

Ana S. Trbović

Faculty of Economics, Finance and Administration
Singidunum University, Belgrade, Serbia

Renewable Energy Policy in the Framework of Serbia's EU Accession Process

Technical paper

Renewable energy policy development in Serbia has been initiated as part of government efforts to achieve sustainable economic development and global, and especially European Union market integration, following transition to a democratic regime in late 2000. Renewable energy policy is a relatively new government undertaking not only in Serbia but also worldwide. Policies to promote renewable energy existed in a few countries in the 1980s, becoming internationally popular in late 1990s, and receiving an impetus during 2005–2010, especially in Europe. The European Union's first White Paper setting out a Community Strategy and Action Plan for renewable energy was published in 1997, and developed into two directives in 2001 and 2003, respectively, promoting production of electricity from renewable energy sources and the use of biofuels or other renewable fuels for transport (updated by Directive 2009/28/EC). The real momentum was created by adoption of the Renewable Energy Roadmap and a binding target to source 20% of the bloc's energy needs from renewable sources by 2020 in 2007, which led to the Renewables Directive in 2009 and commitment for EU member states to adopt National Renewable Energy Action Plans by July 2010. As an aspiring EU member, Serbia has joined the EU renewable energy policy initiatives by becoming a party to the EU-South East Europe Energy Treaty in 2005. It is in compliance with this treaty and relevant EU standards that Serbia adopted a Decree on incentives for producing electricity from renewable sources, which defined stimulating feed-in tariffs, in 2009. Serbia is also a founding member of the recently established International Renewable Energy Agency (IRENA), and part of United Nation's initiatives in this area. As a result of introduced and planned policy measures, significant investments are expected in the renewable energy sector in Serbia, creating so-called green jobs and facilitating a more sustainable economic development. This article reviews and analyzes the renewable energy policy developments in Serbia and the relevant policies and trends in the European Union and internationally. Importantly, the article concludes that energy efficiency may be an even more important target for Serbia since hydro energy is already a major source of renewable energy, contributing significantly to environmentally friendly energy policy in Europe.

Key words: *renewable energy, policy, Serbia, European Union, sustainable development*

Introduction

Renewable energy^{*} policy development in Serbia has been initiated as part of government efforts to achieve sustainable economic development and global, and espe-

^{*} Renewable energy sources are defined as “energy produced from non-fossil renewable energy sources such as: watercourses, biomass, wind, sun, biogas, landfill gas, sewage treatment plant gas and sources of geothermal energy” (Article 2.17, Energy Law of the Republic of Serbia, Official Gazette of the Republic of Serbia“ No. 57/11, 80/11-amendment and 93/12)

cially European Union market integration, following transition to a democratic regime in late 2000.

Renewable energy policy is a relatively new government undertaking not only in Serbia but also worldwide. Policies to promote renewable energy existed in a few countries in the 1980s, becoming internationally popular in late 1990s, and receiving an impetus during 2005-2010. According to research undertaken by the Renewable Energy Policy Network for the 21st Century (REN21), the number of countries with some type of policy target and/or promotion policy related to renewable energy almost doubled during this five-year period, from 55 in early 2005 to more than 100 by early 2010. This organization underscores the following arguments for an active renewable energy promotion policy that are valid for all countries, though to varying degrees:

- The current level of renewable energy in most countries is even lower than would be economically efficient at today's market prices. As newcomers, renewable energy technologies (RET) face a series of market barriers.
- Many analysts are convinced that the long-term resource scarcity fossil energy faces is still not entirely priced-in. If current prices of fossil fuels reflected their scarcity correctly, RET would become more competitive.
- The prices of fossil fuels are highly volatile due to short-term changes and incidences in the world's energy markets. Renewables are generally local energies and, as such, provide diversification of the energy mix with a security premium. It is widely agreed that renewables should have a higher share for energy security reasons in the energy portfolio in particular in oil and gas importing countries.
- The use of fossil fuels is, to varying degrees, damaging to the human health and the local environment. The reduction of these impacts by technical means increases the cost of fossil fuel use. Negative environmental effects (externalities) must be internalised, *i. e.* reflected in the energy price. All this improves the competitive position of renewable energy technologies.
- Renewable energy technologies offer prospects for a dynamic industrial policy. In industrialised economies plagued by unemployment and reduced growth perspectives, as well as in some developing countries, RET have proven to be an option of developing industries with a future.
- The deployment of RET in rural areas in developing countries offers opportunities for the use of local natural resources, for employment, and ultimately for institutional capacity. RET can be effective in achieving the Millennium Development Goals.

