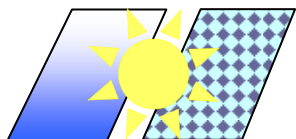

“WHAT OPPORTUNITIES DO RENEWABLE ENERGY SOURCES REPRESENT FOR CROATIA?”

**How can Croatia deliver on renewable energy:
Perspective from the renewable energy sector**

Croatian Professional Association for Solar Energy
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Croatian Parliament, Zagreb “Ivan Mažuranić” Hall
Zagreb, 11 July 2013



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Croatian Professional Association for Solar Energy

Republic of Croatia imports more than 50% of primary energy

- Importing 34% (42%) of electricity
- Imports about 40% of gas
- Imports over 95% of oil and petroleum products
- 100% imported coal

Croatia has a great potential in the use of renewable energy sources (solar irradiation energy)!?

Energy Law (Official Gazette No. 68/01, 177/04, 76/07, 152/08, 127/10 and 113/12)

"The use of renewable energy sources and cogeneration in the interest of the Croatian Republic"

Law on Energy Efficiency in the final consumption (OG. No. 152/08 and 55/12)



How can Croatia deliver on renewable energy: Perspective from the renewable energy sector

Distribution of renewable energy in Europe

Usage of renewable energy with regard to specific regions

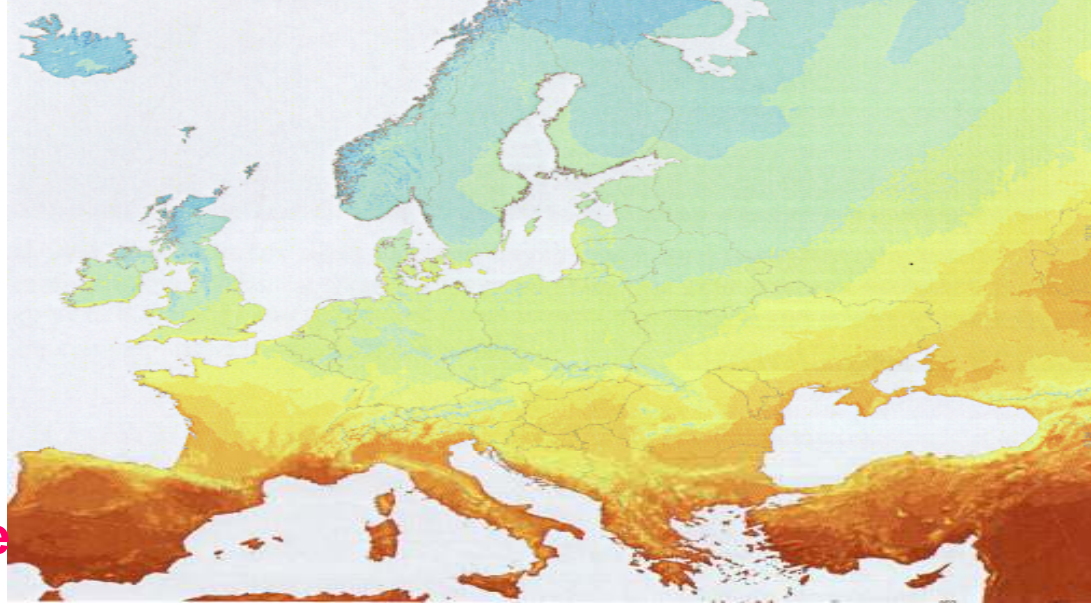
The EU's energy and climate goals by 2020:

- greenhouse-gas emissions 20%
- share of RES energy consumption 20%
- energy efficiency 20%
- share of biofuels in transport 10%

