

RESEARCH PAPER

North Macedonia: Energy Transition and Democracy



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Abstract

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 one from the Western Balkans to set such ambitious goals. In spite of its determination to change its reality and move towards a green and sustainable future in line with its EU accession process, in the past decade the country continuously struggled with severe air pollution, waste management issues, and partial energy market liberalization. The purpose of this study, divided in two main parts, is to first present an overview of the current energy policies and the progress of North Macedonia towards achieving the aims in the frame of its energy strategy; and secondly, to map out the local initiatives that have the potential of creating their own local energy communities. To map out the potential for creating sustainable energy communities, the study will in its first part provide an overview of the factors affecting the energy sector, the potential for renewable energy production and related policies. Finally, following the principles of energy democracy and energy communities definitions, the study will then present the potential of local communities for creating their own energy cooperation, by looking into the initiatives and groups working on a grass-root level, and their potential for using the available local energy resources.

Keywords: North Macedonia, energy policies, energy communities, energy strategy

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Introduction

In recent years, North Macedonia has been acknowledged for making efforts in regards to its energy transition, making visible the progress in aligning the country's legal framework in accordance to the EU legislation. This has been done on several frontiers, mostly through the 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 today described as one of the most attractive amongst the countries of Southeast Europe¹.

As of 2020, the government announced and opened new tenders for large-scale investment projects in the renewable energy sector supported by subsidies, while institutional and private investors have shown much interest in developing new projects for production of renewable energy. Therefore, the energy market of North Macedonia is expected to develop even more intensively in the near future, given the need for, and lack of existing renewable energy projects in the region, and the ambitious goals the country has set for the future through its new national Energy Development Strategy².

In its latest Energy Development Strategy³, 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 as a result of the uncovering of thousands of illegally wiretapped private conversations⁴, involving almost all of the politicians from the ruling political parties at the time, that were leaked to the public by the opposition in 2015. Subsequently, the illegal wiretapping scandal led to massive protests and the Colorful Revolution, which deepened the political crisis, eventually leading towards parliamentary elections and a change of government in 2016⁵. During this period, many of the important processes in the country were put on hold, including the ones concerning the energy sector⁶.

¹ Josimovski, Aleksandar, and Ana Bozarova. "Premiums as support measure for investors in renewable energy projects in North Macedonia." *Balkan Green Energy News*. available at: <https://balkangreenenergynews.com/premiums-as-support-measure-for-investors-in-renewable-energy-projects-in-north-macedonia/> (accessed 13 September 2020)

² 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

³ Government of the Republic of North Macedonia, *Strategy for Energy Development of the Republic of North Macedonia up to 2040*. 2019

⁴ Berendt, Joanna. "Macedonia Government Is Blamed for Wiretapping Scandal." *New York Times*. New York: NYT, 2015. available at: <https://www.nytimes.com/2015/06/22/world/europe/macedonia-government-is-blamed-for-wiretapping-scandal.html>

⁵ Kojstojchinoski, Gjorgji. "Macedonian 'Colorful Revolution': Explaining Counter-Revolution." *Jet D'encre*. available at: <https://www.jetdencre.ch/macedonian-colorful-revolution-explaining-counter-revolutions>

⁶ Нова Македонија. *Македонска енергетска стратегија за наредните декади* [Macedonian energy strategy for the next decades]. Skopje: Нова Македонија, 2020. available at:

<https://www.novamakedonija.com.mk/ekonomija/%D0%BC%D0%B0%D0%BA%D0%B5%D0%B4%D0%BE%D0%BD%D1%81>

After the political situation was stabilized, the process of adopting the energy strategy continued, and the new government, established in 2017, showed a greater level of commitment to the process by engaging the relevant institutions, researchers and organizations in the development of the process. However, the strategy drafting and adoption process faced a certain level of criticism. The strategy has been drafted in a process led by the Macedonian Academy for Science and Art, when Macedonian Deputy Minister for Economy was Kocho Angjushev, a crucial member of the governmental setup that took part in drafting and delivering the updates on the new legal framework on energy.

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, including those owned by the family of Mr. Angjushev⁷, who prior to his governmental role was a major business owner in the energy sector. Nevertheless, the energy strategy and the other updates in the legal framework on energy received an overall good note of the European Union, which monitored the process more closely and reported on it in its documents on North Macedonia.

Once the strategy was adopted at the beginning of 2020, the public was reassured that the state institutions and energy experts recognized the importance of the shift towards clean energy and that they were willing to commit to the projected ambitious goals, demonstrating an overall good cooperation in delivering it. Important reasons for the government to start dedicating more attention to the green energy transition of North Macedonia are air pollution and the depletion of coal and lignite reserves, amongst others.

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 for 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.

<https://www.slobodnaevropa.mk/a/30143095.html>

⁷ Spasovska, Zorana G., and Vladimir Kalinski. Ангјушеви лидери во бизнисот со мали хидроелектрани [The family Angjushev are leaders in the small hydropower plants business]. *Radio Slobodna Evropa*. 2019. available at:

<https://www.slobodnaevropa.mk/a/30143095.html>

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 the 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)

		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
Assumption highlights	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 1: Overview of the 3 scenarios for the energy transition of North Macedonia;

Source: Energy Development Strategy of North Macedonia¹⁰

By making these decisive political decisions in support of the clean energy transition, North Macedonia was praised as the first country from the Western Balkans to set such decisive goals and intensify its energy transition. In a bold step forward, showing commitment and seriousness of the intentions to phase coal out, in February 2020 the Macedonian government launched a public tender for investors for the construction of two large-scale photovoltaic units. They are projected to hold up to 100MW total capacity¹¹, located on the site of the depleting coalmine pit and the thermal power plant in Oslomej, Kicevo, in the southwest of the country.

Additionally, the process of gasification in North Macedonia has been intensified as well, by investing in gas distribution infrastructure and adding connections to the network of pipelines with Bulgaria. The intention is to use gas as an important transitional energy source in the process of coal phase-out. However, this approach has its downsides too. Natural gas continues being mostly used for industrial purposes, and the households are almost invisible in the final consumption, as the commercial distributive networks remains limited. Moreover, as much as gas is perceived as a clean energy source, it is still a type of fossil fuel. This means that at some point in future it would have to be phased-out too as a part of a future long-term fossil fuel removal process.

The purpose of this paper, divided in two main parts, is to first present an overview of the current energy policies and the progress of North Macedonia towards achieving the aims within the frame of its energy

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 Energy Community. "North Macedonia." *Latest Country Updates*. available at: https://www.energy-community.org/implementation/North_Macedonia.html (accessed 11 October 2020)

strategy. Secondly, local initiatives that have the potential of creating their own local energy community will be mapped out. The idea behind this work is to see the extent of potential for fostering and developing the concept of energy democracy in North Macedonia, as the country enters a period of intensified energy transition. It is important for energy transition to be completed in a way that will bring energy security, but also provide a sense of social justice and benefits for small energy consumers and households.