The goal of the renewable energy policies for renewable energy is to promote and facilitate sustainable growth of renewable energy market, by overcoming barriers related to cost (for instance by subsidizing prices and requiring utility companies to purchase renewable energy), infrastructure (such as access to grid, collection of waste, *etc.*) and other legal, financial or technical barriers. While significant, effective energy can only be produced from hydro energy as an alternative to fossil fuels that are becoming scarce and pollute the environment, other renewable energy sources such as biomass, wind, solar, *etc.* are also increasingly explored as alternative options, though they produce less energy and tend to be more expensive (especially wind).

The United Nations (and its agencies: UN Environment Programme, UN Development Programme, UN Framework Convention on Climate Change, UN Industrial Development Organization, The Global Environment Facility and Commission on Sustainable Development) and the World Bank have become the international advocates for

use of renewable energy, and its role in addressing wider problems of energy security, climate change and poverty reduction.

The International Renewable Energy Agency (IRENA) was officially established in Bonn on January 26, 2009, as an international, intergovernmental organization. To date 148 states (Serbia is a founding member) and the European Union signed the Statute of the Agency; amongst them are 48 African, 38 European, 35 Asian, 17 American, and 10 Australia/Oceania States. Its main goal is to “promote the widespread and increased adoption and sustainable use of all forms of renewable energy”.

According to its Statute, IRENA will:

- Collect renewable energy related information and knowledge, and analyse and disseminate current renewable energy practices, including policies and incentives, available technologies, and examples of best operational practice.
- Foster international exchanges about renewable energy policy and its framework conditions.
- Provide relevant policy advice and assistance.
- Improve renewable energy knowledge that facilitates technology transfer and promotes the development of local capacity and competence.
- Promote capacity building services such as training and education.
- Provide information and advice on the financing mechanisms available for renewable energy projects.
- Stimulate and encourage research (including on socio-economic issues), by fostering research networks to undertake joint research, development and deployment of technologies.
- Provide information about the development and deployment of national and international technical standards in relation to renewable energy, based on a sound understanding through an active presence in the relevant fora, and
- Disseminate knowledge and information and increase public awareness on the benefits and potential offered by renewable energy.

EU renewable energy policy

The European Union is a signatory to IRENA, and has continually been at the forefront of global initiatives related to renewable energy. Its first White Paper setting out a Community Strategy and Action Plan for renewable energy was published in 1997, following on from the discussion stimulated by the Green Paper published by the Commission in November 1996. The White Paper recognised that *renewable sources of energy make a disappointingly small contribution of less than 6% to the Union's overall gross inland energy consumption* (section 1) and called for *the goal of achieving a 12% penetration of renewables in the Union by 2010* which was described as *an ambitious but realistic objective* (section 1.3), aiming to double the use of renewable energy sources. By 2000, this leap was not yet made but the initiative led to *spectacular growth* of subsectors such as wind energy, photovoltaic solar panels and geothermal home heating (Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the implementation of the Community strategy and action plan on renewable energy sources (1998-2000) [COM(2001)69 final])

The strategic framework was subsequently developed into two directives, promoting production of electricity from renewable energy sources (2001) and the use of biofuels or other renewable fuels for transport (2003).

The 2001/77/EC Directive concerns electricity produced from non-fossil renewable energy sources such as wind, solar, geothermal, wave, tidal, hydroelectric, biomass, landfill gas, sewage treatment gas, and biogas energies. The definitions in Directive 96/92/EC concerning common rules for the internal market in electricity are also applicable to this Directive. It called for the Member States to adopt and publish, initially every five years, a report setting the indicative Member State targets for future RES-E consumption for the following ten years and showing what measures have or are to be taken to meet those targets, with the overall objective of 21% for the EU-25. Directive 2001/77/EC was later repealed by Directive 2009/28/EC from January 1, 2012.

The 2003/30/EC Directive defines biofuels and stipulates that countries must take national measures across the EU aiming at replacing 5.75% of all transport fossil fuels (petrol and diesel) with biofuels by 2010, with an intermediate target of 2% by 31 December 2005. The percentages were to be calculated on the basis of energy content of the fuel and apply to petrol and diesel fuel for transport purposes placed on the markets of member states. Member states have been encouraged to take on national *indicative* targets in conformity with the overall target. However, this directive created some controversy since there was also concern about the impact of biofuels on rising food prices, rainforest destruction, notably from palm oil production and concern for firms driving poor people off their land to convert it to fuel crops.

