

THE EU GREEN STRATEGY FOR THE WESTERN BALKANS:

Decarbonisation Process and
Trends in the Region. What
are the Options for Kosovo?

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THE EU GREEN STRATEGY FOR THE WESTERN BALKANS: DECARBONISATION PROCESS AND TRENDS IN THE REGION. WHAT ARE THE OPTIONS FOR KOSOVO?

Executive Summary

8 Mill species are at risk of extinction on the planet with forests and oceans polluted and destroyed. Yet, current policies might downsize greenhouse gas emissions by 60% by 2050 only. Particularly, decarbonisation, relying on a comprehensive, integrated industrial strategy, with energy-intensive industries emitting roughly 15% of overall worldwide CO₂ emissions, is especially relevant, because the use of coal still accounts for 47.6% in countries like China. Nevertheless, the trend across the EU has been that of reducing its consumption, supply and production since the 1990s.

Yet, its neighbours – the Western Balkans – are one of the region in Europe most heavily affected by the impact of climate change, with estimates of temperature increases of 1.7-4.0 °C, and even exceeding 5.0 °C by the end of the century. Also, they register CO₂ emissions 3 times higher than the European Union average. Notwithstanding international, EU and local commitments, coal is still crucial to the energy sector across the area, accounting for about 70% of electricity produced there, with some countries reaching even 97%. Besides that, some of them have been planning to build nearly 3.000 MW of new coal power plants for more than EUR 5 Bill. Also, rail still heavily relies on fossil fuels with more than 30% of the TEN-T Core and approximately 50% of the Comprehensive Networks not electrified.

Across the region all, except Albania, are highly dependent on coal, with Serbia chairing the bad performer's group, while North Macedonia became the first Balkan country to set concrete coal phase-out options (possibly 2025) on the table.

On a global level various solutions are underway to face decarbonization. To start with, investment in renewable power accounted for 2/3 of global spending in power generation in 2017, with the 2020 target arriving to 20% and 32% in 2030. Also, compared to 2008, direct and indirect employments in renewable energy more than doubled, increasing from 660.000 to 1.43 Mill jobs. Additionally, the International Monetary Fund (IMF) recently proposed the creation of an international carbon price, while making carbon energy more expensive than clean sources, so as to discourage their future usage, and by improving energy efficiency and re-directing innovation efforts towards green technologies. The main purpose is of restricting global warming to below 2 °C over the next decade. In the meantime, carbon pricing schemes are proliferating—more than 60 have been implemented globally, including key initiatives this year (2021) in China and Germany. Across the Western Balkans, Montenegro is the only one introducing a carbon pricing. The remnant WB5 is, therefore, encouraged to do so.

At the EU level it has been acknowledged that achieving climate-neutrality without transitioning to a fully circular economy is not feasible. Therefore, the core of the EU Green Deal incorporates a new Circular Economy Action Plan, whereas value and resources are maintained in the economy for as long as possible and waste generation is minimised. Particularly with a look at decarbonization, the EU Green Deal proposes to cut 55% greenhouse gas emissions by 2030.

Generally speaking, further decarbonisation will increase energy security, while showing feasible economic and technological pathways. Inevitably, modernizing and decarbonising the EU's economy will stimulate significant additional investment. Particularly, the EU's industry has started the shift to climate neutrality, by reducing gas emissions by 23% between 1990 and

2018, with the economy growing by 61%. Yet, it still accounts for 20% of the EU's greenhouse gas emissions.

Not only decarbonization is relevant for the European Union itself. Rather, it is even more important for the Western Balkans, being their key trade partner (i.e., EU's total trade being more than 70%, vs. the region's overall share of 1.4% only). In fact, most of the production in energy-intensive industries (i.e., steel, chemical, automotive, food and beverage, etc.) is imported from the region, where coal is still of a considerable usage and the primary cause of greenhouse gas emissions with a significant use of carbon-emitting conventional technologies. Thus, by continuing to import more carbon-intensive products from there does represent a considerable hindrance to the EU's targets under the EU Green Deal. Besides that, the transition of the region to a green economy is not only reliant on its future European perspective. Rather, it is also urgent for its own survival following flooding, high temperatures fuelling dozens of fires across the Balkans and causing draught and the dropout of agricultural output. And, whether some local projects (i.e., GIZ) targeting the problem are underway, these reflect much a post-recovery approach. Rather, long-term effective measures to downsize gas emissions are needed. Undoubtedly, a key way forward is phasing out of coal and investing in renewables. Concretely, Albania changed its legislation in 2017 for allowing incentives for solar and wind developments. Following this, 2 solar auctions were held respectively in 2018 near Vlora, and in 2020 in Karavasta, near Fier. The other countries in the region are encouraged to do so as well.

Looking specifically at the issue of rail's emissions outlined above, there is the need of reviewing the existing transport strategies and of promoting a greener and more sustainable transport network, including the revitalisation of the railway network. Besides that, it is urged of thinking about sustainable alternatives to road transport (i.e., investment in inland waterway). Also, digitisation in the public transport systems, making them smarter, less polluting and customer-friendly, should be encouraged.

Among the Western Balkans hydropower is an alternative to coal, with Albania being the leader. Also, Montenegro has shown its continued interest in building new hydropower plants. North Macedonia too relies on this source of energy. Concerning with Kosovo, whether multiple smaller hydropower and renewable energy facilities exist, their capabilities are not fully used. Yet, particularly the case of Albania and Montenegro are indicative about the need of diversifying renewables beyond hydropower highly reliant on weather conditions, thus increasing the need of importing electricity.

Whether the usages of alternative renewables energy sources like wind, solar, bio- and geothermal is underused region-wide, Montenegro and North Macedonia, together with Albania, are willing to orient themselves towards renewable energy and making steps to diversify beyond hydropower.

In the meantime, countries like Albania, Montenegro and North Macedonia have been investing in gas too. But opting for gas power only cuts gas emissions by around 30%, far from the total decarbonisation of the energy sector under the Paris Agreement. Also, the environmental impact of the way pipelines are sometimes built should be duly taken into account. Concretely, local authorities must embark on *ad hoc* measures for guaranteeing the legality and environmental impact of such projects, while minimising the use of gas.

