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based on a decision of the German Bundestag

On the road to nZEB: Strategic goals and policies at national and local level

SUSTAINABLE ENERGY INVESTMENT FORUM

SOFIA, 11 JUNE 2019



The story of the renovation programmes



- UNDP demonstration programme “Renovation of Multifamily Residential Buildings”: 2008
- 20% financing in the beginning
- Gradually raised to 50%...
- ...and then to 80%
- 23 projects executed



The story of the renovation programmes



- “Energy Renovation of the Bulgarian Homes” Programme, financed through Structural Funds
- 75% financing in the beginning
- Raised to 100% in 2015
- 299 projects (still not) executed



The story of the renovation programmes



- “National Programme for Energy Efficiency of the Multifamily Residential Buildings”
- 100% financing since the beginning
- Renovation to energy class C
- Total budget of 1 billion Euro
- 1669 projects executed
- 2022 contracts concluded



Issues: continuity & engagement



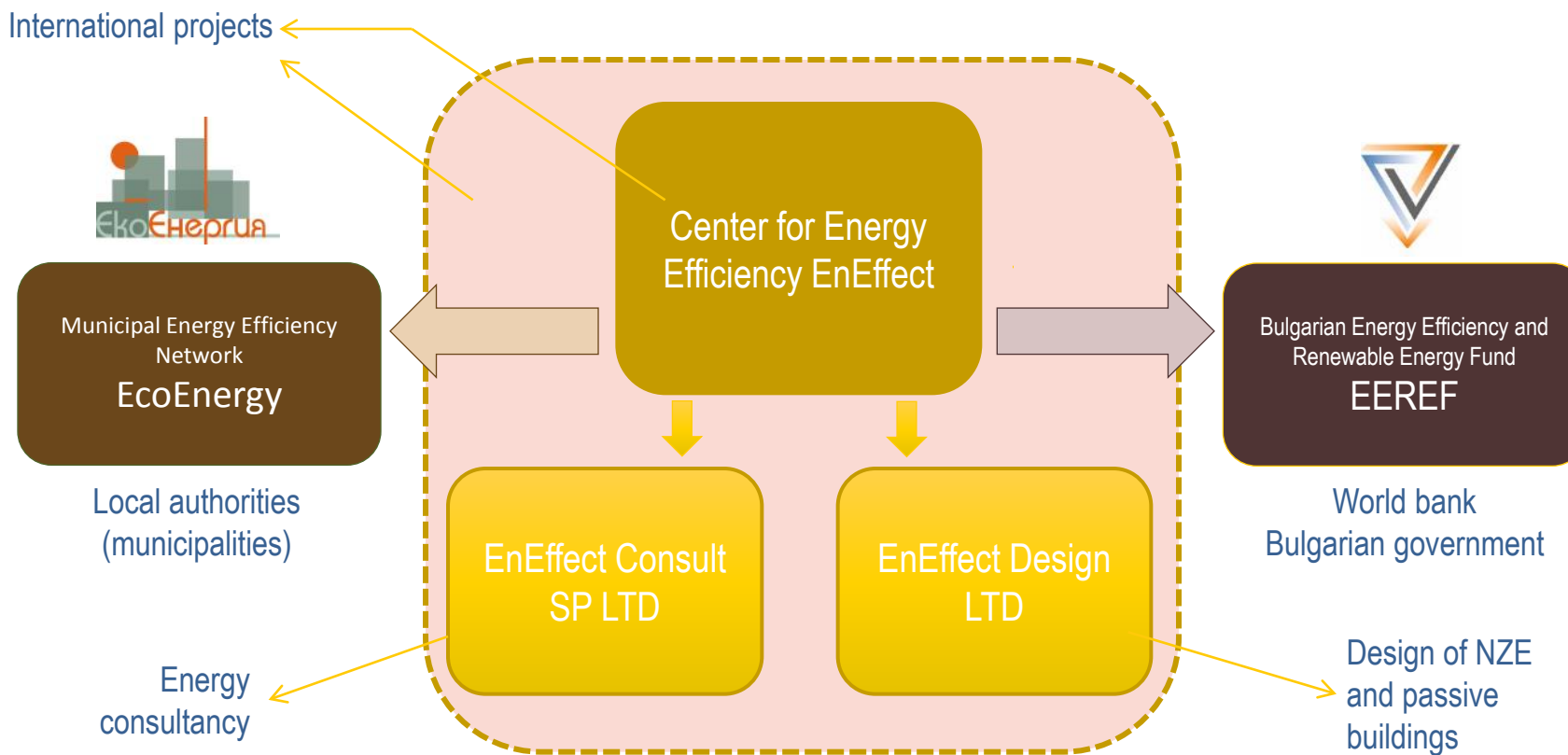
- Long-term vision: defining of concrete energy savings goals and priorities
- Technical assistance and specialized consulting at municipalities
- Professional capacity building
- Quality assurance and monitoring
- Engagement and responsibility of the beneficiaries / consumers
- Systematic communication campaign