The real momentum was created by adoption of the Renewable Energy Roadmap and a binding target to source 20% of the bloc's energy needs from renewable sources by 2020 in 2007, which led to the Renewables Directive in 2008 and commitment for EU member states to adopt National Renewable Energy Action Plans by July 2010.

In September 2008, the European Parliament passed a set of regulations on climate change which is intended to decrease the emission of Greenhouse Gases by 20%, improve energy efficiency by 20% and increase the overall participation of renewable energy by 20% in the European Union by 2020, compared to 1990.

The most recent 2009/28/EC Directive on renewable energy has set mandatory national goals which European Union member states need to achieve through the promotion of renewable energy in the sectors of electric energy, heating and cooling in the transport sector, which would help increase the overall participation of renewable energy to 20% in the European Union by 2020. Moreover, the share of energy from renewable sources in the transport sector must amount to at least 10% of final energy consumption in the sector by 2020. The Member States are to establish national action plans which set the share of energy from renewable sources consumed in transport, as well as in the production of electricity and heating, for 2020. These action plans must take into account the effects of other energy efficiency measures on final energy consumption (the higher the reduction in energy consumption, the less energy from renewable sources will be required to meet the target). These plans will also establish procedures for the reform of planning and pricing schemes and access to electricity networks, promoting energy from renewable sources. Member States can "exchange" an amount of energy from renewable sources using a statistical transfer, and set up joint projects concerning the production of electricity and heating from renewable sources. It is also possible to establish cooperation with third countries, provided the following conditions have been met:

- (1) the electricity must be consumed in the Community,
- (2) the electricity must be produced by a newly constructed installation (after June 2009),
- (3) the quantity of electricity produced and exported must not benefit from any other support.

Each Member State obliged to guarantee the origin of electricity, heating and cooling produced from renewable energy sources. The information contained in these guarantees of origin is normalised and should be recognised in all Member States. It may also be used to provide consumers with information on the composition of the different electricity sources. Member States also agreed to build the necessary infrastructures for energy from renewable sources in the transport sector. To this end, they committed to:

- ensure that operators guarantee the transport and distribution of electricity from renewable sources, and
- provide for priority access for this type of energy.

The Directive takes into account energy from biofuels and bioliquids. The latter should contribute to a reduction of at least 35% of greenhouse gas emissions in order to be taken into account. From 1 January 2017, their share in emissions savings should be increased to 50%. Biofuels and bioliquids are produced using raw materials coming from outside or within the Community. Biofuels and bioliquids should not be produced using raw materials from land with high biodiversity value or with high carbon stock. To benefit from financial support, they must be qualified as “sustainable” in accordance with the criteria of this Directive.

The new Renewables Directive is the first legal act of the European Union which refers to the Treaty establishing the Energy Community, which is also known as the EU-South East Europe Energy Treaty (full name: Treaty establishing the Energy Community between the European Union and the Republic of Albania, Republic of Bulgaria, Bosnia and Herzegovina, Republic of Croatia, Former Yugoslav Republic of Macedonia, Republic of Montenegro, Romania, Republic of Serbia and United Nations Interim Mission on Kosovo pursuant to the United Nations Security Council Resolution 1244). The Directive envisages ways of cooperation between European Union member states and the signatories for a mutually beneficial relationship: *If by virtue of a decision taken under the Treaty establishing the Energy Community to that effect, the contracting parties in that Treaty establishing the Energy Community become bound by the relevant provisions of this Directive, the measures of cooperation between Member States provided for in this Directive will be applicable to them* (Preamble, paragraph 37; reiterated in Article 9). This provision enables non-EU members who are members of the Treaty establishing the Energy Community to use mechanisms available to EU member states such as exchange of statistics and engagement in joint projects to satisfy the requirements of use of renewable energy sources.

Serbia's renewable energy policy

As an aspiring EU member, Serbia has joined the EU renewable energy policy initiatives by becoming a founding party to the EU-South East Europe Energy Treaty in 2005. The Treaty created the Energy Community in South East Europe (SEE), with the following aims:

- (a) create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks, so that

- all Parties have access to the stable and continuous energy supply that is essential for economic development and social stability,
- (b) create a single regulatory space for trade in Network Energy that is necessary to match the geographic extent of the concerned product markets,
 - (c) enhance the security of supply of the single regulatory space by providing a stable investment climate in which connections to Caspian, North African and Middle East gas reserves can be developed, and indigenous sources of energy such as natural gas, coal and hydropower can be exploited,
 - (d) improve the environmental situation in relation to Network Energy and related energy efficiency, foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space, and
 - (e) develop Network Energy market competition on a broader geographic scale and exploit economies of scale (Article 2 of the Treaty establishing the Energy Community).

