

POLICY BRIEF

North Macedonia: Energy Transition and Democracy



Srgjan Vidoeski

2021, Sarajevo

Executive Summary

In its latest energy strategy, adopted at the beginning of 2020, North Macedonia projects complete coal and lignite phase out latest by 2040. The country has been praised as the first country from the Western Balkans to set such ambitious goals. In spite of its determination to move towards a green future in line with its EU accession process, the country continues struggling with air pollution, waste management issues, and inefficient energy market liberalization. The aim of the policy brief is to address these issues through an analysis of recent developments in energy transition of the country. In addition, the brief offers solutions through democratization of the process of energy transition and reviews and maps out the potential for citizen energy.

Recommendations

- ⇒ The latest recommendations from the EU's annual report on the progress of North Macedonia are addressing the lack of appropriate institutional structure and personnel working in the sector of energy governance. We join this recommendation, and urge the Macedonian government to work on improving its institutions dealing with energy issues, providing more adequate structure and human resources able to fully respond to the ongoing energy transition and the related tasks.
- ⇒ North Macedonia has great potential for renewable energy production, as this policy brief shows, in particular clean energy with minimal environmental disruption, such as wind and solar power. However, construction of small hydropower plants has been shown to cause environmental damages in recent years. It is recommended that the North Macedonian government acts more proactively in environmental protection, ensuring that any future energy projects receive approval from environmental experts, but also from the local communities as they are the most knowledgeable of their environment.
- ⇒ Democratization of the energy sector of North Macedonia can easily be achieved as the country has recently adopted its new energy development strategy and started implementing changes in its legal framework concerning energy governance. Now is the right time for wider public inclusion and decentralization of the process of energy transition. It is recommended that North Macedonia take actions in this regard by supporting local initiatives, small investors in energy projects, and by supporting creation of citizen energy communities and prosumers through supportive legal framework, education, knowledge and experience exchange, and technical and financial support.

Context and recent developments

Recent Developments in the Macedonian Energy Governance

In recent years, North Macedonia has been acknowledged for putting efforts in regards to its energy transition, making visible progress in aligning the country's legal framework in accordance with the EU legislation. This has been done on several frontiers, mostly through accelerated adoption of important policy changes, such as the Energy Efficiency Law, the Energy Development Strategy, and schemes for supporting new renewable energy projects. As a result, the energy market of North Macedonia is described today as one of the most attractive amongst the countries of the Southeast Europe.

The 2019 annual progress report of the European Commission states that North Macedonia has been making good progress in aligning the national legislation with the European Union's Clean Energy Package¹. EU's "Clean Energy for all Europeans Package"² marked a significant step towards the implementation of the energy union strategy, published in 2015. Among other important points, it promotes citizen energy, creation of local energy communities, or "prosumers" - a form of residential type of energy circulation, where the consumers are also producers of their own energy.

In North Macedonia, the term "prosumers" or citizen energy has not been officially used until recently. The new National Energy and Climate Plan submitted to the Energy Community in its final draft in early October 2020, provides for about 400MW of solar energy to be generated by households PVs and included into the country's energy mix. This provision is essentially opening a pathway for citizen energy, energy communities and prosumers in North Macedonia, and the Ministry of Economy used the term during an official press, which could mean the plan does bring forward a definition of what a prosumer in the Macedonian context presents.

In comparison to the 2019 report, the latest 2020 annual progress report on North Macedonia, delivered by the European Commission earlier in October 2020 states that North Macedonia remains "moderately prepared in this area (energy), and good progress was made, notably through the adoption of implementing legislation in relation with the third energy package." Other highlights include recognition that North Macedonia managed to align its Energy Law with the EU Renewables Energy Directive, following the adoption of several pieces of secondary legislation to implement the renewable energy rules.

Moreover, the report mentions the progress made with the adoption of the new Law on Energy Efficiency which is aligned with the EU energy efficiency and the energy performance Directives. Additionally, the reports notes that North Macedonia amended its national renewable energy action plan with the aim of reaching the binding target of 23% of renewable energy by 2020 and 24% by 2025. In comparison, in 2018 the country achieved only 18.12% share of renewables in its energy mix. If the country is diligent enough in following its energy strategy and objectives, the targets for 2020 and 2025 should be achieved.

According to the national and international statistics, such as those run by the World Data and the International Energy Agency, North Macedonia remains reliant on fossil fuels³. Majority of its total energy mix, both on supply and demand side, still falls under the category of fossil fuels (Figure 1), mostly due to the usage of coal and oil. In recent years, efforts have been made to include more natural

¹ European Commission. *Clean energy for all Europeans package*. available at: https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en (accessed 13 September 2020)

² European Commission. *Clean energy for all Europeans package*. available at: https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en (accessed 13 September 2020)

³ World Data. *Energy consumption in North Macedonia*. available at: <https://www.worlddata.info/europe/macedonia/energy-consumption.php> (accessed 17 September 2020)

gas in the energy mix, which is why new infrastructure and connecting pipelines are being developed as of 2020⁴.