Conversely, a long-term solution to step out of coal is investing in solar and wind energy. As for the former, geographically all the WB6 are suitable for the production of photovoltaic energy throughout the whole year. And, whether its full potentials remain unexplored in the region, Montenegro is the leader by hosting the largest solar farm project (200 MW) in the Balkans. With a look at wind energy power plants, developments in this sector are still limited in the region. And, whether the wind speed is not as fast as northern Europe, the Western Balkans

offers many feasible wind generation sites, particularly in the higher mountainous areas with more consistent wind speeds.

Yet, whether wind, solar and hydropower are weather-dependent, geothermal power plants rely on technology. They, thus, represent a credible alternative to be introduced in the region. However, awareness about this type of renewable energy started to spread across only recently, and its usage is insignificant with minimal supply in North Macedonia only. But, BiH, Montenegro, Serbia, and Albania have optimal geological and climate characteristics for geothermal exploitation. Therefore, major investments in terms of infrastructure, technical assistance and cross-border supply-chains (i.e., uniting different types of skills between architects, engineers, geologists, etc.) should be channelled into this sector.

Unlike its neighbours, Kosovo lags far behind in terms of usage of renewable energy sources, despite its ample availability. In 2019 only, lignite accounted for 94.5% of total generation, followed by hydropower (3.7%), wind power (1.6%) and solar (0.2%). Also, firewood and coal is still largely burned for heating and/or cooking, thus, generating air pollution turning into respiratory and other health problems. Moreover, the Government's intention to rehabilitate Kosovo B power plant (more than 30 years old) is to be discouraged, while supporting investments in renewable energy sources (i.e., wind, solar and geothermal) should be positively greeted.

Along with downplaying coal's future investments, Kosovo's, as well as BiH's and Serbia's coal subsidization and coal-based production is not to be welcomed. Their side effects are three-fold: electricity market's distortion; wrong signalling for investors in competitive technologies; dis-incentivization efforts, in terms of energy savings and energy efficiency, for electricity consumers.

All in all, renewables, besides being environment-friendly, are exceptionally fast to build and have a highly favourable financing condition. Whether some options are underway across the Western Balkans, the use of modern technologies should be encouraged coupled with a better investment environment as well.

INTRODUCTION

The European Union Green Deal, a roadmap of key policies and measures, represents the EU's core development strategy to face climate change in the coming decade. Concretely, it targets no net emissions of greenhouse gases by 2050, where economic growth is decoupled from resource use. To be said otherwise, the climate-neutrality target cannot be achieved without transitioning to a fully circular economy, whose concept is at the core of the EU Green Deal. Shortly, the latter backs up the European Commission's ambition for making Europe the first climate-neutral continent by 2050. By recognizing that climate change is by its very nature a trans-boundary challenge that cannot be solved by national or local action alone, there is awareness about the need of a more ambitious climate action in the next years. In other words, achieving climate neutrality by 2050 implies undergoing profound changes to our lives. Also, it will require significant public and private investments.

Whether climate change concerns various areas, decarbonization is looked at as a priority by the EU Green Deal, and its implementation will significantly contribute to the circular economy discourse above. Most importantly, renewable sources (i.e., wind energy, bioenergy, and solar photovoltaic) are considered to be the way forward. Also, they are now mainstream market players worldwide. Besides that, they have been continuously increasing in the EU with its share doubling since 2004, when renewables covered only 8.5% of gross final energy consumption. Yet, their usage is still minimal across its neighbours: Western Balkans. Therefore, investing in these types of sources there is of outmost importance for Brussels. In fact, the region

makes a consistent use of outdated and carbon-emitting technologies, by exporting its products to Europe with obvious climatic side-effects.

The paper is divided into five sections. The first one describes the purpose, scope and aims of the EU Green Deal by pinpointing on the one hand the circular economy discourse and the prioritization of the decarbonization process on the other hand. The second section clarifies the need of implementing the Green Deal in the Western Balkans, considering their role as a key trade partner for the European Union, by exporting to Europe materials produced with carbon-emitting and conventional technologies, as briefly outlined above. This ill-fated constellation sheds light on the need for a green modernisation in enterprises across the region. Also, it asks for investments in the co-operative linkages in the industrial eco-systems. Such a paradigm change is not solely a prerequisite for a possible EU membership. Rather, it is also a necessity for natural disasters being a direct consequence of climate change, which have hit severely the region. Along with some local initiatives (GIZ), international attempts – such as the IMF's carbon-pricing at the global level – at downsizing CO₂ emissions are here mentioned.

The third section deals with the commitments and results achieved in the Western Balkans with a view at dealing with the decarbonization process, while committing themselves to downsize CO₂ emissions through various formats (i.e., Energy Community, Paris Agreement, EU Climate Law, National Energy and Climate Plans, etc.) and investing in renewable energies. Yet, despite good intentions the use of coal is still crucial to the energy sector across the region (between 70% and even 97%).

The fourth section clearly outlines that renewables are the way forward, while highlighting the countries' somehow still consistent reliance - except for Albania - on coal, with Serbia leading the group. This part also underlines that whether investing on hydropower has been a way of diversifying from coal, it is not a sustainable practice on the long run, considering its strong dependence on hydrological conditions. At the same time the positive steps of some countries in the region (i.e., Montenegro, North Macedonia and Albania) to opt for wind-, solar, bio- and/or geothermal energy sources are here mentioned. Likewise, the use of gas (i.e., Albania, Montenegro and North Macedonia) is here referred to, even though its further exploitation is not fully encouraged. Finally, major steps are welcomed to further invest in solar and wind power production. Their full exploitation, despite their ample availability, is still minimal across the region. Yet, whether wind-, solar-, and hydropower are weather-dependent, geothermal sources, relying on technology, would represent a credible alternative for the Western Balkans. But, awareness about this type of energy source is still at the beginning with its usage being minimal in North Macedonia. At the same time countries like BiH, Montenegro, Serbia, and Albania have optimal geological and climate characteristics for its exploitation. Not solely the encouragement is about diversifying beyond coal, rather there is the urgency of boosting energy efficiency, by eliminating, wherever possible, inefficient practises (i.e., use of traditional electrical heaters for heating and for air conditioning).

