



## SUSTAINABLE ENERGY DEVELOPMENT AGENCY BULGARIA



Federal Ministry  
for Economic Affairs  
and Energy



MITTELSTAND  
**GLOBAL**  
ENERGY SOLUTIONS  
MADE IN GERMANY



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Deutsch-Bulgarische  
Industrie- und Handelskammer  
Германо-Българска  
индустриално-търговска камара

# Energy efficiency in state and municipal buildings in Bulgaria and their transformation into nZEB

Tsvetomira Kulevska

Information visit of a Bulgarian delegation to Germany on "Low energy buildings in the public sector "

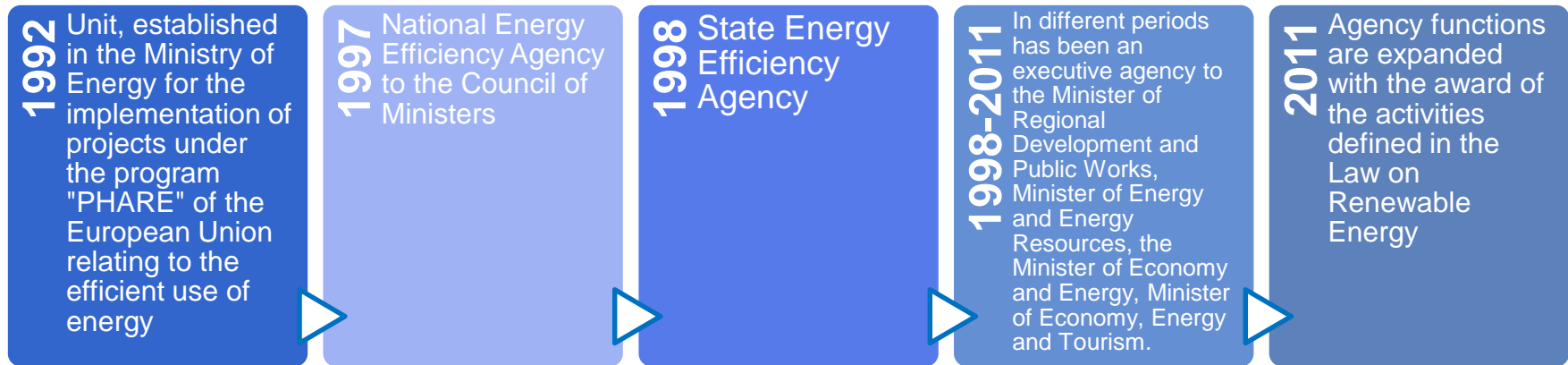
6-8 November 2019

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- ✍ SEDA – who are we?
- ✍ EU requirements for EE and RES
- ✍ Public buildings in Bulgaria – main characteristics
- ✍ nZEB definition in Bulgaria
- ✍ National EE Action Plan

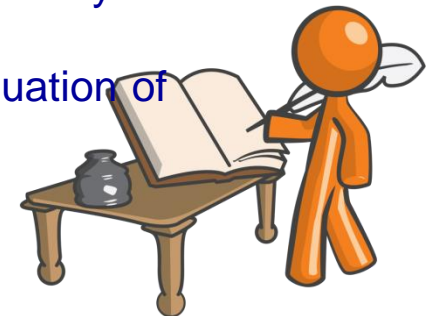


## SEDA - Historical overview



Currently SEDA is a legal entity at state budget support with headquarters in Sofia and has the status of an executive agency within the Ministry of Energy.

Technical and analytical expertise on the implementation and evaluation of the National policies and measures.



## SEDA - general activities

### ENERGY EFFICIENCY

- ✓ Monitoring and evaluation of the EE

- ✓ Training and information in the field of EE

- ✓ Energy services

- ✓ Energy Audits

- ✓ National information system on the state of EE

- ✓ Control over the activity of the obligated parties

### RENEWABLE ENERGY

- ✓ National Renewable Energy Action Plan

- ✓ National Information System

- ✓ Guarantees of Origin

- ✓ Awareness-raising and training campaigns



# EU Legislation



## ENERGY EFFICIENCY DIRECTIVE

- 32,5% EE target to 2030
- EE Obligation Schemes
- Energy Audits
- Metering and billing
- Smart meting
- Leading example of the public sector
- Energy transformation, transmission and distribution
- Energy Services



## ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

- Clear vision for decarbonization of building stock by 2050
- Smart and efficient buildings through use of ICT and Smart technologies
- Smart finance for smart buildings – more efficient use of public funding, De-Risking
- Vulnerable consumers protection (Energy Poverty)



## RENEWABLE ENERGY SOURCES DIRECTIVE

- Binding EU target of at least 32% for 2030
- Framework principles empowering consumers to self-consume and store renewable electricity
- Distance self-consumption for municipalities
- Extend Green Origin Systems to biofuels and gaseous fuel in heating

# Directive 2010/31/EC – current requirements for buildings

EU Member States develop national plan for nearly zero energy buildings

Member States shall ensure that:

(a) after 31 December 2020, all new buildings (including residential buildings) should have nearly zero energy consumption;

(b) after 31 December 2018, new buildings occupied or owned by public authorities should be with nearly zero energy consumption.