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EnEffect



EU Policies

Клас	EP _{min} , kWh/m ²	EP _{max} , kWh/m ²	ЖИЛИЩНИ СГРАДИ
A+	<	48	
A	48	95	
B	95	190	
C	191	240	
D	241	290	
E	291	363	
F	364	435	
G	>	435	

+ 55% RES =
Nearly zero-
energy building

Energy Performance of Buildings Directives

Transition to design and construction of **nearly zero-energy buildings (nZEB)** after 2020 (after 2018 for public buildings)

Introduction of energy efficiency classes with a fixed value of the integrated energy consumption parameters - kWh/m².a



The Passive House Standard

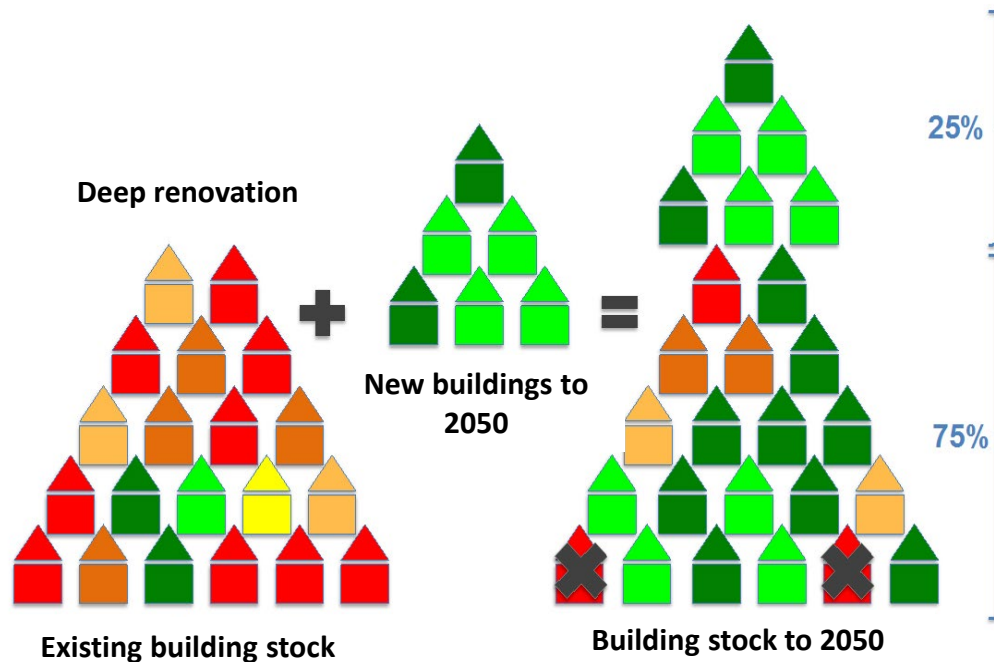
The Passive house is so well insulated that it can be heated only through the air coming from the ventilation system

Criteria		
For a residential building in Central European climate	Heating energy demand or heat load	max. 15 kWh/(m²a) max. 10 W/m²
	Cooling energy demand	max. 15 kWh/(m²a)
	Primary energy demand	max. 120 kWh/(m²a)
	Building airtightness	max. 0.6 /h (50 Pascal)
	Overheating frequency	max. 10 %

The calculation should be performed using the Passive House Planning Package (PHPP)



