

SEER MAP

RES Training

RES support scheme in Serbia, results and challenges

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RES WITHIN ENERGY LAW

ENERGY LAW DEFINITIONS

- ▶ **renewable energy sources** are non-fossil sources of energy such as: watercourses, biomass, wind, sun, biogas, landfill gas, gas from sewage water treatment plants, and geothermal energy sources;
- ▶ **producer from renewable energy sources** is an energy facility generating electricity from renewable energy sources and is entitled to guarantees of origin pursuant to this Law;
- ▶ **privileged electricity producer** is an energy entity generating electricity from renewable energy sources or highly efficient combined production of electricity and thermal energy from natural gas, and is entitled to incentive measures pursuant to this Law;
- ▶ **incentive measures** are instruments or mechanisms of support to electricity generation from renewable energy sources or to highly efficient combined production of electricity and thermal energy;

PRIVILEGED ELECTRICITY PRODUCER

- An energy entity may acquire the **status of a privileged electricity producer** (hereinafter: a privileged producer) for a power plant or part of a power plant if:
- **it uses renewable energy sources** in the electricity generation process and
- meets the conditions referring to the installed power
 - up to 30 MW in hydro power plants;
- The Government prescribes the conditions and procedure of acquisition, duration and termination of the status of a privileged producer
- (<http://www.mre.gov.rs/dokumenta-efikasnost-izvori.php#obn>)
- Status of a privileged producer gives **ability to use incentive measures**

RES PRODUCER

- An energy entity and natural person may acquire the status of a producer of electricity from renewable sources (hereinafter: the producer from renewable sources) for that power plant if:
- It uses renewable energy sources in the electricity generation process
- Other technical and regulatory conditions **may not simultaneously have the status of a producer from renewable sources and the status of a privileged producer**
- The energy entity and/or natural person for the same power plant.
- Status of a producer of electricity from renewable sources gives **ability to obtain guarantee of origin**

RES BYLAWS

- ▶ Enacted from 16 June 2016
 - **Regulation on the requirements and procedure of acquiring the status of a privileged producer**, preliminary privileged producer and producer from renewable energy sources
 - **Regulation on incentive measures** for the production of electricity from renewable sources and from high-efficiency electricity and thermal energy cogeneration
 - **Regulation on the power purchase agreement (PPA)**
- ▶ RES National Action Plan
- ▶ Available on RES section at Ministry website: www.mre.gov.rs

RES BYLAWS REACTIONS

- Regulations has been developing in cooperation with International Financial Institutions
- http://www.windpowermonthly.com/article/1403500/new-legislation-paves-500mw-wind-farms?utm_source=Viber&utm_medium=Chat&utm_campaign=Private
- "You can clearly see they are the result of lengthy discussions with the international financial institutions, which is important, but something you don't see very often." Wind Power Monthly
- First due diligence assessment very positive by C.M.S
<http://balkangreenenergynews.com/long-awaited-ppa-package-finally-adopted-in-serbia/>

It was worth the wait!!!

- "The result is a consistent, comprehensive and, at least on the face of it, bankable set of regulations to govern the renewable sector in Serbia in a manner which appears to be unmatched in the entire Western Balkan region in terms of both the quality of drafting and the completeness of the solutions implemented."