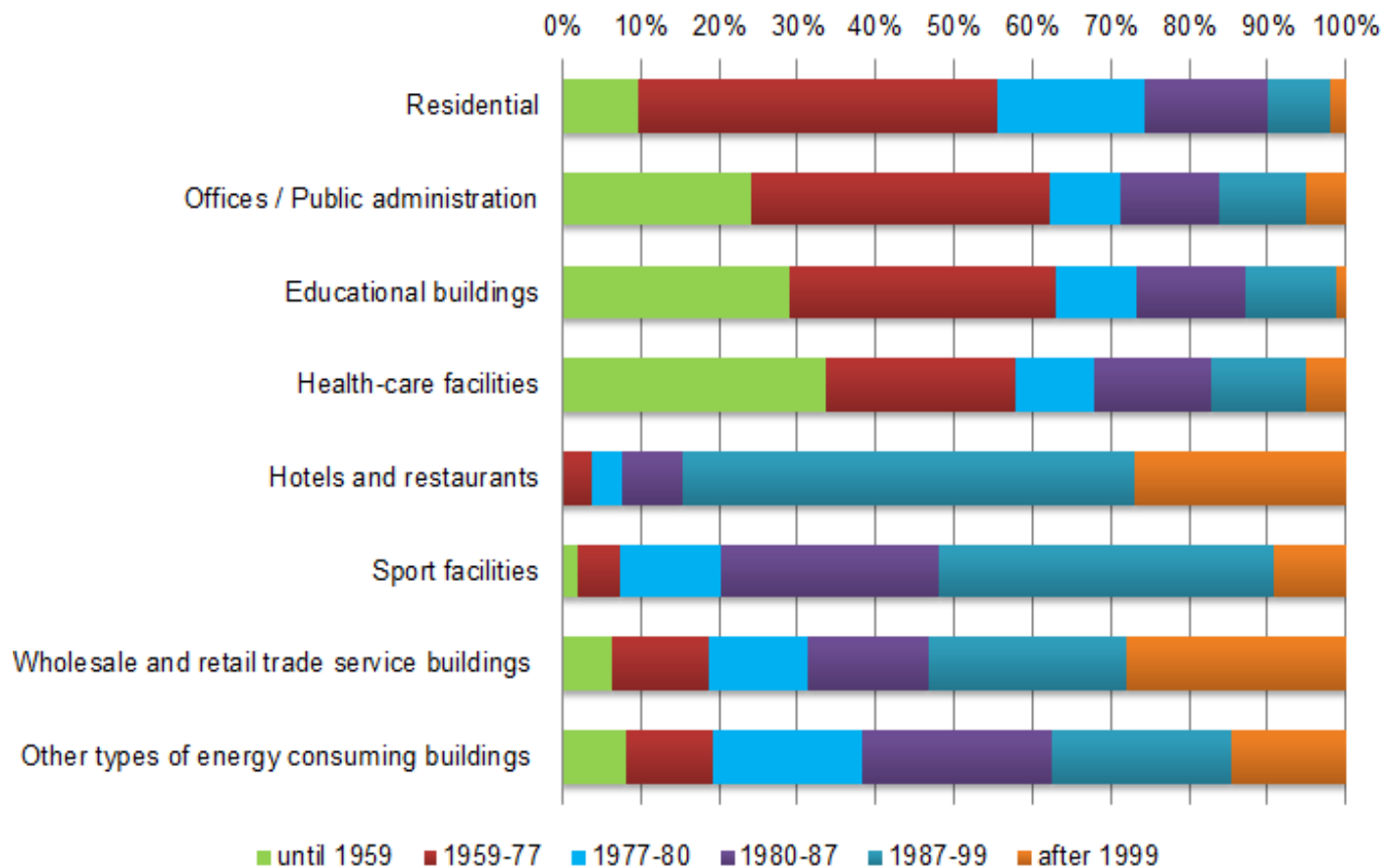


## Heated floor area of public buildings in Bulgaria

No	Category/sub-category	Num.	Total air-conditioned area (heated and/or cooled), m <sup>2</sup>
1	Residential (dormitories)	193	1 169 909
1.2	Service housing	18	61 200
1.3	Student housing	175	1 108 709
2	Offices /Public administration	211	551 290
2.1	Central Authorities	211	551 290
3	Educational buildings	3 617	13 398 225
3.1	Kindergartens	1 014	1 889 405
3.2	Schools	2 173	7 708 820
3.3	Universities/High schools	430	3 800 000
4	Health-care facilities	321	1 063 100
4.1	Hospitals	207	834 500
4.2	Other institutional care	114	228 600
5	Hotels and restaurants	26	243 000
5.1	Hotels	26	243 000
6	Sport facilities	54	122 000
7	Wholesale and retail trade service buildings	32	941 000
8	Other types of energy consuming buildings	157	291 400
<b>Total</b>		<b>4 611</b>	<b>17 779 924</b>

