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# ATTRACTING FINANCING TO FIGHT OFF MUNICIPAL ENERGY POVERTY

## STRATEGIES AND ACTION PLANS

for deep energy renovation of the public buildings of Bulgarian municipalities



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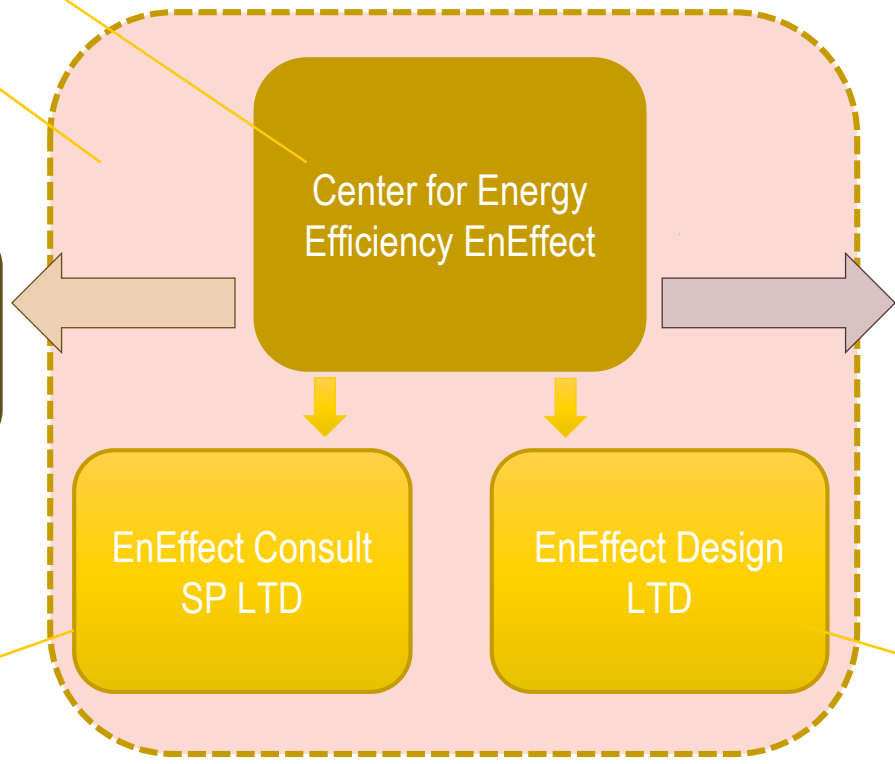
International projects



Municipal Energy Efficiency Network  
**EcoEnergy**

Local authorities  
(municipalities)

Energy consultancy



Bulgarian Energy Efficiency and Renewable Sources Fund  
**BEERSF**

World bank  
Bulgarian government

Design of NZE and passive buildings

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# Supporting the local authorities: the EmBuild project



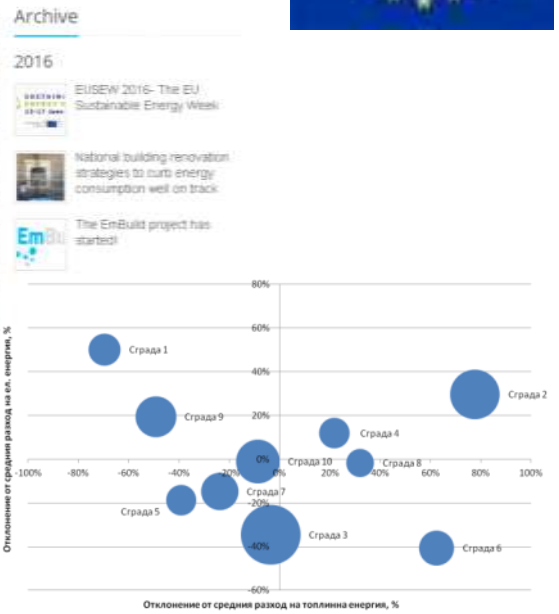
**Buildings in the Clean Energy Package – a BPIE guide**

Published: 06-12-2016

The European Commission has released important pieces of the European energy legislation, gathered in the previously-called Winter Package, now renamed to Clean Energy for All Europeans and it's placing consumers at the heart of the EU's energy strategy.

Moreover, two major online data portals were launched at the same time:

- The EU Building Stock Observatory, managed by BPIE, is a comprehensive database of the building stock characteristics in EUOS.



Key actors: Gabrovo, Burgas, Dobrich, Gorna Malina

<http://www.embuild.eu>

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## GABROVO: AVAILABLE DATA ABOUT BUILDINGS



## Example from Burgas

**Data from the National Programme for Energy Efficiency in the Multifamily Residential Buildings (source: SEDA database)**

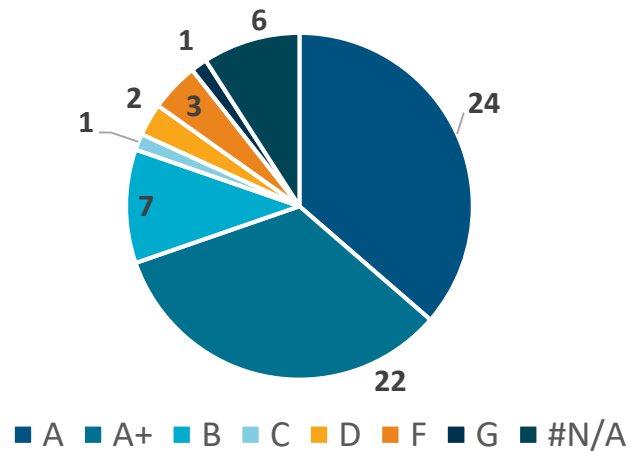
Type of energy	Actual consumption, MWh/year	Calculated savings, MWh/year
Hard fuel	17,4	38,1
Gas	140,3	188,3
Mixture of fuels	8088,2	18068,4
District heat	40395,5	30971,5
Electricity	67973,1	54356,2
<b>TOTAL</b>	<b>116614,4</b>	<b>103622,4</b>