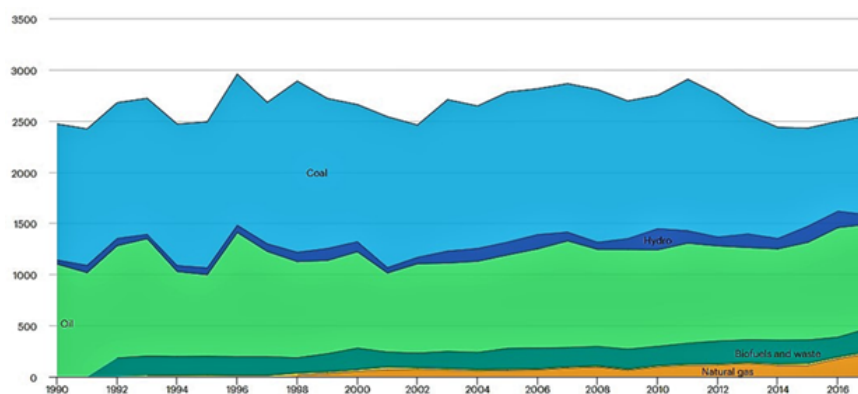






Figure 1: Total energy mix of the country; Source: Word Data, International Energy Agency, 2020⁵

In addition, North Macedonia's energy mix includes a significant percentage of hydropower, having mountainous geography with powerful streams of rivers running through the country. For the time being, the hydropower capacity is partially used. Aside from biomass and biofuel that are present to some extent, other sources of renewable energy such as solar and wind, have their potential underused, to say the least. Their inclusion in the energy mix, both on supply and demand side, has been steadily rising in recent years, but they still remain overshadowed by the predominance of the fossil fuels in the energy mix. The Figure 2 below is the table from the UNDP 2013 report⁶, showing the potential of North Macedonia to utilize renewable energy sources, and the comparison shows the great difference between the types of energy that are being used and the types of energy sources the country possesses that have not been put into full use yet. The difference in comparison is staggering.

	 Biomass	 Solar PV	 Wind	 Small Hydro
Installed Renewable Electricity Capacity 2012 in MW	0	7.1 ¹	0	59.6
Technical Potential for Installed Renewable Electricity Capacity in MW	500	24,000	400	200

Sources: Pavlovic et al. (2013); Lalic et al. (2011); Mijakowski and Mijakowski (2013); EVN Macedonia (2013); Energy Agency (2013); Government of the Republic of Macedonia (2010); EWEA (2013); World Bank (2014); Renewable Facts (2013); EIA (2013); Hoogwijk and Graus (2008); Hoogwijk (2004); JRC (2011); and UNDP calculations.

Figure 2: Renewable energy in North Macedonia; Source: UNDP, 2013; Solar PV 7.1MW capacity is from 2012⁷

As North Macedonia, in its latest Energy Development Strategy projects a complete coal and lignite phase-out, latest by 2040, in 2020 the government announced and opened new tenders for large-scale investment projects in renewable energy sector supported by subsidies, particularly for solar power,

⁴ Министерство за Економија на Република Северна Македонија. *Со Енергетската стратегија до 2040 Северна Македонија ќе инвестира во целосна модернизација и трансформација на енергетскиот сектор*. [Following its Energy Strategy 2040, North Macedonia will invest in complete modernization and transformation of its energy sector]. available at: <http://economy.gov.mk/vest/382> (accessed 03 October 2020)

⁵ International Energy Agency. "North Macedonia." *Country Profile*. available at: <https://www.iea.org/countries/north-macedonia> (accessed 29 August 2020)

⁶ United Nations Development Programme. *Renewable Energy Snapshot: The Former Yugoslav Republic of Macedonia*. UNDP: 2013

⁷ United Nations Development Programme. *Renewable Energy Snapshot: The Former Yugoslav Republic of Macedonia*. UNDP: 2013

while institutional and private investors have shown much interest in developing new projects for production of renewable energy. The scenarios projected by the energy strategy are the following⁸: a reference one, along the lines of business as usual, a scenario for a moderate energy transition, and a green scenario, which is the most optimistic one, projecting strong decarbonization⁹ and fast coal phase-out. Both the moderate and the green scenarios aim for a coal phase-out by 2025. These two scenarios are essentially the more cost-efficient options, which means the country will indeed move away from coal relatively soon. Among the strategic goals of the energy strategy, a central role is given to the commitment to a strong increase of the renewable energy share in the energy mix of the country, a promising indicator that coal phase-out will be done sooner rather than later.

	Reference scenario	Moderate Transition scenario	Green scenario
Vision	Transition from conventional energy based on current policy and least cost principles	Progressive transition from conventional energy based on new policy and least cost principle	Radical transition from conventional energy based on new policy and lignite phase out
Demand drivers	<ul style="list-style-type: none"> • Macedonian GDP growth to reach neighboring EU countries' GDP per capita levels of today by 2040 • Current energy efficiency policies • Penetration of EVs 	<ul style="list-style-type: none"> • Same GDP growth as for reference • Energy efficiency based on enhanced policy (in line with EU Directives / EnC guidelines) • Higher penetration of EVs 	<ul style="list-style-type: none"> • Same GDP growth as for reference • Same as moderate transition but more incentives and advanced technologies • Highest penetration of EVs
Generation investments focus	<ul style="list-style-type: none"> • Lignite PP revitalization choice based on least cost principles • High focus on RES 	<ul style="list-style-type: none"> • Lignite PP revitalization choice based on least cost principles • Further focus on RES technology investments 	<ul style="list-style-type: none"> • Lignite PP revitalization choice based on least cost principles • Extreme focus on RES investments
Carbon price at ETS level	2027	2025	2023
Commodity prices (WEO 2017) ¹	Based on current policies scenario	Based on new policy scenario	Based on the sustainable development scenario
Fuel Supply / Availability	<ul style="list-style-type: none"> • Lignite production capped at a maximum level of annual supply expected (~ 5 M tons 2018-2035, ~ 3 M tons 2035-2040) • Hydro production and wind/solar in line with historical trends and adjusted for new entering power plants • Cross Border Capacities (electricity and gas) evolution in line with the ENTSO-E, ENTSO-G and EnC • Sustainable consumption of biomass² • Battery storage (EVs and pump storage) 		