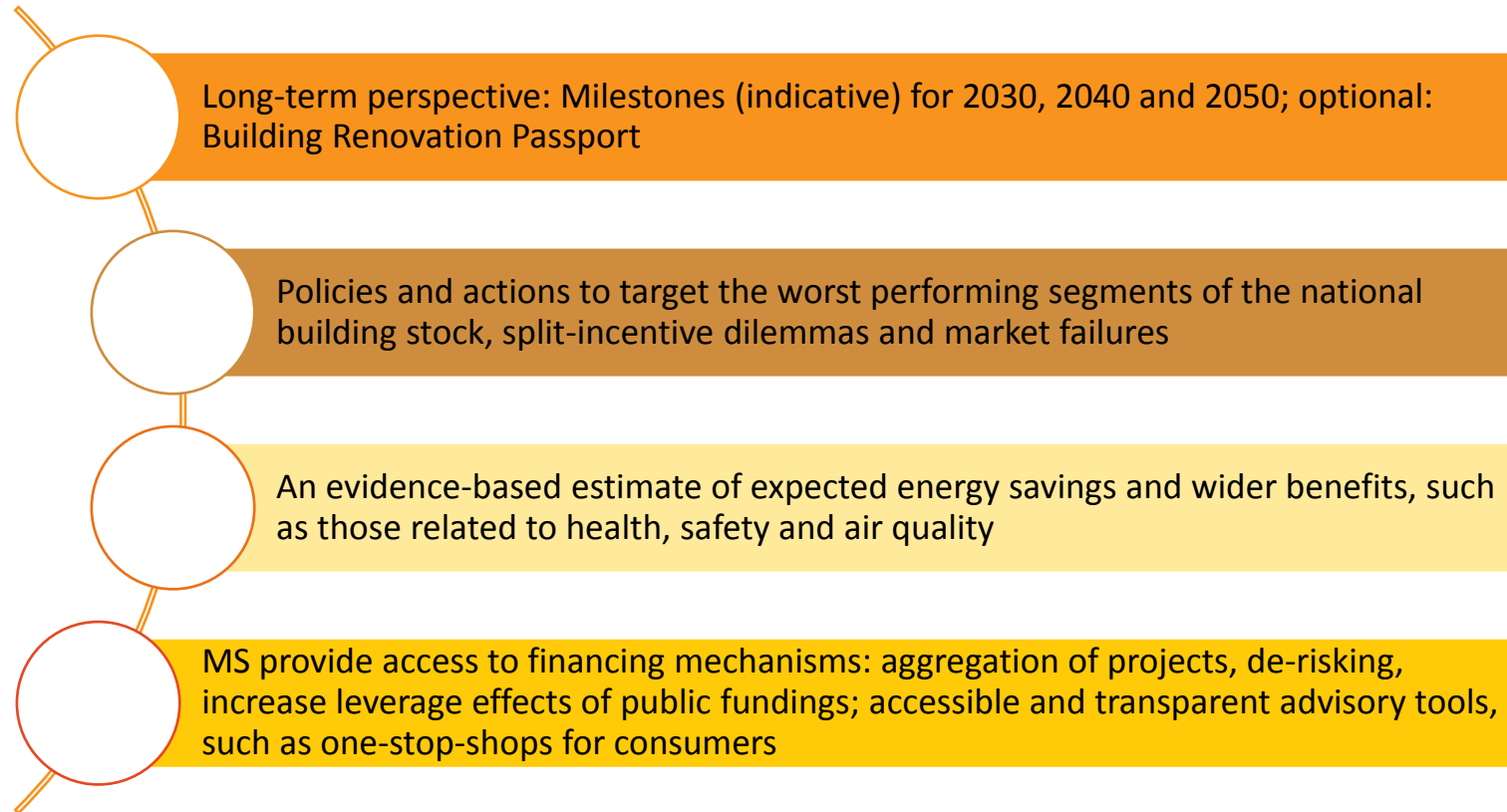
The new EPBD



- "Energy efficiency first" is a key element of the Energy Union
- About 75% of buildings are energy inefficient
- Only 0.4-1.2% of the stock is renovated each year
- The main objective is to accelerate the cost-effective renovation of existing building, which is a 'win-win' option for the EU
- Renovation work and energy retrofits add almost twice as much value as the construction of new buildings



Some highlights



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National policies

National Energy Efficiency Action Plan 2014-2020 / National Energy and Climate Plan

National Plan for Nearly Zero-Energy Buildings 2015-2020

National long-term program to stimulate investment to implement measures to improve the energy performance of public and private residential and commercial buildings 2016-2020 (Renovation Programme)

National plan for improvement of the energy performance of heated and / or cooled buildings owned by the state or used by the state administration - 2015-2020 r.

