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BUILDING AND REGULATIONS IN THE FIELD OF ENERGY EFFICIENCY AND RES IN SERBIA, REGIONAL COUNTRIES AND EU

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CONTENTS

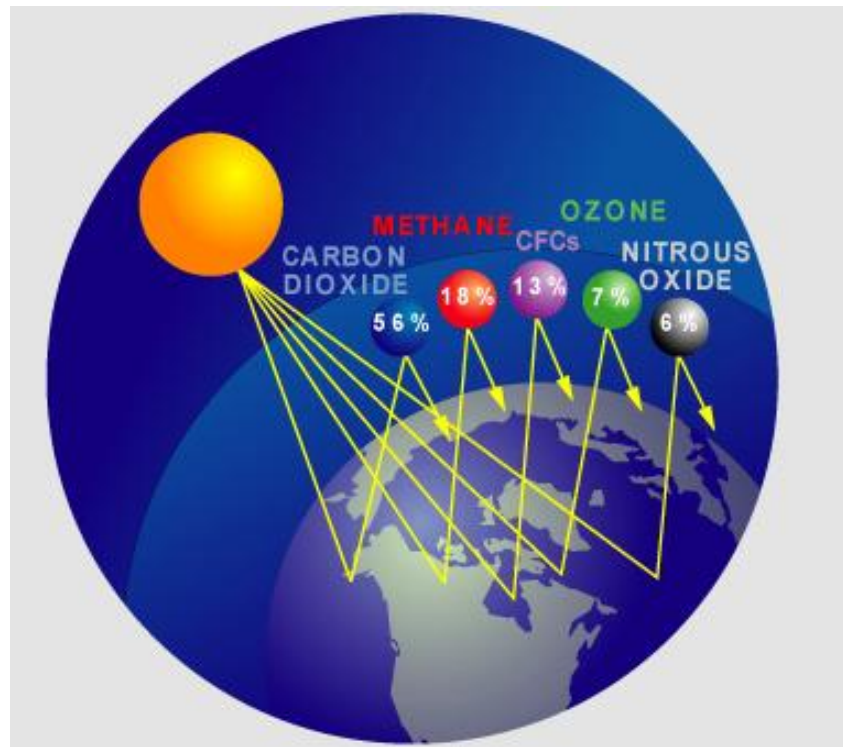


- **INTRODUCTION**
- **REGULATION IN SERBIA**
- **REGULATION IN NEIGHBORING COUNTRIES**
- **EUROPEAN UNION REGULATION**
- **CONCLUSIONS AND RECOMMENDATIONS**

INTRODUCTION

The aims of the EE and RES regulation is reducing:

- use of fossil-fuelled energy and***
- GHG emissions***



INTRODUCTION

EE and RES in the strategies and legal regulation of the RS, the neighboring countries, and EU.



INTRODUCTION

Participation of RES in the overall energy production is at fault level, excluding big HPP.

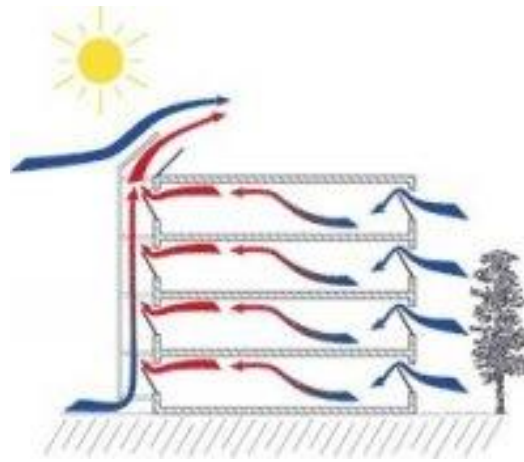


INTRODUCTION

Buildings use around 50% of energy consumption.

To improve EE in residential housing and urban settlements it is necessary:

- to implement principles of bioclimatic planning and design,***
- to use RES.***