Figure 3: Overview of the 3 scenarios for the energy transition of North Macedonia;

Source: Energy Development Strategy of North Macedonia¹⁰

Two of the strategy's ambitious scenarios¹¹ aim towards coal phase out by 2025, with the third one delaying the closure of the thermal power plant REK "Bitola" until 2040, which would have been viewed as overly optimistic only few years ago. The directives in the strategy¹² and the latest tenders opened for the construction of solar power plants, and for extensions to the one existing wind farm in the country, give hopes that the officials are recognizing North Macedonia's great potential for clean energy, without compromising the country's energy security. As a relatively sunny country, with over 280 sunny days per years according to estimates, this type of renewable energy is barely participating in the total energy mix of the country. Together with the wind power, the energy produced by photovoltaics make up a small percentage of the electricity production capacities. The Ministry of Economy of North Macedonia earlier in 2020 announced "the (energy) strategy envisions investments in photovoltaic power plants

⁸ Government of the Republic of North Macedonia. Based on Article 11 paragraph (1) of the Energy Law. "Official Gazette of the Republic of Macedonia No. 96/18 & Official Gazette of the Republic of North Macedonia No.96/19." *Strategy for Energy Development of the Republic of North Macedonia up to 2040*. Skopje: Government of Republic of North Macedonia, 2019

⁹ CEE Bankwatch Network. *The energy Sector in North Macedonia*. available at: <https://bankwatch.org/beyond-coal/the-energy-sector-in-macedonia> (accessed 12 September 2020)

¹⁰ Government of the Republic of North Macedonia. Based on Article 11 paragraph (1) of the Energy Law. "Official Gazette of the Republic of Macedonia No. 96/18 & Official Gazette of the Republic of North Macedonia No.96/19." *Strategy for Energy Development of the Republic of North Macedonia up to 2040*. Skopje: Government of Republic of North Macedonia, 2019

¹¹ Government of the Republic of North Macedonia. Based on Article 11 paragraph (1) of the Energy Law. "Official Gazette of the Republic of Macedonia No. 96/18 & Official Gazette of the Republic of North Macedonia No.96/19." *Strategy for Energy Development of the Republic of North Macedonia up to 2040*. Skopje: Government of Republic of North Macedonia, 2019

¹² International Hydropower Association. "Western Balkans (Macedonia) statistics." *Western Balkans (Macedonia)*. available at: <https://www.hydropower.org/country-profiles/western-balkans-macedonia> (accessed 30 August 2020)

which are expected to have a total installed capacity of 1.357 MW, or 41.8% of the total installed capacity for energy production.”¹³

Moreover, since 2010, about 80 small hydropower plants have been constructed. According to the International Hydropower Association, North Macedonia has a technical hydropower potential of about 5.500 GWh. However, only about 1.500 GWh is currently utilized, representing a total installed capacity of about 675 MW. In recent year though, the construction of small hydropower plants has been criticized and shown as problematic, as environmental protection has been neglected. At a recent press conference held in October 2020, the Minister for Economy, Mr. Bektashi shared the position of the current authorities on further use of the national renewable energy potential. He stated: “the transformation of the energy sector will continue at an even faster pace in order to implement the ambitious plan by 2024 to lift the share of renewables in power generation capacity to 50%... efforts would be made to ensure every consumer gets an opportunity to become a prosumer of environmentally friendly and cheap energy.”

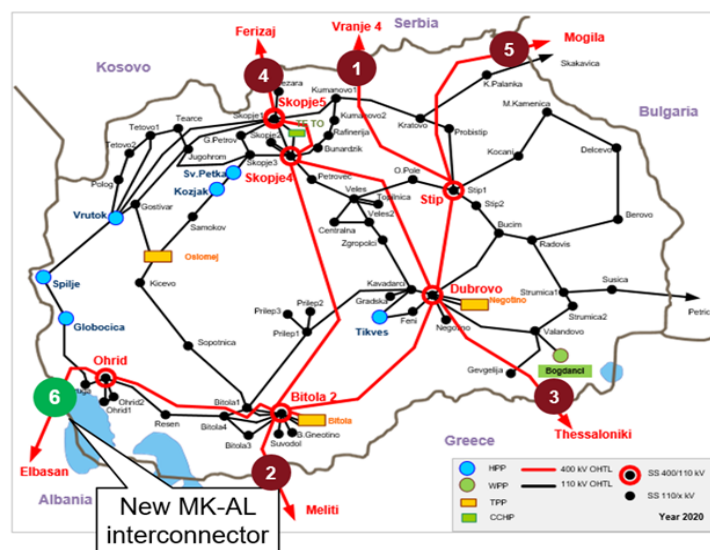


Figure 4: Electricity production of North Macedonia;

Source: Energy and Water Services Regulatory Commission of the Republic of North Macedonia, 2020¹⁴