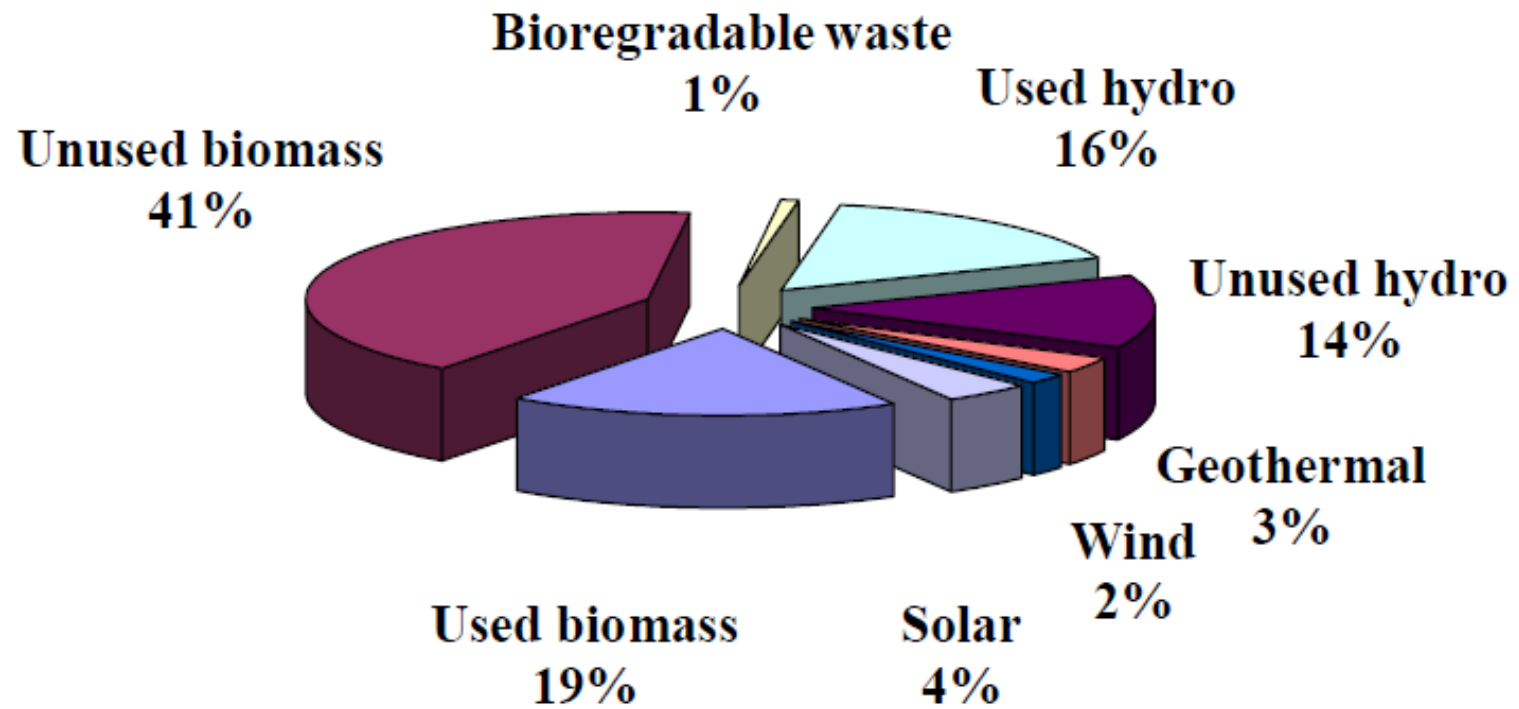
Overall, the newly adopted PPA Package is a great step forward for renewables in Serbia!!!

NATIONAL RES ACTION PLAN

ENERGY LAW REQUIREMENTS

- ▶ **Government adopts and monitors the National Action Plan** for the use of RES which comprise:
 - ▶ the **mandatory and planned share of energy from RES**
 - ▶ the **dynamics** of the achievement and deadlines
 - ▶ measures necessary for the development of distance heating and cooling infrastructure
 - ▶ measures ensuring the development of appropriate programs for of the development and use of RES
- ▶ The National Action Plan is **harmonised** with regulations governing **energy efficiency** and **reduction of the greenhouse gases emission** and **RES National Energy Strategy**

RES STRUCTURE



RES target - new plants till 2020.