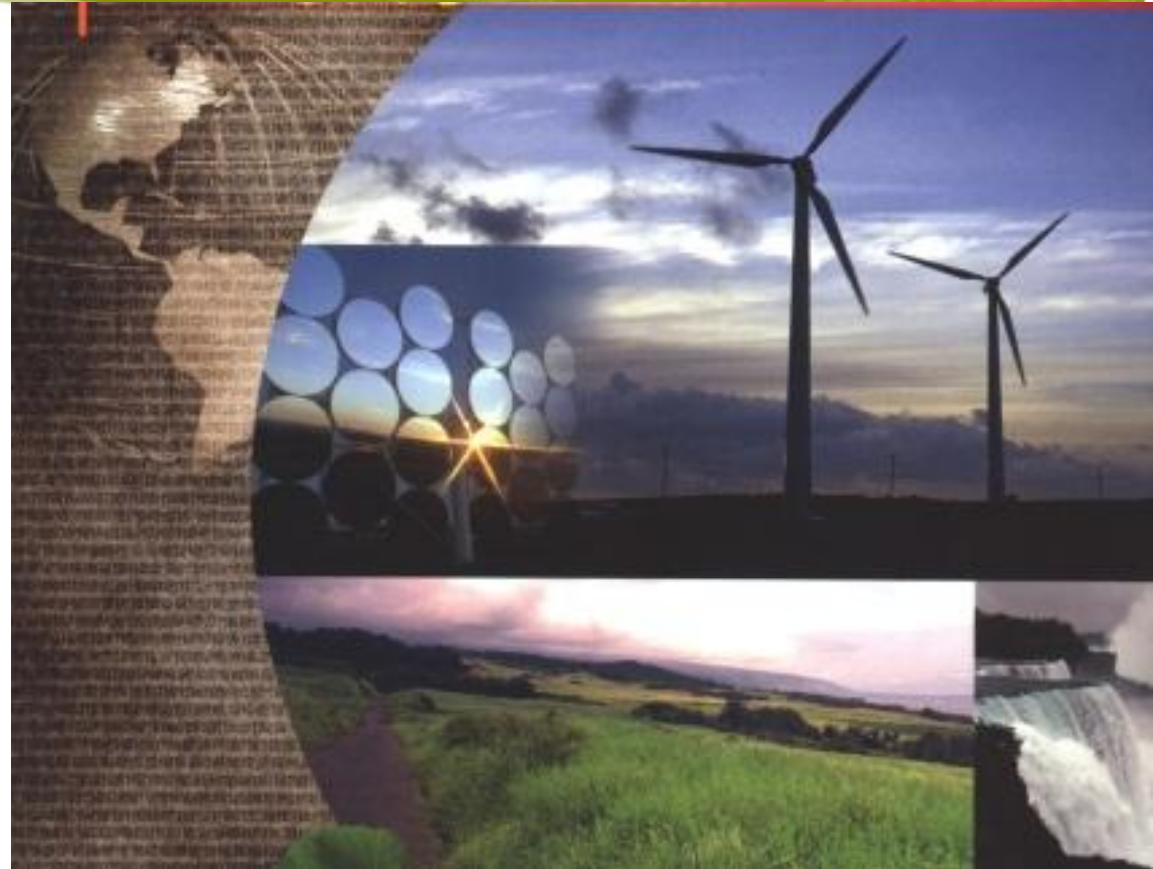


INTRODUCTION

Serbia has potential for energy production from RES.

Potentials of RES in Serbia:

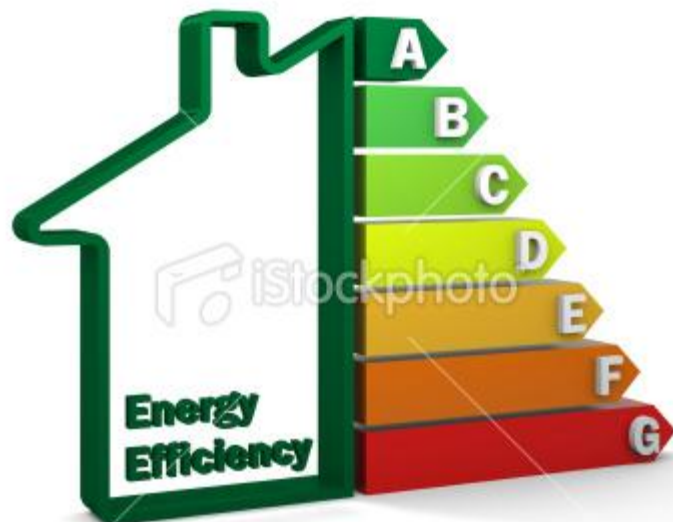
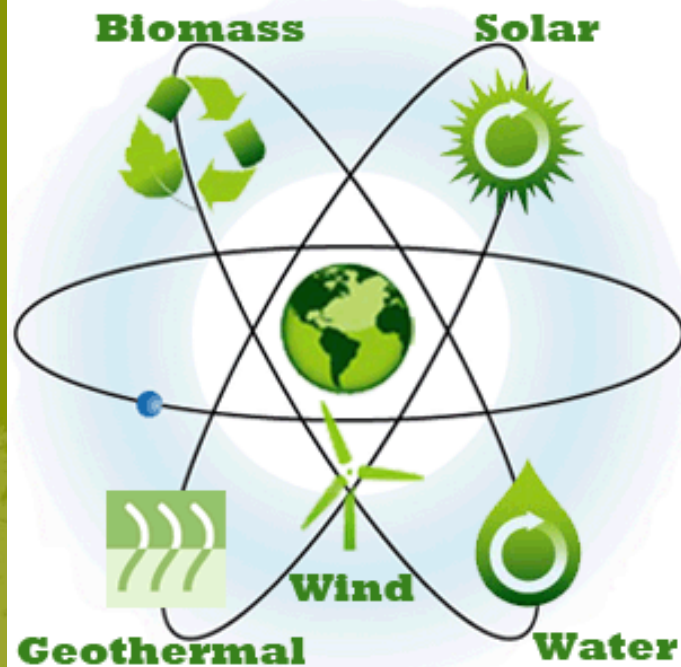
- biomass energy,***
- small hydro power plants,***
- solar energy,***
- wind energy and***
- geothermal energy.***



INTRODUCTION



Technical potential of the RES in the RS is estimated to be over 4.3 million tons equivalent in oil per year.



INTRODUCTION

***Regulation,
national strategies,
legislation
in the field of EE and
RES
in Serbia, the region
and the EU .***

REGULATION IN SERBIA

Ratified international documents

A. Agreement regarding the establishment of energy communities



Serbia's long-term commitments regarding essential reforms in the energy sector.

REGULATION IN SERBIA

Ratified international documents

A. Agreement regarding the establishment of energy communities



Serbia and other countries of the region signed a agreement for establishing an energy community.

REGULATION IN SERBIA

Ratified international documents

A. Agreement regarding the establishment of energy communities

The agreement is the first by-law, which the countries in the region have committed themselves to in order to implement the regulations of the European Union.