To fulfil these aims the parties obliged to undertake the following activities, as delineated by Article 3 of the Treaty establishing the Energy Community:

- (a) the implementation by the Contracting Parties of the *acquis communautaire* on energy, environment, competition and renewables, adapted to both the institutional framework of the Energy Community and the specific situation of each of the Contracting Parties (hereinafter referred to as *the extension of the acquis communautaire*) [Note: Article 11 of the Treaty defines the *acquis* on energy to be (1) the Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity, (2) the Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas, and (3) the Regulation 1228/2003/EC of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity];
- (b) the setting up of a specific regulatory framework permitting the efficient operation of Network Energy markets across the territories of the Contracting Parties and part of the territory of the European Community, and including the creation of a single mechanism for the cross-border transmission and/or transportation of Network Energy, and the supervision of unilateral safeguard measures (hereinafter referred to as *the mechanism for operation of Network Energy markets*”), as further described in Title III;
- (c) the creation for the Parties of a market in Network Energy without internal frontiers, including the coordination of mutual assistance in case of serious disturbance to the energy networks or external disruptions, and which may include the achievement of a common external energy trade policy (hereinafter referred to as *the creation of a single energy market*), as further described in Title IV.

This outcome is the result of so-called Athens Process initiated by the European Commission:

The SEE countries committed themselves to introducing common rules based on EU legislation in these two sectors. The process received a significant boost through the physical reconnection of the SEE grids to the UCTE network in October 2004. [...]

For the EU and SEE, an energy community provides an important geopolitical opportunity to diversify supply routes for different forms of energy and reduce reliance on one or two sources of supply. (South East Europe Stability Pact, 2005).

Article 20 of the Treaty establishing the Energy Community specifically mandates development of renewable energy policy in accordance with existing EU directives:

Each Contracting Party shall provide to the European Commission within one year of the date of entry into force of this Treaty a plan to implement Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market and Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport. The European Commission shall present the plan of each Contracting Party to the Ministerial Council for adoption.

In brief, as a signatory state of the Energy Community Treaty, Serbia assumed an obligation to implement the Directive on the Promotion of Electricity Produced from Renewable Energy Sources in the Internal Electricity Market and the EU Directive on the Promotion of the Use of Biofuels or Other Renewable Fuels for Transport (2003/30/EC and updated 2009/28/EC).

In 2009, in compliance with this treaty and relevant EU standards, Serbia adopted the *Decree on incentive measures for electricity generation using renewable sources and for combined heat and power (CHP) generation* and the *Decree on the requirements for obtaining the status of the privileged electric power producer and the criteria for assessing fulfilment of these requirements*, which defined the relevant rules and a stimulating feed-in tariff system for all electricity produced at small hydro-electric power plants and other renewable energy facilities. Feed-in tariffs are guaranteed for every renewable energy source for the period of 12 years with a possibility for extension.

Under the decree, public power utility company Elektroprivreda Srbije (EPS), which currently sells electricity in Serbia at about five eurocents per kWh, is to pay:

- 7.8 to 9.7 eurocents per kWh of electricity produced by small hydro-electric power plants with the limit of the size of the hydro plant to 10 MW,
- 11.4 to 13.6 eurocents per kWh of electricity from biomass, 12 to 16 eurocents per kWh of electricity from biogas, and
- 9.5 eurocents per kWh of electricity from wind energy with the limit of installed capacity of 450 MW.

EPS is also obliged to buy electricity from producers harvesting sewer and land-fill gas at:

- 6.7 eurocents per kWh, geothermal energy companies at 7.5 eurocents,
- co-generation plants at 7.6 to 10.4 eurocents, and
- waste-fired plants at 8.5 to 9.2 eurocents.

Electricity from solar energy will be paid the most, 23 eurocents per kWh, however with the limit of installed capacity of 5 MW.

The government strengthened this decree in the new Energy Law adopted in 2011 and further amended in 2012 (Article 59, Energy Law). These amendments also allowed the so-called Privileged Power Producers, such as wind and other renewable energy producers, to have ensured access to grid connection, feed-in tariffs, and standardised power purchase agreements. Importantly, the Government will no longer set the electricity price but the Energy Agency, which depoliticises the process to an extent. As a result, the electricity price is expected to further increase by 2020, as shown in fig. 1.