Figure 4 above¹⁵, shows us the current electricity production capacities and transmission network of North Macedonia, as well as the kind of energy sources that being used for electricity generation. The combustible fuel and hydropower remain the main sources, their transmission being presented with red and blue lines on the map. The solar power units are not yet presented on the map, as they are still under planning, development or in construction. The wind power however, presented with green point (Bogdanci) already takes over a small share, in the southeast part of the country. On the side of the electricity supply and demand ratio, according to the statistics¹⁶ that have been following the situation

¹³ Министерство за Економија на Република Северна Македонија. *Со Енергетската стратегија до 2040 Северна Македонија ќе инвестира во целосна модернизација и трансформација на енергетскиот сектор*. [Following its Energy Strategy 2040, North Macedonia will invest in complete modernization and transformation of its energy sector]. available at: <http://economy.gov.mk/vest/382> (accessed 03 October 2020)

¹⁴ Energy and Water Services Regulatory Commission of the Republic of North Macedonia. *Electricity / Electricity Market*. available at: https://www.erc.org.mk/pages_en.aspx?id=113 (accessed 4 October 2020)

¹⁵ Energy and Water Services Regulatory Commission of the Republic of North Macedonia. *Electricity / Electricity Market*. 2020

¹⁶ Worldometer. “Energy Consumption in North Macedonia.” *Republic of North Macedonia Energy*. available at: <https://www.worldometers.info/energy/north-macedonia-energy/> (accessed 2 October 2020)

in the last few years, North Macedonia imported 2,191,000 MWh of electricity in 2016 for instance, covering about 34% of its annual consumption needs that year.

This ratio of dependence from electricity imports which are satisfying about 1/3 of the total electricity consumption of the country, continues steadily well into 2020. North Macedonia also exported around 160.000 MWh of electricity in 2016, with similar number in the following years, up to 2020. Imports and exports are exchanged through relatively good connectivity in transmission lines with its neighboring countries, with the newly constructed line connecting the national network to the one of Albania, thus maintaining the balance of the regional infrastructure.

When we go back and compare the presented figures, we see a large gap with the reality at hand, and the options for a green energy transition that North Macedonia has. Today, around 60% of total energy mix and total electricity production of the country comes from either coal, oil or natural gas. The country has all the required preconditions to be energy independent, and could be enabled to rely on its potentials for renewable energy to satisfy most of its energy needs, even though the energy strategy aims for a stable energy exchange with the neighboring countries. Having this comparison between reality, possibilities and set objectives in mind, the next couple of years should mean a significant amount of work and dedication towards intensive energy transition, or rather energy transformation for North Macedonia.

Overview: Energy Democracy and RES Potential

The concept of energy democracy is a relatively new field of research in the scientific circles, and it entails an interdisciplinary approach. As the name itself suggests, it is about placing together two seemingly different terms, energy and democracy, and viewing the energy issues and energy governance through the principles of democracy. In its essence, energy democracy would mean wide-range participation of the public. The involvement of local communities is the number one factor for achieving democratization of the energy transition process. It is widely considered that social movements, especially in relation to the process of decarbonization and protests against pollution and climate change, has largely contributed to the emergence and popularization of the concept of energy democracy in recent years.

On the EU level and through the Clean Energy Package, the importance of local communities has been recognized and the local communities are enabled to participate in the energy systems through two different legally recognized entities: citizen energy communities and renewable energy communities¹⁷. To sum up the comparison between the two different types of energy communities, both with the commonality of placing the citizens as central figures on deciding on their energy needs, REScoops¹⁸ made the following table, in Figure 5 below:

Article 2(16) Recast Renewable Energy Directive 'Renewable Energy Community'	Article 2(11) Recast Electricity Directive 'Citizen Energy Community'
<p>A legal entity:</p> <ul style="list-style-type: none"> (a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity; (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities; (c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits. 	<p>A legal entity that:</p> <ul style="list-style-type: none"> (a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises; (b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits; and (c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders;

Figure 5: Renewable Energy Community vs. Citizen Energy Community; Source: REScoops, 2019¹⁹

Considering the large-scale actions towards green future, the EU member states are well aware of the importance of further strengthening energy democracy. Any type of energy community brings along a number of benefits to energy system. As they are created or supported by the local communities and operate locally, they strengthen the concept of decentralization and local multilevel governance of energy issues. German *Energiewende*²⁰ is a good example of how a decentralization and local governance can accelerate energy transition and create strong prosumers.

Energy communities of any kind could take over system operations²¹, providing flexibility, local services, and removing the need for traditional network upgrades. The rise of a number of energy

¹⁷ European Commission. *Clean energy for all Europeans package*. available at: https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en (accessed 13 September 2020)

¹⁸ European Federation for Renewable Energy Cooperatives. "Energy communities and the Renewable Energy Directive: The clean energy package." *ResCoop EU*. 2020

¹⁹ Ibid.

²⁰ Clean Energy Wire. *Germany's Energiewende - The Easy Guide*. available at: <https://www.cleanenergywire.org/easyguide> (accessed 28 August 2020)

²¹ European Union. "Energy communities: an overview of energy and social innovation." *JRC Science for Policy Report*. EUR 30083 EN. Prepared by Caramizaru, Aura and Andreas Uihlein. Luxembourg: Publications Office of the European Union, 2020. ISBN 978-92-76-10713-2. DOI:10.2760/180576, JRC119433

communities and their expenditure towards national energy supply for electricity and heating, participating in the energy markets, working on energy efficiency and electro-mobility, are all signs that most likely they are the key for disrupting energy activities traditionally held by large companies and utilities. Some estimates suggest that by 2030, at the EU level, energy communities could own about 17% of installed wind capacity, and 21% of solar capacity²². Having understood the importance of energy democracy and energy communities for the ongoing energy transition in the Western Balkans, there are hopes that the countries will show commitment to following the examples of the EU and the directives, and move on with energy transition in a democratic and inclusive way.