REGULATION IN SERBIA

Ratified international documents

A. Agreement regarding the establishment of energy communities

This by-law harmonizes the national legislations of signatory countries with the EU norms in the fields of energy supply, competition, environmental protection and the use of renewable energy sources.

REGULATION IN SERBIA

Ratified international documents

B. Kyoto Protocol in Serbia

The Kyoto Protocol states that the emission of GHG should be reduced by 2012 on average by 5.2% below its level in 1990.



B. Kyoto Protocol in Serbia



***The Kyoto Protocol
allows the transfer of
clean technologies
from the developed
into less developed
countries.***



REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

A. Law on Energy

Aims of the energy policy:

- *creating economic, business and financial conditions for energy production from RES*
- *combined production of electric and thermal energy.*



The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

B. Serbia's Strategy of Energy Development by 2015

[illegible]

REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

B. Serbia's Strategy of Energy Development by 2015

This Strategy envisions incentive measures for investing into energy facilities using RES. The Strategy of Energy Development by 2015 is a good base for creating a National program for RES use.



REGULATION IN SERBIA

**The legal and strategic framework for measures in the fields
of EE and RES in the Republic of Serbia**

***C. Program for achieving the Strategy of Energy
Development of the Republic of Serbia by 2015***

**The Future of
Renewable
Energy**

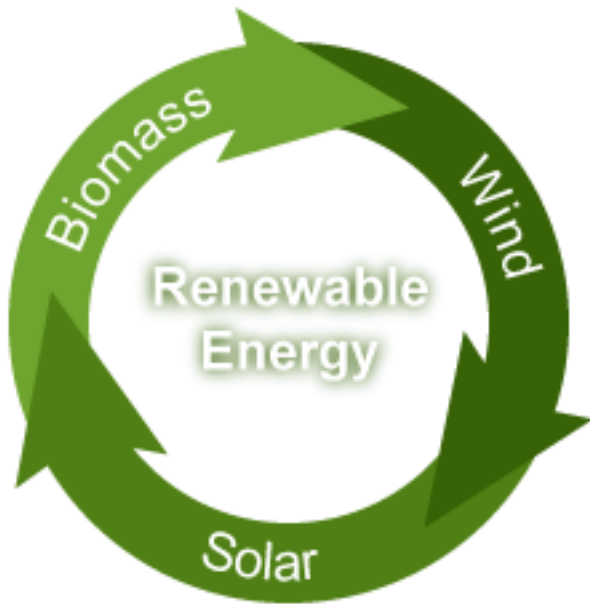


**The Government of Serbia has
adopted the Program for
achieving the Strategy of Energy
Development in the Republic of
Serbia for the period from 2007
to 2015.**

REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

C. Program for achieving the Strategy of Energy Development of the Republic of Serbia by 2015



This Program determines the RES capacities, conditions, methods, dynamics and measures of achieving the Strategy of Energy Development and environmental protection in energy supply.

REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

C. Program for achieving the Strategy of Energy Development of the Republic of Serbia by 2015

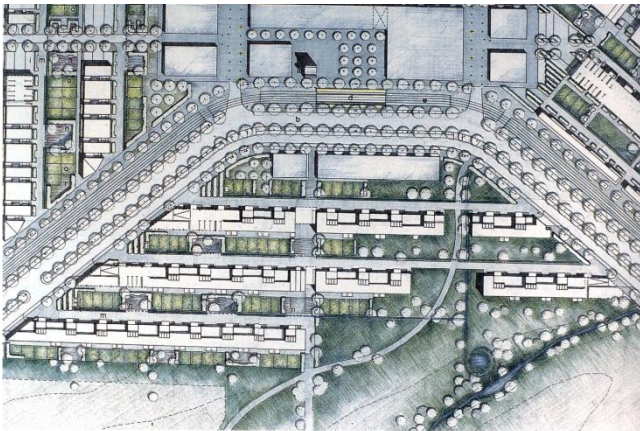
The instruments for realizing the goals of Serbia's energy policy are:

- legislative instruments,**
- institutional instruments,**
- organizational instruments,**
- economic-financial and**
- system instruments.**

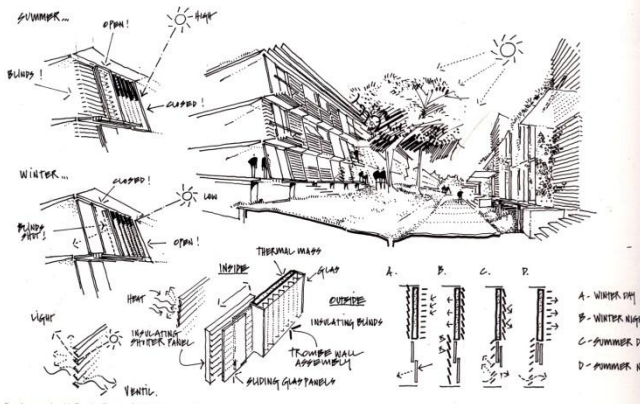
REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

D. Law on planning and construction/building



Architect: Sir Norman Foster and Partners
Environmental Engineer: Atelier 10
Housing Trust: Neue Heimat