The fifth and last section deals with Kosovo lagging far behind its neighbours in terms of usage of renewable energy sources. In fact, the country relies on a highly inefficient, outdated and inadequate fossil fuel-based energy system seriously challenging economic growth and development. Whether the Government foresees to rehabilitate a more than 30 years old power plant (Kosovo B), this manoeuvre should be strongly discouraged. Rather, investing in the potentials of renewable energy sources (i.e., wind, solar, bio- and geothermal) should be exploited, while gas is to be considered as a short-term alternative only, as previously mentioned. At the same time, large-scale battery storage may represent a much more credible scenario for the country.

The paper ends with key policy recommendations for international/EU and local/regional stakeholders, with a view at guaranteeing a smooth transition to a green energy-based economy.

I. The European Union and its New Development Strategy: The Green Deal

The EU Green Deal is an EU development strategy whose central concern is the environment and climate change. It is a roadmap of key policies and measures as an integral part of the European Commission's strategy to implement the United Nations Agenda 2030,¹ and the sustainable development goals (SDGs).² It aims at transforming the EU into a fair and prosperous society with a modern, resource-efficient and competitive economy with no net emissions of greenhouse gases by 2050, and where economic growth is decoupled from resource use.³ It reaffirms the Commission's ambition to make Europe the first climate-neutral continent by 2050, with the EU currently responsible for less than 10% of global greenhouse gas emissions, while recognizing that climate change is by its very nature a trans-boundary challenge that cannot be solved by national or local action alone.⁴

The need of an EU Green Deal stems from two key practical and intertwined considerations: 8 Mill species are at risk of extinction on the planet with forests and oceans being polluted and destroyed, and current policies will only reduce greenhouse gas emissions by 60% by 2050. Therefore, a more ambitious climate action is needed in the coming decade.⁵

Inevitably, achieving climate neutrality by 2050 means undergoing profound changes to the way we live today.⁶ Also, it will require significant public and private investments.⁷

Half of the total greenhouse gas emissions comes from resource extraction and processing.

¹It is a plan of action for people, the planet and prosperity. It aims at protecting the planet from degradation, including through sustainable consumption and production, by managing its natural resources and taking urgent action on climate change. See United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [online]. Available at: <https://sdgs.un.org/2030agenda#:~:text=Transforming%20our%20world%3A%20the%202030%20Agenda%20for%20Sustainable,Prosperity.%20...%205%20Peace.%20...%206%20Partnership.%20> [Accessed: 31 May 2021].

²SDGs, in all 17, are a call for action by all countries to promote prosperity while protecting the planet. See The Sustainable Development Goals: Our Framework for Covid-19 Recovery [online]. Available at: <https://www.un.org/sustainabledevelopment/sdgs-framework-for-covid-19-recovery/> [Accessed: 31 May 2021].

³European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 2 [online]. Available at: https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf [Accessed: 17 May 2021].

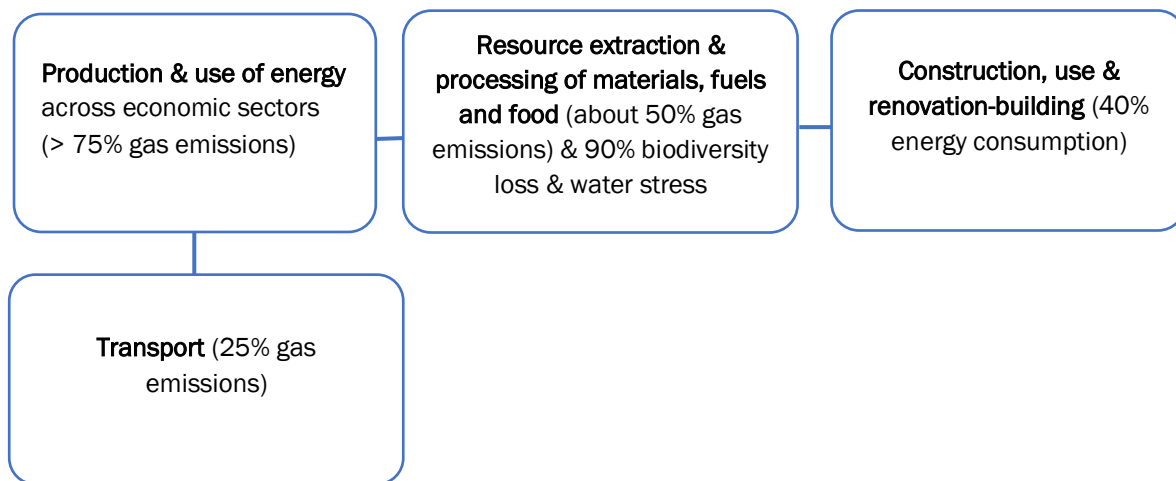
⁴European Commission. Proposal for a Regulation of the European Parliament and the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM (2020) 80 final, 4 March 2020: 1 & 3-4 [online]. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0080&from=EN>

⁵European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 2&4, *op. cit.*

⁶European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans *Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, An Economic and Investment Plan for the Western Balkans, SWD(2020)223 final, 6 October 2020: 2 [online]. Available at: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/green_agenda_for_the_western_balkans_en.pdf [Accessed: 20 May 2021].

⁷European Commission. Proposal for a Regulation of the European Parliament and the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM (2020) 80 final, 4 March 2020: 2, *op. cit.*

Figure 1 - Origin of Greenhouse gas emissions & energy consumption (%)



Source: The European Green Deal: 6, 9-11.

It is *not possible to achieve the climate-neutrality target without transitioning to a fully circular economy*. The new Circular Economy Action Plan is at the core of the European Green Deal, whereas value and resources are maintained in the economy for as long as possible and waste generation is minimised. In this view, economic circularity should address the entire product's life-cycle, from design and manufacturing to consumption, repair, reuse, recycling, so as to bring resources back into the economy.

Concretely, the EU Green Deal detects key areas of intervention.⁸ Whether all of them are a priority, decarbonisation leads the group with the circular economy making a significant contribution in terms of its downsizing. Specifically, the EU's Goal by 2050 is that primary energy largely derives from renewable sources. To be said otherwise, energy efficiency – by making use of hydrogen, biomass and renewable synthetic gas – will reduce energy emissions in the production of industrial goods. And, whereas biomass and hydrogen can reduce certain emissions (i.e., steel production, some chemicals), others will require CO₂ to be captured and stored, or used.⁹

Renewable energy technologies (i.e., wind energy, bioenergy, and solar photovoltaic) are now mainstream market players worldwide. Investment in renewable power accounted for 2/3 of global spending in power generation in 2017. The increasing share of renewable energy investments is partly the result of a slump in the commissioning of new fossil fuel capacity.¹⁰ In

⁸European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 5-12 & 14-15, *op. cit.*

⁹European Commission. A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, EU Refining Forum, Brussels, 7 December 2018: 8 & 15 [online]. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/european_commission_-_a_european_strategic_long_term_vision_for_a_prosperous_modern_competitive_and_climate_neutral_economy.pdf [Accessed: 31 May 2021].

