1. Support in updating the methodology for calculation of energy performance of buildings in Moldova – followed by the Minimum Energy Performance requirements development***
 - 2. Support in development of Regulation on Energy Performance Certification of Buildings to implement the EPBD in Georgia – building on methodology development***
 - 3. Support in development of the National Energy Efficiency Action Plan 2019-2030 for Ukraine***
- All the activities described in the presentation were finalised in course of the second year Work Programme (May 2018 – April 2019)
 - EU4Energy Programme is funded by EU

EU4Energy activities in Moldova, Georgia, and Ukraine

Support in updating the methodology for calculation of energy performance of buildings in Moldova

Support in updating the methodology for calculation of energy performance of buildings in Moldova

Update of methodology / regulation for calculation of energy performance in buildings:

- Built on methodology for space heating heat and domestic hot water and added energy requirement calculations for:
 - Ventilation
 - Cooling
 - Lighting systems
 - Impact of external energy sources
- Built an open-source excel-based tool based on the methodology to calculate energy consumption which could be used for other countries

Support in updating the methodology for calculation of energy performance of buildings in Moldova - Structure of updated calculation tool for EPB calculation

The calculation tool is based on three interconnected types of calculation sheets:

I. Calculation sheets for required energy

they are calculation sheets for calculation of energy requirement for several energy consumption types

II. Auxiliary calculation sheets

- sheets for calculation of thermo-technical characteristics of building structures (U-value, thermal coupling coefficient)*
- database of constructions materials with thermal-technical parameters*
- conversion factors for primary energy and CO₂ emissions*

III. Pages of certificate

- summarization of results from calculation sheets into form of certificate*
- short description of actual building state of building and proposed energy saving measures*

Moldova: Pages of certificate (1/7)

Building energy label

issued according to the Law No. 28/2014 on the energy performance of buildings

Building: Address:	Example Example Street	N° of parcel: City:	123 Aloe
Purpose of issuing energy certificate:	Major renovation	Catastral area:	Aloe

foto

Building energy certificate	Building category:	Total energy use	Primary energy
	Hospitals	389,37	834,71
	Global indicator	kWh/(m ² ·a)	kWh/(m ² ·a)
Primary energy			
Low energy use			
A0/A1/A	R _t	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	R _s	<input type="checkbox"/>	<input type="checkbox"/>
E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High energy use			
Standard calculated energy rating			
Method of calculation	seasonal		
Minimum requirement	177	192	192
Typical value	433	576	576

CO₂ emissions 107,30 kg/(m²/a)

Proposed measures for improvement of energy performance of building:

External walls	0
Roof	0
Floor	0
Opening structures	0
Heating system	0
DHW preparation	0
Ventilation/cooling	0
Lighting	0
Renewable energy sources	0
Others	0

Date of issue:	Valid until:
Issued by:	Signature and stamp:
Address:	e-mail:
Contact tel.:	

Moldova: Pages of certificate (2/7)

Building energy certificate				
Building:	Example		N ^o of parcel:	123
Street, N ^o :	Example Street		City:	Aloe
Building category:	Hospitals			
Year of construction: .				
Space heating				
kWh/(m ² .a)	min	max	Rating	
A	≤	35	G	
B	35	70	F	
C	70	105	E	
D	105	140	D	
E	140	175	C	
F	175	210	B	
G	210	0	A	
DHW preparation				
kWh/(m ² .a)	min	max	Rating	
A	≤	26	G	
B	26	52	F	
C	52	78	E	
D	78	104	D	
E	104	130	C	
F	130	156	B	
G	156	0	A	
Ventilation/cooling				
kWh/(m ² .a)	min	max	Rating	
A	≤	27	G	
B	27	53	F	
C	53	77	E	
D	77	101	D	
E	101	126	C	
F	126	152	B	
G	152	0	A	
Lighting				
kWh/(m ² .a)	min	max	Rating	
A	≤	13	G	
B	13	26	F	
C	26	33	E	
D	33	40	D	
E	40	50	C	
F	50	60	B	
G	60	0	A	
Result of energy rating				
Energy use kWh/(m ² .a)	149,98			
Requirement:	70			
Requirement fulfilled (yes/no)	no			
Result of energy rating				
Energy use kWh/(m ² .a)	32,55			
Requirement:	52			
Requirement fulfilled (yes/no)	yes			
Result of energy rating				
Energy use kWh/(m ² .a)	190,66			
Requirement:	53			
Requirement fulfilled (yes/no)	no			
Result of energy rating				
Energy use kWh/(m ² .a)	16,18			
Requirement:	26			
Requirement fulfilled (yes/no)	yes			

Moldova: Pages of certificate (3/7)

Total energy use			
kWh/(m ² .a)	min	max	Rating
A	≤	101	☒
B	101	201	☒
C	201	293	☒
D	293	385	☒
E	385	481	☒
F	481	578	☒
G	578	0	☒

Primary energy			
kWh/(m ² .a)	min	max	Rating
A	≤	192	☒
B	192	384	☒
C	384	576	☒
D	576	769	☒
E	769	961	☒
F	961	1153	☒
G	1153	0	☒

Result of energy rating	
Energy use kWh/(m ² .a)	389,37
Requirement:	201
Requirements fulfilled (yes/no)	no

Result of energy rating	
Energy use kWh/(m ² .a)	834,71
Requirement:	384
Requirements fulfilled (yes/no)	no

Name of accredited person for thermal protection of buildings:

Signature and stamp:

Address:

Identification N°:

Register:

Moldova: Pages of certificate (4/5)