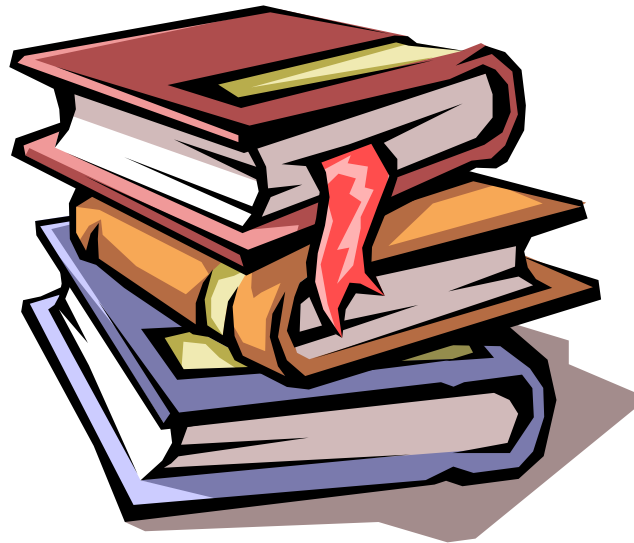
Law on planning and construction from 2009 is the 1st non-energy law with a concept for improving energy efficiency.

REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

D. Law on planning and construction/building

In the Law on Planning and Construction, improving energy efficiency is included in the articles: 4, 201, and 221.



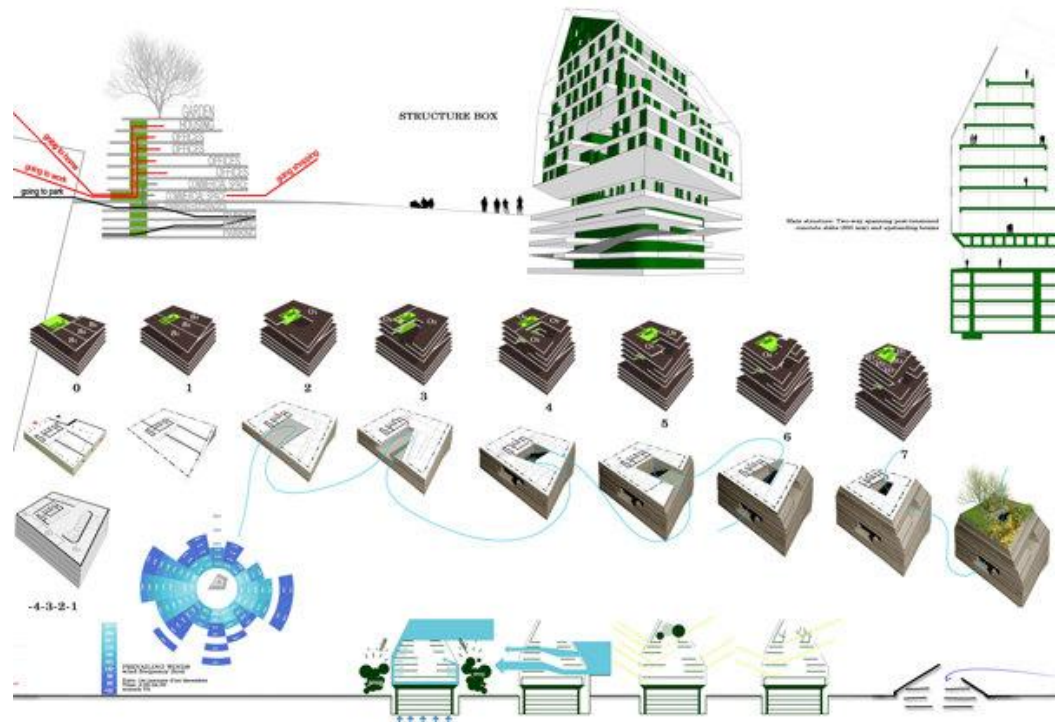
REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

D. Law on planning and construction/building

To secure investments it is necessary to:

- define the urban planning conditions for constructing the plants that use RES,*
- introduce EE in building.*



REGULATION IN SERBIA

The legal and strategic framework for measures in the fields of EE and RES in the Republic of Serbia

D. Law on planning and construction/building

The law prescribes the measures of energy efficiency within the individual levels of spatial and urban plans.

REGULATION IN SERBIA

E. The Rulebook on energy efficiency of buildings

The standards of the *Rulebook* are mandatory in the construction of:

- new buildings,**
- reconstruction, restoration and adaptation of existing buildings,**
- cultural goods**
- buildings that are sold or rented.**

REGULATION IN SERBIA

E. The Rulebook on energy efficiency of buildings

In The Rulebook on EE of buildings 10 categories of buildings are listed with determined energy properties.



REGULATION IN SERBIA

E. The Rulebook on energy efficiency of buildings

Necessary technical documentation:

- report on EE of a building,***
- request for issuance of a building permit, or***
- a decision for adaptation and energy reconstruction.***



REGULATION IN SERBIA

E. The Rulebook on energy efficiency of buildings

The framework for the Rulebook on EE of Buildings relies on:

- Domestic regulation**
- European regulation**
- Decision of Energy Community MIS (Management Information System)**
- Experiences of EU countries**
- Experiences of neighboring countries.**

REGULATION IN SERBIA

F. The Rulebook on the conditions, content and manner of issuing a certificate of energy properties of buildings

The Certificate of energy properties of buildings – Energy passport contains:

- the calculated values of energy use within a specific category of building,*
- the energy grade,*
- the recommendations for improving the energy properties of buildings.*