*SEDA database*

# Public buildings in Bulgaria by period of construction

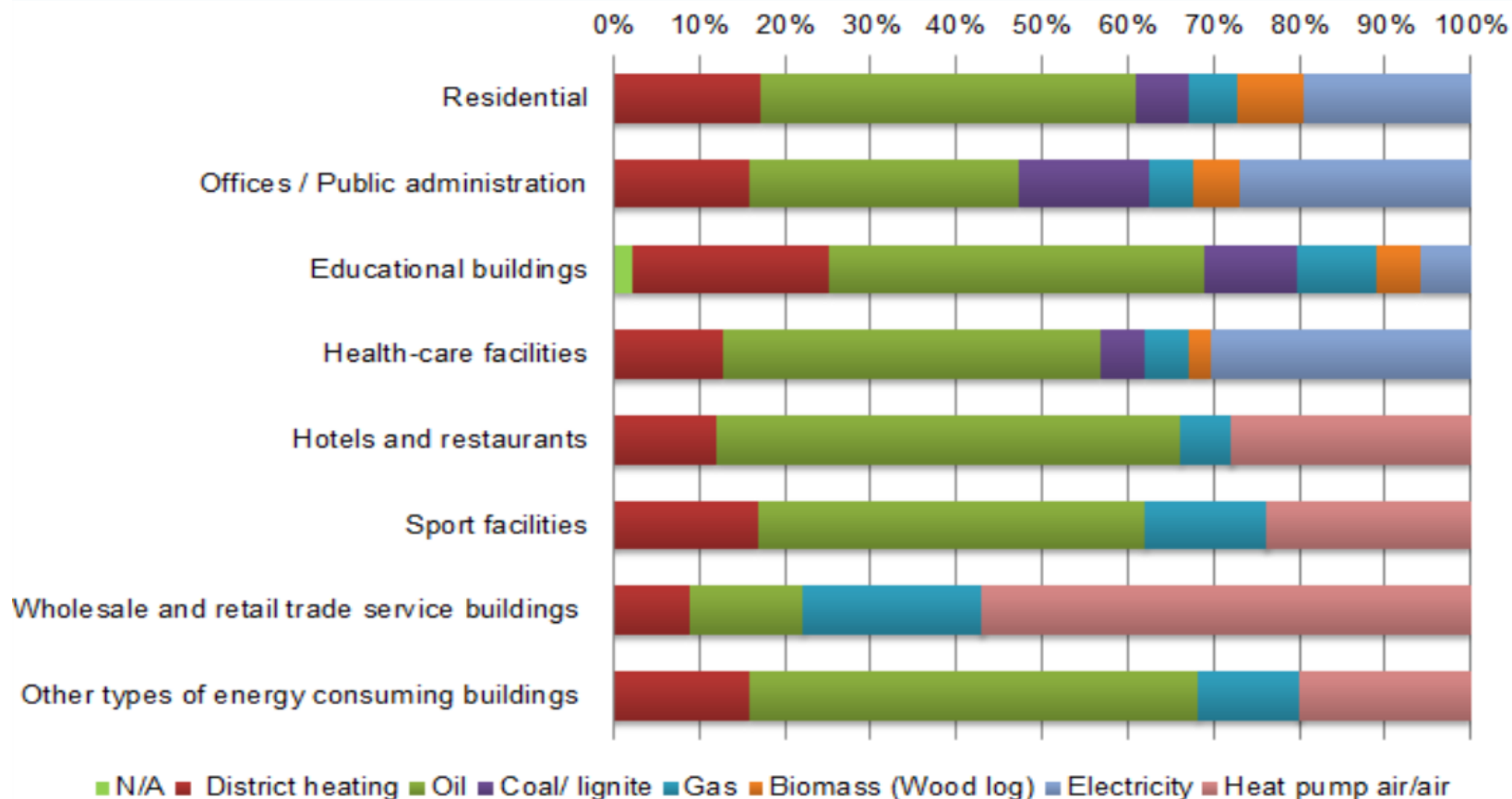




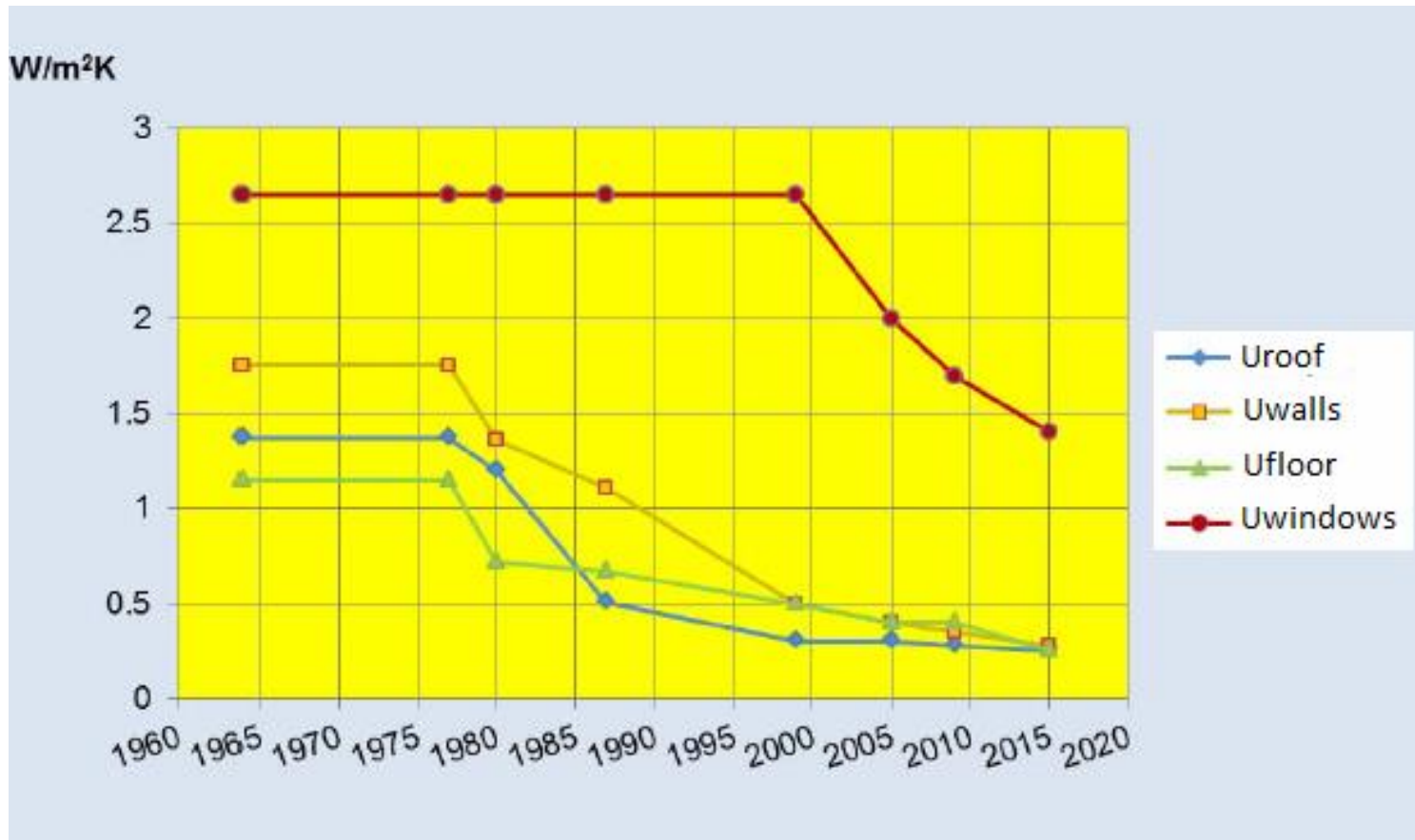
# Geometric characteristics of public buildings in Bulgaria

Category/sub-category	Compactness ratio [m-1]	Number of (above ground) floors (including ground-floor)
Residential (dormitories)	0,20	4,58
Offices/Public administration	0,30	4,30
Education	0,34	3,23
Health-care facilities	0,35	4,13
Hotels & restaurants	0,32	4,10
Sport facilities	0,30	1,80
Commercial	0,11	2,30
Other types	0,36	2,10

