

# NATIONAL SWOT ANALYSIS ON ECO- INNOVATION – SERBIA



<b>WP3</b>	<b>Strategy for eco-knowledge</b>
<b>ACTIVITY 3.2</b>	Analysing the environment for ecoinnovation in partner countries
<b>DELIVERABLE 3.2.4</b>	National SWOT analysis on Eco-innovation

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<b>Title of the project</b>	Eco-innovately connected Danube Region (Ecolnn Danube)
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# 1. SWOT analysis: National (governmental) perspective

Internal factors	
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<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>• Quality of scientific research institutions<sup>1</sup> ***</li> <li>• Quality of math and science education<sup>2</sup> ***</li> <li>• Share of renewable energy in gross final energy consumption in comparison to EU average (23.4 vs. 16.1%)<sup>3</sup> ***</li> <li>• <b>Natural resources:</b><sup>4</sup> *** <ul style="list-style-type: none"> <li>○ <b>Agricultural land:</b> 5.7 million ha</li> <li>○ <b>Hydro potential:</b> circa 27.000 GWh</li> <li>○ <b>Mineral and Thermo mineral waters:</b> 700 springs, out of which 360 are recognized</li> <li>○ <b>Geological reserves:</b> copper – 2.8 billion tons, antimony – 9 million tons, magnesite – 41 million tons, fireproof and ceramic clay – 190 million tons</li> <li>○ <b>Nature Conservation:</b> 125 protected plant and 428 animal species</li> <li>○ <b>National Parks:</b> the Fruška Gora Mountain, Đerdap, Tara, Kopaonik, Mountain Šara</li> <li>○ <b>Biosphere reserve:</b> Golija Mountain</li> </ul> </li> <li>• % of tertiary educated graduates higher than at EU average in: Engineering, manufacturing and construction (17.5 vs. 13.9) as well as Agriculture, forestry, fisheries and veterinary (2.4 vs. 1.7)<sup>5</sup> **</li> <li>• Environmental tax revenues as a % of GDP are for more than 70% higher in comparison to EU average<sup>6</sup> **</li> <li>• The most of both energy<sup>7</sup> and environment protection related legal documents are in-line with EU recommendations and standards</li> <li>• Exceptional geo-strategic position of the country;</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>• Lack of awareness of eco-innovation importance<sup>11</sup> ***</li> <li>• Lack of any or at least reliable statistics in eco-innovation related filed<sup>12</sup> ***</li> <li>• Very low R&amp;D expenditure (0.87 % of GDP), whereas world innovation leaders score well above 2.6%<sup>13</sup> ***</li> <li>• Environmental protection expenditure (as a % of GDP) is for almost 10 times lower in comparison to EU level average<sup>14</sup> ***</li> <li>• Very low GDP at market prices in PPS (in comparison with EU level average it is lower for 272%)<sup>15</sup> ***</li> <li>• 66% of microfinance providers do not have any specific loans for green projects<sup>16</sup> or to finance such projects through their normal microcredit activities ***</li> <li>• Huge gap in technology (average age of the means of production is lagging three decades beyond developed countries)<sup>17</sup> ***</li> <li>• High external energy dependency (Unfavorable structure of domestic conventional energy sources; Low level of investments in the researches of energy potentials; Insufficient use of RES)<sup>18</sup> **</li> <li>• Poor Institutional framework (Property rights, Intellectual property protection, Judicial independence, Favoritism in decisions of government officials, Burden of government regulation, Efficiency of legal framework in settling disputes, Efficiency of legal framework in challenging regulations, Protection of</li> </ul>

<sup>1</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>2</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>3</sup> World bank: <https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS?end=2014&locations=RS-SI&start=2006&view=chart> and European environment agency (EEA)

<sup>4</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>5</sup> Source: Eurostat (online data code: educ\_uae\_grad02), Table 3