REGULATION IN SERBIA

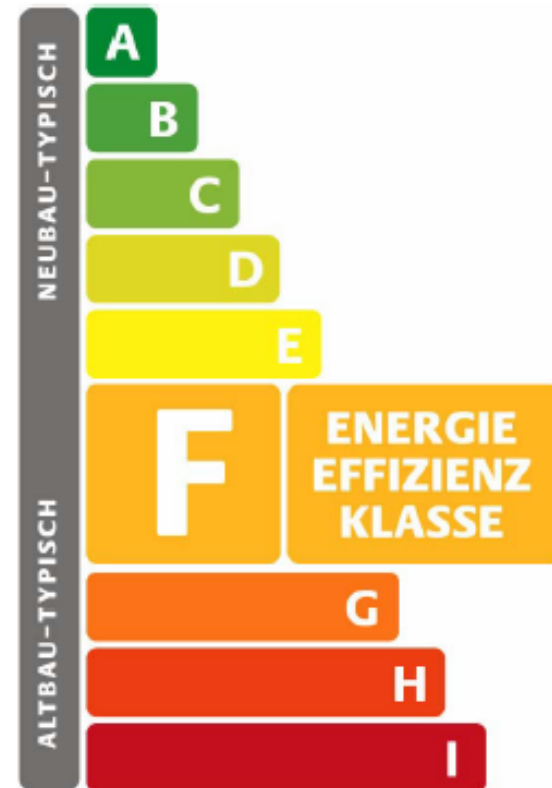
F. The Rulebook on the conditions, content and manner of issuing a certificate of energy properties of buildings



Buildings are classified into eight energy grades according to an energy scale from „A+“, being the most favorable, to „G“, as the least favorable grade.


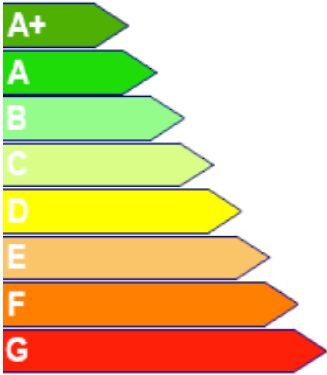

Energy passports are part of the technical documentation submitted with the request for the issuance of a certificate of occupancy.

A	0 to 80 kWh/(m ² a)
B	81 to 110 kWh/(m ² a)
C	111 to 150 kWh/(m ² a)
D	151 to 200 kWh/(m ² a)
E	201 to 250 kWh/(m ² a)
F	251 to 300 kWh/ (m ² a)
G	301 to 350 kWh/ (m ² a)
H	351 to 400 kWh/(m ² a)
I	401 kWh/(m ² a) and more



Energy passports include:

- General data and information on energy grade;
- Data on climate, thermal-technical systems and elements of the thermal envelope;
- Energy needs and calculated energy use;
- Proposal of measures for improving the EE of buildings;
- Explanation of the technical terms in use.

	ЗГРАДА		<input type="checkbox"/> нова <input checked="" type="checkbox"/> постојећа	
	Категорија зграде		1. Зграда са једним станом 2. Зграда са више станова	
	Место, адреса:			
	Катастарска парцела:			
	Власник/инвеститор/правни заступник:			
	Извођач:			
	Година изградње:			
	Година реконструкције/енергетске санације:			
	Нето површина A_N [m ²]:			
	Прорачун		$Q_{H,nd,rel}$ [%] 45	$Q_{H,nd}$ [kWh/(m ² a)] 34
		≤ 15 ≤ 25 ≤ 50 ≤ 100 ≤ 150 ≤ 200 ≤ 250 > 250		
Подаци о лицу које је издало енергетски пасош				
Овашћена организација:				
Потпис овлашћеног лица и печат организације:				
_____ М.П. (потпис)				
Одговорни инжењер:				
Потпис и печат одговорног инжењера ЕЕ :				
_____ М.П. (потпис)				
Број пасоша:				
Датум издавања/рок важења:				

F. The Rulebook on the conditions, content and manner of issuing a certificate of energy properties of buildings

Energy passports

Since 1st October 2012, this Rulebook states that no building in Serbia will receive a certificate of occupancy if it does not have an Energy passport (certificate).