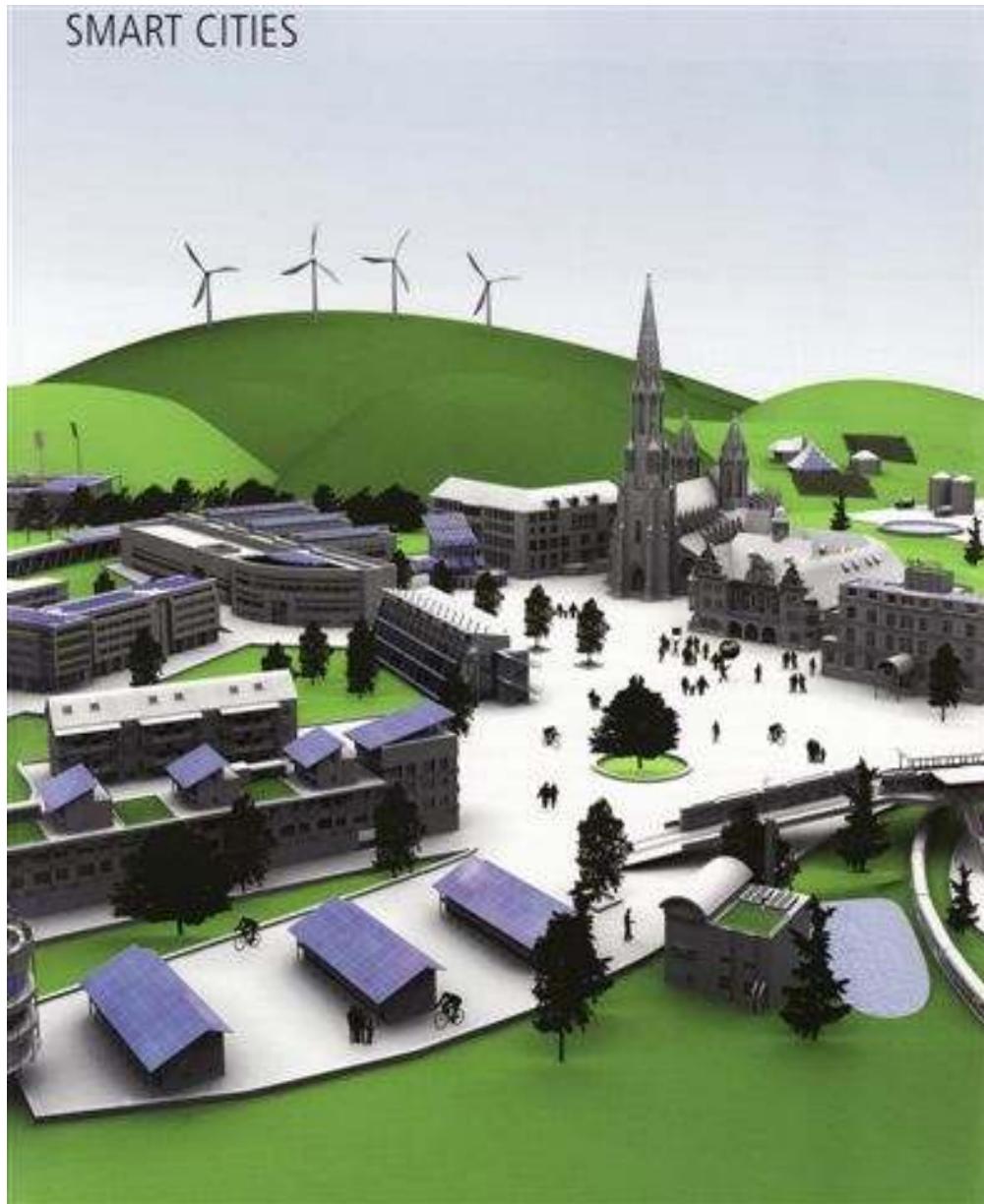
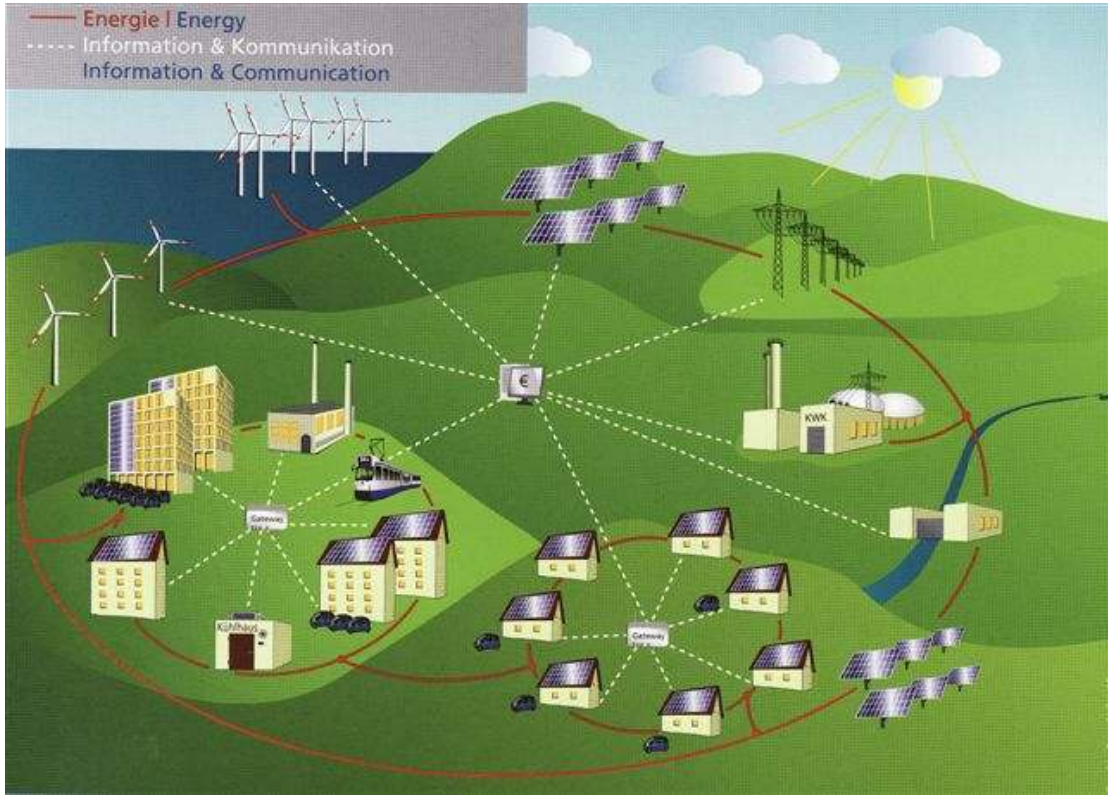
By 2050: (50-50-50-50)