¹⁰European Commission. In-depth analysis in support of the Commission Communication COM(2018) 773, A clean planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy, 28 November 2018: 20 [online]. Available at: <https://ec.europa.eu/clima/sites/clima/files/docs>

the meantime, renewable energy investments have been continuously increasing in the EU, via European support policies, with its share doubling since 2004, when renewables covered only 8.5% of gross final energy consumption. The 2020 target was to arrive to 20% and 32% in 2030. Also, compared to 2008, direct and indirect employments in renewable energy more than doubled, increasing from 660.000 to 1.43 Mill jobs.¹¹

Modernizing and decarbonising the EU's economy will stimulate significant additional investment. Also, it will impact positively growth and jobs with a GDP increase up to 2%.¹² On the one hand, the EU's industry has started the shift to climate neutrality, by reducing gas emissions by 23% between 1990 and 2018, with the economy growing by 61%.¹³ On the other hand, it still accounts for 20% of the EU's greenhouse gas emissions.¹⁴

As far as decarbonisation is concerned the EU Green deal proposes to cut 55% greenhouse gas emissions by 2030¹⁵ - since 1990 emissions have reduced in all sectors except for the transport.¹⁶ At the same time it acknowledges that there is a risk of carbon leakage, as long as many international partners do not share the ambition as the EU, either because production is transferred from the EU to other countries with lower ambition for emission reduction, or because EU's products are replaced by more carbon-intensive imports. If this risk materialises, there will be no reduction in global emissions, and this will frustrate the efforts of the EU and its industries to meet the global climate objectives of the Paris Agreement.¹⁷

II. The EU Green Deal: Why Decarbonising the Western Balkans?

A fossil fuel or sedimentary rock extracted from underground or in open air, or produced artificially, coal (or hard coal) was not mined until the late middle ages. It saw a massive use in the industrial revolution, when it was also used, being converted into gas, to power some means of transport (i.e., locomotives and steamships), and to heat buildings. Today natural gases, such as methane, are widely used because they are safer. Coal can also be converted into liquid fuels such as gasoline or diesel, through various processes, and one of these is the low temperature carbonization (LTC), and it is still a very important fuel. However, some countries worldwide and the European Union have started decreasing its usage, while moving to renewable sources, because of its high degree of CO₂ emissions. But it is still one of the main energy sources of humanity with countries like China being the biggest coal's producer worldwide.

/docs/pages/com_2018_733_analysis_in_support_en_0.pdf [Accessed: 31 May 2021].

¹¹European Commission. In-depth analysis in support of the Commission Communication COM(2018) 773, A clean planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy, 28 November 2018: 21, *ibid*.

¹²European Commission. A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, EU Refining Forum, Brussels, 7 December 2018: 4, *op. cit*.

¹³European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 4, *op. cit*.

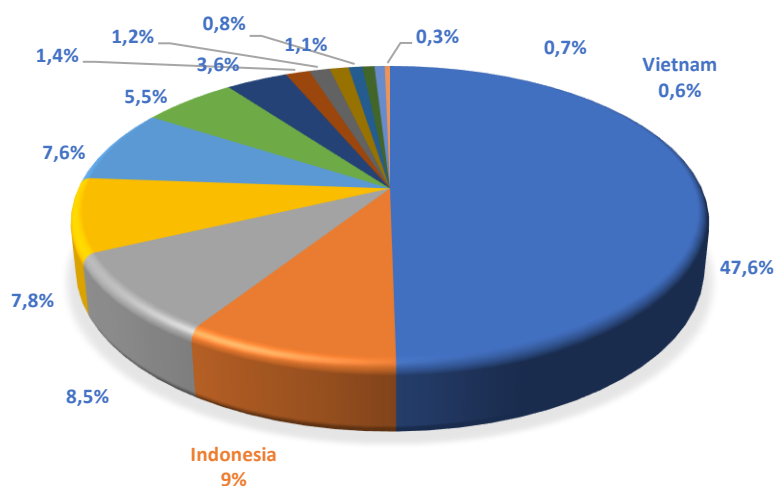
¹⁴European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 7, *ibid*.

¹⁵European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 2, *op. cit*.

¹⁶European Commission. In-depth analysis in support of the Commission Communication COM(2018) 773, A clean planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy, 28 November 2018: 19, *op. cit*.

¹⁷European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM(2019) 640 final, 11 December 2019: 5, *op. cit*.

Figure 2 - Coal Production Worldwide



Source: <https://www.statista.com/statistics/265638/distribution-of-coal-production-worldwide/> [Accessed: 19 May 2021].

Across the EU the trend has been that of reducing coal’s consumption, supply and production. Inland consumption of hard coal decreased continuously in the 1990s. Starting from 1999 the yearly hard coal consumption stabilized around 300 Mill tonnes. Between 2008 and 2009 it sharply declined, and recovered partially in the next years, by reaching roughly 260 Mill tonnes in 2012. Since 2013 the consumption has been decreasing steadily. In 2019 it reached 176 Mill tonnes EU-wide, according to recent estimates, with Poland (39%) and Germany (23%) accounting for more than 60% of the total hard coal consumption, followed by France and the Netherlands (both 6%).¹⁸ Greece, Spain, Portugal, and Denmark have almost half reduced their supply, transformation and consumption of solid fuels like coal from 2017 to 2019, whereas Ireland saw three times its reduction. All other EU countries witnessed a slight decrease followed by Estonia with a slight increase, but Cyprus has 5 times raised the share.

Table 1 - Supply, transformation and consumption of solid fossil fuels (i.e., coal) EU-27, 2017-2019 Mill tones

Country	2017	2018	2019
Germany	240 919.000	233 937.000	183 632.155
Poland	138 247.036	136 449.394	122 008.131
Czech Republic	48 573. 893	48 258.439	44 365.809
Greece	38 437.900	37 102.845	26 932.190

¹⁸ Consumption and production of hard coal [online]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Coal_production_and_consumption_statistics#Consumption_and_production_of_hard_coal [Accessed: 19 May 2021].