<sup>6</sup> Environment main indicators – Indicator 2.1

<sup>7</sup> <https://www.aers.rs/Index.asp?l=1&a=91>

<p>Even though it is landlocked, Serbia controls one of the major land routes from Western Europe to Turkey and the Near East and navigable Danube on its way to the Black Sea**</p> <ul style="list-style-type: none"> <li>• Openness to investment and investments, the interest of potential investors**</li> <li>• Growth (economic outlook) is expected to be around 3–4% over the medium term<sup>8</sup> *</li> <li>• Systemic governmental approach to accreditation<sup>9</sup> and standardization policy<sup>10</sup> *</li> </ul>	<p>minority shareholders' interests)<sup>19</sup> **</p> <ul style="list-style-type: none"> <li>• Stagnant household incomes, an inefficient judicial system, high levels of corruption, and an aging population<sup>20</sup> **</li> <li>• Problematic factors for doing business (Tax rates, Access to financing and Inefficient government bureaucracy)<sup>21</sup> **</li> <li>• % of tertiary educated people in total population is just about 6% **</li> <li>• Ignored the processes of environmental protection, reclamation and safety and health at work<sup>22</sup> **</li> <li>• Lack of risk capital, high interest rates on equity loans for start-ups **</li> <li>• Lack of mechanisms for conflict resolution and general interests of property rights<sup>23</sup> **</li> <li>• Significant number of businesses operating in grey-zone, causing fiscal cash drain *</li> <li>• Lack of any eco-innovation policy, dysfunctional market for both eco-related products or services *</li> </ul>
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<sup>11</sup> Report on national results of survey – Serbia (2017). Ecolnn Danube project. RDA Banat.

<sup>12</sup> National report on obstacles & opportunities – Serbia (2017). Ecolnn Danube project. RDA Banat

<sup>13</sup> <https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2015&locations=RS&start=2015&view=map>

<sup>14</sup> Environment main indicators – Indicator 1.1

<sup>15</sup> Economy main indicators Database – Indicator 1.1

<sup>16</sup> <https://www.statista.com/statistics/430215/microcredit-environmentally-friendly-provision-serbia/>

<sup>17</sup> Bogetic, S, Djordjevic, D. and Randjic, D (2011). Analysis of Options for Improving Competitiveness of Domestic Enterprises. *Proceedings of the 8<sup>th</sup> Conference of businessmen and scientists: SPIN'11* (pp. 3-11). Belgrade: Faculty of Organisational Sciences, Centre for Operative Management and Chamber of Commerce of Serbia.

<sup>18</sup> Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030.

<sup>8</sup> <http://www.worldbank.org/en/country/serbia/overview#3>

<sup>9</sup> <http://www.ats.rs/en/pages/about-us>

<sup>10</sup> [http://www.iss.rs/en/button\\_4.html](http://www.iss.rs/en/button_4.html)

<sup>19</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>20</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/ri.html>

<sup>21</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>22</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>23</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