**Data for public buildings (source: Burgas municipality)**

Building	Actual consumption 2014 (MWh)	Actual consumption 2015 (MWh)	Actual consumption 2016 (MWh)	Calculated annual savings (report to SEDA - implemented measures in 2015/2016)
High School of Commerce	186,506	196,407	n/a	295,58
High School "K.Preslavski"	392,441	387,546	286,883	773,32
High School "Y. Yovkov"	269,476	308,515	n/a	569,45

## Example from Dobrich

Number of buildings (n=66) distributed by  
energy classes (actual consumption)



## Example from Burgas

Building	Average specific energy, kWh/sq.m/a (2014-2016)	Classes	Class: Actual consumption	Class: Energy audit	Year of measures
Burgas municipality	4382,34	G (600 > )	G	D	2010
Daycare № 3	1470,03	G (390 > )	G	C	2013
Daycare № 5	1550,32	G (390 > )	G	D	2013
Daycare № 7	1475,09	G (390 > )	G	C	2013
Daycare № 8	936,17	G (390 > )	G	C	2013
Daycare № 15	884,55	G (390 > )	G	C	2013
Daycare № 6	1418,04	G (390 > )	G	C	2013
Daycare № 14	1618,92	G (390 > )	G	C	2011
Kindergarten № 6	707,18	G (390 > )	G	C	2014
"P.Yavorov" El. School	744,55	G (241 > )	G	B	2013
"V.Levski" High School	965,21	G (241 > )	G	B	2013
"A.Zlatarov" High School	3948,69	G (241 > )	G	C	2013
"Rakovski" High School	6347,72	G (241 > )	G	D	2014
"K.Petkanov" High School	1571,95	G (241 > )	G	B	2014
"N.Gerov" Elementary School	618,73	G (241 > )	G	B	2013
"Knyaz Boris I" El. School	1318,03	G (241 > )	G	C	2014

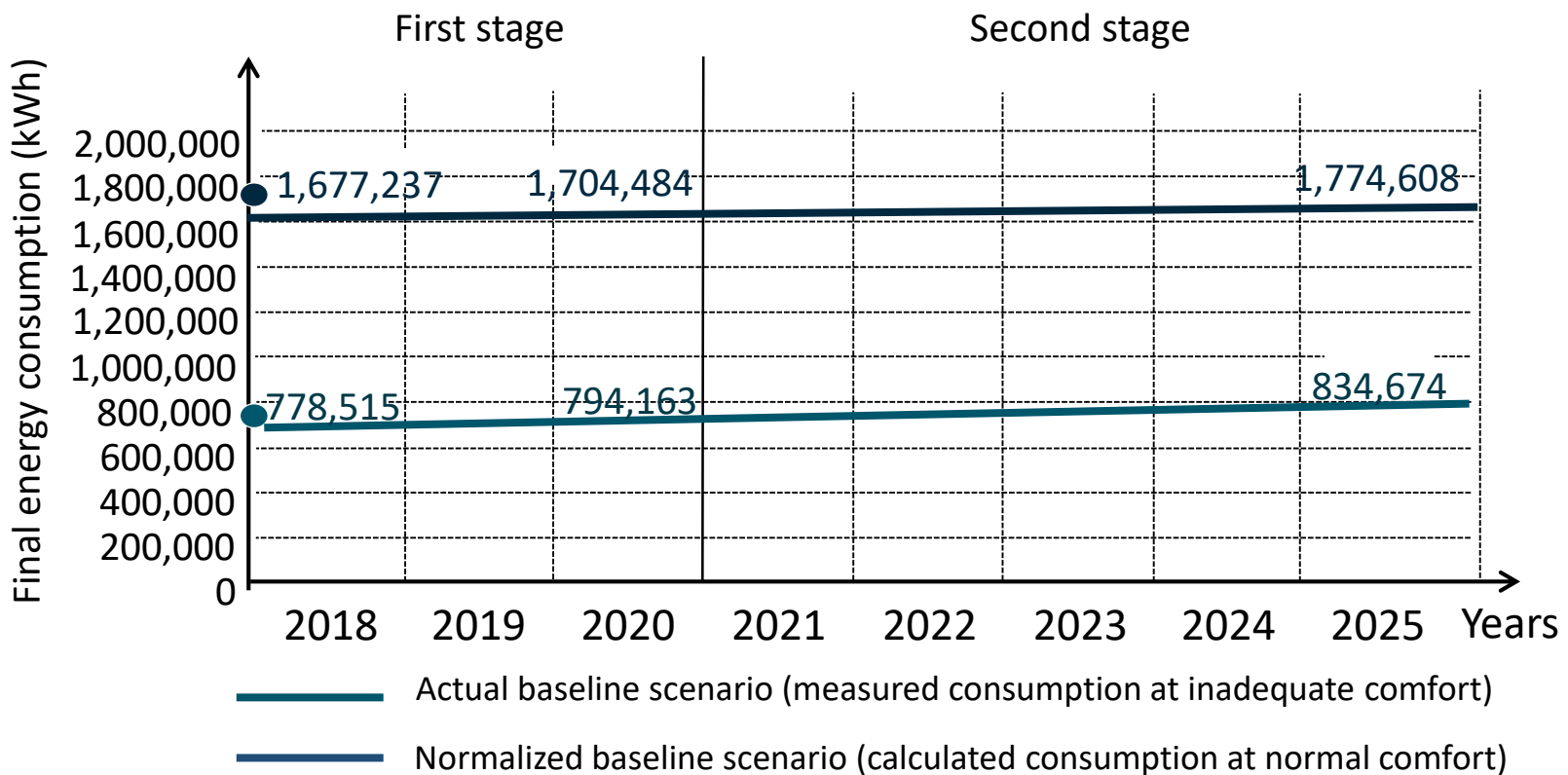
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## Forecast for baseline scenario development: total final energy consumption