Energy passports

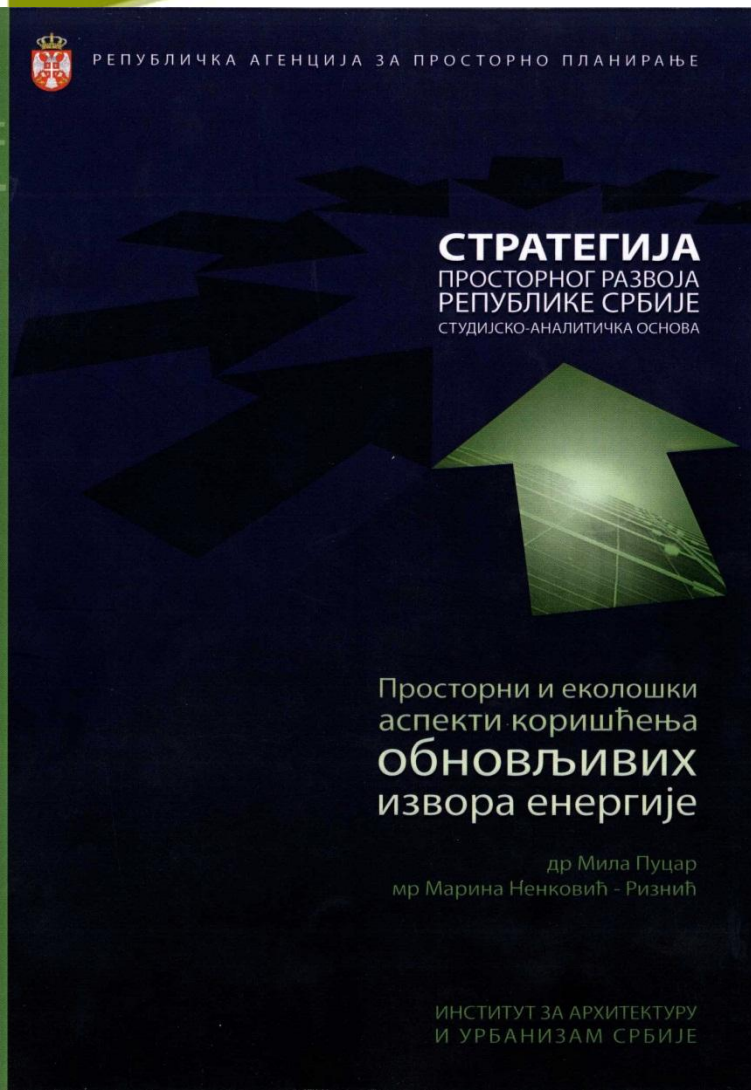
- *Engineers for EE are trained during 40 lessons.*
- *They make a project on EE for an existing building and defend it before a panel.*
- *After they take an exam and get a license.*



Energy passports

Energy passports for buildings are issued by competent institutions with at least 2 employed engineers with EE licenses. These Institutions must be authorized by the Ministry of Building and Urban Planning to issue certificates. No institution has been authorized so far, so no energy passports have been issued yet.

G. Spatial Plan of the Republic of Serbia 2010-2014-2021



The Spatial Plan includes:

- STUDY-ANALYTICAL FRAMEWORKS of the STRATEGY of SPATIAL PLANNING of the REPUBLIC of SERBIA,
- RENEWABLE ENERGY SOURCES AND ENERGY EFFICIENCY
- SPATIAL AND ECOLOGICAL ASPECTS OF USE

Spatial Plan of the Republic of Serbia 2010-2014-2021 (SPRS)

Strategies Environmental Impact Assessment of SPRS

РЕПУБЛИКА СРБИЈА
МИНИСТАРСТВО ЖИВОТНЕ СРЕДИНЕ
И ПРОСТОРНОГ ПЛАНИРАЊА
РЕПУБЛИЧКА АГЕНЦИЈА
ЗА ПРОСТОРНО ПЛАНИРАЊЕ



**ПРОСТОРНИ
ПЛАН РЕПУБЛИКЕ
СРБИЈЕ**
2010 – 2014 – 2020

РЕПУБЛИКА СРБИЈА
МИНИСТАРСТВО ЖИВОТНЕ СРЕДИНЕ
И ПРОСТОРНОГ ПЛАНИРАЊА
РЕПУБЛИЧКА АГЕНЦИЈА
ЗА ПРОСТОРНО ПЛАНИРАЊЕ



**СТРАТЕШКА
ПРОЦЕНА УТИЦАЈА
ПРОСТОРНОГ ПЛАНА
РЕПУБЛИКЕ СРБИЈЕ
НА ЖИВОТНУ
СРЕДИНУ**

**ПРОСТОРНИ
ПЛАН РЕПУБЛИКЕ
СРБИЈЕ**
2010 – 2014 – 2020

G. Spatial Plan of the Republic of Serbia 2010-2014-2021

***Spatial Plan of the Republic of Serbia
analyzes:***

- possibilities of EE implementation,***
- potentials of RES.***



Spatial Plan of the Republic of Serbia 2010-2014-2021 (SPRS)

Law on SPRS includes the following aspects:

