The Seventh International Forum on Energy for Sustainable Development
International Conference on Renewable Energy
Regional Seminar on:
«Enabling Policies to Promote Financing Renewable energy Investments»
19-20 October 2016, Baku, Azerbaijan

Case Study of Serbia

Dr Milan Ristanovic, Dipl.-Ing.
Associate Professor
and
Prof. Dr. Miloš Banjac, Dipl.-Ing.
University of Belgrade
Faculty of Mechanical Engineering
Scope of presentation

1. Serbian energy policy

2. The key barriers for implementation of RES Projects
   - Lack of reliable data
   - Economical barriers
   - National investment uncertainty

5. Other activities

6. Conclusion
1. Serbian energy policy (on the EU road)

2006 - Republic of Serbia ratified the Treaty on establishing the Energy Community

Signatories to the agreement are European Commission (EU) and Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Serbia, UNMIK, Montenegro ...

Moldova, and Ukraine
1. Serbian energy policy (on the EU road)

2050 Energy strategy

• The EU has set itself a long-term goal of reducing greenhouse gas emissions by 80-95% when compared to 1990 levels by 2050.

The Energy

• Roadmap 2050 explores the transition of the energy system in ways that would be compatible with this greenhouse gas reductions target while also increasing competitiveness and security of supply.

Energy Roadmap

• The European Commission's 2011 Energy Roadmap set out four main routes to a more sustainable, competitive and secure energy system in 2050: energy efficiency, renewable energy, nuclear energy and carbon capture and storage.
1. Serbian energy policy (on the EU road)

2030 Energy Strategy Target

2020
- 20% greenhouse gas reduction
- 20% renewable energy
- 20% energy savings

2030
- 40% greenhouse gas reduction
- ≥27% renewable energy
- Energy > 27% review in 2014

Presentation of J.M. Barroso to the European Council, 20-21 March 2014

Adopted on 24 October 2014
1. Serbian energy policy (on the EU road)

Commitments for RES
According to decisions of the Energy Community Ministerial Council meeting held in Budva on 18 October 2012, the Republic of Serbia is committed to:

- Increase the share of RES in consumption from 21.2% in 2009 to 27% in 2020. (5.8%)
- Increase the share of biofuel consumption in the transport sector from 0% in 2009 to 10% in 2020.
1. Serbian energy policy (on the EU road)

Commitments for RES - Comparison of RES % with EU Member States

EU Target 2020 20% RES

EU Target 2030 27% RES

Graph showing commitments of RES for various EU member states, with Serbia highlighted.
2. The key barriers for implementation of RES Projects

2.1. Lack of reliable data

- where are and how big are economically viable RES potential
- Planning documents - that determined the mode how to use of land (Spatial Plan of the Republic of Serbia, Regional Spatial Plans, Spatial Plans of the unit of local administration, General Urban Plan, General Regulation Plan ...
2. The key barriers for implementation of RES Projects

Estimated potential of RES

- The total technical potential of RES is about 5.65 Mtoe
- We already use 33% of the available technical potential (0.9 Mtoe we used hydropower and 1.06 Mtoe of biomass potential)

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Potential (Mtoe)</th>
<th>Remaining (Mtoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>2.24</td>
<td></td>
</tr>
<tr>
<td>Hydro power</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Geothermal</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Wind Energy</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.04</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Primary energy production and net imports of energy 14.626 Mtoe (in 2014)
- Total consumption of final energy 7.67 Mtoe (in 2014)
2. The key barriers for implementation of RES Projects

2.2. Economical barriers

- Price of electricity from RES are still more expensive than from classical sources
- Small GDP and GDP per capita,
- Political challenges (price of electricity is very small - 6,45 c€/kWh
2. The key barriers for implementation of RES Projects

2.2. Administrative procedures

- Lack of legal procedures
- or extremely complicated legal procedures (The process of issuing installation and operation license requires the involvement of several different public authority and is therefore extremely complicated and time consuming)
2. The key barriers for implementation of RES Projects