This paper will also give an overview of the current energy mix of the country and the energy sector, and present the latest actions and energy-related policies influencing the transition. Furthermore, meaning and practical implementation of the concept of energy democracy, connecting these ideas to the current situation in North Macedonia will be discussed in more detail in the second part of the paper. Moreover, by listing some examples, we will provide an explanation of how energy democracy can be interpreted and practiced. Finally, and most importantly, the potential of the selected local communities of North Macedonia to create, or manage, their own energy and energy needs will be presented, thus opening a pathway for introducing a more direct democracy in the process of energy transition.

A 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 recommendations¹², is that the country is still struggling with air pollution, waste management issues, and poorly managed energy market liberalization. Therefore, this paper aims to present a better look at the current situation in the energy sector of North Macedonia and to show more closely the positive developments, next to the negative sides of the country's energy transition. At this moment, the important question is no longer if the country will move forward with its energy transition, but rather how the process will be conducted, with some recommendations given throughout this reading.

¹² European Commission. *Commission staff working document: North Macedonia 2019 Report*. SWD(2019) 218 final / COM(2019) 260 final. available at: <https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20190529-north-macedonia-report.pdf> (accessed 25 August 2020)

1. Overview: Currents developments in the energy transition of North Macedonia

As of 2020, North Macedonia has been praised for its new policies in regards to its energy transition, towards clean energy and decarbonization. The roadmap in the new Energy Development Strategy¹³ promises that it would lead processes of accelerated positive changes in the energy sector. This determination has been more and more visible in the last few years, as the fossil fuels are steadily being replaced with renewable energy sources. 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 Package¹⁴.

According to the official announcement, the energy policy framework of the EU was updated in 2019 in accordance with the Paris Agreement¹⁵ commitments, aimed at reducing greenhouse gas emissions and moving towards cleaner energy, by gradually phasing out fossil fuels¹⁶. The agreement on this new energy rulebook, officially titled "Clean energy for all Europeans package"¹⁷, 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 Community¹⁸ in its final draft in early October 2020, provides for about 400MW of solar energy to be generated by households PVs and is included in 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. The plan is yet to be adopted in its final version, after the Energy Community gives its

¹³ 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

¹⁴ 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)

¹⁵ United Nations Framework Convention on Climate Change. "The Paris Agreement." Effective: 4 November 2016. *United Nations Climate Change*. available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> (accessed 18 September 2020)

¹⁶ European Commission: "Binding target of 32% for renewable energy sources in the EU's energy mix by 2030. The recast Renewable Energy Directive (2018/2001/EU) entered into force in December 2018." available at: https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en (accessed 13 September 2020)

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 Energy Community. "North Macedonia." *Latest Country Updates*. available at: https://www.energy-community.org/implementation/North_Macedonia.html (accessed 11 October 2020)

recommendations to the final draft. North Macedonia is the first of nine contracting parties to submit a final draft of its National Energy and Climate Plan to the Energy Community Secretariat¹⁹.

Moreover, according to the officials, the country has also been taking actions towards adopting changes in line with the recommendations provided by the European Commission²⁰ in the 2019 progress report. Most notably, on finishing the unbundling of the electricity and gas systems, increasing the capacity of the institutions working in the energy sector²¹, such as the Energy Agency and the Regulatory Commission for Energy, and aligning the legislation in compliance with the EU directives. Active steps towards fulfilling the recommendations are being made in 2020 as of October, most important ones being the adoption of the abovementioned Energy Development Strategy and the new Law on Energy Efficiency²².

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.²³” 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 rules²⁴.

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 report 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 2025²⁵. In comparison, in 2018 the country

¹⁹ Spasic, Vladimir. “North Macedonia first EnC member which submitted draft National Energy Climate Plan.” *Balkan Green Energy News*. available at: <https://balkangreenenergynews.com/north-macedonia-first-enc-member-which-submitted-draft-national-energy-climate-plan/> (accessed 13 October 2020)

²⁰ European Commission. *Commission staff working document: North Macedonia 2019 Report*. SWD(2019) 218 final / COM(2019) 260 final. available at: <https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20190529-north-macedonia-report.pdf> (accessed 25 August 2020)

²¹ European Commission. *Commission staff working document: North Macedonia 2019 Report*. SWD(2019) 218 final / COM(2019) 260 final

²² Poyner, Barbora. “North Macedonian Parliament adopts the most all inclusive Energy Efficiency Law Energy.” *Energy Community*. Vienna: Energy Community, 2020. available at: <https://www.energy-community.org/news/Energy-Community-News/2020/02/06.html> (accessed 24 August 2020)

²³ European Commission. *Commission staff working document: North Macedonia 2020 Report*. SWD(2020) 351 final / COM(2020) 660 final. available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/north_macedonia_report_2020.pdf (accessed 15 October 2020). 78

²⁴ European Commission. *Commission staff working document: North Macedonia 2020 Report*. SWD(2020) 351 final / COM(2020) 660 final. available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/north_macedonia_report_2020.pdf (accessed 15 October 2020). 78

²⁵ European Commission. *Commission staff working document: North Macedonia 2020 Report*. SWD(2020) 351 final. 2020

achieved only 18.12% share of renewables in its energy mix²⁶. If the country is diligent enough in following its energy strategy and objectives, those targets for 2020 and 2025 should be achieved.

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 Macedonia²⁷: 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.

In order to understand the importance of the adopted changes from this year and the recognized the volume and scope of work that the country should perform in the next period in accordance with the recommendations of the EU, one should first look into its energy mix and total energy production and consumption. Understanding the starting point, it would be possible to paint a better picture of the importance of the objectives the country has set for its energy sector. Additionally, having in mind the current situation and taking into account the set goals, it will provide a better idea of the possibilities of creating and promoting citizen energy and energy communities, and raising awareness on the issues of democratization of the energy sector.

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 fuels²⁸. Majority of its total energy mix, both on supply and demand side, still falls under the category of fossil fuels (Figure 2), mostly due to the usage of coal and oil. In recent years, efforts have been made to include more natural gas in the energy mix, which is why new infrastructure and connecting pipelines are being developed as of 2020²⁹.

²⁶ Ibid.

²⁷ Ibid., 77

²⁸ World Data. *Energy consumption in North Macedonia*. available at: <https://www.worlddata.info/europe/macedonia/energy-consumption.php> (accessed 17 September 2020)

²⁹ 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)

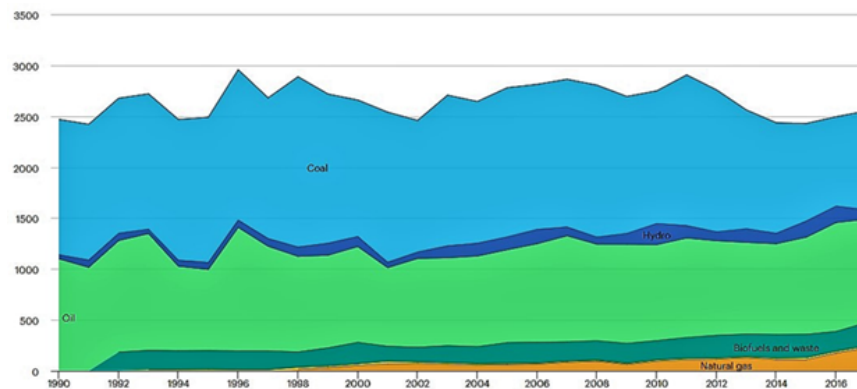


Figure 2: Total energy mix of the country; Source: Word Data, International Energy Agency, 2020³⁰

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, is steadily rising in recent years, but they still remain overshadowed by the predominance of the fossil fuels in the energy mix.