# Preliminary financial framework of the plan

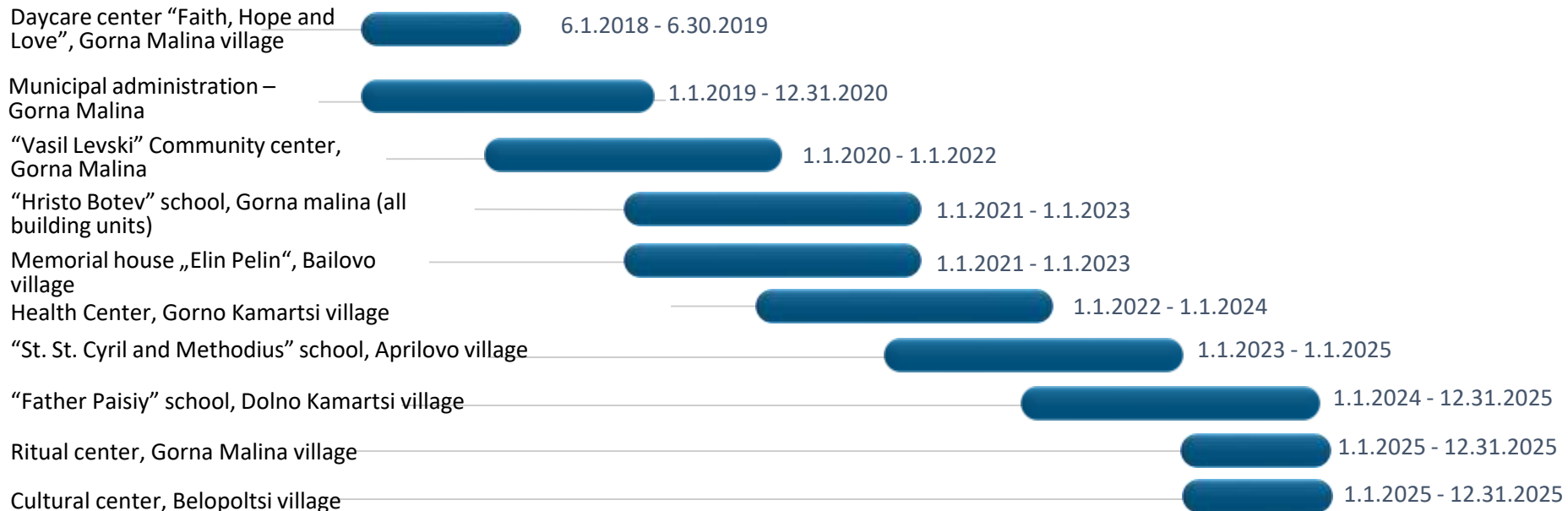
FINANCIAL SOURCES	YEARS								
	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
<b>OWN RESOURCES</b>									
Monetary resources	5000	10000	5000	5000	60000	55000	60000	100000	300000
Guarantees	0	0	0	0	0	0	0	0	0
In-kind contribution	2000	2000	2000	2000	3000	3000	3000	3000	20000
									<b>320000</b>
<b>GRANT RESOURCES</b>									
Operational Programmes	0	0	0	60000	60000	60000	60000	60000	300000
National Trust EcoFund	0		20000	20000	20000	20000	20000	20000	120000
Financial Mechanism of EEA	20000	260000	120000	0	0	0	0	0	400000
Horizon 2020	0	0	10000	10000	10000	10000	10000	10000	60000
Other sources	0	0	0	60000	0	0	0	0	60000
									<b>940000</b>
<b>SOFT AND BRIDGE FINANCING</b>									
Energy Efficiency and RE Fund	0	0	0	0	0	0	80000	160000	240000
EE credit lines	0	0	0	0	0	0	0	0	0
Other sources	0	0	0	0	0	0	0	0	0
									<b>240000</b>
<b>Public-private partnerships</b>									
Partner 1	0	0	0	0	0	0	0	0	0
Partner 2	0	0	0	0	0	0	0	0	0
									<b>0</b>
<b>TOTAL:</b>	<b>27000</b>	<b>272000</b>	<b>157000</b>	<b>157000</b>	<b>153000</b>	<b>148000</b>	<b>233000</b>	<b>353000</b>	<b>1500000</b>