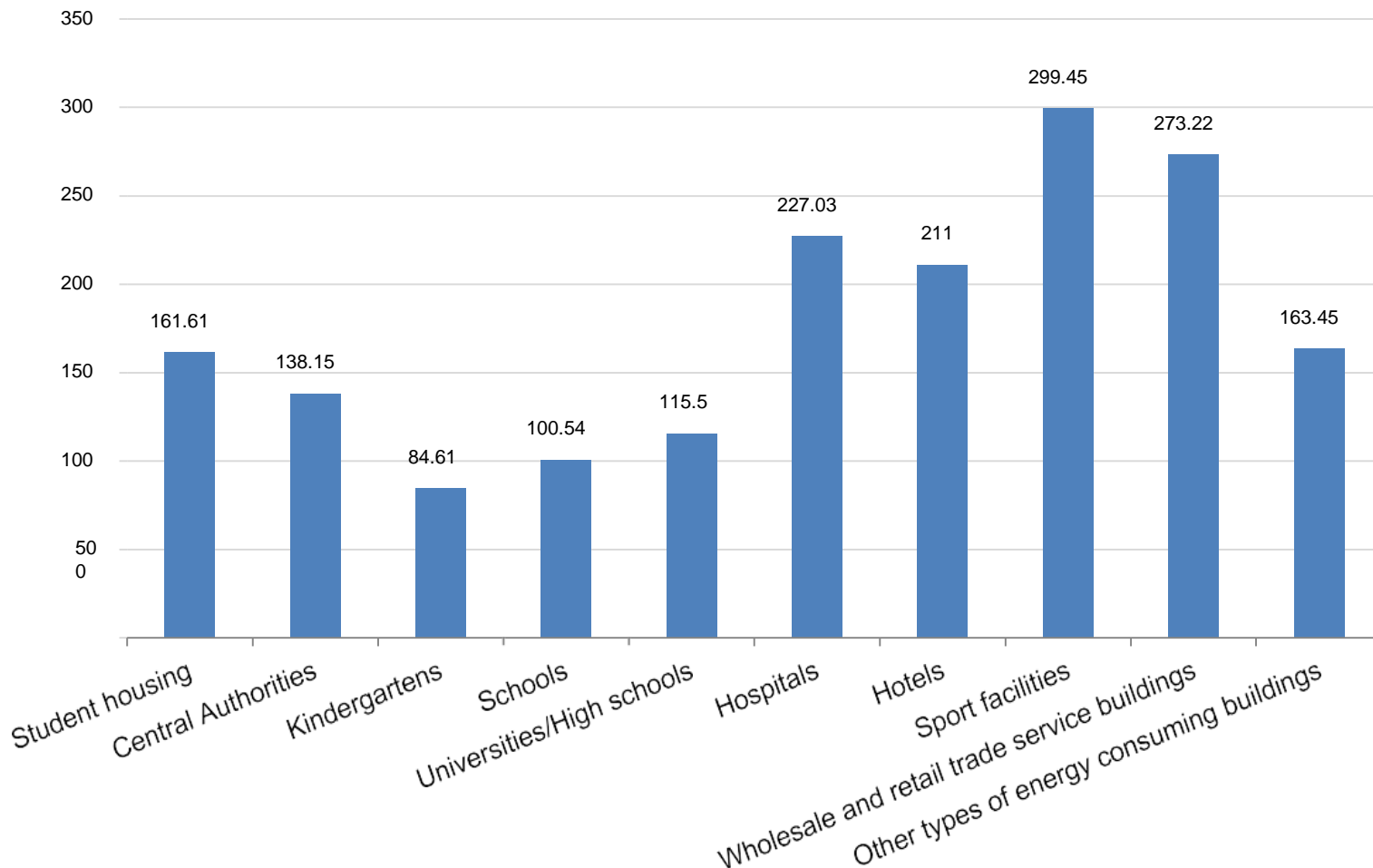
# Fuels and energy used in the public buildings in Bulgaria