Bulgaria	35 750.957	32 001.457	29 510.624
Romania	27 134.538	25 880.313	25 152.006
Spain	24 910.000	21 985.000	9 576.000
France	18 617.100	17 258.774	14 304.165
Italy	17 253.174	16 144.729	12 464.730
UK*	17 032.389	14 355.220	10 545.169
Netherlands	16 805.785	15 190.411	12 217.902
Hungary	10 400.000	10 421.000	8 979.000
Slovakia	7 989.000	7 806.000	6 684.000
Austria	6 006.195	5 446.189	5 564.752
Belgium	5 722.900	5 766.600	5 705.300
Portugal	5 419.565	4 555.088	2 155.363
Finland	5 391.000	5 206.000	4 208.000
Sweden	3 926.000	4 035.000	3 794.000
Slovenia	3 783.553	3 719.568	3 505. 221
Denmark	2 662.415	2 697.465	1 534.545
Ireland	1 887.638	1 306.352	586.754
Croatia	665.000	615.200	720.400
Lithuania	269.500	285.200	279.600
Luxembourg	78.030	72.536	73.365
Latvia	70.082	78.189	67.499
Estonia	48.000	50.000	50.345
Cyprus	5.055	22.554	27.685
Malta	0.000	0.000	0.000

Source: https://ec.europa.eu/eurostat/databrowser/view/nrg_cb_sff/default/table?lang=en
[Accessed: 19 May 2021]

Production of hard coal also decreased continuously from 1990, and its long-term downsizing has been more severe than for consumption. For instance, in 2019 the EU production was 65 Mill tonnes, 77% less than the 277 Mill tonnes of 1990. Whereas in 1990 thirteen Member States of the current EU were producing hard coal, in 2019 there were only two left: Poland (61.6 Mill Tonnes/95% of the total EU production) and Czech Republic (3.4 Mill tonnes/5%). All the other coal producers stopped their production.¹⁹

Energy-intensive industries (i.e., steel, chemicals, cement, glass, plastic) making often use of high temperatures and/or chemical processes, by burning carbon fuels, are the primary cause of greenhouse gas emissions. Also, energy-intensive's CO₂ emissions are in some cases a by-product of the chemical transformation process during the production of these materials. And, it is not easy to decarbonise, because it is not enough to just shift the energy source or fuel, given that carbon is also used as a raw material. Additionally, it plays a key role in the chemical transformation process.²⁰

Transformation free from a fossil fuel-based economy is a vital part of sustainable development. Also, further decarbonisation will increase energy security, while showing feasible

¹⁹Consumption and production of hard coal, *ibid*.

²⁰Melina Gkionaki. How it works: Decarbonisation through innovation, *European Investment Bank*, 23 October 2020 [online]. Available at: <https://www.eib.org/en/stories/decarbonisation-technologies#> [Accessed: 19 May 2021].

economic and technological pathways.²¹ Decarbonisation is especially needed for those energy-intensive industries mentioned above, and it largely relies on a comprehensive, integrated industrial strategy.²² These industries emit roughly 15% of overall worldwide CO₂ emissions.²³

Yet, green production processes, as those promoted under the EU Green Deal, have to compete also with materials imported from outside the EU, which are cheaper and produced with carbon-emitting, conventional technologies.²⁴ And, considering that the Western Balkans, being a key trade partner of the EU, make still a considerable use of such technologies, the implementation of the EU Green Deal there is even more stringent.

The EU accounts for more than 70% of the region's total trade, while the region's share of overall trade is only 1.4%.²⁵ Trade with the region has grown by almost 130% over the past 10 years, with the total trade between the EU and the Western Balkans reaching EUR 55 Bill in 2019. In the same period the region increased its exports to the EU by 207%. In 2019 the EU's main imports from the Western Balkans were machinery and appliances (23.1%), base metals (12.6%), and chemicals (10.1%), with the EU's exports to the region being machinery and appliances (20.6%), mineral products (11.1%), and chemicals (10.5%).²⁶

Along with machinery and appliances, base metals and chemicals, the manufacture industry is also energy-intensive. In 2020, manufactured goods made up 77% of EU's exports to and 80% of EU's imports from the Western Balkans (i.e., Albania, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo and North Macedonia).²⁷ Among the WB6, Serbia accounts for almost half of the total EU's exports to the Western Balkans. The growth of Serbia's exports between 2010 and 2020 was the largest among the six in absolute terms, as it was its average annual growth rate (6.5%).²⁸

The consistent trade volume between these two macro-regions, coupled with the huge impact of obsolete and conventional technologies, still in use in the Western Balkans, on the EU's market and climate raise the need for a green modernisation in enterprises across the region. Also, it asks for investments in the co-operative linkages in the industrial eco-systems (i.e., innovation, inward foreign direct investment, and export pre-requisites and skills development). And, whether the Western Balkans have improved significantly in terms of innovation performance in the last ten years, aligning with the other European regions would require a sustained annual GDP growth of some 7%.²⁹

However, the transition to a green economy is not solely reliant on the region's future European perspective and, thus, the need for alignment to specific environmental policies. Also, it is urgency for its own survival. In 2014 BiH saw historic flooding causing over € 2 Bill damages

²¹European Commission. In-depth analysis in support of the Commission Communication COM(2018) 773, A clean planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy, 28 November 2018: 13 & 18, *op. cit.*

²²Gauri Khandekar. Industrial decarbonisation and the EU Green Deal: The case for bold action, *EURACTIV*, 17 January 2020 [online]. Available at: <https://www.euractiv.com/section/energy-environment/opinion/industrial-decarbonisation-and-the-eu-green-deal-the-case-for-bold-action/> [Accessed: 19 May 2021].

²³Melina Gkionaki, *op. cit.*

²⁴Melina Gkionaki, *ibid.*

²⁵Western Balkans. Countries and regions [online]. Available at: <https://ec.europa.eu/trade/policy/countries-and-regions/regions/western-balkans/> [Accessed: 19 May 2021].

²⁶Western Balkans. Countries and regions, *ibid.*

²⁷Imports, exports and trade balance between the EU and the Western Balkans, 2010-2020 [online]. Available at: <https://ec.europa.eu/eurostat/statistics-explained/index.php?oldid=479958> [Accessed: 19 May 2021].