**RENEWABLE ENERGY SOURCES –
NATURAL RESOURCES**

**USE OF RENEWABLE ENERGY SOURCES –
SUSTAINABLE TECHNICAL
INFRASTRUCTURE**

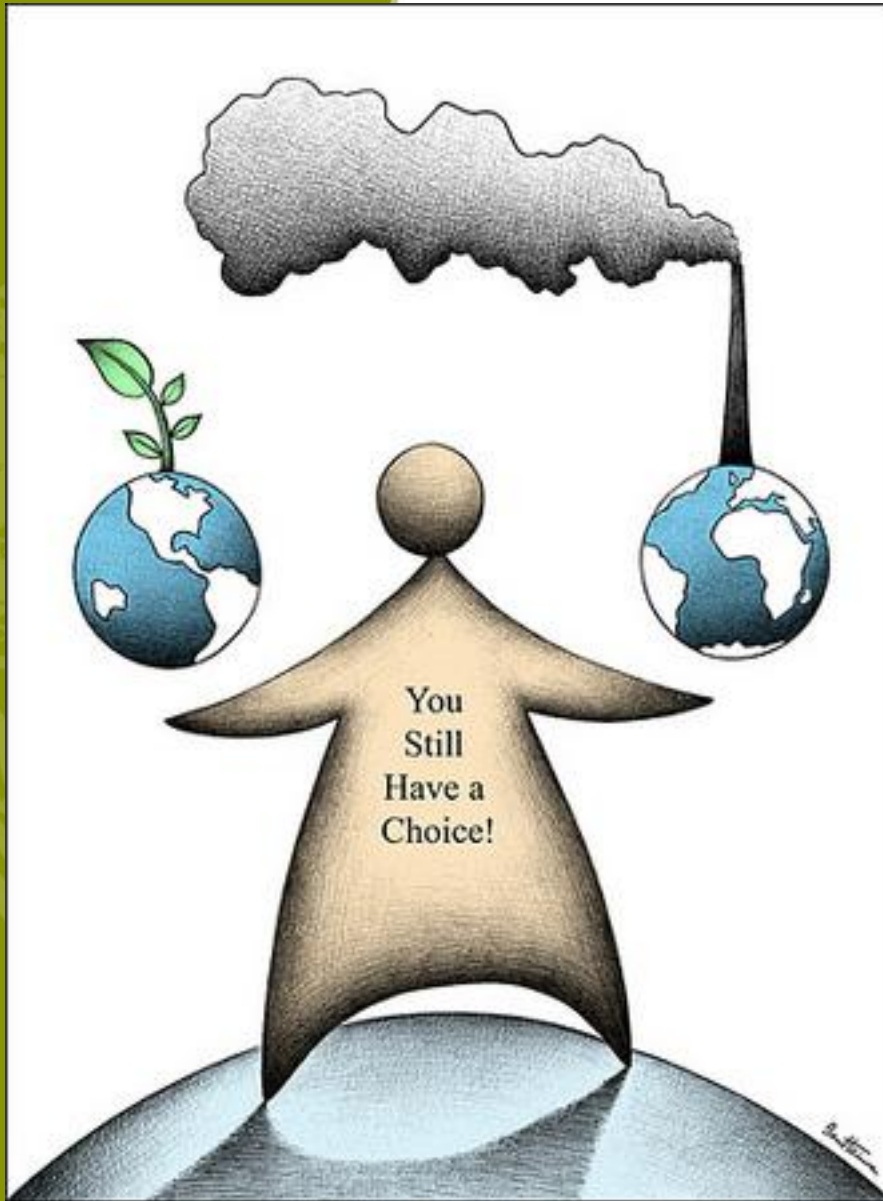
**ENERGY EFFICIENCY IN BUILDING,
INDUSTRY, TRANSPORTATION AND
MUNICIPAL WASTE SERVICES**

Spatial Plan of the Republic of Serbia 2010-2014-2021 (SPRS)

The main problems in the implementation of RES, are:

- lack of reliable data on the potentials of RES,**
- insufficient number of programs and projects that attract domestic and foreign investments,**
- inconsistency of some RES and dependency on climate conditions,**
- unequal spatial coverage,**
- relatively low current price of electricity**
- often unregulated ownership relations.**

H. National Strategy of Sustainable Development



National Strategy of Sustainable Development (NSOR, 2008) defines the vision of the Development of Serbia until 2017 (refers to the period from 2009 to 2017).

I. Regulation on the incentive measures for the production of electric energy by using renewable energy sources and combining power and thermal energy production

Incentive measures for a wider use of RES have been adopted since 1st January 2010.

Incentive redemption prices for electricity from renewable sources are in accordance with the model „feed-in tariff“.



I. Regulation on the incentive measures for the production of electric energy by using renewable energy sources and combining power and thermal energy production

Incentive redemption prices for electricity produced by:

- wind: 9.5 c€,***
- solar energy: 23 c€,***
- HPP (mini hydro power plants), from 0,5 MW to 10 MW:
from 9,7 to 5,9 c€,***
- powerplant on biomass, from 0,5 MW to 10 MW:
from 13,6 to 11,4 c€,***
- powerplant on biogas, from 0,2 MW over 2 MW:
from 16,0 to 12,0 c€,***
- powerplant on landfill gas 6,7 c€,***
- powerplant on geothermal energy 7,5 c€.***

J. White Paper of Electric Power Industry of Serbia

**Around 70 per cent of
electric energy is
produced from lignite.
Serbia's potential in
economic sustainability
is limited.**



БЕЛА КЊИГА ЕЛЕКТРОПРИВРЕДЕ СРБИЈЕ



J. White Paper of Electric Power Industry of Serbia

One of the key categories presented in *White Paper of Electric Power Industry of Serbia*

is the expansion of the portfolio to include RES. The document deals with:

- the current strategic framework,**
- medium-term goals**
- the projects for achieving these goals.**



БЕЛА КЊИГА ЕЛЕКТРОПРИВРЕДЕ СРБИЈЕ



Institutional network

Institutional network:

- **Ministry of energy, development and environmental protection**
- **Ministry of natural resources, mining and spatial planning**
- **Ministry of Building and Urban Planning,**
- **Secretariat for Energy and Mineral resources,**
- **Agency for Energy,**
- **Agency for Energy Efficiency,**
- **Regional centers for energy,**
- **Association for Energy and Mining of the Serbian Chamber of Commerce, Committee for Energy Efficiency,**
- **Standing Conference of Towns and Municipalities,**
- **Zero Emission Network**
- **Chamber of Serbian Chamber of Engineers.**

REGULATION IN NEIGHBORING COUNTRIES

A. Bosnia and Herzegovina -Republic of Srpska

In B&H energy policy is carried out on the level of entities.

Institutional-legislative framework of B&H is lagging in the field of energy supply.



REGULATION IN NEIGHBORING COUNTRIES

A. Bosnia and Herzegovina -Republic of Srpska

Scientific-research projects are supported in the field of energy efficiency. One of these programs is „Energy efficiency in building“.