Building energy certificate							
Building:	Example	N° of parcel:	123				
Street, N°:	Example street	City:	Aloe				
Building category	Residential and public buildings						
Thermal protection of building							
Building volume	$V_b =$	6845,9	m^3				
Total floor area	$A_b =$	2409,5	m^2				
Shape factor	$A_E / V_b =$	0,380	1/m				
Construction height	$h_K =$	2,80	m				
Climatic zone	II. Central region		Number of degree-days: 3220 K.day				
<table border="1"> <thead> <tr> <th colspan="2">Standard energy rating</th> </tr> </thead> <tbody> <tr> <td>Energy need for heating $kWh/(m^2 \cdot a)$</td> <td>94,56</td> </tr> </tbody> </table>				Standard energy rating		Energy need for heating $kWh/(m^2 \cdot a)$	94,56
Standard energy rating							
Energy need for heating $kWh/(m^2 \cdot a)$	94,56						
Name of accredited person for thermal protection of building: Signature:							
Address: Name of expert Identification N°: Register:							
Description of actual state							
External walls							
Roof							
Opening structures							
Floor on the ground/basement ceiling							
Others							

Moldova: Pages of certificate (5/5)

Description of proposed measures for improvement of energy performance	
External walls	
Roof	
Opening structures	
Floor on the ground/basement ceiling	
Others	

Other sheets also for type of measures and savings...

Support in updating the methodology for calculation of energy performance of buildings in Moldova

- Energy classes of buildings were elaborated for each component including total energy use, and primary energy consumption - based on Slovakian classes adjusted for Moldovan climate and using the ratios from heating requirements for each specific element
- A number of examples of energy audits were processed in the tool to show how it works

Support in updating the methodology for calculation of energy performance of buildings in Moldova

- Two workshops to discuss the methodology, calculation tool, and classification system were conducted (completed in February 2019)
- Tool can be used as inputs calculating Minimum Energy Performance requirements



EU4Energy activities in Moldova, Georgia, and Ukraine

**Support in development of Regulation on Energy
Performance Certification of Buildings to implement
the EPBD in Georgia**

Support in updating the methodology for calculation of energy performance of buildings in Georgia

- Expanded / altered the open-source excel-based tool based on the methodology to calculate energy consumption – more precision than in the Moldovan example (Georgian and English versions) including more detail on:
 - Shading
 - Opaque elements
 - Unconditioned spaces
 - RES production (solar thermal, PV, wind)
- Based on the methodology and calculation tool, developed a regulation (ordinance) with:
 - Methodology and notes on what information the auditors need to input into the tool (being finalized)
 - Layout of the energy performance certificate
 - Energy classes based on minimum energy performance standards (B class) of buildings - elaborated for each component including total energy use, and primary energy consumption - based on Slovakian classes adjusted for Georgian climate and using the ratios from heating requirements for each specific element

Support in updating the methodology for calculation of energy performance of buildings in Georgia



- A number of examples of energy audits are being processed in the tool to show how it works
- Two workshops to discuss the methodology, calculation tool, and classification system were conducted (completed in May 2019) – with potential additional workshop to be undertaken

Support in updating the methodology for calculation of energy performance of buildings – challenges and opportunities

Challenges:

- Each country can choose their own level of precision required and default parameters – makes for a difficult task to create a tool
- Most software tools are proprietary and thus need to be built from zero for a country using standard methodologies
- Developing the detailed methodology and calculation tool is a massive undertaking...

Opportunities:

- Many EnC countries are undergoing this process at the moment – so if one methodology could be agreed upon (for example the Georgia methodology) then the climate parameters would change, but the rest could remain the same (?)

EU4Energy activities in Moldova, Georgia, and Ukraine

Support in development of the National Energy Efficiency Action Plan 2019-2030 for Ukraine

Support in development of the National Energy Efficiency Action Plan 2019-2030 for Ukraine

The objective of the project is to develop the National Energy Efficiency Action Plan of Ukraine for period 2019-2030 (draft NEEAP)

- In accordance with Directive 2012/27/EU,
- An intermediate target and reporting on savings every 3 years starting with 2021
- Following developed NEEAP Template which:
 - Reports on accomplishments of the 1st NEEAP
 - Reports on how Ukraine is implementing / will implement the Energy Efficiency Directive (EED) 2012/27/EU (as adopted by EnC)

Support in development of the National Energy Efficiency Action Plan 2019-2030 for Ukraine

Task

Task 1. Kick-off meeting with participation of the EnCS and the beneficiaries

Task 2. Review of the current NEEAP

Task 3. Develop a detailed structure and generalised content for the next NEEAP

Task 4. Creation of the list of measures for inclusion in next NEEAP and their associated preliminary forecasted energy saving potential

Task 5. Creation of the list of measures for inclusion in next NEEAP

Task 6. Drafting of the full NEEAP – complete except for calculations

Task 7. Stakeholder consultation on the draft NEEAP report – to be undertaken soon

Task 8. Finalisation of the NEEAP for the governmental approval process

Currently finalizing calculations and the full draft

Support in development of the National Energy Efficiency Action Plans – challenges and opportunities

Challenges:

- Data needs are immense for proper development of a NEEAP that can be monitored on a “per-measure” basis
- Monitoring of measures – particularly for Article 7 – can be a daunting task and should be planned
- NEEAPs take capacity and time to develop...

Opportunities:

- Updated (EED compliant) template has been developed for EnC countries
- Bottom up calculation tools developed for Ukraine (and Georgia) are available for use – as are calculation tools for ecodesign / energy labelling impact estimates



*Thank you
for your attention!*

www.energy-community.org/regionalinitiatives/EU4Energy.html