²⁸Serbia is the largest trade partner of the EU in the Western Balkans [online]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?oldid=479958#Serbia_is_the_largest_trade_partner_of_the_EU_in_the_Western_Balkans [Accessed: 19 May 2021].

²⁹European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 8, *op. cit.*

and losses (nearly 15% of its GDP) and over € 1.5 Bill damages in Serbia (nearly 5% of its GDP). The previous year record temperatures have been registered and fuelling dozens of fires across the Balkans, causing a draught in Serbia with a drop in agriculture output of nearly 10%, and forcing Albania to spend € 200 Mill on energy imports.³⁰ Over the past years, the frequency and severity of natural disasters (especially floods and droughts) in the Western Balkans has increased in a consistent way. Particularly flooding is expected to rise in the coming years. Specifically, the Drin River Basin flowing through Albania, Kosovo, Montenegro and North Macedonia will be hit severely. The German Society for International Cooperation (GIZ) is helping with a project (time-span 2012-2021) in this regard.³¹ Yet, this is much a post-recovery approach. What are needed are long-term effective measures to downsize gas emissions. One key way of doing that is certainly phasing out of coal and investing in renewables. In the meantime the IMF proposed to make carbon energy more expensive than clean sources, so as to discourage their future usage, while improving energy efficiency and re-directing innovation efforts towards green technologies. Concretely, the IMF suggests the creation of an international carbon price floor arrangement complementing the Paris Agreement mentioned in the next pages, with the goal of allowing between one quarter and one half of CO₂ and other greenhouse gases to fall over the next decade, with the aim at restricting global warming to below 2 °C.³² Inevitably, carbon pricing, being the most important policy tool to cut gas emissions, needs to rely on a broader package of measures to enhance its effectiveness and acceptability including public investment in clean technology networks (like grid upgrades to accommodate renewables) and measures to assist vulnerable households, workers, and regions.

At the global level it is estimated that additional measures equivalent to a carbon price of \$75 per ton or more are required by 2030. Meanwhile, carbon pricing schemes are proliferating—more than 60 have been implemented globally, including key initiatives this year (2021) in China and Germany.³³

III. Between Commitments and Results: Decarbonisation Process, Renewable Energy and Trends in the Region

The Western Balkans (ca. 18 Mill inhabitants) is one of the regions in Europe most heavily affected by the impact of climate change with estimates of temperature increases of 1.7-4.0 °C, and even exceeding 5.0 °C by the end of the century,³⁴ notwithstanding only 65% of the Western Balkan citizens,³⁵ compared to 93% in the EU,³⁶ considering climate change to be a

³⁰It is time for Action on Climate Risk in the Balkans, 17 September 2018 [online]. Available at: <https://www.worldbank.org/en/news/opinion/2018/09/17/it-is-time-for-action-on-climate-risk-in-the-balkans> [Accessed: 25 June 2021].

³¹Adaptation to Climate Change through Transboundary Flood Risk Management in the Western Balkans, [online]. Available at: <https://www.giz.de/en/worldwide/29000.html> [Accessed: 25 June 2021].

³²To reduce gas emissions the IMF wants to make carbon energy more expensive, This is how, 23 June 2021 [online]. Available at: <https://www.weforum.org/agenda/2021/06/a-proposal-to-scale-up-global-carbon-pricing/> [Accessed: 25 June 2021].

³³To reduce gas emissions the IMF wants to make carbon energy more expensive, This is how, 23 June 2021, *ibid*.

³⁴European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 2, *op. cit*.

³⁵Balkan Barometer 2019: Public Opinion Survey, 3 July 2019: 85 [online]. Available at: <https://www.rcc.int/pubs/89/balkan-barometer-2019-public-opinion-survey> [Accessed: 20 May 2021].

³⁶European Commission. Special Barometer 490 Report Climate Change, September 2019: 3 [online]. Available at: https://www.buildup.eu/sites/default/files/content/ebs_490_en_1.pdf [Accessed: 20 May 2021]

serious concern. Also, the Western Balkans have CO₂ emissions three times the European Union average.³⁷

In the meantime the countries across the region have been engaging at various degrees in a series of commitments to move towards renewable energy sources. To start with, they are an integral part of the EU-sponsored Energy Community. A regional institution headquartered in Vienna, also including Moldova and Ukraine, it aims at speeding up the harmonisation with the EU rules in the area of energy efficiency and renewable energy.³⁸ Shortly, whatever new legislation comes through in response to the Commission's proposals, it will reach Belgrade, Podgorica, Tirana, Pristina and Sarajevo. Also, the Energy Union highlights cooperation at the regional level with a view at binding the area closer together, while helping to modernise its energy sector and contributing to economic development.³⁹

Under the Paris Agreement⁴⁰, a legally binding international treaty on climate change adopted by 196 Parties in the French capital on 12 December 2015 and entered into force on 4 November 2016, signed by four (i.e., Albania, BiH, Montenegro and Serbia) out of six countries,⁴¹ the Western Balkans committed themselves to ensure that the global average temperature increase is kept well below 2 °C, and to pursue efforts for limiting global warming to 1.5 °C.⁴² At the EU level, in line with the European Climate Law,⁴³ which has been positively greeted by the President of the EU Council Charles Michel (in a tweet on 27th June 2021) and aimed at achieving climate neutrality by 2050, the latter will be reflected in the EU's bilateral relations and accession negotiations with the Western Balkans, who should start the transformation process from now on.⁴⁴

At the ministerial meeting in Podgorica in February 2019, the Western Balkans have committed to pursue a clean energy transition, with a view, among others (i.e., unlock greater economic growth, addressing persistent air and health-related pollution challenges), at reducing energy imports, develop renewable energy sources, and strengthening regional security.⁴⁵ At the 5th Energy and Climate Committee meeting, organized by the Energy Community Secretariat, bringing together more than 70 participants, held virtually (due to Covid-19) on the 26th of March 2020, the connection between national energy and climate plans (NECPs), and the European Green Deal, focusing in particular on the Green Agenda for the Western Balkans has been

³⁷Western Balkans Solar Photovoltaic (PV) and Wind Power Market Overview in 2019, *Renewable Market Watch* [online]. Available at: <https://renewablemarketwatch.com/news-analysis/270-western-balkans-solar-photovoltaic-pv-and-wind-power-market-overview-in-2019> [Accessed: 1 June 2021].