Legal Framework

2004 – Energy Law

2009 - Introduced Feed-in Tariffs for production of electricity from renewable energy sources

- **The Decree procedure for the acquisition**, duration and termination of the status of a privileged producer
- **The Decree of the incentive measures** for the production of electricity from RES (Feed-in tariffs system)

- According to the Decree on Feed-in Tariffs, the Electric Company of Serbia (EPS), acting as single buyer, is obliged to offer a **12-year contract** with guaranteed price to all investors who have privileged producer status.
- Feed-in tariffs for new plants range from **6.7 to 23.00 €c/kWh**.

2011 – Energy Law - the status of privileged producer

- New **Decree on incentive measures** for privileged power producer
- New **Decree on conditions and procedure for acquiring the status of privileged power producer**
- Model of a Power Purchase Agreement (up to 5 MW, over 5MW and over 50 MW installed capacity (it was not be acceptable to institutional lenders for financing - it was not "bankable")
2. The key barriers for implementation of RES Projects

2.3. National investment uncertainty

• Not enough high Credit Rating (2016, Moody's, B1, positive, Fitch, BB-, stable) macroeconomic performances, political stability, banking sector stability (SPECULATIVE GRADE, Capacity to meet financial commitments, risk of changes in business environment and economic conditions, significant credit risk)

• Lack of confidence of investor in the national legal system
2. The key barriers for implementation of RES Projects

EUROPE - POLICY UNCERTAINTY

Source: Bloomberg New Energy Finance
2. The key barriers for implementation of RES Projects

The Reform Process

EU Overview of Retroactive changes, moratoria or other changes in national RES legislations: TO BE COMPLETED/ADJUSTED

<table>
<thead>
<tr>
<th>Country</th>
<th>RETROACTIVE CHANGE</th>
<th>OTHER LEGAL CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSTRIA</td>
<td></td>
<td>X (Jul/2012)</td>
</tr>
<tr>
<td>BELGIUM</td>
<td></td>
<td>X (2013)</td>
</tr>
<tr>
<td>BULGARIA</td>
<td></td>
<td>X (May/2011)</td>
</tr>
<tr>
<td>CZECH REPUBLIC</td>
<td></td>
<td>X (Sep/2013)</td>
</tr>
<tr>
<td>ESTONIA</td>
<td></td>
<td>X (Sep/2013)</td>
</tr>
<tr>
<td>GERMANY</td>
<td></td>
<td>X (2010 + June/2012)</td>
</tr>
<tr>
<td>GREECE</td>
<td></td>
<td>X (Aug/2012)</td>
</tr>
<tr>
<td>FINLAND</td>
<td>X (2012)</td>
<td></td>
</tr>
<tr>
<td>FRANCE</td>
<td>X (Sep/2013)</td>
<td>X (Oct/2012)</td>
</tr>
<tr>
<td>ITALY</td>
<td></td>
<td>X (Dec/2010)</td>
</tr>
<tr>
<td>NETHERLANDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORWAY</td>
<td></td>
<td>X (Jan/2012)</td>
</tr>
<tr>
<td>POLAND</td>
<td></td>
<td>X (Sept/2013)</td>
</tr>
<tr>
<td>PORTUGAL</td>
<td></td>
<td>X (Oct/2012)</td>
</tr>
<tr>
<td>SLOVAKIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPAIN</td>
<td></td>
<td>X (Jan/2012)</td>
</tr>
<tr>
<td>SWEDEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>10 MS</td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- New legislation or Amendments
- Retroactive change
- Moratorium (= Suspension of support)

TO BE AVOIDED
2. The key barriers for implementation of RES Projects

Updating Legal Framework

2013 – National Action Plan for RES
2014 – New Energy Law

- Status of temporary privileges power producer together with Status of privileges power producer
- Feed-in tariffs not financed from Budget of RS, but from special fee payed by all final electricity consumers