National Programme for Energy Efficiency of the Multifamily Residential Buildings

National Housing Strategy



National Energy and Climate Plan



РЕПУБЛИКА БЪЛГАРИЯ
Министерство на енергетиката

**ПРОЕКТ НА ИНТЕГРИРАН ПЛАН В
ОБЛАСТТА НА ЕНЕРГЕТИКАТА И КЛИМАТА
НА РЕПУБЛИКА БЪЛГАРИЯ**

Dominated by reports on the activities up to 2020;
limited content on planned policies and measures by
2030 and 2050

Lack of modelling of the end energy consumption and
lack of argumentation for the goals set

Lack of coordination between policies and measures

Lack of financial framework

Lack of projections on the effect of the renovation of the
building stock and the mandatory construction of
nZEBs from 2021 on



National NZEB Plan

НАЦИОНАЛЕН ПЛАН ЗА СГРАДИ С БЛИЗКО ДО НУЛЕВО ПОТРЕБЛЕНИЕ НА ЕНЕРГИЯ 2015-2020 г.

София, 2015 г.

Таблица 5.1					
Година	Административни сгради				
	РЗП, м2	Инвестиции, лв	Спестявания (КЕП и емисии)		
			ktoe	GWh	t CO2
2016	9 092	2 045 677	0.15	1.80	204.57
2017	27 821	6 259 773	0.43	5.04	625.98
2018	66 214	14 898 259	1.00	11.63	1 489.83
2019	192 968	43 417 784	3.29	38.208	4 341.78
2020	196 800	44 286 140	3.35	38.97	4 428.00
Кумулативно	492 896	110 907 634	10.56	122.76	14 445.63

Таблица 5.2					
Година	Жилищни сгради				
	РЗП, м2	Инвестиции, лв	Спестявания (КЕП и емисии)		
			ktoe	GWh	t CO2
2016	0	0	0.00	0.00	0.00
2017	4414	1 236 036	0.06	0.64	154.50
2018	11312	3 090 091	0.14	1.65	395.92
2019	23189	6 493 054	0.29	3.386	811.63
2020	35654	6 655 380	0.45	5.21	1 247.88
Кумулативно	74570	17 474 562	1.19	13.83	3 314.87

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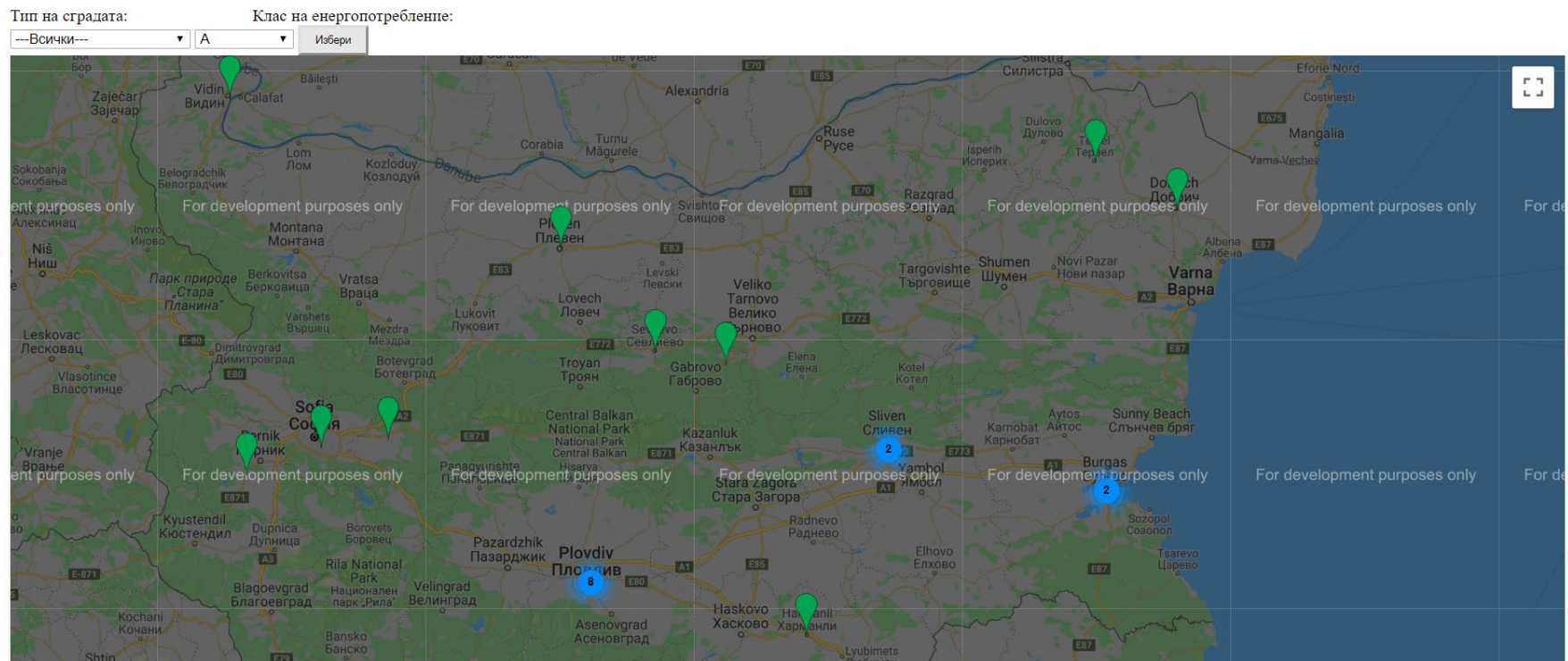
Federal Ministry
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National NZEB Plan