National Renewable Energy Action Plan

<u>Total new RES in 2020</u>	<u>1092 MW</u>
Wind energy	500 MW
HPP (over 10 MW)	250 MW
SHPP (up to 10 MW)	188 MW
Biomass – CHP plants	100 MW
Biogas (manure) – CHP plants	30 MW
Solar energy	10 MW
Landfill gas	10 MW
Waste	3 MW
Geothermal energy	1 MW

➤ *Serbia has enough RES potential to go beyond 2020 RES targets*

➤ *Cooperation agreement signed with Italy for joint projects based on HPPs*

➤ *2016-2020 - expect exporting 975 GWh (cca 84 ktoe) to count towards Italian target*

INCENTIVE MEASURES

ENERGY LAW REQUIREMENTS

- ▶ The incentive measures for privileged electricity producers include:
 - ▶ **the obligation of purchasing** electricity from a privileged producer;
 - ▶ **prices** at which such electricity is purchased
 - ▶ the **validity period** of the electricity purchase obligation;
 - ▶ undertaking **balance responsibility**;
 - ▶ other incentive measures
- ▶ A privileged producer is entitled to incentive measures by the **conclusion of an agreement on electricity purchase with a guaranteed supplier**

REGULATION ON INCENTIVE MEASURES

- ▶ **12 years** incentive period
- ▶ **Not financed from Budget** of Republic of Serbia, but from **special fee** born by all final electricity consumers
- ▶ privileged producers **sell to the guaranteed supplier**
- ▶ balancing responsibility and **balancing costs allocated to the guaranteed supplier**
- ▶ **Free of charge access** to electricity transmission/distribution systems
- ▶ **regular annual adjustment** of the incentive purchase prices due to inflation in the Eurozone

Incentive Purchase Price (1)

No.	Type of power plant of the privileged producer of electricity	Installed power – P (in MW)	Incentive purchase price (¢€/kWh)	Maximum effective operating time (h)
1.	Hydro power plant			5000 in a year of the incentive period
1.1		up to 0.2	12.60	
1.2		0.2 – 0.5	$13.933 - 6.667*P$	
1.3		0.5 – 1	10.60	
1.4		1 – 10	$10.944 - 0.344*P$	
1.5		10 – 30	7.50	
1.6	On the existing infrastructure	up to 30	6.00	5000 in a year of the incentive period
2.	Biomass power plants			8600 in a year of the incentive period
2.1		up to 1	13.26	
2.2		1 – 10	$13.82 - 0.56*P$	
2.3		up to 10	8.22	
3.	Biogas power plants			8600 in a year of the incentive period
3.1		0 – 2	$18.333 - 1.111*P$	
3.2		2–5	$16.85 - 0.370*P$	
3.3		over 5	15	