³⁸Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 5 [online]. Available at: https://ieefa.org/wp-content/uploads/2020/09/Beyond-Coal_Investing-in-Kosovos-Energy-Future_September-2020.pdf [Accessed: 26 May 2021].

³⁹The Key Role of the Western Balkans in the Energy Union, *Newsletter for the European Union*, 12 February 2018 [online]. Available at: <https://www.newslettereuropean.eu/key-role-western-balkans-energy-union/> [Accessed: 1 June 2021].

⁴⁰The Paris Agreement [online]. Available from: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> [Accessed: 31 May 2021]

⁴¹List of parties that signed the Paris Agreement [online]. Available at: <https://www.un.org/sustainabledevelopment/blog/2016/04/parisagreementsignatures/> [Accessed: 31 May 2021].

⁴²European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 2, *op. cit.*

⁴³European Commission. Proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM (2020) 80 final, 4 March 2020 [online]. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0080&from=EN>

⁴⁴European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 2, *op.cit.*

⁴⁵Ministerial Meeting on Transition of the Western Balkans in Montenegro, 21 February 2019 [online]. Available at: <https://www.total-montenegro-news.com/politics/3395-montenegro-wb-meeting> [Accessed: 1 June 2021].

stressed. Specifically, it affirmed the Commission's support to decarbonisation at the international level, while reminding that the Green Agenda for the Western Balkans should unlock the region's huge renewable energy potentials, while enhancing citizens' health, boosting regional cooperation and supporting the circular economies in the area.⁴⁶

NECPs include a set of measures and activities targeting the achievement of the EU 2030 energy and climate goals, as set forth under the European Commission *Clean Energy for All Europeans Package*: at least 40% reduction of greenhouse gas emissions, a 32% share of renewables in energy consumption, and a 32.5% improvement in energy efficiency. However, these targets will be slightly different for the Western Balkans, which are still not part of the EU. On the whole NECPs should cover the period 2021-2030, laying down the pathway to achieve the 2030 targets expected to be agreed in 2021.⁴⁷

Among the WB6 North Macedonia has prepared its first draft, Albania started to work on it, while BiH and Kosovo have made some progress.⁴⁸ Montenegro is preparing a new energy strategy prioritizing on renewable energy sources in order to achieve climate neutrality, while the country's NECP, which is also being drafted, will set a deadline for a coal phase-out.⁴⁹ Serbia is committed to prepare its first draft before December 2021.⁵⁰

Notwithstanding international, EU and local commitments to climate neutrality, coal is still crucial to the energy sector in the Western Balkans, accounting for about 70% of electricity produced in the region, and in some countries even 97%.⁵¹ Among the various sectors, rail still heavily relies on fossil fuels with more than 30% of the TEN-T⁵² Core and approximately 50% of the Comprehensive Networks not electrified.⁵³ Therefore, policy cooperation and provision of viable alternatives to fossil fuels are crucial in helping the countries in the region to reconsider their unsustainable infrastructure and energy investments. For this purpose, technical and financial assistance is needed for benefiting from the enormous potential of a new economic model, which is sustainable and climate-neutral.⁵⁴ Specifically, there is the need of reviewing the existing transport strategies and of promoting a greener and more sustainable transport network, including the revitalisation of the railway network. Besides that, it is urged of thinking about sustainable alternatives to road transport (i.e., investment in inland waterway). Also, digitisation

⁴⁶EU to focus on Green Deal diplomacy; preparing Green Agenda for Western Balkans, *Balkan Green Energy News*, 26 March 2020 [online]. Available at: <https://balkangreenenergynews.com/eu-to-focus-on-green-deal-diplomacy-preparing-green-agenda-for-western-balkans/#:~:text=The%20Green%20Agenda%20for%20the%20Western%20Balkans%20should,the%20Western%20Balkans%20and%20propose%20the%20respect%20> [Accessed: 20 May 2021].

⁴⁷Western Balkan countries on the way to finalizing their National Energy and Climate Plans, *Balkan Green Energy News*, 16 June 2020 [online]. Available at: <https://balkangreenenergynews.com/western-balkan-countries-on-the-way-to-finalizing-their-national-energy-and-climate-plans/> [Accessed 1 June 2021].

⁴⁸Albania makes progress in draft national energy and climate plan, *Exit News*, 16 June 2020 [online]. Available at: <https://exit.al/en/2020/06/16/albania-makes-progress-in-draft-national-energy-and-climate-plan/> [Accessed: 1 June 2021].

⁴⁹Montenegro to set coal phaseout deadline in national energy and climate plan – prime minister, *Balkan Green Energy News*, 30 April 2021 [online]. Available at: <https://balkangreenenergynews.com/montenegro-to-set-coal-phaseout-deadline-in-national-energy-and-climate-plan-prime-minister/> [Accessed: 1 June 2021].

⁵⁰Serbia: National Energy and Climate Plan to be drafted, *Serbia Energy*, 26 April 2021 [online]. Available at: <https://serbia-energy.eu/serbia-national-energy-and-climate-plan-to-be-drafted/> [Accessed 1 June 2021].

⁵¹European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 4, *op. cit.*

⁵²TENT-T network is part of a wider system of Trans-European Networks (TENs) including roads, railways, airports and water infrastructure in the European Union.

⁵³European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 5, *op. cit.*

⁵⁴European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 3, *ibid.*

in the public transport systems, making them smarter, less polluting and customer-friendly, should be encouraged.