The Ministry of Economy of North Macedonia reassures that the next period will be dedicated into complete transformation of the energy sector³¹. While presenting the energy strategy of the country during the Western Balkans Summit organized by the European Bank for Reconstruction and Development in February 2020 (EBRD) in London, UK, the Minister Bektashi stated:

The strategy provides a platform for the overall modernization and transformation of the energy sector in line with the EU energy trends, contributing to increased access, integration and availability of energy services, reducing local and global pollution, and increasing private sector participation, taking into account the development potential of Macedonia and domestic specifics. Thus, the Strategy integrates the climate and environmental aspects of the energy sector, while proposing affordable, safe and sustainable energy for the future. In parallel, a strategic environmental impact assessment has been developed as a separate document for assessing the environmentally feasible and sustainable options for achieving the goals.³²





³⁰ International Energy Agency. "North Macedonia." *Country Profile*. available at: <https://www.iea.org/countries/north-macedonia> (accessed 29 August 2020)

³¹ 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)

³² Ibid.

Indeed, the development potential of North Macedonia is great, as the Minister stated. In the 2013 report³³, the United Nations Development Programme (UNDP) stated that North Macedonia is one of the countries with a huge potential for renewable energy exploitation that remains almost completely unutilized. Some actions to change that reality are already being taken – those being predominantly the rising usage of the potentials for solar power, but also the potential for clean energy from hydro, wind and biomass, to an extent.

Figure 2 above shows that we can still barely detect the participation of solar and wind energy in the energy mix of the country. The Figure 3 below is the table from the UNDP 2013 report³⁴, showing the potential of North Macedonia to utilize renewable energy sources, and the comparison shows a 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 3: Renewable energy in North Macedonia;

Source: UNDP, 2013; Solar PV 7.1MW capacity is from 2012³⁵

As the energy transition progresses, it is yet to be seen which pathway from the energy strategy the country will decide to follow, with all the signs pointing out toward the two more optimistic scenarios, either the moderate or the green one. For the time being, thermal power plants remain vital for generation of more than half of the country's electricity production. The importance of REK "Bitola" thermal power plant for the country's energy security has also been pointed out in the EC's 2020 country report: "concerning security of

³³ United Nations Development Programme. *Renewable Energy Snapshot: The Former Yugoslav Republic of Macedonia*. UNDP: 2013

³⁴ United Nations Development Programme. *Renewable Energy Snapshot: The Former Yugoslav Republic of Macedonia*. UNDP: 2013

³⁵ United Nations Development Programme. *Renewable Energy Snapshot: The Former Yugoslav Republic of Macedonia*. UNDP: 2013

supply, the availability of coal for the Bitola thermal power plant still needs to be urgently addressed, including by investing in new resources.”³⁶

Nevertheless thermal power plants are greatly responsible for air pollution the country has been facing during recent years. However, two of the strategy’s ambitious scenarios³⁷ 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 strategy³⁸ 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.

Moreover, since 2010³⁹, about 80 small hydropower plants have been constructed. According to the International Hydropower Association⁴⁰, 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. These numbers show the highly unexploited hydropower potential of the country, in contrast to the abundance of hydropower reserves that it possesses. Due to environmental concerns, however, hydropower needs to be dealt with utmost caution, as the newly constructed hydropower plants are often lacking proper environmental impact assessment studies and could potentially be more damaging than of use.

In addition, as a relatively sunny country, with over 280 sunny days per year according to the 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 makes up a small percentage of the electricity production capacities. The Ministry of Economy of North Macedonia announced earlier in 2020 that “the (energy) strategy envisions investments in photovoltaic power plants which are expected to have a total installed capacity of 1.357 MW, or 41.8% of the total installed capacity for energy production.”⁴¹

³⁶ European Commission. *Commission staff working document: North Macedonia 2020 Report*. SWD(2020) 351 final / COM(2020) 660 final. available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/north_macedonia_report_2020.pdf (accessed 15 October 2020). 78

³⁷ 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

³⁸ 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)

³⁹ International Hydropower Association. “Western Balkans (Macedonia) statistics.” 2020

⁴⁰ Ibid.

⁴¹ 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)

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 solar 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.”

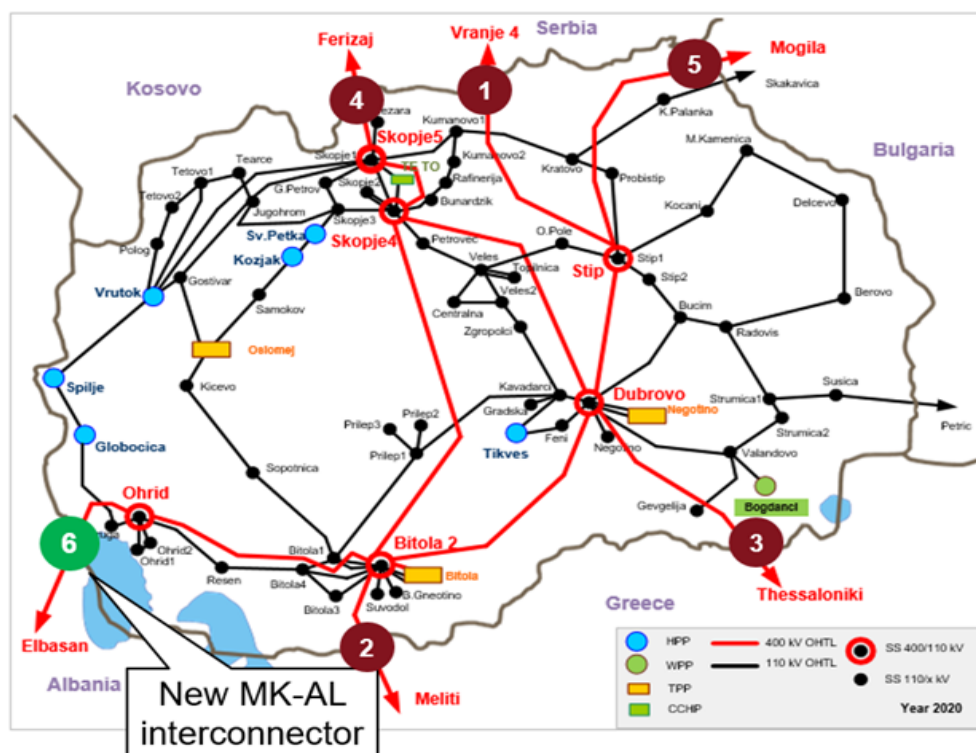


Figure 4: Electricity production of North Macedonia;

Source: Energy and Water Services Regulatory Commission of the Republic of North Macedonia, 2020⁴²

Figure 4 above⁴³, shows us the current electricity production capacities and transmission network of North Macedonia, as well as the kind of energy sources that are being used for electricity generation. As discussed earlier, the combustible fuel and hydropower remain the main sources, their transmission being presented with red and blue lines on the map. One could observe some that 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.