НАЦИОНАЛНА ИНФОРМАЦИОННА СИСТЕМА ЗА ЕНЕРГИЙНА ЕФЕКТИВНОСТ СЕРТИФИЦИРАНИ СГРАДИ





Renovation Programme

НАЦИОНАЛНА ДЪЛГОСРОЧНА ПРОГРАМА

ЗА НАСЪРЧАВАНЕ НА ИНВЕСТИЦИИ ЗА
ИЗПЪЛНЕНИЕ НА МЕРКИ ЗА ПОДОБРЯВАНЕ
НА ЕНЕРГИЙНИТЕ ХАРАКТЕРИСТИКИ НА
СГРАДИТЕ ОТ ОБЩЕСТВЕНИЯ И ЧАСТНИЯ
НАЦИОНАЛЕН ЖИЛИЩЕН И ТЪРГОВСКИ

СГРАДЕН ФОНД

2016-2020 г.

София, юни 2017 г.

СЦЕНАРИЙ A2: Обновяване на 1% от необновената РЗП към 01.01.2016					
Година	РЗП, м ²	Инвестиции, лв	Жилищни сгради		
			Спестявания (КЕП и емисии)		
			ktoe	GWh	t CO ₂
2016	2 328 652	349 297 645	25.81	300.15	34 929.78
2017	2 328 652	349 297 645	25.81	300.15	34 929.78
2018	2 328 652	349 297 645	25.81	300.15	34 929.78
2019	2 328 652	349 297 645	25.81	300.15	34 929.78
2020	2 328 652	349 297 645	25.81	300.15	34 929.78
Кумулативно	11 643 262	1 746 489 225	283.94	3301.65	384 227.63

“By 2020, the Programme will gradually be transformed with the goal to decrease the grant component – 75%, 50%, 25% respectively. As a part of the realization of such approach, a social mechanism for vulnerable owners of the buildings has to be included, providing the option for 100% or 90% grant component if certain social criteria are met.”

Renovation Programme

4.2 Financial incentives for investors in buildings with nearly zero energy consumption

Grant funding (10-20% of the value) of technologies with a proven energy-saving effect that enable achievement of nearly zero energy consumption (Class A and at least 55% renewable energy use).

Developing of a financial facility "Favourable Loans for High Energy Efficient Buildings (Single Houses or Flats)" (...) The interest rate on the credit is tied to the energy efficiency level of the building, ie. the better the energy performance of a building, the more favorable credit conditions;