PROJECT (BUILDING)	Score	Reduced emissions (%)	NPVQ	Financial savings	Investment
Municipal administration – Gorna Malina	116	79,56%	0,8915	38 006	345 000
“St. St. Cyril and Methodius” schools, Aprilovo village	98	77,96%	0,0778	19 849	320 000
Memorial house „Elin Pelin“, Bailovo village	118	80,58%	2,0095	24 681	140 000
“Vasil Levski” Community center, Gorna Malina	128	89,42%	4,0579	29 746	100 000
“Father Paisiy” school, Dolno Kamartsi village	93	86,15%	0,7603	9 728	95 000
Cultural center, Belopoltsi village	78	77,52%	-0,4831	2 452	85 000
“Hristo Botev” school, Gorna malina (all building units)	110	65,41%	2,1317	12 846	70 000
Health Center, Gorno Kamartsi village	103	85,36%	1,1635	8 206	65 000
Ritual center, Gorna Malina village	93	79,31%	0,1736	3 656	54 000
Daycare center “Faith, Hope and Love”, Gorna Malina village	148	83,83%	8,7767	25 946	45 000

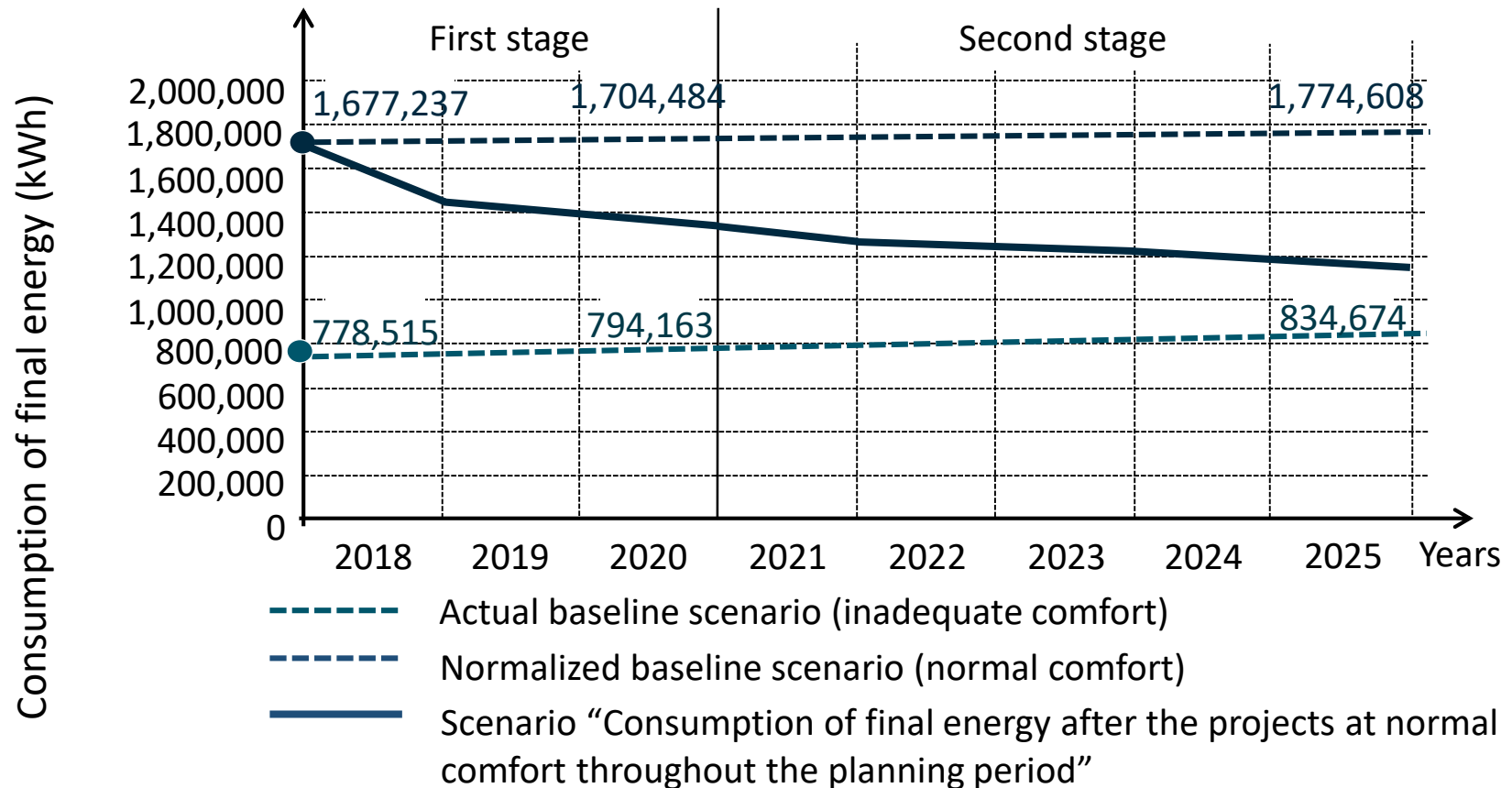
# Sequence of implementation of the investment projects (time schedule)