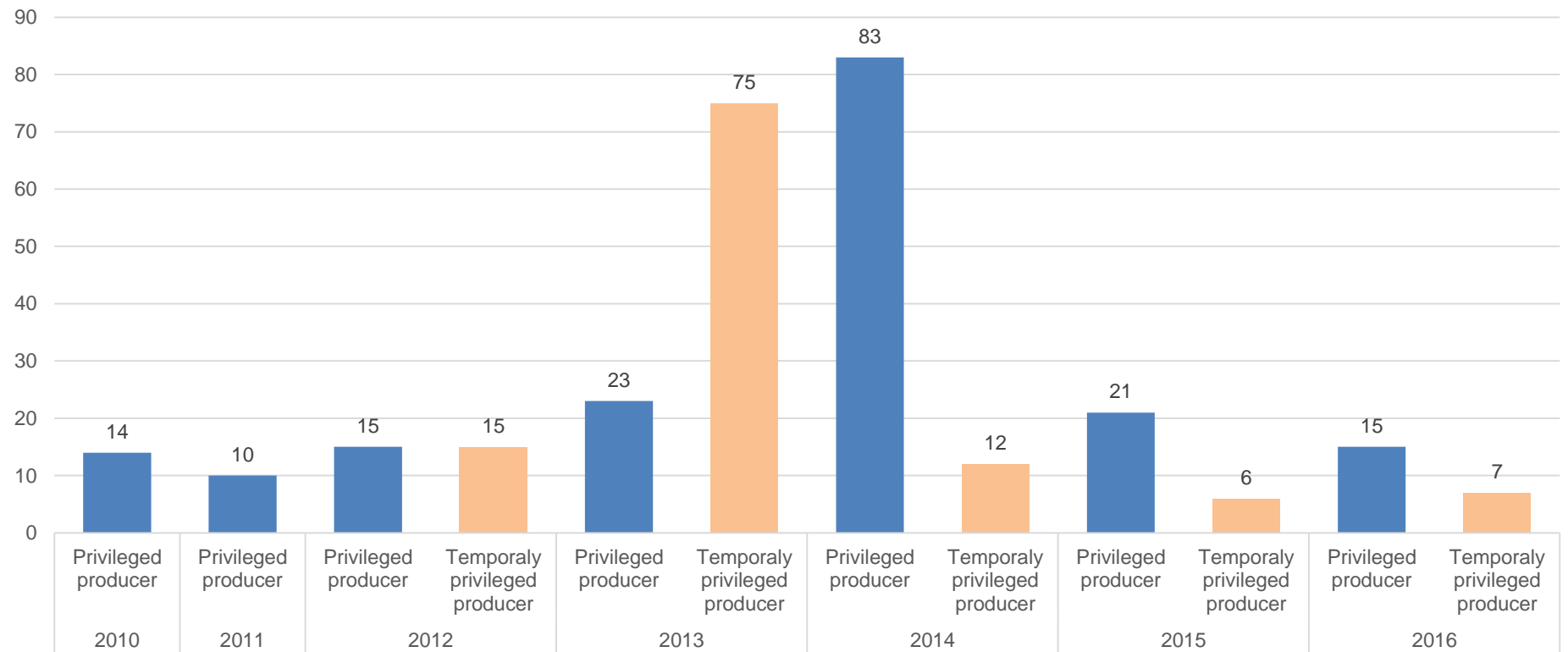
Incentive Purchase Price (2)

No.	Type of power plant of the privileged producer of electricity	Installed power – P (in MW)	Incentive purchase price (¢€/kWh)	Maximum effective operating time (h)
4.	Landfill gas power plants and the gas from municipal waste water treatment facilities		8.44	8600 in a year of the incentive period
5.	Wind power plants		9.2	9000 in a three-year quarter of the incentive period

Incentive Purchase Price (3)