2016 – updating By-laws

- New Decree on incentive measures for privileged power producer
- New Decree on conditions and procedure for acquiring the status of privileged power producer
- New Model of a Power Purchase Agreement
2. The key barriers for implementation of RES Projects

National Action Plan for RES

Final energy consumption  2009

- Transport 21%
- Hydro power plants 10%
- Biomass for heating 11%
- Heating (gas, coal, fuel oil) 34%
- TPP 24%

Final energy consumption  2020

- Transport 23%
- TPP 20%
- HPP 11%
- Wind farms 12%
- Electricity - otherst 1%
- RES - Heating 1%
- Biodiesel and bioethanol 3%
- Biomass for heating 12%

Heating (gas, coal, fuel oil) 28%
2. The key barriers for implementations of RES Projects

New Decree on incentive measures

New Feed in prices for RES electricity

<table>
<thead>
<tr>
<th>Power Plant Type</th>
<th>c$/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro power plant</td>
<td>12.6</td>
</tr>
<tr>
<td>Biomass power plant</td>
<td>13.26</td>
</tr>
<tr>
<td>Biogas power plant</td>
<td>15</td>
</tr>
<tr>
<td>Plant fired by biogas from animal origin waste</td>
<td>15</td>
</tr>
<tr>
<td>Landfill and sewage gas power plant</td>
<td>8.44</td>
</tr>
<tr>
<td>Wind power plants</td>
<td>9.2</td>
</tr>
<tr>
<td>Solar power plant</td>
<td>14.6</td>
</tr>
<tr>
<td>Geothermal power plants</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Hydro, Biomass, Biogas, Plant fired by biogas from animal origin waste, Landfill and sewage gas power plant, Wind power plants, Solar power plant, Geothermal power plants.
2. The key barriers for implementations of RES Projects

New Model of a Power Purchase Agreement

1. „Force Majeure“ - Political and Natural and effects of the Force Majeure
   
   *In case of the occurrence of a Force Majeure the PPA shall remain in force but its legal effects shall be suspended for the period of duration of the Force*

2. „Change in Law“ - the coming into force of new regulations after the date of coming into force of the PPA
   
   *On the request of Privileged producer Goverment can adopt proposal of a regulation that would recuperate the loss suffered by the privileged producers*

3. „Payment security instruments“, maintenance and enforcement of the payment security instruments
   
   *Three blank promissory notes, for 3 months, by own property guaranteed Serbian Electric Power Company*

4. „Contract termination“ – define all possible circumstances when privileged producer can terminate PPA and charge the entire loss

5. Risk of electricity not received by the system operator

6. Method of settlement of disputes

7. ....
2. The key barriers for implementations of RES Projects

New Model of a Power Purchase Agreement

Method of settlement of disputes
Competence for the resolution of any disputes arising from, or in connection with the Agreement have

- The Commercial Court in Belgrade
- or
- Permanent Court of Arbitration at the Chamber of Commerce of Serbia in Belgrade
  (National legal system)
- The internationals court of arbitration of the International Chamber of Commerce (ICC) in Paris
- The International Arbitral Centre of the Austrian Federal Economic Chamber in Vienna (VIAC)
2. The key barriers for implementations of RES Projects

New Model of a Power Purchase Agreement

First due diligence assessment very positive by C.M.S

“ 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.”

“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.”

3. Other activities

6 + 1 Guidelines for Investors

CONSTRUCTION OF PLANTS AND ELECTRICITY/HEAT GENERATION FROM BIOMASS IN THE REPUBLIC OF SERBIA
Guide for Investors

CONSTRUCTION OF PLANTS AND ELECTRICITY/HEAT GENERATION FROM HYDRO-GEOTHERMAL SOURCES IN THE REPUBLIC OF SERBIA
Guide for Investors

CONSTRUCTION OF PLANTS AND ELECTRICITY GENERATION IN SMALL HYDROPOWER PLANTS IN THE REPUBLIC OF SERBIA
Guide for Investors