2018

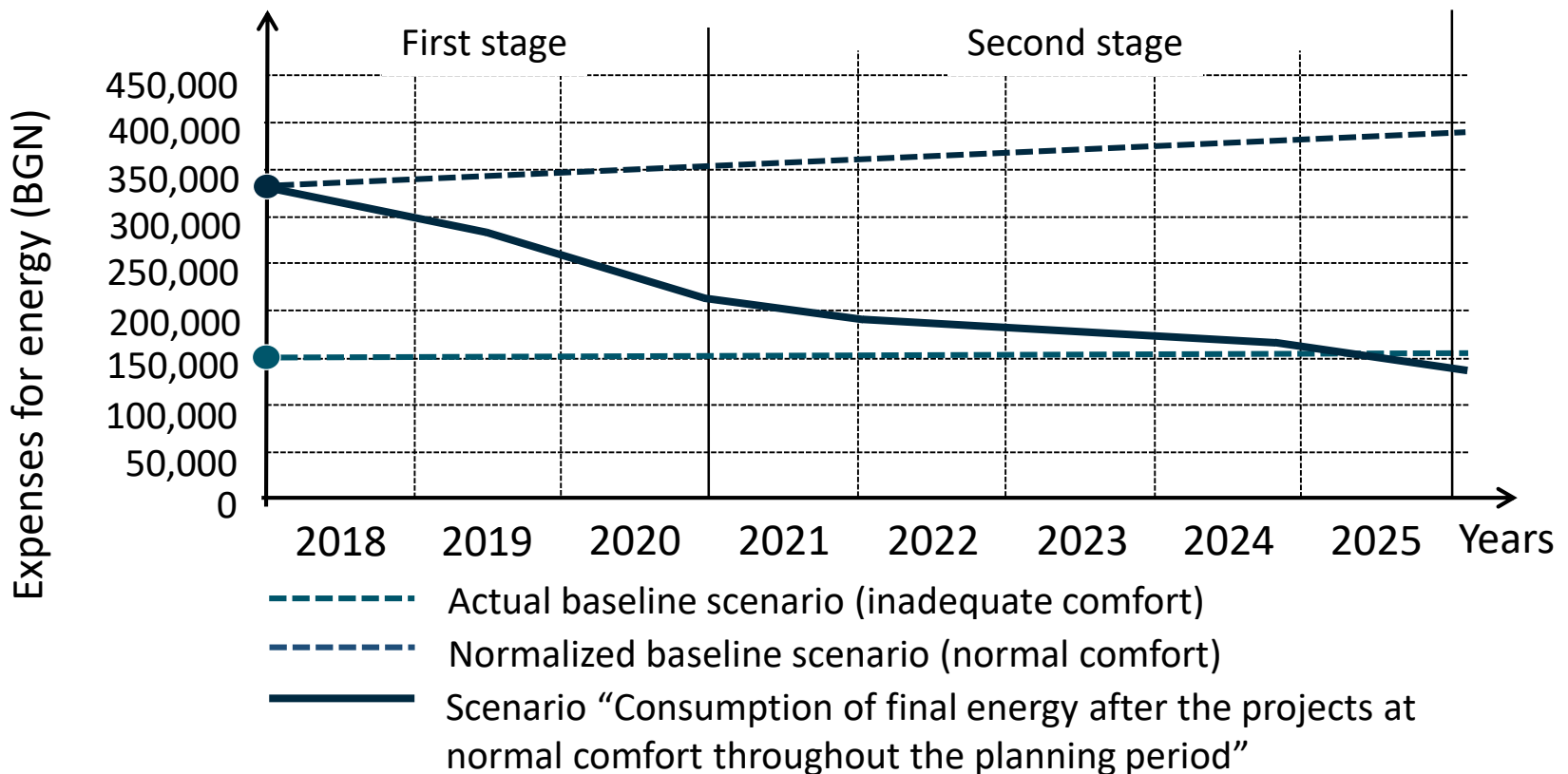
2025



## Scenario “Final energy consumption at normalized comfort during the whole planning period”



## Scenario “Expenditure at normalized comfort during the whole planning period”



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## Comfort or financial savings?

In buildings where comfort is severely deteriorated, improving comfort should be given priority over the reduction of financial costs.

This is the first step to lead households and municipalities out of energy (and social) poverty.

## Long-term strategic goals

### IMPROVEMENT OF THE COMFORT AND CUTTING OFF EXPENSES

Deep energy retrofit (including  
staged retrofit)