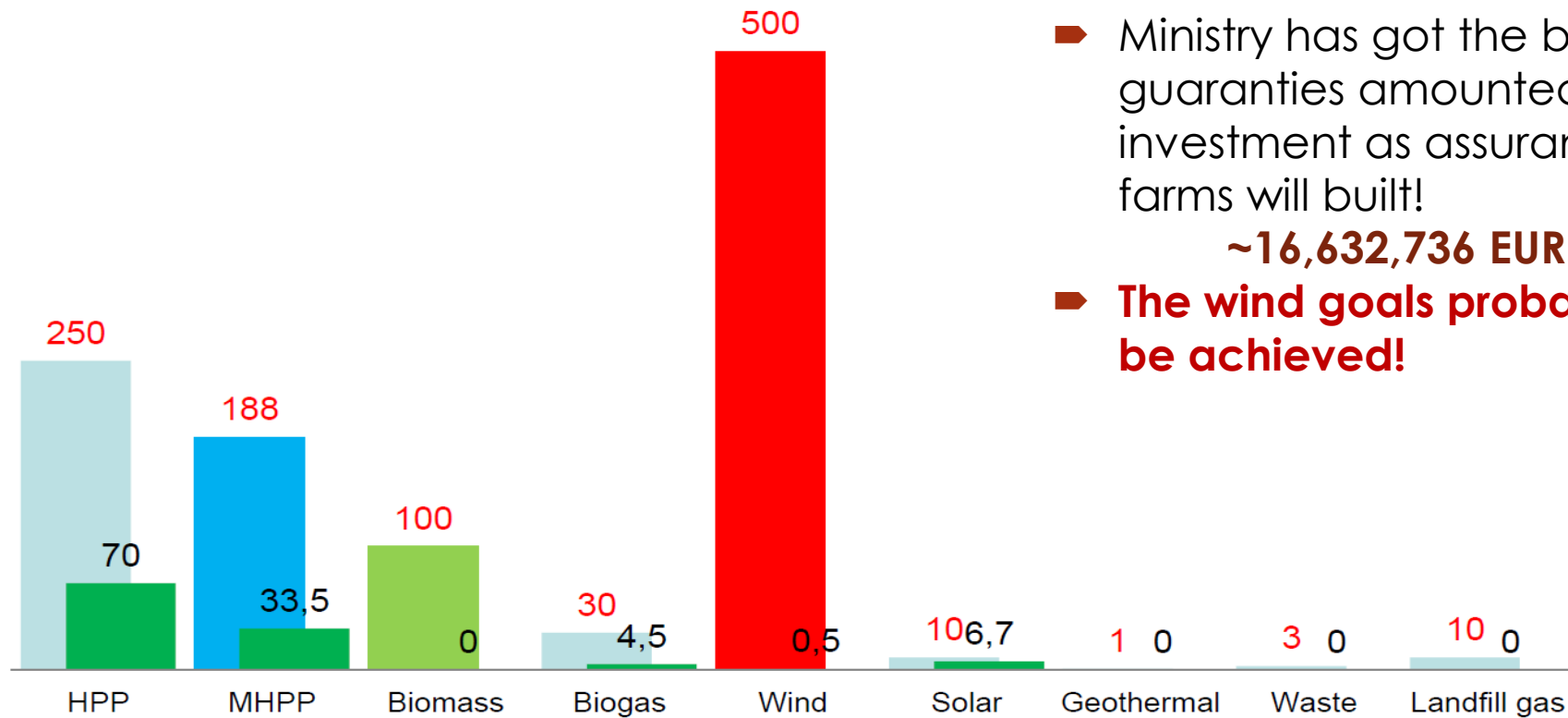
No.	Type of power plant of the privileged producer of electricity	Installed power – P (in MW)	Incentive purchase price (¢€/kWh)	Maximum effective operating time (h)
6.	Solar power plants			1400 in a year of the incentive period
6.1		On a facility of up to 0.03	14.60–80*P	
6.2		On a facility of 0.03 – 0.5	12.404–6.809*P	
6.3		Out of facility	9	
7.	Geothermal power plants		8.2	8600 in a year of the incentive period
8.	High-efficiency cogeneration natural gas power plants			8600 in a year of the incentive period
8.1		up to 0.5	8.20	
8.2		0.5–2	8.447 – 0.493*P	
8.3		2–10	7.46	
9	Waste power plants		8.57	8600 in a year of the incentive period

Effects of feed-in tariffs (1)