CONSTRUCTION OF PLANTS AND ELECTRICITY GENERATION IN SOLAR POWER PLANTS IN THE REPUBLIC OF SERBIA
Guide for Investors
3. Other activities

6 +1 Guidelines for Investors

| CONSTRUCTION OF PLANTS AND ELECTRICITY GENERATION IN WIND POWER PLANTS IN THE REPUBLIC OF SERBIA |
| Guide for Investors |

| IZGRADNJA SOLARNIH GREJNIH SISTEMA U REPUBLICI SRBIJI |
| Vodič za investitore |

| Izbor lokacije i uvid u plana dokumenta |
| Kopija plans parcela – Plan parcelacije zemljišta |
| Prepis lista nepokretnosti – izvod iz katastra |
| Prethodna studija opravdanosti sa generalnim projektom |
| Informacija o lokaciji |
| Milijunje operatora sistema u uslovima priključenja |
| Izjava o relaciji |
| Uslove za projektovanje i priključenje |
| Elektroenergetski potop |
| Lokacijski uslovi |
| Studija opravdanosti sa idejnim projektom |
| Energetska dozvola |
| Odloka o potrebi procene uticaja na životnu sredinu |
| Odloka o obnovi i sadržaju studije o proceni uticaja |
| Studija procene uticaja na životnu sredinu |
| Saglasnost na studiju procene uticaja na životnu sredinu |
| Projekat za građevinsku dozvolu |
| Tehnička kontrola projekta za građevinsku dozvolu |

| Vodna saglasnost |
| Građevinska dozvola |
| Pravna saglasnost građevinske dozvole |
| Prihvaćanje statusa proizvoda za sredstva za energetiku |
| Ugovor sa odobrivačem deo |
| Projekat za izvođenje radova |
| Priljev građevinskih radova |
| Građenje objekta |
| Odobrenje za priključenje na električnu mrežu |
| Ugovor o izgradnji priljeva na električnu mrežu |
| Priljev na električnu mrežu |
| Projekat izvedenih objekta |
| Izvještaj komisije za tehnički pregled |
| Vodna dozvola |
| Upotrebna dozvola |
| Licencija za obavljanje energetskih delatnosti |
| Status podrške proizvođača električne energije |
| Ugovor o iznosu električne energije – punovrstnost |
3. Other activities

Ongoing projects

• 2011 - KfW and GIZ "Promotion of RES - development of biomass market in Serbia"

• Budget: 20+5+2 million EUR

• The goal: switch the operation of district heating to CHP and shift from traditional energy sources to biomass

• Pre-feasibility study -15 cities (10 -80 MW),

• Cost effectiveness is only in case the heating plants do not change the purpose and use heavy fuel oil

• Novi Pazar, Prijepolje, Mali Zvornik, Nova Varos and Becej (1-6 MW)
3. Other activities

Ongoing projects

UNDP/GEF project "Reducing barriers to accelerated development of the market of biomass in Serbia,"

- Budget: $2.85 million US
- Including co-financing of 30 million USD.

Goals:
- Co-financing to build 6 CHP plants
- Pre-feasibility study for further 12 similar projects
- Internet platform for biomass market
- Training programs ... etc.
4. Conclusion

Plans (new 1092 MW) and Realization (electricity)

Preliminary privileged producer 2016
483 MW

Ministry have got the bunk guaranties amounted 2% of investment as assurance the farms will built!
~16,6 mil EUR!
4. Conclusion

Future plans

Diversity of RES-E support schemes in the EU-28

- Feed-in tariff (FIT)
- Feed-in premium (FIP)
- Quota
- Tenders

Note: This map does not include secondary support instruments like tax incentives, investment grants, etc.

Source: Ecofys
4. Conclusion

2006 - Republic of Serbia ratified the Treaty establishing the Energy Community - takes over obligations

Signatories to the agreement are European Commission (EU) and Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Serbia, UNMIK, Montenegro ...

Moldova, and Ukraine
Thank you for your attention!

mristanovic@mas.bg.ac.rs
mbanjac@mas.bg.ac.rs