Replacement of the fuel base

Restoration of thermal and  
sanitary comfort

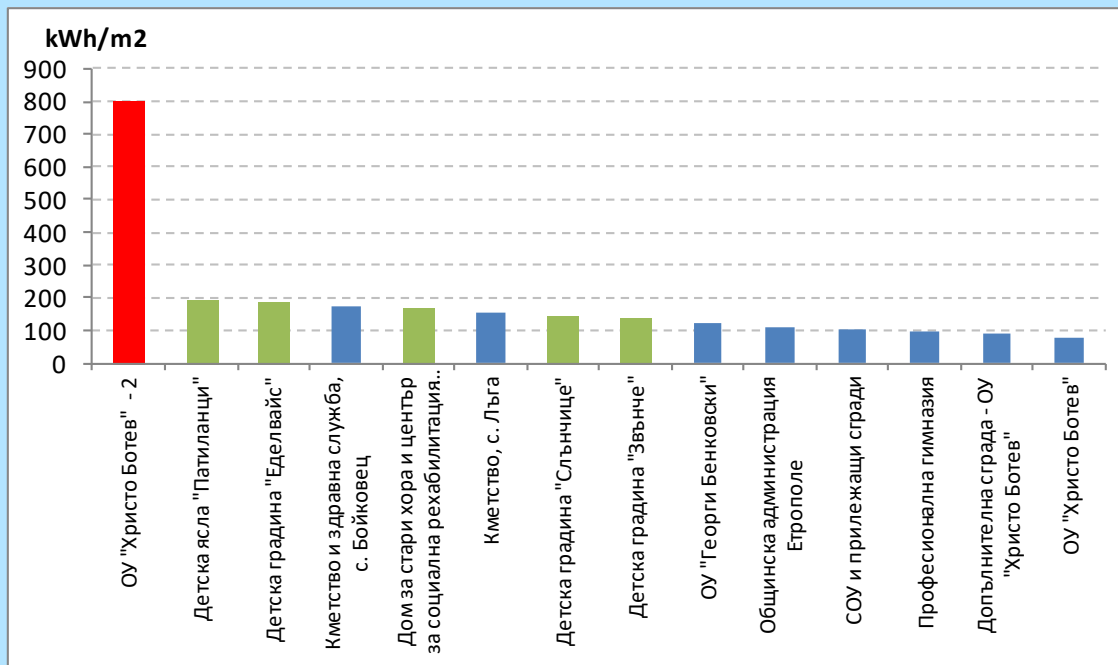
### PUBLIC SUPPORT FOR ENERGY EFFICIENCY AND RES

Awareness raising and  
building of interest

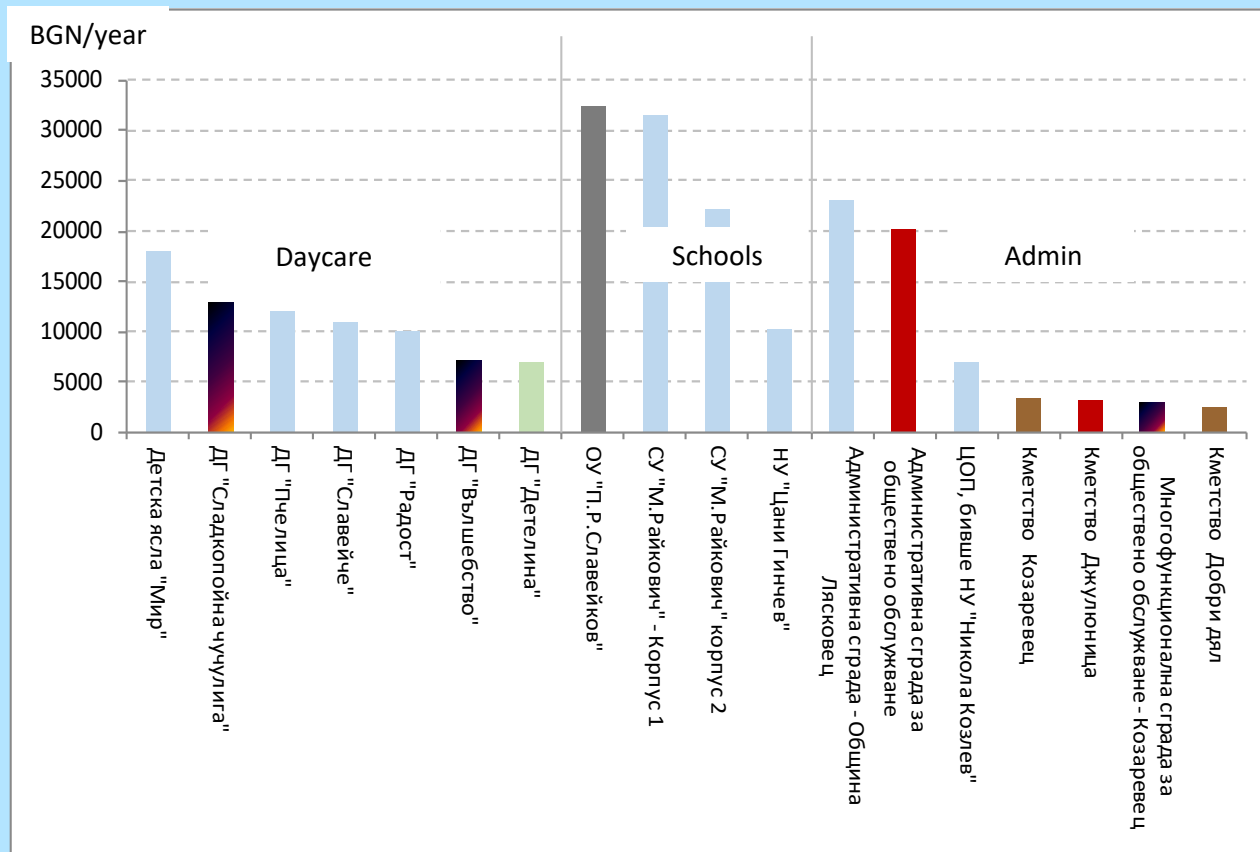
Municipal Energy  
Information System

Immediate goals of the action plan

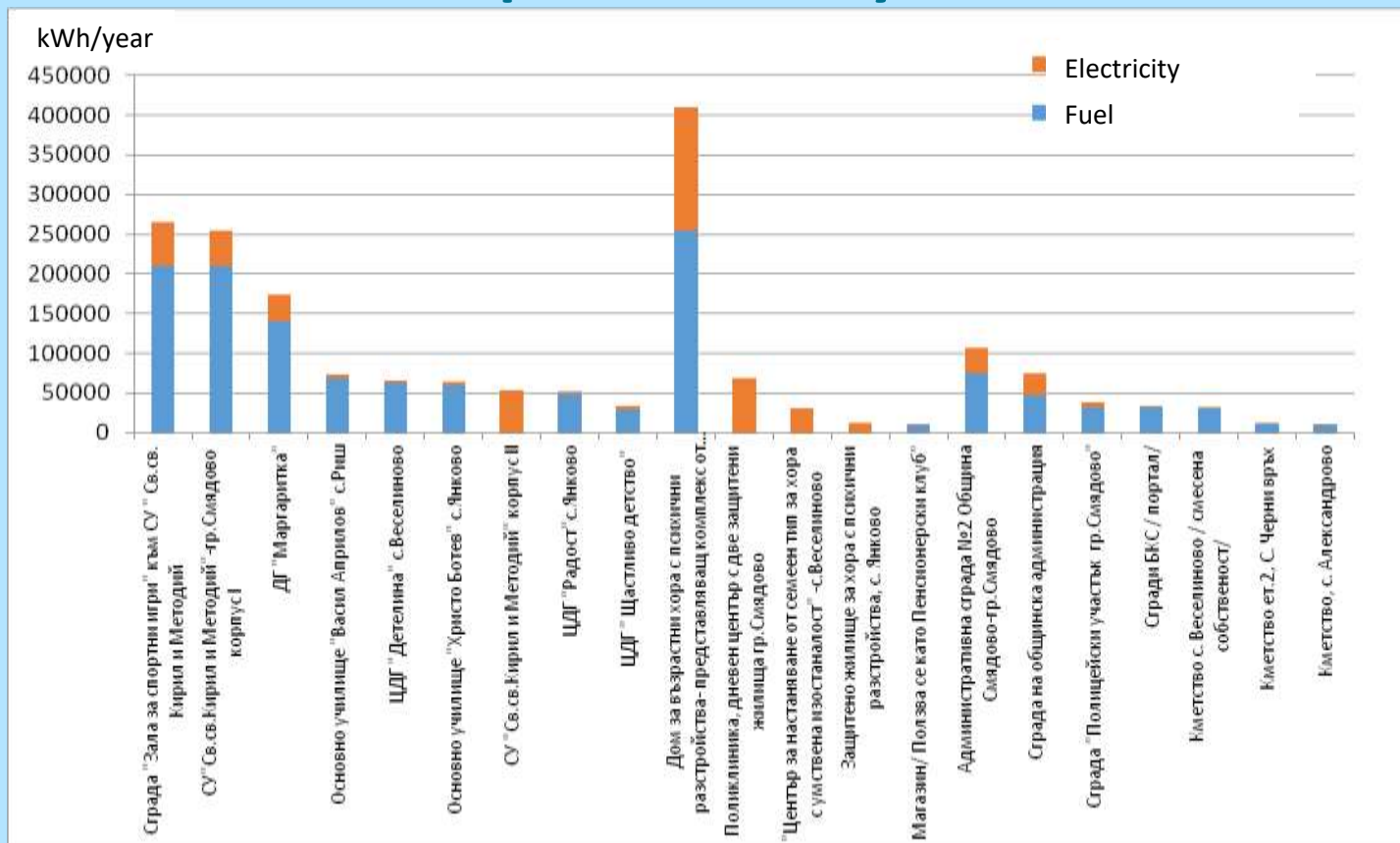
## Example from Etropole



## Example from Lyaskovets

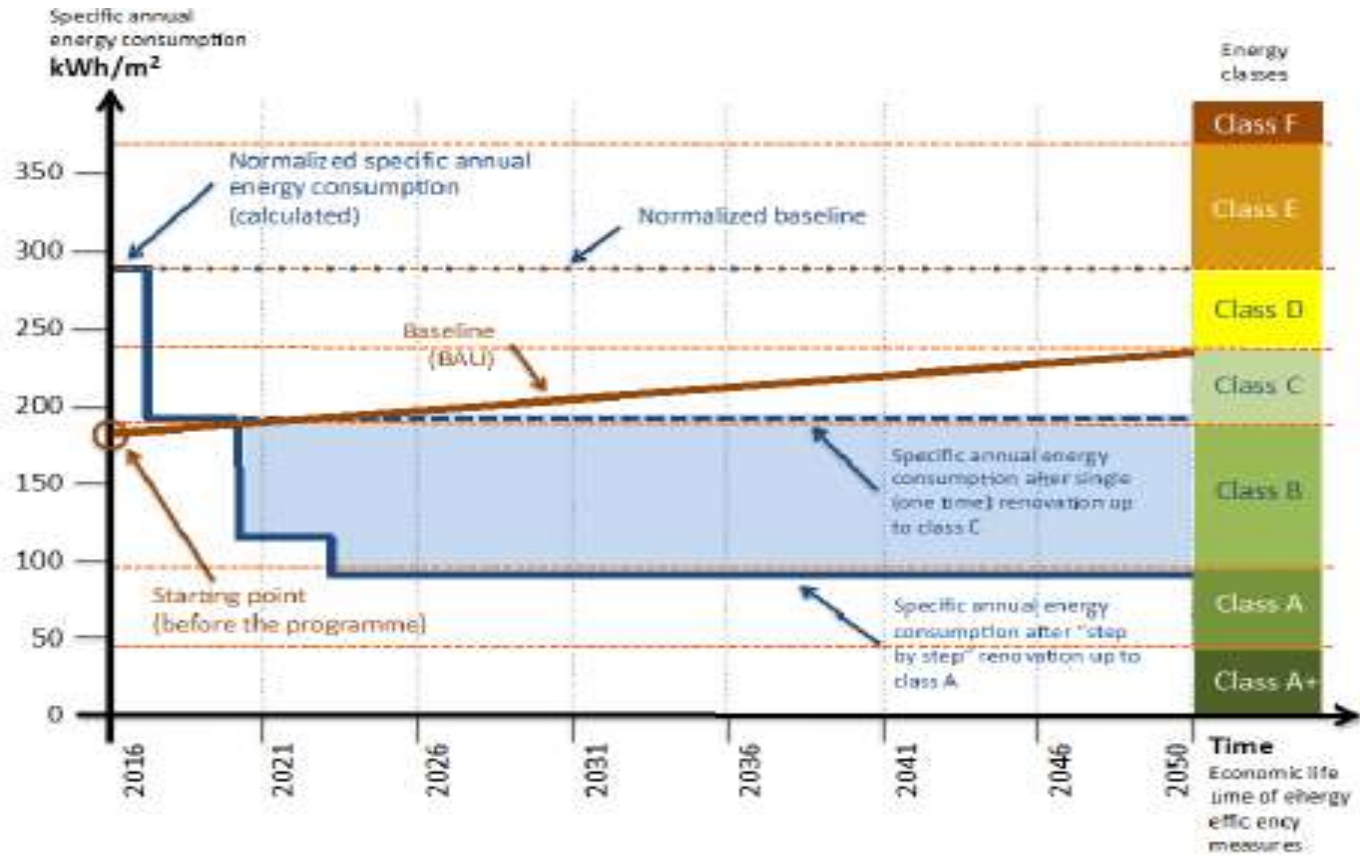


## Example from Smyadovo



# The real situation

Class	EPmin, kWh/m <sup>2</sup>	EPmax, kWh/m <sup>2</sup>	Residential
A+	<	48	A+
A	48	95	A