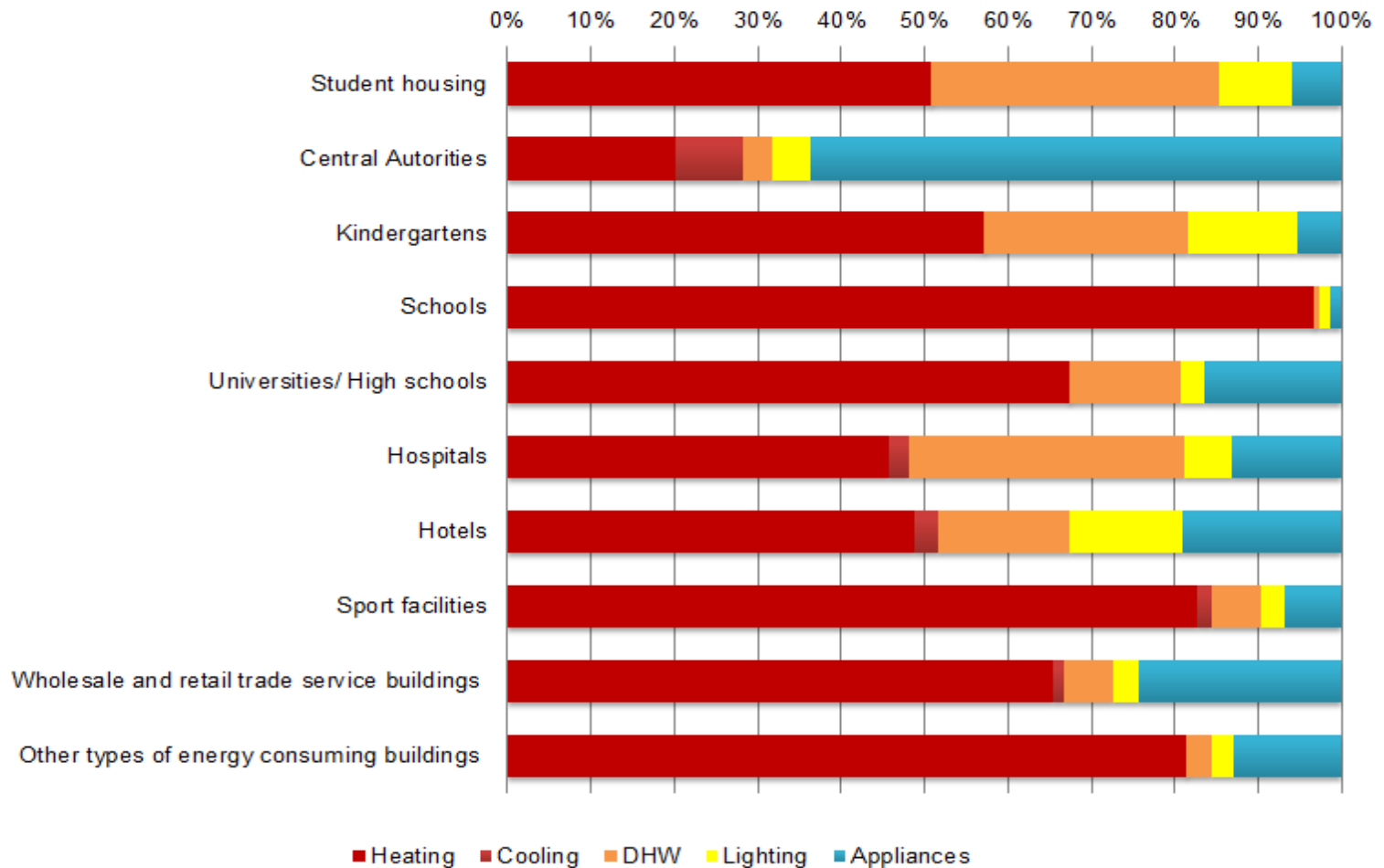
# Regulatory requirements for the heat transmission factor $U$ , $W/m^2K$ of the envelope components of buildings in Bulgaria



# Specific final energy consumption of reference public buildings in Bulgaria



# Consumers' shares in final energy consumption of reference public buildings in Bulgaria

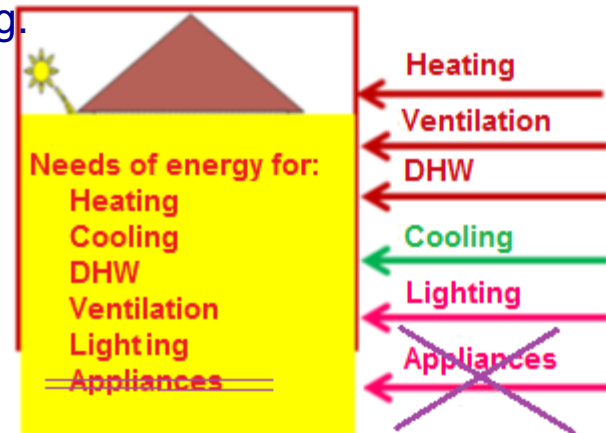
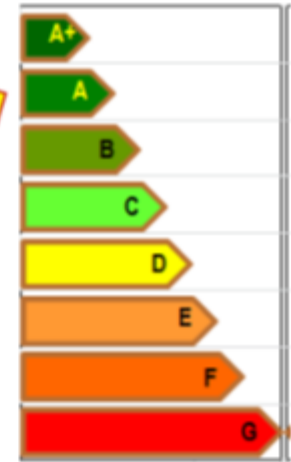


# Nearly zero-energy building – national definition

"Nearly zero-energy building" shall be a building which simultaneously fulfils the following conditions:

a) the energy consumption of the building, defined as primary energy, complies with Class A on the scale of energy consumption classes for buildings of the relevant type;