Source: Register of Privileged Power Producers

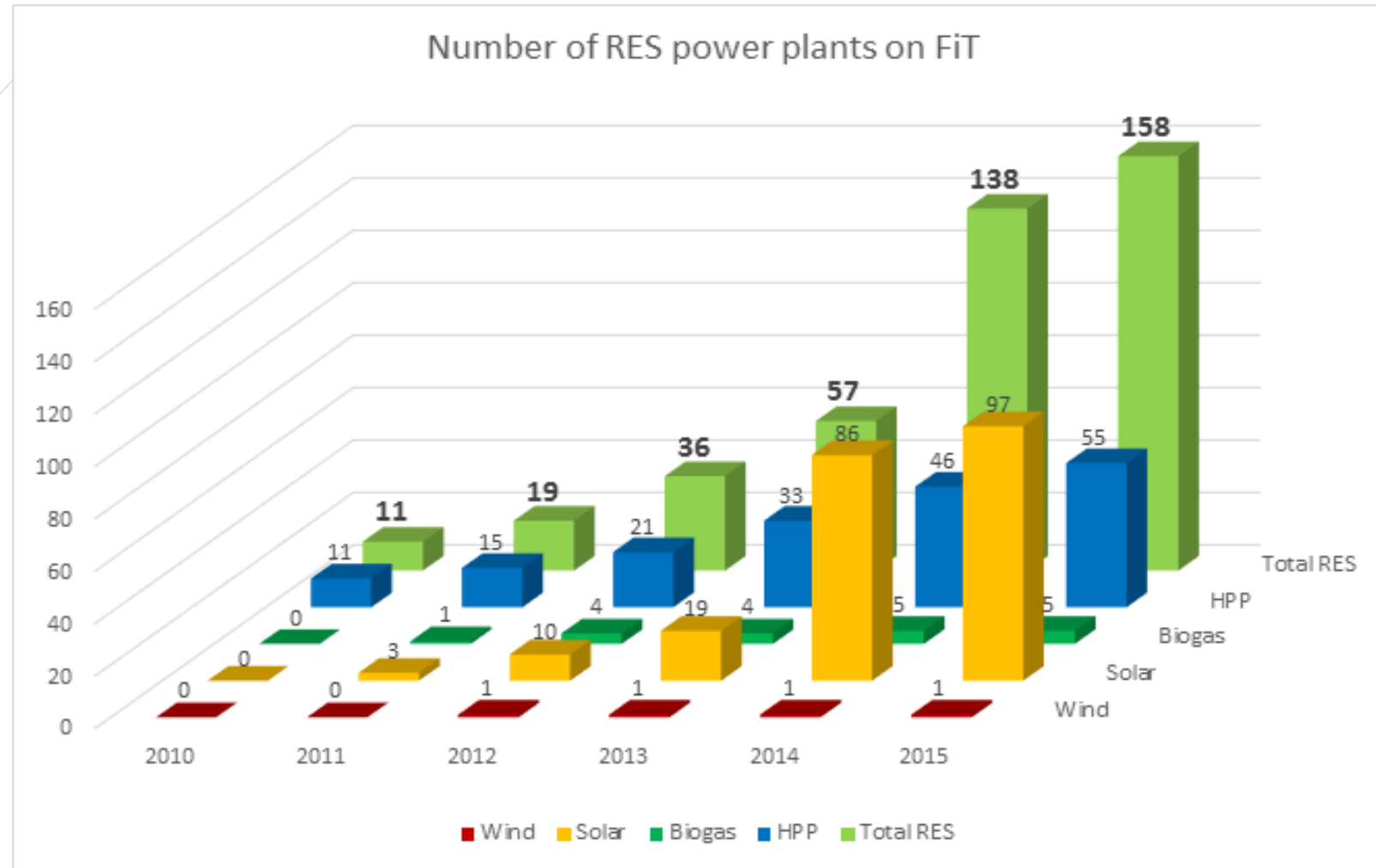
Effects of feed-in tariffs (2)



Source: Serbian NREAP Progress Report 2014

- Temporary privileged status amounted 500 MW!!!
- Ministry has got the bank guaranties amounted 2% of investment as assurance the farms will built!
~16,632,736 EUR!!!
- **The wind goals probably will be achieved!**

Effects of feed-in tariffs (3)