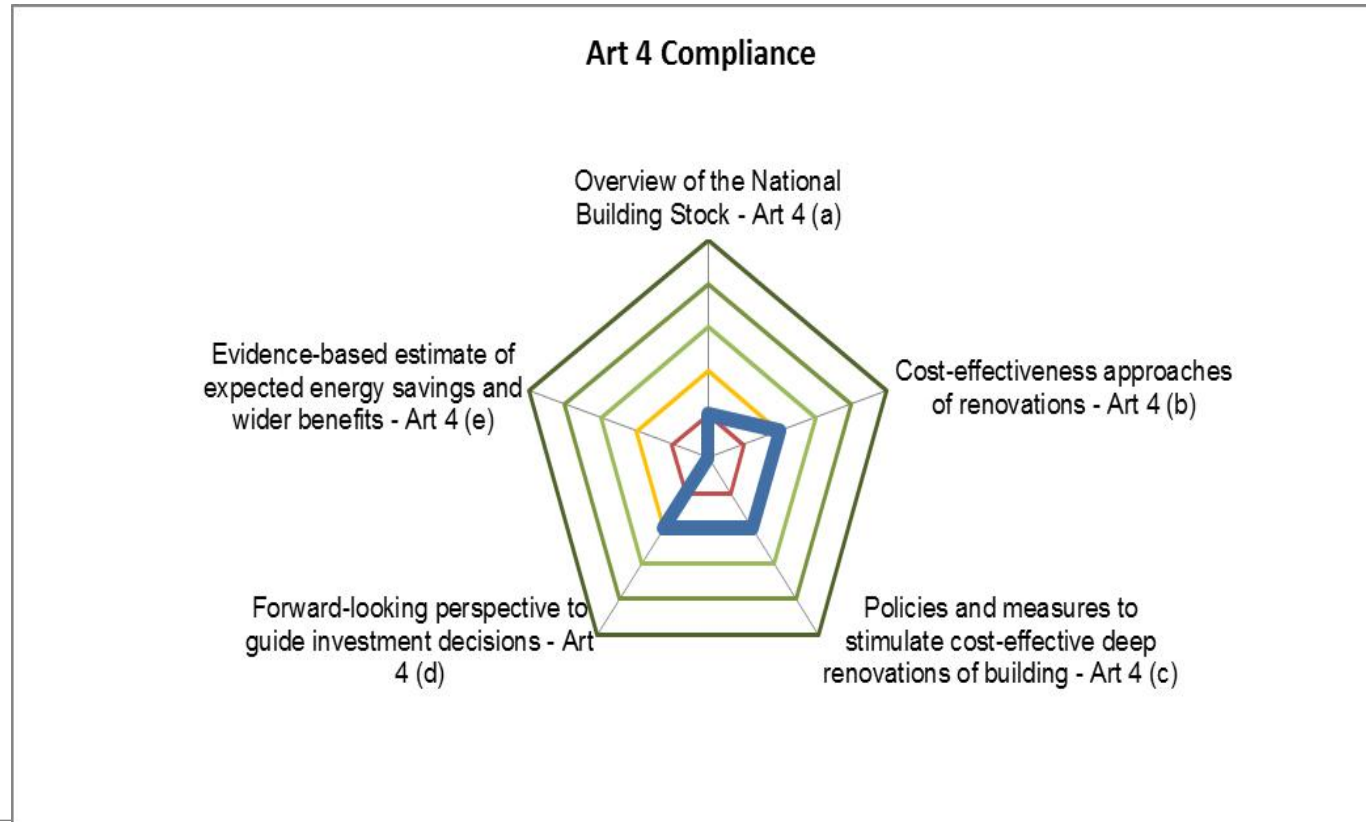
Expansion of the Energy Efficiency and Renewable Energy Fund's portfolio with new packages to finance energy saving projects in buildings;

Establishment of municipal funds for energy efficiency





Art. 4 Compliance





Problem areas: norms

Клас	EPmin, kWh/m ²	EPmax, kWh/m ²	ДЕТСКИ ГРАДИНИ
A+	<	33	
A	33	65	
B	65	130	
C	130	195	
D	195	260	
E	260	325	
F	325	390	
G	>	390	

The first certified Passive House in Bulgaria

- Appliances
- Primary energy factors
- National approach to nZEB definition (energy classes, RES share)
- Building regulation (thermal bridges, ventilation)
- National programme for energy efficiency in the residential buildings

“Research has shown that lowering the heat transfer coefficients below the reference values given in the regulation leads to an increase in energy consumption during the summer months.”
National NZEB Plan, p.38