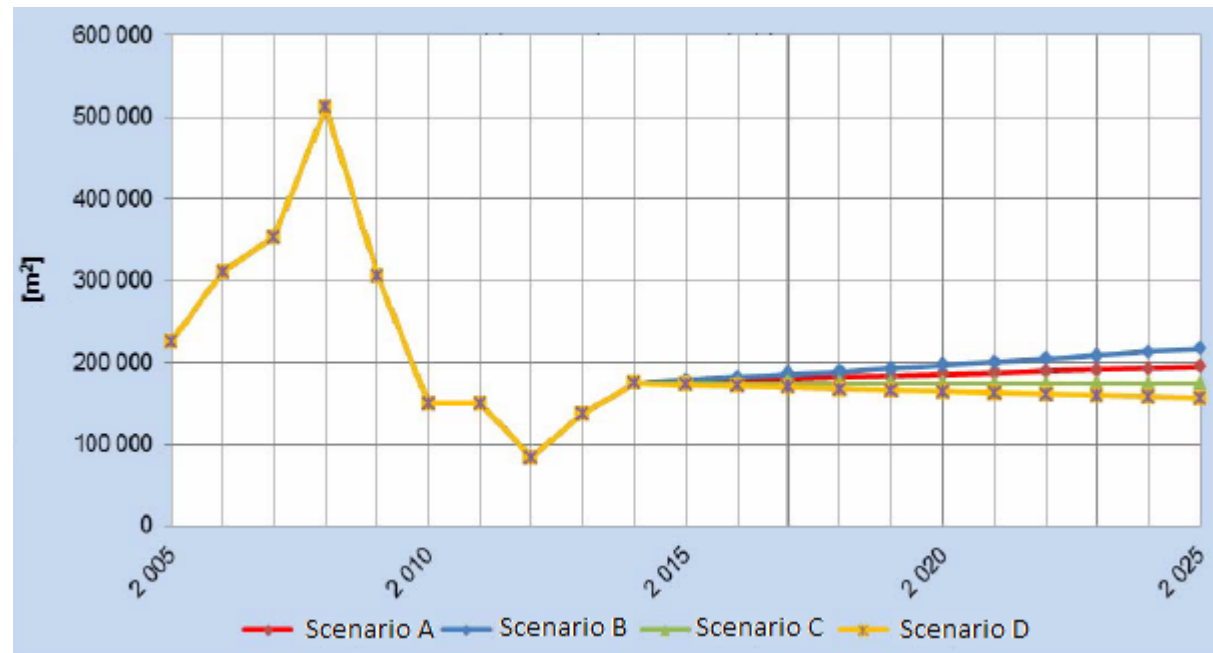
6) not less than 55% of the energy consumed (supplied) for heating, cooling, ventilation, domestic hot water and lighting is energy from renewable sources produced on-site or near the building.



# Outlook and scenarios for application of the national nZEB definition to new buildings

## New administrative buildings:

- Scenario A: baseline year 2014 and annual growth 1%;
- **Scenario B: baseline year 2014 and annual growth 2%;**
- Scenario C: baseline year 2014 and zero growth in the next years;
- Scenario D: baseline year 2014 and annual reduction 1%.



2016: 171 300 - 181 800 m<sup>2</sup>  
 2017: 169 600 - 193 000 m<sup>2</sup>  
 2018: 167 900 - 189 200 m<sup>2</sup>  
 2019: 166 200 - 193 000 m<sup>2</sup>  
 2020: 164 550 - 196 850 m<sup>2</sup>.



# National targets for achieving the requirements of the nZEB definition in the new buildings segment

Buildings	Gross floor area m <sup>2</sup>	Investment BGN	Savings FEC GWh	Savings tCO <sub>2</sub>
Administrative buildings	492 896	110 907 634	122,8	14 445,6
Residential buildings	74 570	17 474 562	13,8	3 314,9
Other buildings	140 598	31 385 202	36,9	4 722,8
<b>Total 2020</b>	<b>708 063</b>	<b>159 767 398</b>	<b>174</b>	<b>22 483</b>