In November 2009, the Italian and Serbian governments signed an agreement, which envisages construction of renewable energy plants (hydro plants, wind parks, etc.) and interconnecting transmission line to enable exports of part of the production to an in-

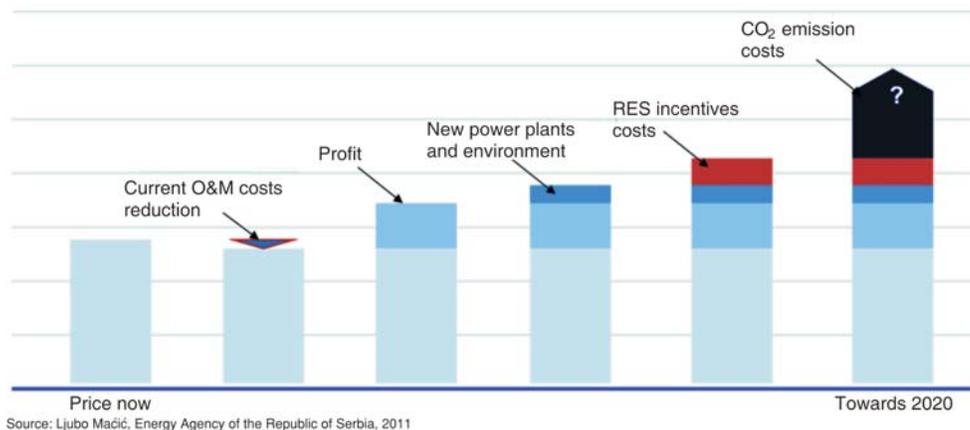


Figure 1. Electricity prices trends in Serbia in the future

terconnecting transmission line to enable exports of part of the production to Italy. This creates an additional incentive since Italian feed-in tariffs are even more generous than those in Serbia, but the exact process of using this mechanism is still under negotiations. The new 2009/28/EC Directive on renewable energy, and specifically its Articles 9 and 10 form the basis of the current agreement between Serbia and Italy, allowing EU member States to participate in joint projects with third countries and to include imported electricity produced from renewable energy sources in the national overall target (within limitations described). In 2012, the Government of Serbia signed additional agreements in area of renewable energy, including an important agreement with German producers.

By means of a Decree on amendments and supplements to the Decree on programme for the realization of the energy sector development strategy of the Republic of Serbia until 2015 for the period 2007-2012 (hereinafter POS), the government also adopted changes that call for more efficient usage of domestic energy production potential, the reduction of greenhouse gasses, the decrease in the import of fossil fuels, the development of local industries and creating new jobs.

Serbia's renewable energy potential

The stated objective of the Republic of Serbia before the end of 2012 is to enhance its power generation from renewable energy sources by 7.4 per cent or 735 million kWh compared to 2007.

According to the Government of Serbia Energy Programme, the estimated value of renewable energy sources in Serbia is about 4.3 million tones of oil equivalent (toe) annually – of which 2.7 million toe per annum lies in the production of biomass, 0.6 million toe per annum in the unused potential of hydro-energy, 0.2 million toe per annum in already existing geothermal sources, 0.2 million toe in wind power and 0.6 million toe per annum in solar energy. As visible from fig. 2 (source: Ministry of Energy of Serbia), hydro-energy and biomass energy are the renewable energy sources with the most significant energy potential.

The individual participation of renewable energy sources in the overall potential is:

- *Biomass*: around 2.7 million toe annually, out of which 1.0 million toe are wood and more than 1.7 million toe are attributable to agricultural biomass.
- *Small hydro power plants*: around 0.6 million toe annually, estimated on the basis of the *Cadastre of small hydro power plants in the Socialist Republic of Serbia excluding Socialist Autonomous Provinces* from 1987, including 856 locations for the construction of the small hydro plants (90% of the locations have a technical potential of power below 1 MW; *Note*: under the Energy Law, the term Mini Hydro-Electric Power Station is defined as any hydro-electric power station with a power of up to 10 MW).
- *Geothermal sources*: around 0.2 million toe annually, located in the territory of Vojvodina, Posavina, Mačva, Podunavlje, and the wider area of Central Serbia as well as in existing Serbian spas.
- *Wind energy*: around 0.2 million toe annually (based on the data collected by the Hydro-meteorological service of Serbia).
- *Solar energy*: around 0.6 million toe annually.