By 2100: (100-100-100-100)

EU and Croatia it can and must be realized



How can Croatia deliver on renewable energy: Perspective from the renewable energy sector



Energetics of 21st century

- Smart city
- Smart Grids
- Satellite monitoring
- Weather forecast



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Croatia: 1st July 2007

Regulations on the use of renewable energy sources and cogeneration (*Narodne novine, br. 88/12*)

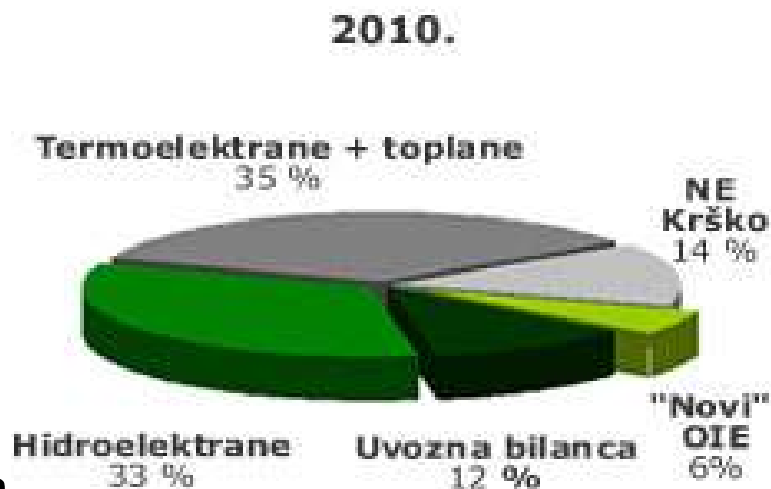
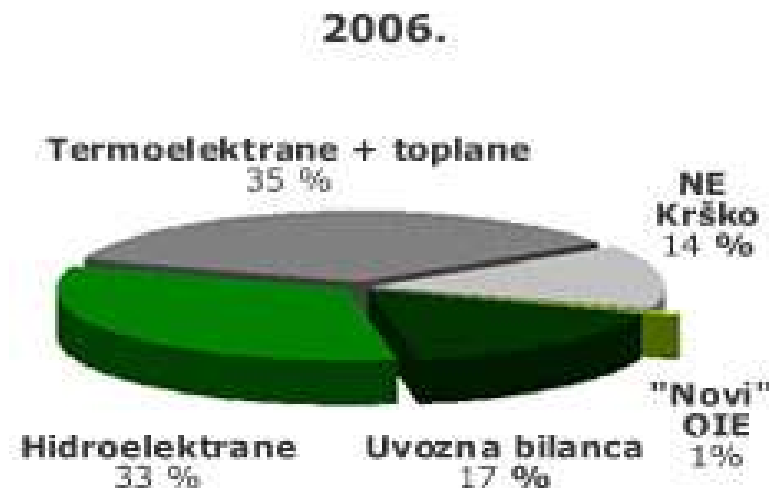
Regulations on acquiring the status of preferential electricity producers (*Narodne novine, br. 88/12*)