⁴² 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)

⁴³ Energy and Water Services Regulatory Commission of the Republic of North Macedonia. *Electricity / Electricity Market*. 2020

On the side of the electricity supply and demand ratio, according to the statistics⁴⁴ that have been following the situation 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. To another end, North Macedonia also exported around 160.000 MWh of electricity in 2016, with similar number in the following years. 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 (Figure 4, point 6), thus maintaining the balance of the regional infrastructure.

When we go back and compare Figures 2, 3 and 4, 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.

The odds of turning these projections into reality are favorable, and what is important in the next period, following the clear roadmaps on the deadlines for reaching these objectives, is defining the pathways on how to achieve them and how to lead the process. The next chapter of the paper looks into possibilities for a more democratic participation in energy transition of North Macedonia, showing certain methods and providing recommendations on how to better facilitate the establishment of prosumers, citizen energy and incorporate local communities through the principles of social justice and democracy, in the process of energy transition towards clean energy for all, as the EU's clean energy package calls for.

⁴⁴ 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)

2. Energy Democracy and Energy Communities – mapping out the potential of North Macedonia

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 the decision-making processes (namely in regards to the energy sector) through the principles of democracy. In its essence, energy democracy would mean a wide-range participation of the public in important energy governance questions⁴⁵, as well as considering views from experts from different fields and local communities, among others, when a decision on distribution of energy resources, or on sort of energy issue is being made.

A common notion amongst researchers dealing with the issue of energy democracy is that 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 contributed largely to the emergence and popularization of the concept of energy democracy in recent years. In addition to the process of democratization of the decision-making processes that are linked to the energy resources, social justice is increasingly mentioned in this context as well.

That is bringing us to the closely related concept of energy justice, which could be interpreted either as an objective of energy democracy on one hand, or as a separate concept with other separate processes, one of which is energy democracy as well. Van Veelen⁴⁶ says that energy justice and energy democracy are intertwined, and suggests that energy democracy is one instrument for achieving social justice. Therefore, energy democracy could be viewed as a “participation in democratic governance of resources, as a means of placing power in the hands of ordinary citizens” as he mentions, reinforcing the idea that energy justice is the ideal that energy democracy aims for, by including the public in the process of governing energy and natural resources.

According to Van Veelen⁴⁷, in its critical overview of the existing literature on energy democracy and the way it is understood, the local communities and their involvement in any decision impacting their energy needs and energy consumption, is what energy democracy consists of in most parts. Therefore, the importance

⁴⁵ Hess, David J. “Energy democracy and social movements: A multi-coalition perspective on the politics of sustainability transitions.” *Energy Research & Social Science* 40 (2018): 177–189. <https://doi.org/10.1016/j.erss.2018.01.003>

⁴⁶ Van Veelen, Bregje, and Dan van der Horst. “What is energy democracy? Connecting social science energy research and political theory.” *Energy Research & Social Science* 46 (2018): 19–28. <https://doi.org/10.1016/j.erss.2018.06.010> (accessed 14 August 2020)

⁴⁷ Van Veelen, Bregje, and Dan van der Horst. “What is energy democracy? Connecting social science energy research and political theory.” 2018

of local communities is central for both the development of energy democracy and striving for energy justice. Furthermore, that would mean that any existence of energy communities and any prospects for having some in near future in a given society are signs of practicing democratization of the energy sector. Finally, energy democracy is about how the process of energy transition is being managed⁴⁸, and not just when and if the set targets and objectives are achieved.

On 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 communities⁴⁹. According to the European Federation for Renewable Energy Cooperatives⁵⁰ (REScoops), there are some open questions on the differences, advantages and disadvantages of the two different types of energy communities. It would mean that each country is left to interpret and implement the EU directives in different ways into their national legal frameworks and energy systems.

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, REScoops⁵¹ made the following table (Figure 5):

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, 2019⁵²

⁴⁸ Hess, David J. "Energy democracy and social movements: A multi-coalition perspective on the politics of sustainability transitions." *Energy Research & Social Science* 40 (2018): 177–189. <https://doi.org/10.1016/j.erss.2018.01.003>

⁴⁹ 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)

⁵⁰ European Federation for Renewable Energy Cooperatives. "Energy communities and the Renewable Energy Directive: The clean energy package." *ResCoop EU*. available at: <https://www.rescoop.eu/blog/energy-communities-and-the-renewable-energy-directive> (accessed 4 September 2020)

⁵¹ European Federation for Renewable Energy Cooperatives. "Energy communities and the Renewable Energy Directive: The clean energy package." *ResCoop EU*. 2020

⁵² Ibid.

Having already an EU directive on the matter, we could easily conclude that 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*⁵³ is a good example of how decentralization and local governance can accelerate energy transition and create strong prosumers, as mentioned earlier ordinary citizens being both consumers and producers of their own energy.

A notable example of a successful energy community in a local context is a small German town of Feldheim⁵⁴. In 1997, their local council installed four wind turbines, supported by the local residents and the local start-up company “Energiequelle”⁵⁵ (100% Renewable Energy Atlas, 2020). Following the successful opening of a local wind farm, the town expanded to 47 wind turbines in 2015. In recent years, the village added a solar power park, a battery system for saving surplus of energy, and a biogas power station covering the total heating demand of the locals, with the surplus used for electricity production. Today, the locals of Feldheim are owners of “Feldheim Energie GmbH & Co”⁵⁶, including an ownership over a local electricity and heating grid. Today, Feldheim is 100% energy self-sufficient and climate neutral, and in addition, the locals have great financial benefits.

Similar examples are starting to appear more and more across Europe, most notably in the UK, Belgium, Denmark, and other Scandinavian countries, where, as in Germany, the local governance allows the focus to be shifted to the citizens and the local community in order to place them in the center of the clean energy transition. Unlike these European countries, France on the other hand is opening up to a lesser extent towards the idea of prosumers and creation of local energy communities, even though its legal framework is deemed as favorable⁵⁷. In France, the reliance on nuclear energy and the influence of major French energy companies, such as EDF, is making the process of shifting the focus towards the citizens much more challenging, as the strong businesses have already established themselves as leaders in the energy sector of the country.

The definitions and examples of energy communities, practicing energy democracy through local governance and the creation of energy communities, show us that benefits could go far beyond the local context. If many local regions move towards being self-sufficient and carbon neutral, with people becoming

⁵³ Clean Energy Wire. *Germany's Energiewende - The Easy Guide*. available at: <https://www.cleanenergywire.org/easyguide> (accessed 28 August 2020)

⁵⁴ 100% Renewable Energy Atlas. *Feldheim, Germany*. 2019. available at: <https://www.100-percent.org/feldheim-germany/>

⁵⁵ 100% Renewable Energy Atlas. *Feldheim, Germany*. 2019

⁵⁶ Ibid.