# NEEAP 2014-2020. Energy efficiency policies and measures

## Buildings:

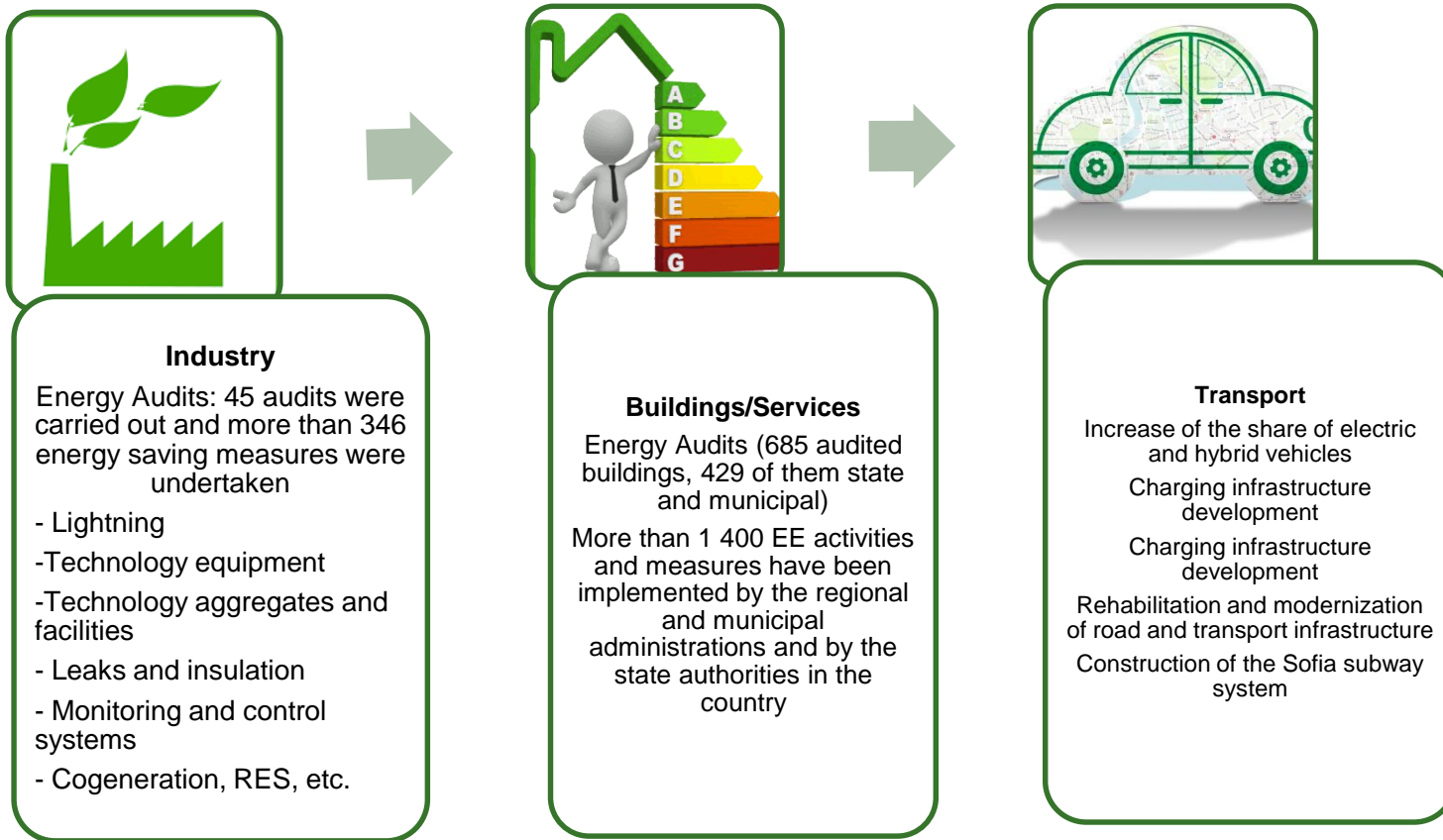
- Energy savings obligations for public buildings (up to 2016)
- Mandatory energy audits for all buildings with floor area more than 250 m<sup>2</sup>
- Mandatory inspection of water heating boilers and air conditioning systems
- National residential buildings renovation program
- National Nearly-zero Energy Buildings (nZEB) program
- State-owned buildings – mandatory renovation of 5%/ann of the total floor area



## The role of the regions and municipalities/Services:

- Mandatory Energy Efficiency Programs for regional and municipal administrations
- Energy audits for public lighting systems
- Energy efficiency management
- Mandatory annual reporting to SEDA
- Information and education campaigns

# NEEAP Annual report for 2018



- ✓ 600% increase in the number of electric and hybrid cars in the country for the past 5 years; in 2018 the start of the production of Bulgarian hybrid and fully electric cars was announced
- ✓ Municipal authorities efforts on local level

# NEEAP Annual report for 2018 - Financing Energy Efficiency

## Industry



☐ "Innovation and Competitiveness" OP

☐ 165 projects in SMEs

☐ 104 mln. BGN grant support

## Buildings/Services



☐ „Regions in Growth“ OP - 31 contracts for public buildings and households; 22 mln. BGN grant support

☐ **EE and RES Fund:** 9 loan agreements; 3 mln. BGN.

☐ **National Trust EcoFund**  
- Up to 85% grant  
- 14 projects EE in buildings,  
- scheme for encouraging the use of electric cars – 8 cars for public institutions

## Households



☐ **Energy Efficiency of Multi-Family Residential Buildings National Programme:**

- 100% grant
- 511 renovated residential buildings
- 560 mln. BGN

☐ **Residential Energy Efficiency Credit Line (REECL):**

- 10-15% grant
- 1 031 measures
- 5 mln. BGN



## EE of Buildings – Results 2018

### State and municipal EE Programs

### Mandatory state and municipal EE programs and energy management

209 EE projects by central government bodies  
1,233 projects / measures by municipal and regional administrations  
98 GWh energy savings  
46 kt CO<sub>2</sub> savings

### Central administration

### Annual renovation of 5% of the gross floor area of all buildings owns or occupied by the central administration

- 139 066 m<sup>2</sup> renovated in 2018 (5,47%)
- Up to 1 January 2019 – 1,85 mln. m<sup>2</sup> do not meet the energy performance requirements of Article 5 (1) of Directive 2012/27/EC

### Buildings audits

### Mandatory energy performance certification of buildings

- 685 audited buildings
- 1 842 901 m<sup>2</sup>
- 102 GWh saved energy

*SEDA – Annual Report on NEEAP implementation, 2019*

**Thank you for the kind patience!**

**Vielen Dank für Ihre Geduld! 😊**



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