External factors	
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<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>• EU ecological trends, directives and international environmental protocols/agreements ***</li> <li>• Available finances from EU funds and programs<sup>24</sup> ***</li> <li>• There is a high share of 65.2% of unused RES<sup>25</sup> ***</li> <li>• Integration of the Republic of Serbia in to EU – fulfillment of obligations undertaken by the accession the Energy Community Treaty and the Stabilization and Association Agreement (Higher use of RES; Increase of the possibilities and scope of public-private partnership in the energy field)<sup>26</sup> ***</li> <li>• Total energy potential of RES is assessed at over 5.65 Mtoe per year, as follows:<sup>27</sup> *** <ul style="list-style-type: none"> <li>○ biomass: 3.4 Mtoe;</li> <li>○ wind: 0.1 Mtoe;</li> <li>○ MHE: 1.7 Mtoe;</li> <li>○ solar: 0.2 Mtoe and</li> <li>○ geothermal: 0.20 Mtoe.</li> </ul> </li> <li>• Increase of total economic competitiveness of energy system (More intensive use of pre-accession funds of EU in the energy sector; More efficient business operation of public energy utilities and other economy entities in the energy field; Attraction of foreign partners, banks and investors in the safe and long-term investment in Serbian energy system; Increase of competition and competitiveness in energy sector; Development of electricity and natural gas market in the country and region; Increase of legal security of investments)<sup>28</sup> ***</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>• Huge „brain drain“ phenomenon (Country capacity to retain talent is one of the worst in the world)<sup>34</sup> ***</li> <li>• The presence of activities that lead to environmental threats<sup>35</sup> ***</li> <li>• Poor financial investment in ecology related expenditures other than pursuant by law by investors ***</li> <li>• Eco-innovation related legal framework isn't implemented in full scale ***</li> <li>• The risk of access to the restructuring and privatization of certain government and public mining companies<sup>36</sup> **</li> <li>• Mutually incompatible legislation in the field of mining and environmental protection, water and soil - unfair competition between resources<sup>37</sup> **</li> <li>• High level of corruption<sup>38</sup> **</li> <li>• Poor financial potential for re-investment in domestic companies **</li> <li>• Trend of decrease of the level of payments for mineral rents (as % of GDP) in last several years<sup>39</sup> **</li> <li>• The risk of increased pressure on mineral resources in order to accelerate economic development<sup>40</sup> **</li> <li>• Deepening of social and economic crisis, poverty increase, indebtedness and slow economy development of the country<sup>41</sup> **</li> <li>• Outdated technology in manufacturing sector</li> </ul>

<sup>24</sup> <https://europa.rs/eu-assistance-to-serbia/eu-programmes/?lang=en>

<sup>25</sup> Strategy on Energy sector development of the Republic of Serbia with forecasts till 2030

<sup>26</sup> Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030.

<sup>27</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>28</sup> Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030.

<ul style="list-style-type: none"> <li>• Serbia is potentially the richest source of lithium ore in the world<sup>29</sup> ***</li> <li>• Dependency rate on energy imports in Serbia from 2006 to 2015 decreased by 10%<sup>30</sup> **</li> <li>• High level of tertiary education enrolment rate<sup>31</sup> **</li> <li>• Better implementation of environmental protection measures and safety and health at work<sup>32</sup> **</li> <li>• Introduction of the principles of cleaner generation in energy sector<sup>33</sup> **</li> </ul>	
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Notes:

\*\*\* - Attribute with strong impact, \*\* - Attribute with moderate impact, \* - Attribute with lower impact

<sup>34</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>35</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>36</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>37</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>38</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>39</sup> <https://data.worldbank.org/indicator/NY.GDP.MINR.RT.ZS?locations=RS>

<sup>40</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>41</sup> Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030.

<sup>29</sup> <http://www.riotinto.com/energyandminerals/jadar-4643-sr.aspx>

<sup>30</sup> <https://www.statista.com/statistics/691219/dependency-on-energy-imports-in-serbia/>

<sup>31</sup> Municipalities and Regions in the Republic of Serbia (2017). Statistical Office of the Republic of Serbia.

<sup>32</sup> Strategy on Management of Mineral Resources in Serbia till year 2030.

<sup>33</sup> Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030.