⁵⁷ Campos, Inês, et al. “Regulatory challenges and opportunities for collective renewable energy prosumers in the EU.” *Energy Policy* 138 2020: 111-121. <https://doi.org/10.1016/j.enpol.2019.111212>

responsible for their energy needs and functions as prosumers, managing energy resources they produce and consume - the energy transformation on a national level would be significant. The energy communities of any kind could take over system operations⁵⁸; providing flexibility, local services, and removing the need for traditional network upgrades.

The rise of a number of energy 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 capacity⁵⁹. 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.

With regards to reaching targets and set objectives, we are looking towards a brighter future for North Macedonia. This is especially true considering the new developments with the solar power capacities. The country sure gives a leading example among the Western Balkans countries with its prospects for accelerated energy transition. The potential for establishing energy communities that could use the solar, wind or hydropower resources is a great opportunity for North Macedonia to democratize the process. In the next part of this chapter, the outlooks for each of these different types of clean energy will be presented, ending with a mapping out of potential regions in North Macedonia where the potential for local communities of prosumers is promising.

2.1. Solar power potential

The solar potential of North Macedonia is clearly the most prominent clean energy resource 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

⁵⁸ 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

⁵⁹ 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

power plant and the 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.

Looking back to the definitions of energy communities and citizen energy, this would be a great opportunity for the investors and the state administration to put principles of energy democracy into practice. Nevertheless, the project does not have provisions for active shares of investments to the solar units by locals or by employees as far as the public is aware. However, in the recently submitted final draft of its National Energy and Climate Plan to the Energy Community, North Macedonia has a provision of 400MW solar energy generated from household rooftops PVs. The plan is yet to be adopted as currently (October, 2020) it is under review by the Energy Community, but it already opens a wide range of possibilities for citizen energy and emergence of “prosumers” in the North Macedonia. In an official press statement, the Ministry of Economy has already used term “prosumers” in relation to energy production, which implies that a possible new tender or a line of subsidies might be related to the installment of rooftop or residential PVs on private lands.

Overall, this is a positive development not just for North Macedonia, but for the Western Balkans in general, as the region is still home to seven of the ten most polluting thermal power plants in Europe⁶⁰. According to a 2019 World Bank report⁶¹, about 1,600 people will continue dying prematurely every year because of air pollution in North Macedonia if things remain status quo, including a large economic cost for the country’s GDP. Transforming one of the biggest thermal power plants in the country and an air pollutant, into a solar power energy unit, shows that the positive changes are on the way. Undoubtedly, if things continue developing in this direction, we would witness reduction of air pollution significantly.

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 1MW⁶². 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

⁶⁰ Hafner, Asja, and Pete Baumgartner. “Dirty Balkan power plants pollute as much as the rest of Europe combined.” *Radio Free Europe*. Radio Liberty: 2020. available at: <https://www.rferl.org/a/dirty-balkan-power-plants-pollute-as-much-as-rest-of-europe/30654474.html> (accessed 18 October 2020)

⁶¹ World Bank. *Air Quality Management in North Macedonia*. Prepared by Yewande Awe, et al. Report No: AUS0001228. Washington DC: World Bank Publications, 2019. available at: <http://documents1.worldbank.org/curated/en/116521576516981237/pdf/Air-Quality-Management-in-North-Macedonia.pdf> (accessed 17 October 2020)

⁶² 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-isplatлива-premium-tarifata-za-fotovoltaichni-centrali-vo-makedonija> (accessed 7 October 2020)

of Sveti Nikole, with 25MW of installed capacity, and one near the town Makedonski Brod, with 10MW of installed capacity⁶³.

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 power⁶⁴, 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.

The fact that North Macedonia, after a short period, already got on the way of securing over 135MW of installed capacity for solar power should be celebrated. However, energy democracy means inclusion of citizens and local communities in the process by involving the local community surrounding any energy projects, and creating conditions for participation of the citizens to the greatest possible extent. If the Figure 3 from the previous chapter shows us a potential for 24.000MW installed capacity for solar power, then we can only wonder what kind of energy transformation the country might have if, for instance, 10,000 different households, start-ups or local communities installed 1MW or more of solar energy capacity. It would mean radical changes for the energy market of North Macedonia, to put it in a simple way, and large-scale localization and democratization of the way energy is managed and produced.

Aside from the incentives promoted by the government, one of the emerging and potentially important stakeholders in promoting and expanding the usage of solar energy in North Macedonia is the “Solar Macedonia” Association. Established back in 2006 as an association bringing together over 20 different organizations and individuals, from companies to non-profit organizations and academics, its focus is to strengthen the cooperation between Macedonian companies in the sector of solar energy (producers, contractors, importers, traders), and connecting experts and scientists from all branches to promote renewable energy, as stated on the association’s website⁶⁵. In August 2020, the President of “Solar Macedonia” professor Ilija Nasov, PhD announced introduction of new innovative technologies, brought to the country and their associates through a project they implemented in cooperation with the USAID⁶⁶. In the following years, they

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⁶⁴ 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-isplatliva-premium-tarifata-za-fotovoltaichni-centrali-vo-makedonija> (accessed 7 October 2020)

⁶⁵ Solar Macedonia. “About Us.” *Basic Information*. available at: <https://solar.org.mk/en/za-nas/> (accessed 7 October 2020)

⁶⁶ Иновативност Мк. “Членките на Солар Македонија ги воведуваат најновите светски иновации за искористување на на соларната енергија!” [Members of Solar Macedonia are bringing the new worldwide innovations for using solar energy!]. Иновативност Мк: Скопје, 2020. available at:

are expecting for their scope of work to increase, especially in the domain of introducing new technologies to the local stakeholders working with solar energy, as the energy transition of North Macedonia accelerates.

2.2. Hydropower potential

With its mountainous terrain and numerous rivers and streams flowing through it, North Macedonia is also recognized for its hydropower potential. By definition, hydropower is considered as a renewable, clean energy, since its production does not contaminate the environment. In addition, it is also a source of energy that is constantly renewed by nature, being literally flow of energy. 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.

A viable solution in the energy transition today can only be found in the establishment of small and medium-size hydropower plants, with a detailed feasibility study instructing ways of protecting the surrounding nature and ecosystems, if they were to be built. However, if any damages are foreseen and there are no ways to mitigate them, such projects should be abandoned. Several energy experts from North Macedonia, almost unanimously agree that the procedure for the construction of small hydropower plants in the country, especially in rich and biodiverse regions, is lacking much of the needed transparency and proper environmental impact assessment. Due to the fact that the incentives for the construction of small hydropower plants are high, for installed capacities up to 10MW, the constructing of such small-scale projects is booming.