The solar potential of North Macedonia is clearly the most prominent clean energy resources in the country. In line with its new energy strategy, the Macedonian government opened a tender, earlier in 2020, to find investors for constructing two solar power plants on the site of Oslomej, with a combined capacity of up to 100MW, in a partnership with ESM, the state power utility. This marks the official start of transforming the old thermal power plant and the depleting coal mine pit “Oslomej”, in the southwest region of the country, into a large solar power plant, with the intention of keeping the same employees from the former thermal power plant and mine. The intention of keeping the same local employees, requalified to work in solar energy production, to some extent represents inclusion of the local community and the ordinary citizens into an energy project.

In addition to the large-scale solar power project for replacing the old thermal power plant “Oslomej” and the newly announced provision of projected 400MW of residential solar energy from rooftop PVs, in 2019 North Macedonia opened a tender with subsidies for investments in photovoltaics, for an investment in a minimum installed capacity of 1MW²³. The tender was aimed at the construction of two large-scale shared-investment units for solar power generation in different regions of the country, with one site one near the town of Sveti Nikole, with 25MW of installed capacity, and one near the town Makedonski Brod, with 10MW of installed capacity²⁴.

The tender attracted around 80 bids from interested investors, that are enabled to construct a number of photovoltaics, up until filling up the total installed capacity of 35MW in solar power²⁵, with subsidies from the government in the form of premium tariffs, and projected return of investment in a relatively short time. These actions were praised by the international institutions and agencies, and it meant a great start for the usage of the solar energy in North Macedonia. After one year, four different solar power units are currently under construction in North Macedonia, which is a good indicator of the commitment and determination of the authorities to follow through with the energy strategy goals..

According to the International Hydropower Association²⁶ there are over 600GW of unused hydropower capacities in North Macedonia available, which is making the hydropower market attractive. However, the damage done to the local ecosystems, disruption of nature and living organisms is preventing more and more countries nowadays from utilizing this type of energy, at least on a larger scale. This dilemma is present in North Macedonia today as well. With its mountainous terrain and numerous rivers and streams flowing through it, North Macedonia is recognized for its hydropower potential and today it is a matter of working closely with environmental protection experts and local communities in order for this potential to be put into use. A viable solution in energy transition today can only be found in the

²² European Union. “Energy communities: an overview of energy and social innovation.” *JRC Science for Policy Report*. EUR 30083 EN. Prepared by Caramizaru, Aura and Andreas Uihlein. 2020

²³ Постоловски, Дамјан. “Колку е исплатлива премиум тарифата за фотоволтаични центри во Македонија?” [How much cost-effective is the premium tariff for photovoltaic power plants in Macedonia?]. *Фактор*. 2019. available at: <https://faktor.mk/kolku-e-isplativa-premium-tarifata-za-fotovoltaichni-centrali-vo-makedonija> (accessed 7 October 2020)

²⁴

²⁵ Постоловски, Дамјан. “Колку е исплатлива премиум тарифата за фотоволтаични центри во Македонија?” [How much cost-effective is the premium tariff for photovoltaic power plants in Macedonia?]. *Фактор*. 2019. available at: <https://faktor.mk/kolku-e-isplativa-premium-tarifata-za-fotovoltaichni-centrali-vo-makedonija> (accessed 7 October 2020)

²⁶ International Hydropower Association. “Western Balkans (Macedonia) statistics.” *Western Balkans (Macedonia)*. available at: <https://www.hydropower.org/country-profiles/western-balkans-macedonia> (accessed 30 August 2020)

establishment of small and medium-size hydropower plants, with a detailed feasibility study instructing ways of protecting the environment and ecosystems, if they are to be built.

North Macedonia has been estimated to have a moderate potential for wind power throughout the country, on patches of lands mostly located in some of its larger valleys and plateaus. According to the Global Wind Atlas²⁷, the areas with a good wind potential, based on the average wind density and the speed for harvesting wind power and development of wind farms, are located predominantly in the western, central and southeastern parts of the country. Some patches of land viable for development of wind projects can also be found in other parts of the country, such as the northeast valley of Ovche Pole.