## 2. SWOT analysis: National business perspective

Internal factors	
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<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>• Serbia can serve as a manufacturing hub for duty-free exports to a market of more than 1 billion people: number of free – trade agreements bridging access to both western and eastern markets<sup>42</sup> **</li> <li>• Relatively short transportation routes to major industrial production centres in Europe **</li> <li>• National diversity and intercultural connections of national minorities with their native countries **</li> <li>• Low prices of electric energy **</li> <li>• Enterprises providing ICT training for 21.4% higher value in comparison to EU average<sup>43</sup> *</li> <li>• Solid IC system: wireless service, available through multiple providers with national coverage, is growing very rapidly; best telecommunications services are centered in urban centers; 4G/LTE mobile network launched in March 2015<sup>44</sup> *</li> <li>• Internet users as percent of population: 67.1% (July 2016 est.), comparison to the world: 79<sup>45</sup> *</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>• R&amp;D expenditure in the business sector is just 21.9% in comparison to EU average<sup>46</sup> ***</li> <li>• Intellectual assets (PCT patent applications; Trademark applications; Design applications) is just 22.7% in comparison to EU<sup>47</sup> ***</li> <li>• Energy intensive economy (more than 4 times in comparison to EU)<sup>48</sup> ***</li> <li>• Linkages (Innovative SMEs collaborating with others; Public-private co-publications; Private co-funding of public R&amp;D expenditure) is just 42.6% in comparison to EU average<sup>49</sup> **</li> <li>• Inefficient economy - low level of resources productivity is related to state of art of its industry and infrastructure in general (more than 7 times lower resources productivity in comparison to EU)<sup>50</sup> **</li> <li>• Low firm-level technology absorption<sup>51</sup> **</li> <li>• Structure of SME sector<sup>52</sup>: The biggest number of business entities in the SME sector is in the trade sector and repair of motor vehicles and motorcycles (29.0%), followed by the processing industry (15.7%), and the smallest in technical and scientific activities (12.1%) **</li> <li>• Low competitive strength due to the lack of managerial and marketing skills, commitment and networking*</li> </ul>

<sup>42</sup> <http://ras.gov.rs/export-promotion/free-trade-agreements>

<sup>43</sup> European Innovation Scoreboard 2017 - Serbia.

<sup>44</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/ri.html>

<sup>45</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/ri.html>

<sup>46</sup> European Innovation Scoreboard 2017 Database - Indicator 2.2.1

<sup>47</sup> European Innovation Scoreboard 2017 - Serbia.

<sup>48</sup> Energy main indicators Database – Indicator 1.2

<sup>49</sup> European Innovation Scoreboard 2017 - Serbia

<sup>50</sup> Environment main indicators – Indicator 3.1

<sup>51</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>52</sup> Information on the SMEs sector in the RS from the year 2008-2015; Chamber of commerce and industry of RS, October 2016

External factors	
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<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>Existing financial and tax incentives for new investments are significant, especially for large companies and projects<sup>53</sup> ***</li> <li>Rising trend in creative industries, worldwide and regionally, shift from location determined work to globally distributed brainpower collaboration via internet; paradigm shift from volume to rapid prototyping production ***</li> <li>Economy sentiment, particularly towards industry and service sectors<sup>54</sup> **</li> <li>Adoption of circular economy philosophy for certain branches of manufacturing industry **</li> <li>Improving trends in Innovation activities Indexes (SMEs product/process innovations, SMEs marketing/organizational innovations and SMEs innovating in-house)<sup>55</sup> **</li> <li>With the Introduction of “Feed in” tariff in 2010 a period of better utilization of the RES has started. Until today, a number of electricity generation projects were realized from RES with the total installed capacity of 19 MW<sup>56</sup> **</li> <li>Philosophy of the “Crowdsourcing companies”, which allows any entity to compete globally **</li> <li>Low prices on electricity (31% of EU 28 average<sup>57</sup> for households and 75% of the EU 28 average for medium size industries) **</li> <li>Number of individuals in Serbia who uses the internet to sell goods or services to other consumers from 2007 to 2015 increased seven fold<sup>58</sup> *</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>Institutional and administrative obstacles that discourage use of RES for electricity generation in full scale<sup>59</sup> ***</li> <li>Minor University-industry collaboration in R&amp;D field<sup>60</sup> ***</li> <li>Lack of transparency and consistency in law application as well as corruption remain key issues that need to be resolved<sup>61</sup> ***</li> <li>There is no venture capital investments in Serbia at all<sup>62</sup> **</li> <li>Opportunity driven entrepreneurship is just 39.5% comparing to EU<sup>63</sup> **</li> <li>Exports of medium and high technology products as a share of total product exports is below 70% in comparison to EU<sup>64</sup> **</li> <li>Business environment is facing the challenges of economic activities depression on global scale which is on internal plan made more complex by transition challenges on one hand and challenges of adapting to economic criteria for the EU membership on the other<sup>65</sup> **</li> <li>Low level of government procurement of advanced technology products<sup>66</sup> **</li> <li>Buyer sophistication<sup>67</sup> *</li> <li>Total consumer spending in Serbia is stagnating<sup>68</sup> *</li> </ul>