According to the International Hydropower Association⁶⁷, there are over 600GW of unused hydropower capacities in North Macedonia available, which is making the hydropower market attractive. With the incentives and permits given to companies in a quick procedure and lack of strictness in following environmental protection protocols, as well as lack of any inclusion of local communities, the Macedonian public has been turning against these projects in recent years. Notable example of citizens' initiative to stop the construction of small hydropower plants in the northwest of the country are the movements known as

<https://inovativnost.mk/2020/08/25/%D1%87%D0%BB%D0%B5%D0%BD%D0%BA%D0%B8%D1%82%D0%B5-%D0%BD%D0%B0-%D1%81%D0%BE%D0%BB%D0%B0%D1%80-%D0%BC%D0%B0%D0%BA%D0%B5%D0%B4%D0%BE%D0%BD%D0%B8%D1%98%D0%B0-%D0%B3%D0%B8-%D0%B2%D0%BE/> (accessed 8 October 2020)

⁶⁷ 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)

“Green Front against Small Hydropower Plants”⁶⁸ and “Shar Mountain for a National Park”⁶⁹. They have been active for several years, advocating for responsible attitude towards water in the country and the biodiversity, especially in the region of the Shar Mountain in the northwest of the country.

Both initiatives are advocating against the usage of the rivers from the Shar Mountain for electricity production, and for protecting the region of the Shar Mountain as a national park, a procedure that was started by the Macedonian government in May 2020, thanks to the efforts of the initiative. In October 2020, the initiatives have started a petition against the small hydropower plants, and with the support of the Macedonian Eco Society and local mountaineers, a march has been organized towards the affected areas (Leshnica, Shar Mountain) where the construction of small hydropower plants has caused visible damages⁷⁰. Energy experts agree with the demands of the local community fighting to protect their environment, while it is considered that social acceptance will be impossible to achieve if the environmental protection is not in place and the local community is being excluded from decision-making process with regard to energy resources, water in this case.

Moreover, one of the consulted expert claims that the newly constructed small hydro projects and those still under construction are working full capacity only during the period when snow melts and the streams of water are powerful. This means that the rationale behind constructing such projects, considering the damage they cause and the exclusion of the locals, is weak, to say the least. As the initiatives are getting louder, the only viable solution for any future usage of the hydro potential in the country lies in a true democratization of the process through the inclusion of the locals, and detailed environmental impact assessment with protocols on environment protection or recommendations to abandon the project if the damage would be foreseen.

⁶⁸ Зелен фронт против мали Хидроцентрали / Fronti gjelbërt kundër HEC. [Green Front Against Small Hydropower Plants]. “Save Lechnica.” available at: <https://www.facebook.com/pages/category/Community/%D0%97%D0%B5%D0%BB%D0%B5%D0%BD-%D1%84%D1%80%D0%BE%D0%BD%D1%82-%D0%BF%D1%80%D0%BE%D1%82%D0%B8%D0%B2-%D0%BC%D0%B0%D0%BB%D0%B8-%D0%A5%D0%B8%D0%B4%D1%80%D0%BE%D1%86%D0%B5%D0%BD%D1%82%D1%80%D0%B0%D0%BB%D0%B8-Fronti-gjelb%C3%ABrt-kund%C3%ABr-HEC-101124431758024/> (accessed 19 October 2020)

⁶⁹ 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>

⁷⁰ Дуковска, Југослава. “Малите хидроцентрали се смрт за реките и за водоснабдувањето.” [Small hydropower plants are death for the rivers and water supply]. Слободен Печат: 2020. Available at: <https://www.slobodenpecat.mk/malite-hidrocentrali-se-smrt-za-rekite-i-za-vodosnabduvaneto/> (accessed 17 October 2020)

2.3. Wind power potential

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 Atlas⁷¹, 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.

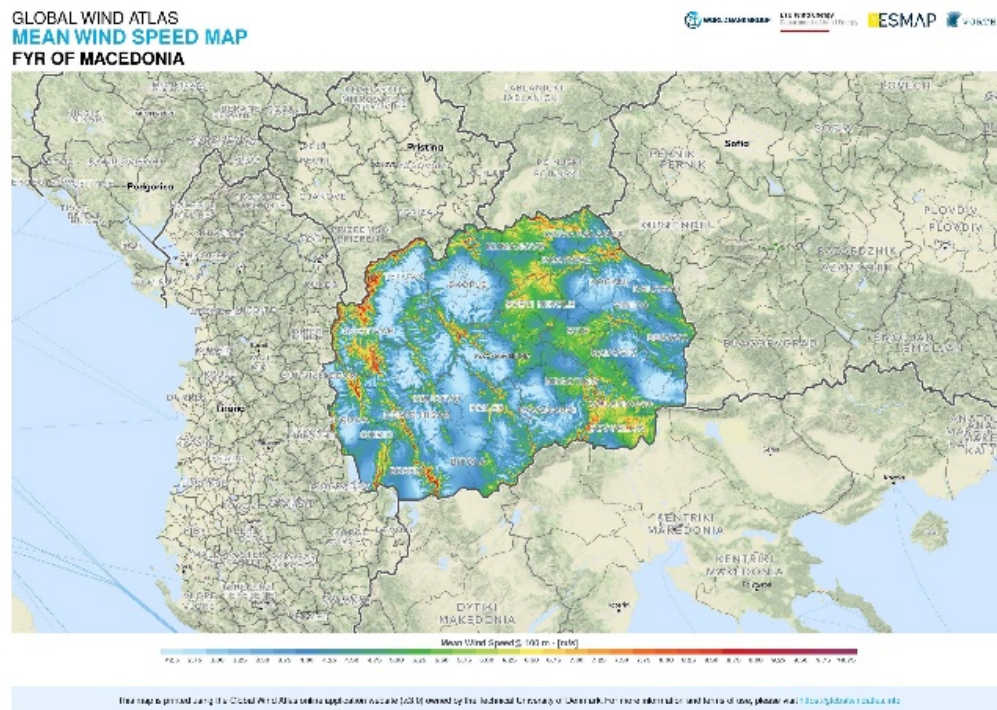


Figure 6: Wind Power map of North Macedonia; Source: Global Wind Atlas, 2020⁷²

Figure 6 above shows a real-time map of North Macedonia (October 2020) generated by Global Wind Atlas⁷³, where areas with good wind potential, suitable for wind projects, are mostly covered in either dark yellow or red colors. The energy strategy of North Macedonia in its future development scenarios foresees the installation of capacities to use its wind potential. According to energy experts, if there is potential, it is recommended to construct and combine wind power projects with solar power projects. The reason behind this recommendation is that both solar and wind power are considered as intermittent sources of energy, depending on weather conditions. The practices of other countries, such as Spain and Germany, show that one of the best ways to secure uninterrupted energy supply is by combining two renewable energy sources. Wind

⁷¹ Global Wind Atlas. *Energydata Info*. 2020. Available at: <https://globalwindatlas.info/> (accessed 23 October)

⁷² Ibid.

⁷³ Global Wind Atlas. *Energydata Info*. 2020. Available at: <https://globalwindatlas.info/> (accessed 23 October)

and solar power are often taken as one of the best combinations, due to the different energy they generate based on weather conditions, providing diversification of clean energy supply.