Problem areas: plans

Monitoring and reporting on execution

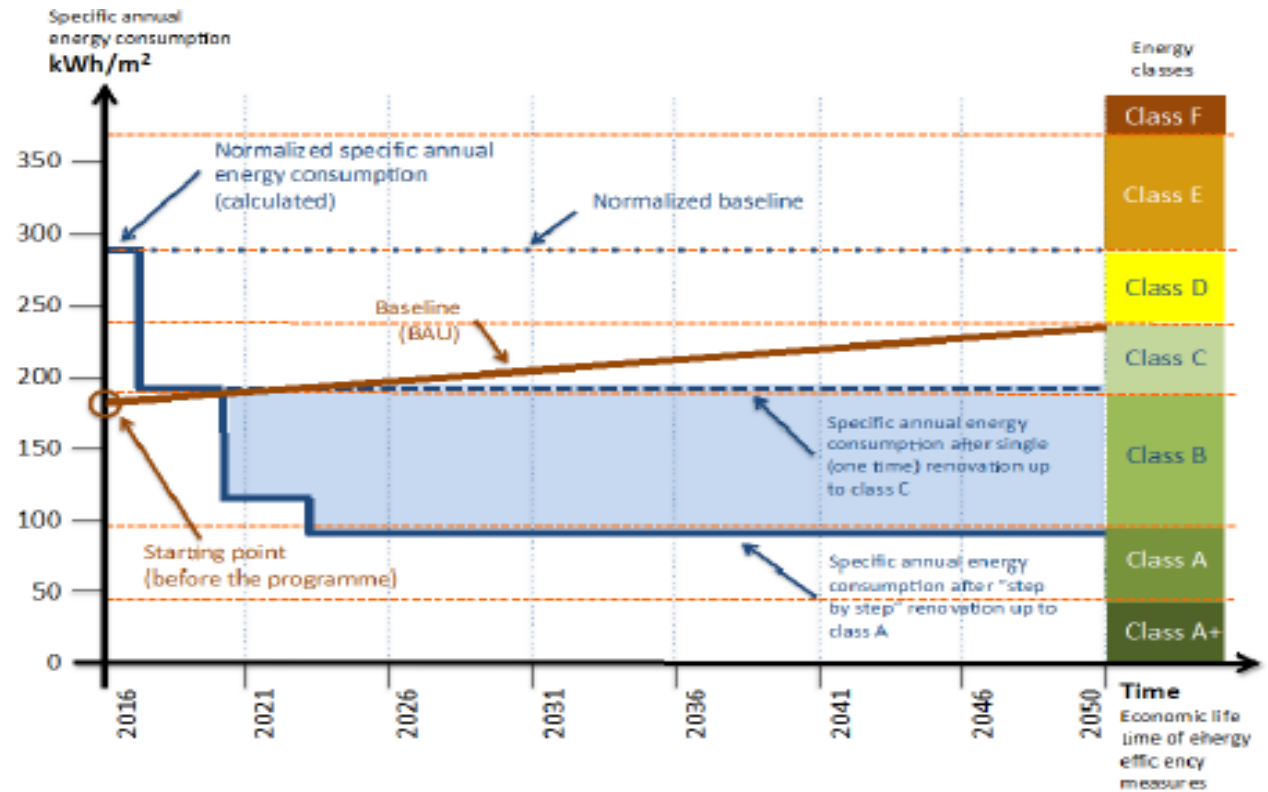
Година	Сгради за обществено обслужване - държавна и общинска собственост, за обновяване до СБНПЕ				
	РЗП,м2	Инвестиции, лв	Спестявания (КЕП и емисии)		
			ktoe	GWh	t CO2
2016	0	0	0	0	0
2017	45810	14 659 200	0.65	7.56	1 145
2018	91620	29 318 400	1.30	15.11	2 291
2019	109950	35 184 000	1.56	18.138	2 749
2020	137450	43 984 000	1.95	22.68	3 436
Кумулативно	384 830	123 145 600	8.1	93.7	14 201.8

National NZEB Plan 2015-2020, p. 43

Problem areas: actual savings

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

100% grant for renovation to energy class C ?!





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
TOTAL	116614,4	103622,4

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 Burgas

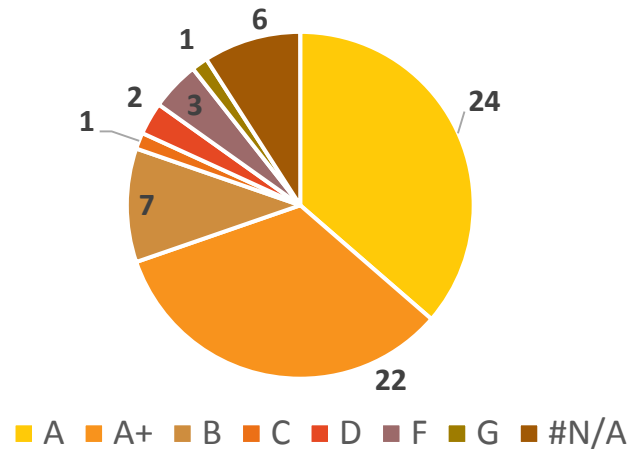
Building	Average specific energy, kWh/sq.m/a (2014-2016)	Classes	Class: Actual consumption	Class: Energy audit	Year of measures
Burgas municipality	4382,34	G (600 >)	G	D	2010
Daycare № 3	1470,03	G (390 >)	G	C	2013
Daycare № 5	1550,32	G (390 >)	G	D	2013
Daycare № 7	1475,09	G (390 >)	G	C	2013
Daycare № 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