B	96	190	B
C	191	240	C
D	241	290	D
E	291	363	E
F	364	435	F
G	>	435	G



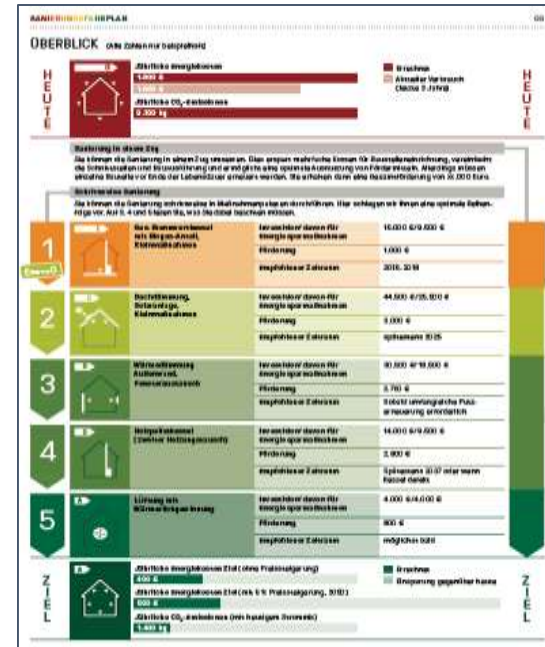
# DEEP AND QUALITATIVE RENOVATION

## HOLISTIC RENOVATION PROCESS

## BUILDING RENOVATION ROADMAP



Source: Energiesprung



Source: ifeu

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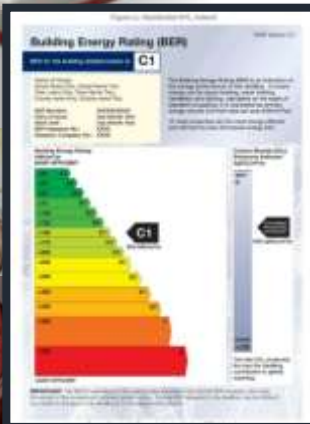
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**FOR  
RENT - SALE**

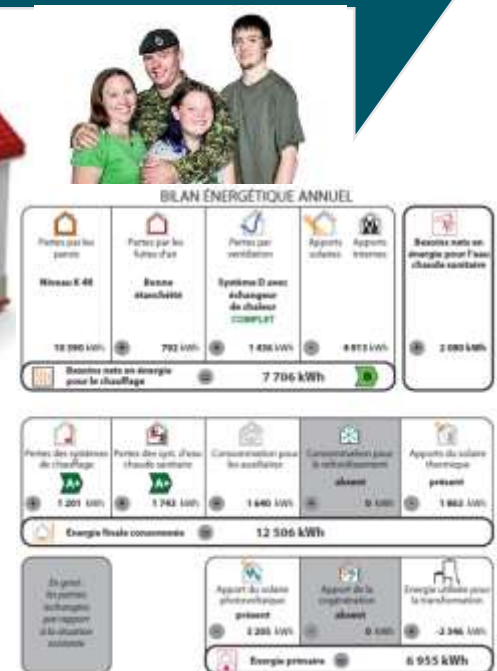
### ENERGY PERFORMANCE CERTIFICATE

Informs potential buyers/tenants on  
the buildings' energy performance



### BUILDING RENOVATION ROADMAP

Guides (new) owners with  
a personalised step-by-step  
renovation roadmap



# Conclusions

- Secure long-term political commitment
- Establish and maintain an energy information system
  - Maintain high project readiness
- Set realistic and measurable goals corresponding to the financial framework
- Consider staged retrofit and change of functionality
  - Raise the understanding of the wider benefits
  - Organize and monitor the implementation
    - Inform and communicate

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# Thank you for your attention!

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