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 21 million euros⁷⁴. According to a number of feasibility studies⁷⁵ 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. 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”⁷⁶, in efforts to initiate a diversification of the country’s energy sources and enhance energy security. Going back to what has been mentioned earlier, on North Macedonia importing about 30% of electricity to cover its national demands, this shows that wind potential is a good addition and a viable option in satisfying domestic demands and exporting any surplus of energy. Having successfully completed its first wind power plant project, the country now hopes to attract more investors for the development of other future wind parks.

The hopes for more wind power are well and alive, as the existing wind farm in Bogdanci is getting an extension whose construction is currently underway (as of 2020), demonstrating the intention of the country to further utilize its wind potential. The Macedonian utility company “ELEM” is in charge of extending the

⁷⁴ МКД. “Нови ветерници во Богданци, инвестиција од 21 милион евра.” [New wind mills in Bogdanci, investment worth 21 million euros]. *МКД News*. Available at: <https://www.mkd.mk/makedonija/ekonomija/novi-veternici-vo-bogdanci-investicija-od-21-milion-evra> (accessed 16 October 2020)

⁷⁵ World Bank. *Air Quality Management in North Macedonia*. Prepared by Yewande Awe, et al. Report No: AUS0001228. Washington DC: World Bank Publications, 2019. available at: <http://documents1.worldbank.org/curated/en/116521576516981237/pdf/Air-Quality-Management-in-North-Macedonia.pdf> (accessed 17 October 2020)

⁷⁶ 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)

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.

Nevertheless, the wind farm in Bogdanci, as the first in the country, is seen as a novelty by the majority of the local population, as an opportunity for new jobs and development of the region, which represents an indirect contribution to the local community– if not through creating renewable energy community. According to the officials from the Municipality of Bogdanci⁷⁷, the locals have welcomed the wind farm in their region since day one of construction, contrary to the increasing acceptance issues of wind power projects in the western European countries. The project has a detailed environmental impact assessment study, showing minimum and almost harmless changes to the environment.

In addition, there have been no complaints about noise by the locals. In other instances, the issues with the locals resisting wind projects are the result of environmental concerns, noise complaints, and worry that the landscape might get overcrowded with wind towers. However, the construction of wind farms in North Macedonia following the example of Bogdanci is perceived as welcome, and there is a high probability that a wind project would be easily accepted in any other region of the country, especially if the environmental studies show no harmful consequences and the noise is mitigated through carefully selected technology. Yet, no active association advocating for the usage of wind power in North Macedonia, in particular in a participatory manner following concepts of citizen energy and energy democracy, or a study on the exact views and opinions of the people specifically aimed towards wind projects and the willingness of the people to participate, have been found for reference.

Nevertheless, for the time being, there is no visible resistance and wind potential remains. Just as with any future exploitation of renewable energy, wind power projects can be a good opportunity for citizen participation and creation of energy communities in North Macedonia. It is yet to be observed in the upcoming years, as the energy transition of the country moves forward following its energy strategy objectives, if inclusion of local communities in a future wind power project will be fostered, bringing the energy transition closer to the local communities.

⁷⁷ Personal conversation with a municipality employee. 27 September 2020.

2.4. Mapping out initiatives with the potential for developing energy communities

While reviewing the main potential for renewable energy sources in North Macedonia in the previous segments, we confirmed there are some initiatives in the country that are aimed at promoting and strengthening the appropriate usage of renewables, alongside conservation of nature and inclusion of the public, which matches the spirit of democratization of the energy transition process. To summarize, the initiatives that been most visible in recent years are “Solar Macedonia”⁷⁸, 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 park⁷⁹. 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.

The abovementioned and mapped out initiatives are some of the most prominent ones that have been detected in this research. The initiatives for protecting the nature by lobbying for the cessation of the construction of small hydropower plants in the areas with pristine nature and the initiatives for introduction of new technologies and usage of solar power have elements of democratization. For one, even though their approaches are different, their ultimate aim is including the voice of the public in deciding on how or even if there is need for a renewable energy source to be used within a local context. 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.

Considering the latest developments in the energy governance of the country, the adoption of the 2040 Energy Development Strategy, and the initial steps and enthusiasm present in the Macedonian Government for supporting citizen energy and prosumers, are providing good prospects for the establishment of future energy communities. 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 local governance. During this research period, some scattered information has been obtained. Opportunities do exist, one example being the municipalities of Tetovo, Bitola

⁷⁸ Solar Macedonia. “About Us.” *Basic Information*. available at: <https://solar.org.mk/en/za-nas/> (accessed 7 October 2020)

⁷⁹ 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>

and Bogdanci, aside from the capital Skopje, which has a different and more decentralized structure on the city level.

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, more prominent being Eco Guerilla⁸⁰ and CBC LOJA⁸¹. If the 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 the ideas from these initiatives, thus forming an axis of collaboration between the municipality and non-profit organisations and enabling the inclusion of the public through these future partnerships. The waste issues and the landfills problem in Tetovo could be easily transformed into a solution through energy production from waste, following the example of other EU countries, where biomass is produced from waste through the introduction of new technologies and public-private partnerships. Biomass power is carbon neutral electricity generated from renewable organic waste which is otherwise dumped in landfills⁸². Such solutions would decrease both waste and air pollution in the city, and contribute to the democratization of energy transition.

Moreover, 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 could potentially have a bright future as a green city. Much of it depends on the willingness of the municipality and the present initiatives on the environmental issues in the city, which just as Tetovo, struggles with heavy air pollution, especially during winter months. The Macedonian Ecological Society has been addressing these problems for years now, through different activities in the area of human-nature relationship⁸³, in Bitola, but also on the national level, and they should be considered as one of the promising initiatives for implementing the concept of energy communities.

Furthermore, the Municipality of Bogdanci has already been mentioned earlier as 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

⁸⁰ 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)

⁸¹ CBC LOJA. “Earth Day (Trash House).” CBC LOJA Newsletter. 2019. Available at: <https://cbcloja.org.mk/earth-day/> (accessed 20 October 2020)

⁸² Zafar, Salman. “Biomass Wastes.” *Alter Energy Mag.* 2009. available at: <https://www.altenergymag.com/article/2009/08/biomass-wastes/530/> (accessed 20 October 2020)

⁸³ Macedonian Ecological Society. “3a MEД.” [On MES (Macedonian Ecological Society)]. *Home Page*. Available at: <https://mes.org.mk/za-med/> (accessed 27 October 2020)

country could become a hotspot for wind and solar power development on the citizen level and really boost 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. Having the potential of wind resources, with governmental support and local initiatives, these regions could easily deliver renewable energy communities in future, where the locals could also take some part in the development of RES projects.

In particular, the town of Sveti Nikole has a promising future that should be mentioned. 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 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. Following the example of the initiatives for protecting Shar Mountain as a national park, there is a movement for protecting Osogovo Mountain as a national park as well, led also by the Macedonian Ecological Society⁸⁴.

Although this initiative does not seem at the moment as strong and visible as those for Shar Mountain protection, the region itself is a promising spot for green transformation and could be a good example for a positive human-nature relationship and energy democratization. Aside from its nature, the region of the Osogovo Mountain 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 UNESCO⁸⁵. In recent years, the status of the site has been proclaimed 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 could also produce biomass, thus minimizing pollution and creating communities for citizen energy that would both protect the region and contribute to a sustainable development.