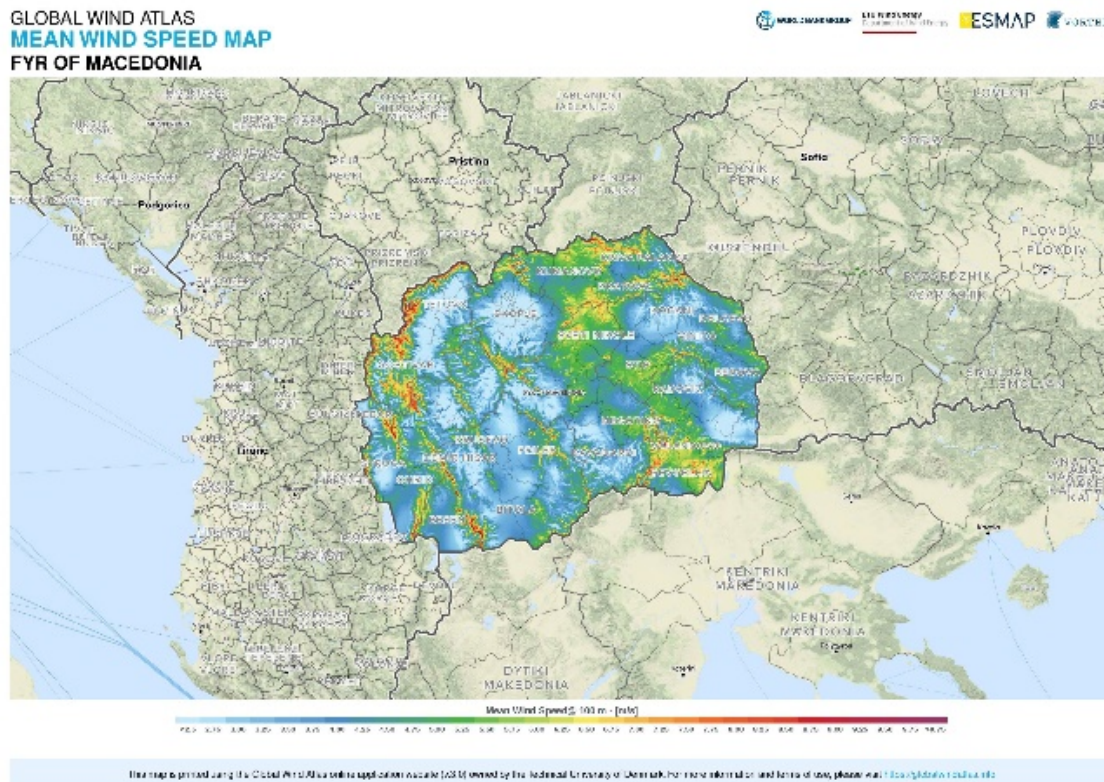


Figure 6: Wind Power map of North Macedonia; Source: Global Wind Atlas, 2020²⁸

Figure 6 above shows a real-time map of North Macedonia (October 2020) generated by the Global Wind Atlas²⁹, where areas with good wind potential, suitable for wind projects, are mostly covered in either dark yellow or red. According to a number of feasibility studies and energy experts, the southeastern part of North Macedonia has a large wind energy potential, with a good terrain, national and regional grid connections and easily accessible infrastructure, so the construction of the first wind farm there was a good choice. The energy strategy of North Macedonia in its future development scenarios foresees installation of capacities to use its wind potential.

North Macedonia completed its first wind power park in 2014, near the town of Bogdanci in the southeast of the country. The wind farm operates 16 wind turbines with a total installed capacity of 36.8MW, generating about 100GWh of electricity annually, thus providing electricity from renewable energy for more than 16.000 households in Bogdanci and the surrounding region. The investment cost

²⁷ Global Wind Atlas. *Energydata Info*. 2020. Available at: <https://globalwindatlas.info/> (accessed 23 October)

²⁸ Ibid.

²⁹ Global Wind Atlas. *Energydata Info*. 2020. Available at: <https://globalwindatlas.info/> (accessed 23 October)

21 million euros³⁰. Moreover, the land in this part of the country is relatively flat which facilitates logistics and operations. In addition, the measurements have shown high regular average wind speeds, classifying the region of Bogdanci as a good inland wind site, with a high probability of reaching good targets for annual electricity production and great potential for expanding the wind farm with future extensions.

The 1st phase of the wind power plant has been developed by the Macedonian government and the support of the Western Balkans Investment Framework and the German Development Bank “KfW”³¹, in efforts to initiate a diversification of the country’s energy sources and enhance energy security. Macedonian utility company “ELEM” is in charge of extending the wind farm in Bogdanci, as a 2nd phase of the initial project from 2014, and the plan is to increase the total installed capacity to 50MW upon completing the construction. This has been a great opportunity for some kind of inclusion of the local community in utilizing the local wind potential, but such steps have not been made for this particular project. Being owned and managed by the national energy company “ELEM”, and constructed with the support of international funding, unfortunately little space has been left for enhancing citizen participation.

³⁰ МКД. “Нови ветерници во Богданци, инвестиција од 21 милион евра.” [New wind mills in Bogdanci, investment worth 21 million euros]. *MKA News*. Available at: <https://www.mkd.mk/makedonija/ekonomija/novi-veternici-vo-bogdanci-investicija-od-21-milion-evra> (accessed 16 October 2020)

³¹ Padori-Klenke, Silvana. “Со електраните на ветер Македонија во европски етер.” [With the wind mills Macedonia enters European skies]. *Deutsche Welle in Macedonian*. 2020. available at: <https://www.dw.com/mk/%D1%81%D0%BE-%D0%B5%D0%BB%D0%B5%D0%BA%D1%82%D1%80%D0%B0%D0%BD%D0%B8%D1%82%D0%B5-%D0%BD%D0%B0-%D0%B2%D0%B5%D1%82%D0%B5%D1%80-%D0%BC%D0%B0%D0%BA%D0%B5%D0%B4%D0%BE%D0%BD%D0%B8%D1%98%D0%B0-%D0%B2%D0%BE-%D0%B5%D0%B2%D1%80%D0%BE%D0%BF%D1%81%D0%BA%D0%B8-%D0%B5%D1%82%D0%B5%D1%80/a-17053900> (accessed 16 October 2020)