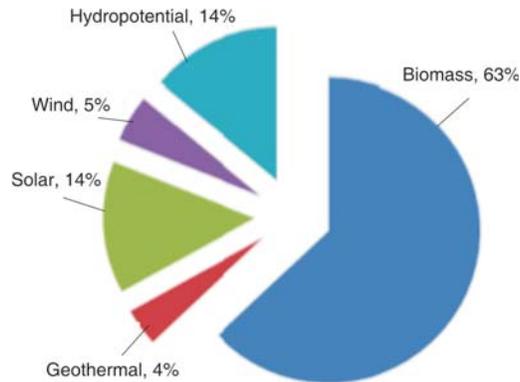


Figure 2. Estimated values of renewable energy sources in Serbia

The production potential in Serbia is estimated to around 1.4 kWh/m² and with an average daily value of about 3.8 kWh/m² throughout the whole year. The largest potential is situated in southern regions and varies between 1.6 kWh/m² in January and 6.5 kWh/m² in July.

Geothermal sources: These sources are rather equally spread around the country and are mostly used for sports and recreation, medical purposes and agriculture.

Serbia's potential and trends are in line with general European trends though Western Europe is ahead in terms of renewable energy use, as identified in the Encyclopaedia of Energy:

Until 2010, cost-effective hydropower, biomass power plants, and wind energy converters are the main contributors to renewable energy sources (RES) growth. Hydro-power and biomass will then reach their limits (biomass is increasingly used for fuel production). After 2010, the continuously growing use of wind energy is complemented by electricity from solar-thermal power plants and from geothermal energy. Relevant contributions from photovoltaics will not emerge until 2030 because of relatively high costs. [In the Solar Energy Economy, scenario], CO₂ emissions in 2050 are reduced to 2100 Mt/year, or 67% of the current value. This is only a first approach to an effective CO₂ abatement policy. Also, the dependency on imports of crude oil and natural gas, at 65% of the present value, is still too high.

* Otherwise, it is to be noted that a moratorium on the construction of nuclear power plants is in force in Serbia until 2015, and while the country expressed interest in taking part in the construction of the Bulgarian nuclear plant Belena, this project has been frozen due to security concerns, which intensified after the nuclear crisis in Japan.

Altogether, the scenario represents the minimum requirements for European energy policy, if a relevant role of RES in future energy supply is one of the substantial goals [1].

In 2007, all of the renewable energy in Serbia (9.928 GWh) was produced by hydro power plants, representing 24.9% of Serbian electricity consumption, which has further risen to a third of total electricity consumption according to some more current estimates. Several biomass plants have since been built, albeit with relatively minor contribution to the total energy consumption. At the moment, other than large hydro power plants, renewable energy sources are underused in Serbia*. According to the *Decree on amendments and supplements to the Decree on programme for the realization of the energy sector development strategy of the Republic of Serbia until 2015 for the period 2007-2012*, the reason for this is as follows: *inadequacy of the existing regulatory framework, complicated administrative procedures, and the long absence of a system of subsidies to promote investment in renewable energy. Other factors include the absence of licensed producers of the equipment needed for the production of renewable energy, and the absence of reliable information about the renewable energy capacities in certain locations, which prevent the inclusion of these locations in urban and spatial plans*. Financing is to be added to this list since these are all expensive projects and feasible only with significant government subsidies, which is why there is also controversy whether a transition country such as Serbia should make large investments in promoting wind energy at this point of transition.

There has been scarce public debate on renewable energy policy in Serbia, which has remained principally in the government arena, with focused advocacy and technical assistance of active donors in Serbia, chiefly from the European Union member states. While this may seem somewhat undemocratic, other studies have shown that a discussion on topics like renewable energy requires prior knowledge and expertise to be meaningful and effective. As Alberts [2] concludes: *Engaging citizens in policy making may be a core element of good governance. However, not all citizens are capable of participating effectively*. Thus, the recommendation would be to engage in a debate with the more interested and knowledgeable part of the public.

Guides on constructing renewable energy plants from different energy sources have been published in 2010 (again with donor assistance) but the list of permits required may alienate rather than attract investors, pointing to the need of improving the business climate more generally, specifically relating to the permitting process. Nonetheless, the January 2011 article published by the European Wind Energy Association (EWEA, Wind Directions [3]) on Serbia's future wind installations is more optimistic. Based on the discussions with several investors and the government, it predicts that Serbia will reach 100 MW of installed wind energy by the end of 2012, starting with a smaller 6 MW installed capacity that will be operational in late 2011. One should also keep in mind that thanks to the large hydro energy plants Serbia's renewable energy participation is already at one third, which is substantially above EU's goal of 20% and the EU-25 average of 12.8% (according to 2004 figures).