⁸⁴ Ibid.

⁸⁵ 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)

In line with boosting social and green entrepreneurship on the national level, the organizations such as ARNO – Association for Development of New Options⁸⁶ and Social Innovation Hub⁸⁷ 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 map of North Macedonia in Figure 7 below 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.

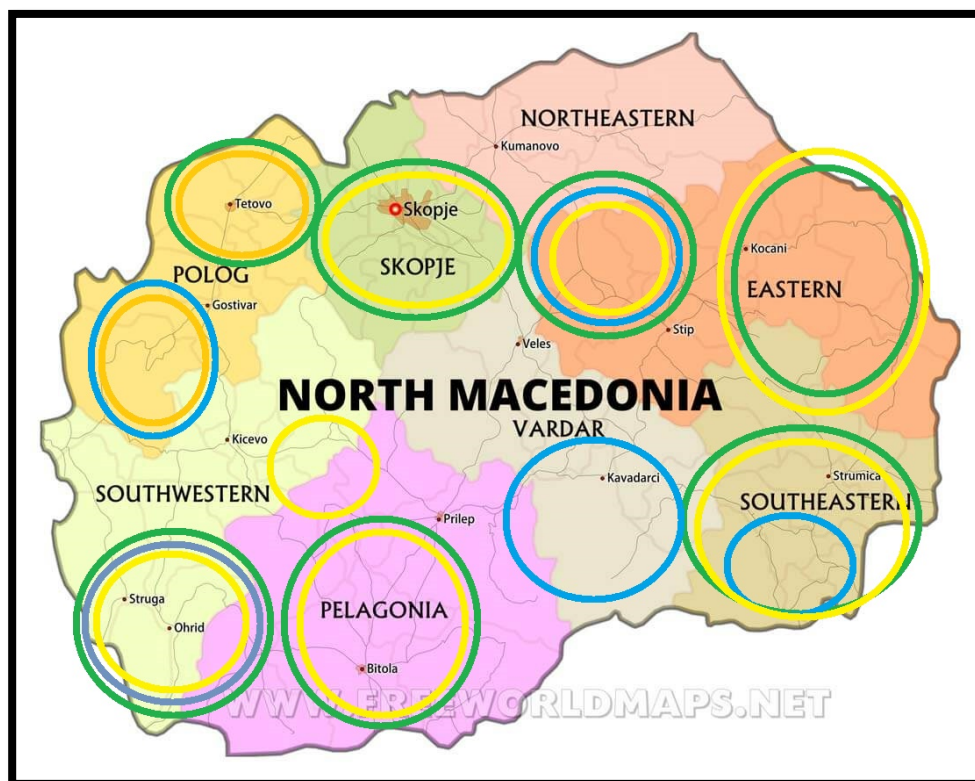


Figure 7: Map of North Macedonia, locating potential for energy communities; Source: Free World Maps, 2020⁸⁸

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 the establishment of future energy communities. Looking at the map, it is safe to conclude that most of

⁸⁶ 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)

⁸⁷ Social Innovation Hub. "Social innovation helps create prosperous societies." *About us – Home Page*. available at: <http://socialinnovation.mk/about-us/> (accessed 28 October 2020)

⁸⁸ Free World Maps. *North Macedonia Map*. Available at: <https://www.freeworldmaps.net/> (accessed 7 October 2020)

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 marked 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 more than one renewable energy source, and in combination with proper nature protection and a mechanism for prevention of air pollution, they could be turned into real future green spots.

The selection of the mapped-out regions has been done based on the local potential to form energy communities in the future, by looking into the initiatives and groups working on grass-root level that already exist, taking into account their determination and actions towards sustainable living. Locally available energy resources elaborated in the previous segments have also been taken into consideration.

Conclusion

The importance of democratization of the energy sector lies primarily in the benefits that this process can bring for the citizens. By allowing the process of energy democratization to develop, the people would be able to decide on their own local energy production and consumption. In that case, the government, the civil society and the business community should work as links, connecting different local communities producing energy, or coordinating, together with the citizens, the usage of the produced energy and creating a locally sustainable energy mix.

Based on the presented research, the potential for creating sustainable energy communities, communities of prosumers, citizen energy communities and democratization of the energy transition in North Macedonia is significant. As the country aims towards becoming an EU member state, the current EU member states can serve as positive examples on bringing democratization in the energy transition process, through significant involvement of local communities. The German Energiewende is one example that provides a good roadmap of a successful energy transition with participation of the citizens and local communities, by following the concept of multi-level governance and involving its citizens on a larger scale.

In this regard, municipalities should play a much more proactive role, and they are pivotal in supporting local initiatives and should, therefore, find ways to take over processes for tendering and granting subsidies to support decentralization of the energy system, thus supporting their own local communities. Considering that the governance system in North Macedonia is decentralized and the municipalities do have a degree of power, a wider decentralization of energy governance and creation of multilevel system of governing with local inclusion, should not be a big challenge as energy transition moves forward.

However, as stated in the EU recommendations, the bigger challenge is finding appropriate personnel and experts to work on implementing these changes. As the latest recommendations point out, the lack of appropriate human resources is one important obstacle for North Macedonia. Moreover, as the country is managing to accelerate its process of energy transition towards a more promising green future through new laws and the energy strategy, the next step would be to manage to restructure the institutions working in the area of energy, decentralize them and bring forward qualified human resources to manage these important processes.

The intention of the objectives of the Macedonian energy strategy seem clear enough to be well transitioned into practicing policies, the country has enough clean energy resources, and for the moment it shows commitment in delivering results. The citizens should be given a chance to invest in the construction of any form of power plant in their vicinity, thus becoming partial owners with a power to decide. This could be one of the ways of creating a functioning local citizen energy community in relation to the usage of

renewable energy potential, if all the preconditions are met. Such optimistic scenario would essentially create prosumers of energy in North Macedonia, both producers and consumers of energy, and give a real example of energy democracy in practice, where each household or a local community would be responsible for their own energy needs.

Furthermore, by looking into the small-scale and local production of energy today, including local policies on energy, it is still not clear enough if the importance of energy democratization is fully recognized. For small-scale investments, the market remains a battlefield where larger energy players are bound to win. The fact that North Macedonia, within a very short period, got on the way of securing over 135MW of installed capacity for solar power should be celebrated. However, one should not overlook the fact that the past tenders for photovoltaics have mostly been favoring business community over small-scale investments from local communities and citizens. The involvement of the local community in small hydropower projects should also be crucial for providing sense of social justice and bringing democratization to the process of energy resources usage, which for the moment seems neglected as well. In order to support a positive human-nature-energy relationship, it is important to consider the local voices through local initiatives, in combination with environmental protection studies.

Energy democracy means wide inclusion of citizens and local communities in the processes of delivering 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; the households would have potentially free or almost free energy, produced by their own photovoltaics or through participation in local wind farms and biomass units, and would ideally sell any surplus through the transmission grid. Only 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.

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