Energy Democracy on a map

While reviewing the main potential for renewable energy sources in North Macedonia, we confirmed there are some initiatives in the country that are aimed at promoting and strengthening the appropriate usage of renewables. The initiatives that have been most visible in recent years are “Solar Macedonia”³², an association working on promotion and expansion of usage of solar energy on the national level, and the initiatives for preserving the area of Shar Mountain in the northwest of the country as a national park³³. These initiatives are focused on advocating for appropriate usage of renewable energy sources – , in case of “Solar Macedonia” through the introduction of new technologies, while “Shar Mountain for National Park” initiatives are lobbying for the environmental protection and avoidance of hydropower exploitation if the environment is jeopardized. They are a promising sign that a democratization of energy transition of North Macedonia, with wider inclusion of local communities and the public, is achievable. Therefore, such initiatives should be supported as they represent the grass-root level, the bottom -up approach, in the democratization of energy governance.

What is lacking for the moment are more concrete legal steps and formulation of a more elaborated and more precise legal framework in this direction, in line with the energy strategy and the EU recommendations. Energy communities, citizen energy and prosumers could not be sustainable and they could not exist without the support of the local governance. The Municipality of Tetovo has air pollution and waste management problems, and local initiatives and guerilla actions have been visible for years while addressing these issues, most prominent being Eco Guerilla³⁴ and CBC LOJA³⁵. If local authorities worked closely and showed support instead of making nominal statements and partial solutions, the waste and air pollution issues could be solved through mutual collaboration and inclusion of ideas of the public.

Bitola as the 2nd biggest city in the country has the largest thermal power plant in its vicinity, “REK Bitola”. If the plans of the government, according to the energy strategy, go as planned, the thermal power plant should be transformed into large-scale solar power plant or gas-fueled power plant in the future, which in both cases allows for the inclusion of the public. In combination with the introduction of rooftop PVs installation by private owners, Bitola and its region could potentially have a bright future as a green city. The Macedonian Ecological Society has been addressing these problems for years now, through different activities in the area of human-nature relationship³⁶, in Bitola, but also on the national level, and they should be considered as some of the promising initiatives for implementing the concept of energy communities.

The Municipality of Bogdanci is a spot in North Macedonia where wind power is already being developed. With the extension of the existing wind farm in progress, and more wind resource available, the Municipality of Bogdanci and the southeast region of the country could become a hotspot for wind and solar power development on the citizen level, boosting the concept of prosumers in practice. Aside from Bogdanci, other prominent regions with possibilities for wind power are Gostivar, in the Polog Region in the west of the country, and Ovche Pole in the region surrounding the town of Sveti Nikole in central North Macedonia. In its region, plots of land for development of solar power units are already marked and development of solar projects is in progress, so together with the future harvesting of its

³² Solar Macedonia. “About Us.” *Basic Information*. available at: <https://solar.org.mk/en/za-nas/> (accessed 7 October 2020)

³³ Center for Educational Development. “Shar Mountain for a National Park.” *Projects*. available at: <http://ced.org.mk/site/en/projects/completed-projects/119-coordination-meeting-with-ngos-for-launching-the-campaign-for-protection-of-shar-mountain>

³⁴ FES. “Grassroots Action for Green Change.” Friedrich-Ebert-Stiftung Skopje. 2019. Available at: <https://www.fes-skopje.org/e/grassroots-action-for-green-change/> (accessed 20 October 2020)

³⁵ CBC LOJA. “Earth Day (Trash House).” CBC LOJA Newsletter. 2019. Available at: <https://cbcloja.org.mk/earth-day/> (accessed 20 October 2020)

³⁶ Macedonian Ecological Society.” 3a MEA.” [On MES (Macedonian Ecological Society)]. *Home Page*. Available at: <https://mes.org.mk/za-med/> (accessed 27 October 2020)

wind power, this relatively poor and small town in central North Macedonia has a theoretical potential to be transformed into a mecca of renewable energy production.

Further to the east of Sveti Nikole is the Osogovo Mountain, located near the borderline with Bulgaria, and some initiatives in this region are lobbying for protecting its nature. The region of the Osogovo Mountain aside from its nature, it is one of the sunniest regions in the country and the local population could benefit from installing PVs and forming a community of prosumers using solar power. As one of the poorer regions in North Macedonia, with a high percentage of emigration, it could benefit from green energy transformation and from being protected as a national park, thus boosting the sustainable development and the economy.

Finally, one of the most important regions in terms on protection that should stand out in the agenda of local and governmental initiatives is the Ohrid region and the Ohrid Lake, which are a cultural and a heritage site protected by UNESCO³⁷. In recent years, the status of the site has been defined as endangered due to malpractice in urban planning, waste and air pollution. One of the initiatives working on grass-root level to address these issues is SOS Ohrid. Together with the neighboring region of Prespa Lake, this whole part of North Macedonia located in the country's southwest, has the potential of utilizing its solar energy potential and with proper waste management it w also produce biomass, thus minimizing pollution and creating communities for citizen energy that would both protect the region and contribute to a sustainable development.

In line with boosting social and green entrepreneurship on the national level, the organizations such as ARNO – Association for Development of New Options³⁸ and Social Innovation Hub³⁹ are providing their contribution too, and should be considered as initiatives with a potential to contribute to energy democratization and creation of energy communities in the future, among others. The following map of North Macedonia in Figure 7 bellow shows the regions of the country, the previously described renewable energy potential and initiatives working in the different regions, that are roughly marked with different colors, depending on the kind of potential a certain region has.