Source: Register of Privileged Power Producers

Conclusions

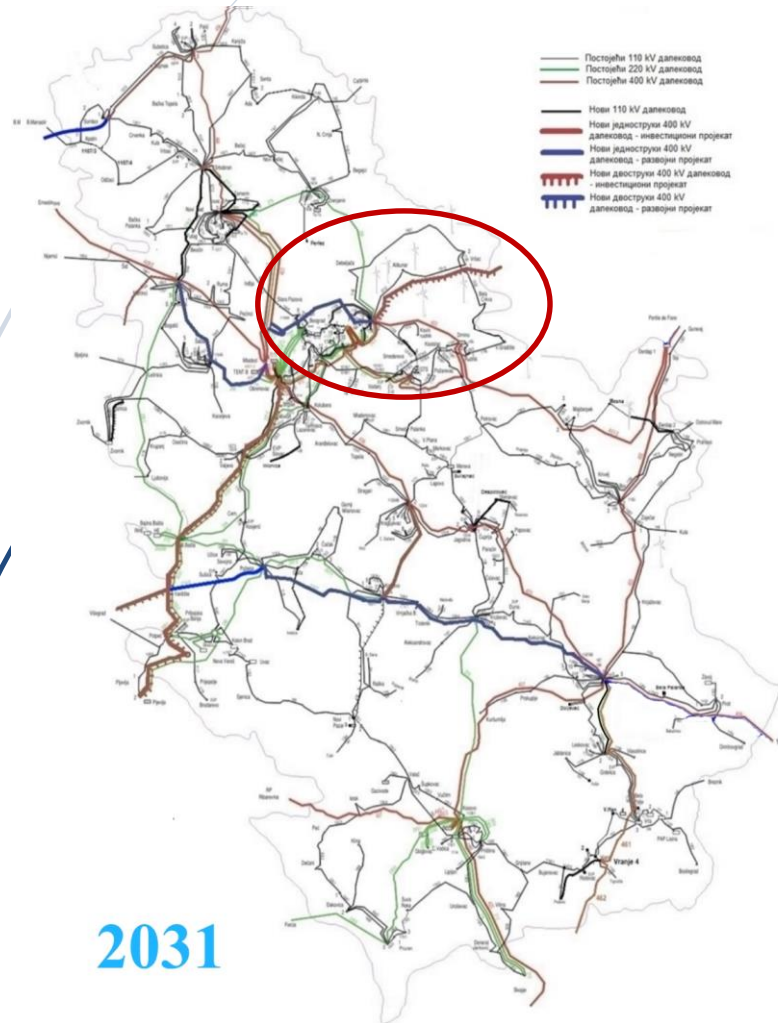
- **RES utilization is a strategic commitment** of Republic of Serbia & has a lot of indirect benefits as for the energy sector so for the society
- **RES legislation is attractive** and **mostly harmonized with EU** one
- **Dynamics** of RES projects realization still **under expectations** but **first Feed-in tariffs effects are visible**
- **Energy market still not developed** enough to let new RES plants to market without subsidies

TSO&DSO

TSO & DSO

- ▶ TSO & DSO **integrate** electricity production capacities and **optimally use** renewable energy sources
- ▶ **Transmission/distribution tariff**: Producers do not pay
- ▶ **Connection tariff**: Producers pay construction of connecting lines and connection facility (TSO/DSO property) - shallow approach
- ▶ Operation: TSO & DSO **primarily take over electricity generated from RES**, except in case that the safety of the transmission/distribution system operation is endangered

Transmission system development and RES connection



- Temporary status of privileged producer:
 - WPP Plandište (102 MW)
 - WPP Čibuk 1 (158,5 MW)
 - WPP Alibunar (42 MW)
 - WPP Kovačica (104.5 MW)
 - WPP Košava (117 MW) – partially
- SUM: 500 MW until 2020
- Long-term (10 years) development plan

Operation planning and real-time operation

- ▶ Prediction of RES generation (accuracy of network models, reserve planning)?
- ▶ RES in NTC calculation?
- ▶ Reassessment of secondary (aFRR) and tertiary (mFRR) reserve – network code pluralistic methodology?
- ▶ Common reserve dimensioning – SMM Control Block
- ▶ Cross-border (mFRR activation) EMS - CGES
- ▶ Imbalance Netting (aFRR activation) SMM in 2017 – WB6 & beyond?

QUESTIONS?