<sup>53</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>54</sup> European Commission - Directorate general for economic and financial affairs (DG ECFIN)

<sup>55</sup> European Innovation Scoreboard 2017 - Serbia.

<sup>56</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>57</sup> <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=ten00117&plugin=1>

<sup>58</sup> <https://www.statista.com/statistics/707291/online-c2c-commerce-penetration-in-serbia/>

<sup>59</sup> National report on obstacles & opportunities – Serbia (2017). Ecolnn Danube project. RDA Banat

<sup>60</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>61</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>62</sup> European Innovation Scoreboard 2017 - Serbia



Notes:

*\*\*\* - Attribute with strong impact, \*\* - Attribute with moderate impact, \* - Attribute with lower impact*

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<sup>63</sup> European Innovation Scoreboard 2017 - Serbia

<sup>64</sup> European Innovation Scoreboard 2017 - Serbia

<sup>65</sup> Serbia – Your Business Partner (2013). Chamber of Commerce and Industry of Serbia.

<sup>66</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>67</sup> The Global Competitiveness Report 2017–2018 . World Economic Forum

<sup>68</sup> <https://www.statista.com/statistics/234810/total-consumer-spending-in-serbia/>

### 3. CONCLUSION

From the *Government point of view*, Republic of Serbia has its strengths mainly in university education as well as in its natural resources. Major weaknesses are in sphere of awareness of importance of eco-innovation and importance of innovation at all, what is related with very low level of expenditure in R&D sector. On the other hand, there are opportunities for Serbia which could be used in order to benefit and they are mostly related to EU ecological trends, directives and international environmental protocols/agreements, available funds as well as high share of unused RES potentials. The major threats for the Government are huge depopulation and decade's long "brain drain" as well as activities that lead to environmental threats.

*Business sector point of view* is slightly differs from governmental one. They underline free trade agreements and accessibility of foreign markets with almost billion people as crucial strengths of the country. Beside low R&D expenditure and % of intellectual assets, energy intensive economy is seen as a major weakness. Business sector recognises both the existing financial and tax incentives for new investments as well as rising trend in creative industries (shift from location determined work to globally distributed brainpower collaboration via internet; paradigm shift from volume to rapid prototyping production) as major opportunities in sphere of eco-innovation for Serbia. Relating to threats, institutional and administrative obstacles that discourage use of RES for electricity generation in full scale, minor university-industry collaboration in R&D field as well as corruption are still most influential ones.

It could be stressed as a main conclusion that in eco-innovation sphere Serbia should pay more attention in rising awareness of its importance at all levels, from government, R&D institutions, educational system, business sector to the households. In mid-term, this should lead to creation of reliable statistics on eco-innovations, increase of R&D expenditure in both government and business sector and finally increase its share in national GDP and contribution to economy.

So, key factor of Serbian success in eco-innovation sphere are:

1. Development of numerous indicators organised in 5 groups of eco-innovation indicators: *Eco-innovation inputs, Eco-innovation activities, Eco-innovation outputs, Resource efficiency outcomes and Socio-economic outcomes*.
2. Increase the R&D expenditure in eco-innovation field by both: government and business sector as well.
3. Promote the concept of eco-innovation as important part of everyday operations in governmental institutions, business sector and households as well.