Tariff system for the production of electricity from renewable energy sources and cogeneration (*Narodne novine, br. 63/12*)

Decree on fees for encouraging production of electricity from renewable energy sources and cogeneration (*Narodne novine, br. 33/07*)

Decree on the minimum share of electric energy produced from renewable energy sources and cogeneration whose production is encouraged (*Narodne novine, br. 33/07*) **(13.6% by 2020)**

EU targets for Croatia: 20% share of RES in gross final energy consumption! Current status: 15,5% (1,5%)



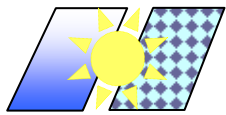
How can Croatia deliver on renewable energy: Perspective from the renewable energy sector

RES	Target 2020.	Current status
Wind	1.200 MW	245,25 MW
Solar PP	45 MW	6,80 MW
Small hydro PP	100 MW	1,34 MW
Biomass	140 MW	6,69 MW
Biogas	110 MW	8,13 MW
Municipal waste	40 MW	2,5 MW
Geothermal	20 MW	0 MW



It is clear the targets are not within reach due to all kinds of barriers – legal, technical and administrative

- > Wind – technical limit of 400MW imposed due to lack of secondary regulation in 2007, and in 2013 no efforts have been made to tend to those problems although there is high number of storage HPPs
- > Solar – 45MW predicted in strategy due to still expensive technology in 2009; revision needed due to new market circumstances but not coming
- > Small HPPs – environmental and legal barriers existing for years without any improvement
- > Biomass and Biogas – not promoted and pushed enough; and Croatia exports it's biomass to other countries



- > Croatia has technical and economical potential of RES necessary to achieve a roadmap of 100% renewables in energy consumption in several decades, which would count for cheaper and more stable energy system
- > Croatia still needs to embrace a potential for higher employment rates and more competitive economy; it has its industry (which needs to be developed more), but not the market
- > Croatia needs to start investing in infrastructure to enable higher penetration of RES
- > Croatia needs to establish a sustainable legal framework for RES, and develop a more liberal and functional energy market
- > Croatia should set much higher goals for renewables, change its mindset on renewables, and push for more than targets require!



How can Croatia deliver on renewable energy: Perspective from the renewable energy sector

Tariff system for the production of electricity from renewable energy sources and cogeneration

$$C_k = C \times k_1 \times k_2$$



	C	k1	k2	Ck
to 10 kW	1,1 kn	2,39	1,20	3,1548 (0.42 €)
10 – 30 kW	1,1 kn	2,03	1,10	2,4563 (0.32 €)
30 – 300 kW	1,1 kn	1,50	1,03	1,6995 (0.22 €)
300 – 1000 kW	1,1 kn			(0.14 €)
over 1 MW	PPC kn			(0.08 €)

Total electricity consumption in Croatia in 2012 amounted to 18,527 GWh.

The EU average of electricity in 2012 obtained from Photovoltaic is 2.6% and in Croatia it is 0.02%.

For Croatia to reach that average, by now it should have 500 MW of installed PV systems.



How can Croatia deliver on renewable energy: Perspective from the renewable energy sector



Thank you very much for your attention

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