Conclusions

As seen from the analysis of EU and Serbian regulatory frameworks, renewable energy policy is a complex, multi-sector policy, requiring across-the-board initiatives in

* Otherwise, it is to be noted that a moratorium on the construction of nuclear power plants is in force in Serbia until 2015, and while the country expressed interest in taking part in the construction of the Bulgarian nuclear plant Belena, this project has been frozen due to security concerns, which intensified after the nuclear crisis in Japan.

energy, environment, employment, taxation, competition, research, technological development, agriculture, regional and even foreign policies. Based on this integrative approach, Serbia has developed a Biomass Action Plan that involved intensive inter-ministerial coordination and produced specific recommendations in a number of policy areas. Nonetheless, Serbia is yet to develop additional measures for renewable energy promotion, such as tax incentives and support to relevant technologies, as well as a more integrated approach to overall energy reform, including energy efficiency policies.

If we review the grid developed by REN21 [4], where a number of developed and transition countries are represented, it is clear that Serbia is at the beginning of renewable policy development with feed-in tariffs in place as one of the possible policy tools (see Table).

The Government should review the policies implemented in other countries, especially in the European Union and undertake a cost-benefit analysis of these policies. As deduced by Beck *et al.* [5], *Experience with renewable energy policies around the world is still emerging, and more understanding is needed of the impacts of various policies. Thus, many policies could still be considered experimental in nature.* One useful tool in raising the level of understanding of these complex issues is a more active participation in Energy platforms that have been organized around specific subsectors such as wind, enabling informal collaboration among EU member states and resulting in greater information sharing including research and discussion regarding policy implications*. However, to undertake a meaningful analysis the government requires greater administrative capacity, improved statistics and, above all, more autonomy from daily political sensitivities related to use of energy. As the 2008 OECD/International Energy Agency survey highlights [6], this applies to the entire Western Balkans region and the energy sector as a whole. There must be: *a clear separation of the functions of policy making, regulation and ownership. This means ensuring that administrations have the capacity, resources and statistical data to develop strategies and implement policies in a wide range of areas – not only in market regulation, but also in terms of energy efficiency, energy security, energy poverty and the impact of energy use on the environment. Such policies and strategies must be formulated in a transparent way that involves broad public consultation. The establishment of fully independent and empowered regulators must also be a priority.*

Since Serbia's ultimate goal is sustainable development, energy efficiency policies should also be carefully reviewed and probably attract even greater government consideration at this phase economic development (especially in public procurement, and further focus on housing and transport policies), while ensuring sufficient promotion and support for renewable energy development, and improving the coordination among various ministries and agencies. A momentous step in this direction is the National energy efficiency action plan adopted in 2010, while a step back in energy reform occurred in April 2011 when the Renewable energy department was eliminated from the Ministry of energy under pressure to reduce costs of government administration without any functional analysis. In 2012, the Energy efficiency agency was merged with the Ministry of energy; nonetheless, it appears that the intent this time is to render government policies more aligned, and that the Government is placing significant emphasis on energy efficiency and on investments in energy (especially hydro energy) sector based on public-private partnerships.

The framework created by the EU accession process is facilitating a systematic approach for development of business climate, including renewable energy policy in Ser-

* For more, see, <http://ec.europa.eu.energy/renewables/platforms/en.htm>.

Renewable energy policy by country, REN21

Country	Feed-in tariff	Renewable portfolio standard/ /Quota	Capital subsidies, grants, rebates	Investment or other tax credits	Sales tax, energy tax, excise tax, or VAT reduction	Tradable RE certificates	Energy production payments or tax credits	Net metering	Public investment, loans, or financing	Public competitive bidding
EU-27										
Austria	X		X	X		X			X	
Belgium		(*)	X	X	X	X		X		
Bulgaria	X		X						X	
Cyprus	X		X							
Czech Republic	X		X	X	X	X		X		
Denmark	X		X	X	X	X		X	X	X
Estonia	X		X		X		X			
Finland	X		X		X	X	X			
France	X		X	X	X	X			X	X
Germany	X		X	X	X			X	X	
Greece	X		X	X				X	X	
Hungary	X		X	X	X			X	X	X
Ireland	X		X	X		X				X
Italy	X	X	X	X	X	X		X	X	
Latvia	X				X	X			X	X
Lithuania	X		X		X				X	
Luxembourg	X		X	X	X					
Malta			X		X			X		
Netherlands			X	X	X	X	X			
Poland		X	X		X	X			X	X
Portugal	X		X	X	X				X	X