Example from Dobrich

Example from Dobrich

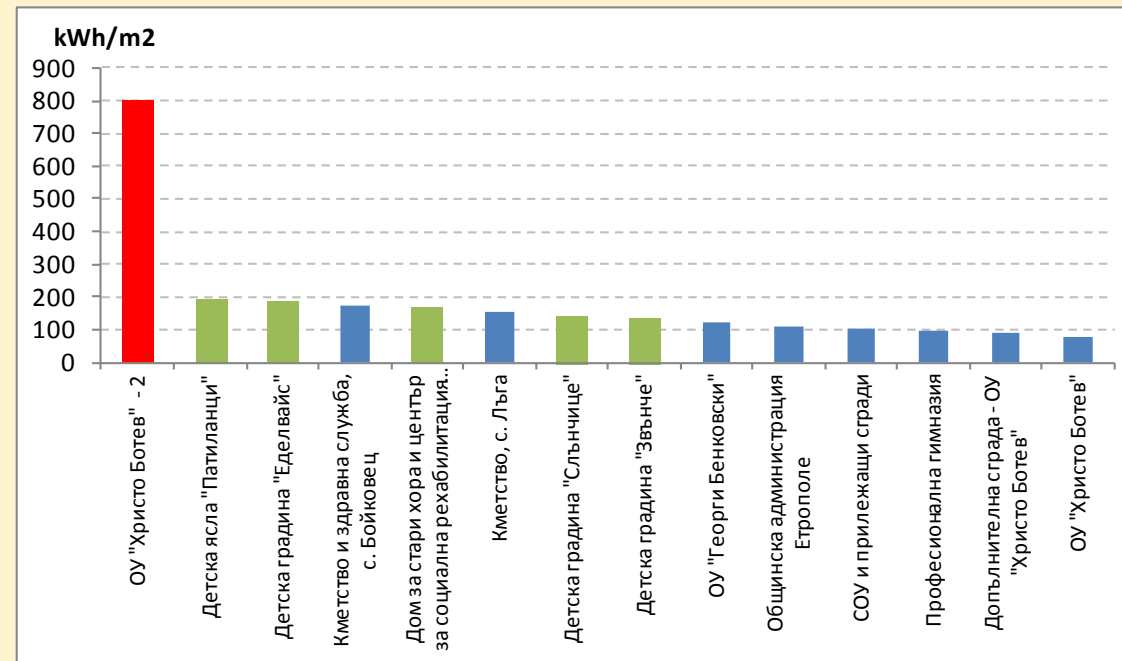
Number of buildings (n=66) distributed by energy classes (actual consumption)





Example from Etropole

Example from Etropole



Problem areas: knowledge

- ✓ Respondents are **most likely to trust their friends, family or colleagues** when asking for advice about renovation measures (67%), followed by internet search (37%), or a builder or contractor (29%) or a bank (18%). 9% would trust the energy performance certificate.
- ✓ When asked about who they would consult for information on energy performance, the most common response was to use a **general internet search** (36%) followed by consulting with the builder or contractor (26%), or the previous owner or occupier (20%).
- ✓ **Only 3% of homeowners said that they had had an energy audit.** Of those who had not considered having an energy audit, the main reason was that **they had not thought about it** (43%). Around one in five respondents did not know who would conduct the audit or thought it would be too costly (22% and 18% respectively).



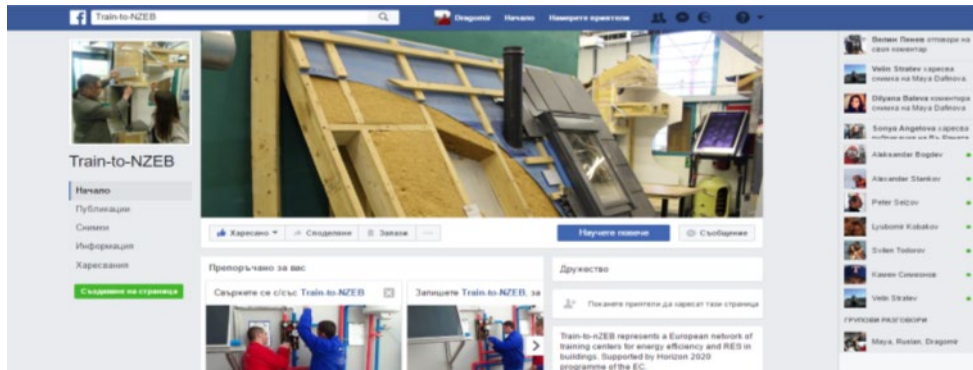
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Building Knowledge Hubs



Communication



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The Building Knowledge Hubs

Thank you for your attention!

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