It determines:

- guidelines and recommendations for improving energy efficiency of existing buildings, and***
- new energy efficient buildings.***

REGULATION IN NEIGHBORING COUNTRIES

A. Bosnia and Herzegovina -Republic of Srpska

In the field of EE of Republic of Srpska SRP "Energy efficiency in building" offers:

-standards and normatives for further projects.



REGULATION IN NEIGHBORING COUNTRIES

B. Croatia

Universities, institutes and professional organizations are authorized to train engineers for licenses for energy certification of buildings.

There are 9 institutions authorized by the Ministry of environment, spatial planning and building to carry out the Program decisions.



REGULATION IN NEIGHBORING COUNTRIES

B. Croatia

Project "Energy efficiency promotion in Croatia" within the project "Sustainable energy management in towns and districts in Republic of Croatia" is carried out in several steps that implement the Project with the support of UNDP experts.



REGULATION IN NEIGHBORING COUNTRIES

C. Macedonia

Macedonia has adopted:

- the National Strategic Plans for Energy Efficiency***
- the National Action Plan for Energy Efficiency for the period 2009–2016 and***
- the Law on Energy from 2006 and Law on Planning and Building from 2009.***



REGULATION IN NEIGHBORING COUNTRIES

C. Macedonia

In Macedonia, on the local level, most municipalities have no departments nor individuals that only deal with energy efficiency and RES, and only few departments have plans for energy development.



REGULATION IN NEIGHBORING COUNTRIES

D. Montenegro

In Montenegro, several laws and documents have been passed that define:

- energy efficiency of buildings,**
- energy audits,**
- ways of performing energy audits,**
- Building Certification,**
- renewable energy sources,**
- incentives for legal and natural persons that use RES and**
- incentives for energy efficiency projects.**

REGULATION IN NEIGHBORING COUNTRIES

D. Montenegro

In Montenegro the training on energy certification of buildings has started in 2010. Training is organized in educational institutions – faculties (Architectural faculty and Mechanical Engineering Faculty in Podgorica) accredited for trainings experts for EE. Rulebooks on EE of buildings and certification of buildings have not been passed yet.

EUROPEAN UNION REGULATION

In the European Union, projects including energy efficiency are gaining importance, and their results should lead to a significant reduction in the emission of greenhouse gases in the following decades. Energy is traditionally one of the most important fields of the European Union.

EUROPEAN UNION REGULATION

The energy policy of the European Union is linked to many other social fields, like economic development, standard of living, sustainable development and environmental protection.

The energy sector regulation is still one of the most important fields of activity of EU institutions.



EUROPEAN UNION REGULATION

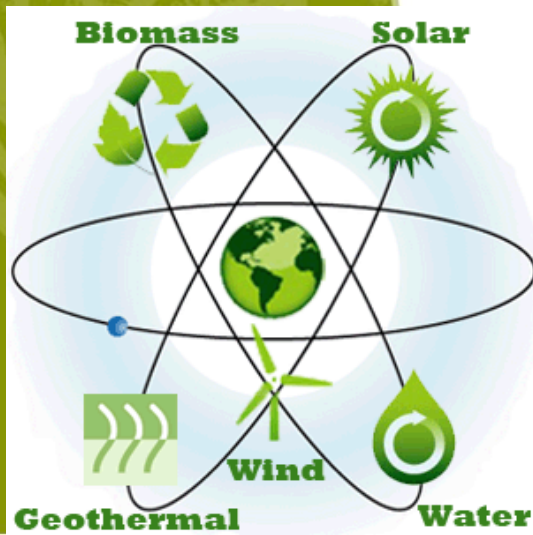
Regulation in the field of energy is important for reduction of poverty, consumer protection, and development of social relations and general capacity of member states to develop their social systems. The main goal of the European Union energy policy is safe, competitive and sustainable energy supply of the economy and population.

EUROPEAN UNION REGULATION

The goal of EU energy policy is

20/20/20. It should be achieved by 2020:

- to increase the use of renewable energy sources in the overall energy consumption for 20%;***
- to reduce the level of greenhouse gas emissions by 20%;***
- to increase energy efficiency by 20%.***



EUROPEAN UNION REGULATION

***Directive on the energy performance of buildings (EPBD)
2002/91/EC, Directive 2010/31/EC***

***This Directive defines the general framework
for the method of calculating energy
performances of buildings.***



EUROPEAN UNION REGULATION

***Directive on the energy performance of buildings (EPBD)
2002/91/EC, Directive 2010/31/EC***

***Reconstruction of existing buildings to
improve energy performances must
depend on the economic effects.***



EUROPEAN UNION REGULATION

Directive 2009/28/EC on the promotion of electricity produced from renewable energy sources

The Directive on renewable energy sets binding national objectives, which the EU member-states should achieve through the promotion of renewable energy in the sectors of electric power, heating and cooling and in the transportation sector.



CONCLUSIONS AND RECOMMENDATIONS



Although all the documents and regulations recognize EE and RES as important elements of energy policy, there is still a lack of rules regulating concrete measures for economy and public subjects.



CONCLUSIONS AND RECOMMENDATIONS

Serbia, by joining the Energy Community, is obliged to adapt to the system of energy use management. It is necessary to launch an initiative for the establishment of a National network for RES management and efficient energy use.

CONCLUSIONS AND RECOMMENDATIONS

Due to the awareness of the need to rationalize energy consumption, special attention should be given to:

- ***systems of education,***
- ***training,***
- ***legislation and***
- ***regulations.***



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