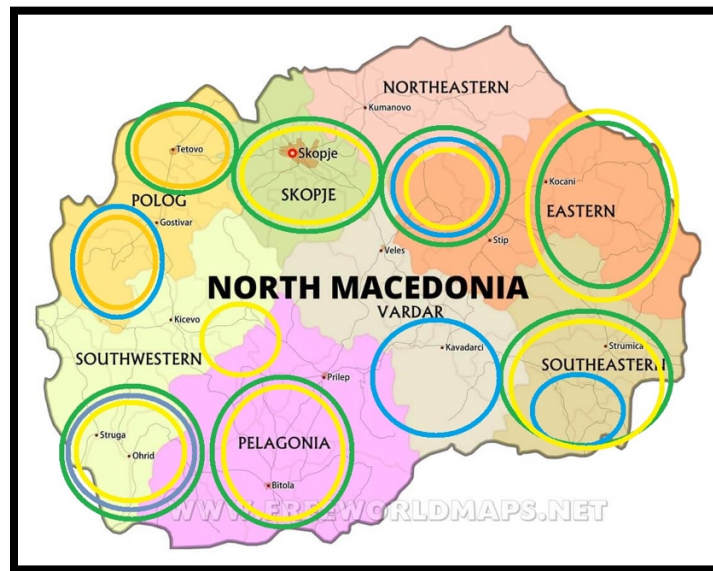


Figure 7: Map of North Macedonia, locating potential for energy communities; Source: Free World Maps, 2020⁴⁰

³⁷ UNESCO. "Natural and Cultural Heritage of the Ohrid region." *World Heritage Conservation*. available at: <https://whc.unesco.org/en/list/99/> (accessed 27 October 2020)

³⁸ ARNO. "ARNO – Association for Development of New Options." *About us*. available at:

http://www.arno.org.mk/?wordfence_logHuman=1&hid=9AFD6AE13249323DF0B26433A2F87BB2&lang=en (accessed 28 October 2020)

³⁹ Social Innovation Hub. "Social innovation helps create prosperous societies." *About us – Home Page*. available at: <http://socialinnovation.mk/about-us/> (accessed 28 October 2020)

⁴⁰ Free World Maps. *North Macedonia Map*. Available at: <https://www.freeworldmaps.net/> (accessed 7 October 2020)

The map contains regions marked with circles in different colors: yellow, blue, and green, that are overlapping in several places. The circles on the map also indicate the local potential for energy democracy boosting, depending on their renewable energy potential, existing initiatives and actions, all with the potential for creating future energy communities. Looking at the map, it is safe to conclude that most of North Macedonia has the potential to become a hotspot for energy democracy in practice through citizen energy and communities of prosumers. The legend of the map is the following:

- 1) Regions marked in yellow show good solar potential in combination with local initiatives for the use of this kind of energy.
- 2) The circles in blue show wind potential and the regions with possibilities for grass-root movement for renewable energy communities focused on the available wind resources.
- 3) The green circles show the regions of North Macedonia that have an overall good potential for the use of more than one renewable energy source, and in combination with proper environment protection and a mechanism for prevention of air pollution, they could be turned into real future green spots.

Concluding remarks

In its latest Energy Development Strategy, adopted at the beginning of 2020, North Macedonia projects a complete coal and lignite phase-out, latest by 2040.

The strategy was being drafted for several years, and initially it was due to be adopted in 2015. However, during this period North Macedonia had a major political crisis which resulted in delaying the adoption of the national energy strategy and the national climate and energy action plan. With the new strategies being currently transformed into legal framework and tenders, critics indicated that the energy transition of the country was centered around the interests of the business community, and alleged that the process was done so as to benefit the energy companies, rather than local communities.

Downside of the current situation in North Macedonia, in spite of its determination for intensified energy transition while harmonizing policies in accordance with the EU recommendations, is that the country is still struggling with air pollution, waste management issues, and poorly managed energy market liberalization. Considering these environmental and energy issues, as well as the adoption of the Energy Development Strategy, today the important question is no longer if the country will move forward with its energy transition, but rather how the process will be conducted.

What remains to be resolved are the decision-making institutions of the country, that remain a weak point, and the lack of resources of the institutions handling the energy issues in North Macedonia, seen as quite often being influenced by the political circumstances and working more for the interest of the business community operating in the energy sector. The 2020 report highlights the following recommendations for North Macedonia : to finish unbundling the gas transmission system operator, to increase the number of staff as well as the technical/engineering capacity of the Energy Department in the Ministry of Economy and the Energy Agency, and to adopt and implement the Energy Efficiency implementing legislation.

Energy democracy means wide inclusion of citizens and local communities in the processes of implementing energy projects. By looking at the examples, North Macedonia is still lacking aspects of local inclusion, but the potential is there. If the legal framework is further adjusted with the accompanying bylaws, and if the municipalities take over portions of the energy transition and support local initiatives, then the objectives of the national energy strategy would surely be achieved, providing democratization. It would mean radical changes for the energy sector of North Macedonia. If these aspects are present, energy democracy will be fully practiced and the people will get full benefits from the open energy market, leading to a drastic rise of the life standard. Finally, achieving this aim would make the sense of social justice in the Macedonian society much stronger.