Renewable energy policy by country, REN21 (continuation)

Country	Feed-in tariff	Renewable portfolio standard/ /Quota	Capital subsidies, grants, rebates	Investment or other tax credits	Sales tax, energy tax, excise tax, or VAT reduction	Tradable RE certificates	Energy production payments or tax credits	Net metering	Public investment, loans, or financing	Public competitive bidding
Romania		×			×	×			×	
Slovakia	×			×	×				×	
Slovenia	×		×	×	×	×			×	×
Spain	×		×	×	×	×			×	
Sweden		×	×	×	×	×	×		×	
United Kingdom	×	×	×		×	×			×	
Other developed/transition countries										
Australia	(*)	×	×			×			×	
Belarus									×	
Canada	(*)	(*)	×	×	×			×	×	×
Israel	×				×					×
Japan	×	×	×	×		×		×	×	
Macedonia	×									
New Zealand			×						×	
Norway			×		×	×			×	
Russia			×			×				
Serbia	×									
South Korea	×		×	×	×				×	
Switzerland	×		×		×					
Ukraine	×									
United States	(*)	(*)	×	×	(*)	(*)	×	(*)	(*)	(*)

bia but the pace of these reforms will continue to be determined by administrative capacity of the Serbian government and its order of priorities. In practice, the private sector has already positively responded to the introduced renewable energy policy in Serbia (feed-in tariffs) but the extent of the investment will be visible only in the years to come. The hurdles in the form of access to finance and permitting complexities are already visible and require further policy reforms, which have been announced in autumn 2012, as well as improved implementation of adopted policies, to render aspirations of renewable energy policy in Serbia more realistic, and its contribution to sustainable economic development more valuable.

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Апстракт

Ана С. ТРБОВИЋ

**Факултет за економију, финансије и администрацију,
Универзитет „Сингидунум“, Београд, Србија**

Политика развоја обновљиве енергије у контексту европских интеграција Србије

Развој мера политике у области обновљиве енергије у Србији покренут је након демократске транзиције крајем 2000. године као део владиних напора да се постигне одрживи економски развој и да се српско тржиште интегрише са светским, а посебно европским тржиштем. Ради се о релативно новој политици не само у Србији, већ и широм света. Мере за подстицање употребе обновљивих извора енергије постојале су само у неколико земаља у 1980, постајући шире популарне крајем 1990, те посебно се развијајући током 2005–2010, нарочито у Европи. Прва Бела књига Европске Уније која успоставља стратешки оквир, као и Акциони план за развој обновљивих извора енергије, објављени су 1997, и преточени у две директиве у 2001 и 2003 (подстичу производњу струје из обновљивих извора енергије и коришћење биогорива или других обновљивих горива за транспорт (замењено Директивом 2009/28/ЕС). Први замах настао је 2007. године усвајањем Стратешког оквира за обновљиву енергију уз обавезујући циљ да 20% енергије треба да потиче из обновљивих извора до 2020 у ЕУ, што је довело до Директиве за подстицање обновљивих извора енергије у 2009, обухватајући и обавезу држава чланица ЕУ да усвоје националне акционе планове у овој области до јула 2010. Србија, која тежи чланству у ЕУ, приступила је ЕУ Енергетском споразуму Југоисточне Европе и ЕУ 2005, који обухвата и наведене директиве. Србија је потом, у 2009. усвојила Уредбу о подстицајима за производњу електричне енергије из обновљивих извора, која одређује и подстицајне цене обновљиве енергије. Србија је такође чланица-оснивач Међународне агенције за обновљиву енергију (ИРЕНА) и прати иницијативе Уједињених нација у овој области. Као резултат уведених и планираних мера политике, значајне инвестиције се очекују у сектору обновљиве енергије у Србији, стварајући тзв. зелене послове и омогућавајући више одржив економски развој. У овом чланку се разматрају и анализирају мере политике обновљиве енергије у Србији, као и трендови развоја ове политике у ЕУ и свету. Закључује се да енергетска ефикасност може бити још важнији циљ за Србију, јер хидроенергија је већ значајан извор обновљиве енергије, тако да Србија битно доприноси еколошкој енергетској политици у Европи.

Кључне речи: *обновљиви извори енергије, Србија, ЕУ, одрживи развој*

Електронска адреса аутора: atrbovic@fefaf.edu.rs

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