IV. Diversifying Energy Production and Consumption in the Western Balkans: Renewables are the Way Forward

Across the region all, except Albania, are dependent on coal, and in 2016 their 16 lignite power plants emitted as much sulphur dioxide and dust as all the EU's 250 coal plants together.⁵⁵ Trends clearly show that Albania holds the leading role in low supply of coal. Conversely, Serbia chairs the bad performers' group. Others are undertaking targeted efforts to downsize coal's usage like North Macedonia, which became the first Balkan country to set concrete coal phase-out date options (possibly 2025) on the table. Also, arrangements for new coal plants and the reconstruction of the existing plant at Oslomej are not on the government's agenda.⁵⁶

Table 2 - Supply, transformation and consumption of solid fossil fuels (i.e., coal) Western Balkans, 2017-2019.
Mill tonnes

Country	2017	2018	2019
Serbia	41 550.718	40 034.955	40 091.768
BiH	15 790.000	16 039.744	14 664.787
Kosovo	7 604.771	7 693.491	8 073.312
North Macedonia	5 406.862	4 911.079	5 984.299
Montenegro	1 382.800	1 572.700	1 493.900
Albania	219.238	427.730	216.406

Source: https://ec.europa.eu/eurostat/databrowser/view/nrg_cb_sff/default/table?lang=en
[Accessed: 20 May 2021]

Albania is the leader for the usage of hydro-marine sources, accounting for 20% of gross domestic consumption and for about 100% of electricity production, whereas Montenegro comes second in the use of bio-fuels with 17%,⁵⁷ followed by North Macedonia, Serbia, and BiH.

Whether the usages of alternative renewables energy sources like wind, solar, bio- and geothermal is underused region-wide, Montenegro and North Macedonia, together with Albania, are willing to orient themselves towards renewable energy and making steps to diversify beyond hydropower. Yet, Montenegro has in fact shown its continued interest in building new hydropower plants in naturally valuable areas. Also North Macedonia relies on hydropower and to a lesser extent gas, with coal still being the first energy source for electricity generation. In fact, despite discontinuing plans for two major projects in the Mavrovo National Park, Skopje has still commitments for hydropower. Since 2010 eighty small hydropower plants have gone online for a total of ninety-six (106.32 MW).⁵⁸

Particularly, the case of Albania (2.8 Mill inhabitants) and Montenegro (620.000 inhabitants) are indicative about the need of diversifying renewables beyond hydropower. Until

⁵⁵Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 1 [online]. Available at: https://bankwatch.org/wp-content/uploads/2020/06/2020-06.04_Two-speed_energy_transition_Western_Balkans_final.pdf [Accessed: 1 June 2021].

⁵⁶Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 6, *ibid*.

⁵⁷The Key Role of the Western Balkans in the Energy Union, Newsletter for the European Union, 12 February 2018 [online]. Available at: <http://www.newslettereuropean.eu/key-role-western-balkans-energy-union/> [Accessed: 1 June 2021].

⁵⁸Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 1&5; 6-7, *op. cit.*

2017 Albania only offered renewable energy incentives for hydropower up to 15 MW for a total cost of EUR 93.5 Mill in 2018 – the highest amount in the region. Consequently, solar photovoltaic (PV) and wind power have remained underdeveloped. Montenegro's electricity needs are met – along with the 225 MW lignite power plant at Pljevlja and the 307 MW Perućica – by the 342 MW Piva hydropower plants. And, whether its dependence on hydropower is not as extreme as for Albania, it is still a serious issue.⁵⁹ On the one hand investing in hydropower has been an advantage in decarbonising their energy sector. On the other hand it made both countries highly vulnerable to the changing climate, therefore, being heavily dependent on imports with risks of diverting valuable sources from developing solar and wind, and improving energy efficiency.

In the meantime, in 2017, Albania changed its legislation so as to allow incentives for solar and wind developments. Following this, a solar auction was held in 2018 and won by the India Power bound to build 100 MW of solar power near Vlora. In 2020 another solar auction was completed, for 140 MW, in Karavasta near Fier. However, the country plans to use gas in the power sector, thus undermining its decarbonizing electricity supply. It disposes of a 98 MW gas power plant in Vlora, which has never been operative due to technical issues. Also, it considers building new gas power plants. Along with Albania, the Montenegrin government's interest in gas is also a concern.⁶⁰ The same is valid for North Macedonia, where the government is investing in a new gas interconnection with Greece.⁶¹ But opting for gas power only cuts gas emissions by around 30%, far from the total decarbonisation of the energy sector as foreseen by the Paris Agreement.⁶² Rather, major steps should be undertaken for further investing in solar and wind power production, while minimizing the use of gas.

With a view at solar energy, geographically all the WB6 are suitable for the production of photovoltaic energy throughout the whole year. The average annual sunshine duration is roughly 2.130 hours. Besides that, high irradiation can sometimes be found on altitudes and terrains unsuitable for agriculture. In these cases, owners and municipalities would be likely to sell or lease their land, which would otherwise generate little or no income.⁶³ However, sometimes good intentions are difficult to implement. For instance, North Macedonia was the first country to set a wind farm into operation – the 36.8 MW Bogdanci plant in 2015. But its progress stagnated for several years, with its project pipeline being reactivated in 2018 only. The same country, however, plans to build – with support of the European Bank for Reconstruction and Development (EBRD) – a 120 MW photovoltaic plant on the depleted lignite mine at Oslomej.⁶⁴

Considering wind energy, power plants' developments are still limited in the region. And, whether the wind speed is not as fast as northern Europe, the Western Balkans offer many feasible wind generation sites particularly, in the many higher mountainous regions having higher altitudes and faster, as well as more consistent wind speeds. In the meantime, according to recent estimates, the number of wind power plant projects is quickly increasing with Albania targeting to have 70 MW of wind power capacity by 2020, and Serbia building the Čibuk 1 Wind farm with 150 MW capacity.⁶⁵ Montenegro progressed in the wind sector too. In 2017 the 72 MW EBRD-financed Krnovo wind farm started to be operative – the first in the country. It was then followed in 2019 by the 46 MW Možura. Also, two more wind farms should be built in the next

⁵⁹Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 2-3, *ibid*.

⁶⁰Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 5, *ibid*.

⁶¹Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 7, *ibid*.

⁶²Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 2-3, *ibid*.

⁶³Western Balkans Solar Photovoltaic (PV) and Wind Power Market Overview in 2019, *Renewable Market Watch*, *op. cit*.

⁶⁴Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 5-6, *op. cit*.

⁶⁵Western Balkans Solar Photovoltaic (PV) and Wind Power Market Overview in 2019, *Renewable Market Watch*, *op. cit*.

five years in North Macedonia. This should bring total installed wind capacity to around 86 MW in the country.⁶⁶

Whether wind, solar and hydropower are weather-dependent, geothermal power plants rely on technology, and they represent a credible alternative to be introduced in the Western Balkans too.⁶⁷ Awareness about this type of renewable energy started to spread across the region, but as recent available data show, its usage is insignificant with minimal supply in North Macedonia.

Figure 3 - Total primary energy supply Western Balkans, 2017

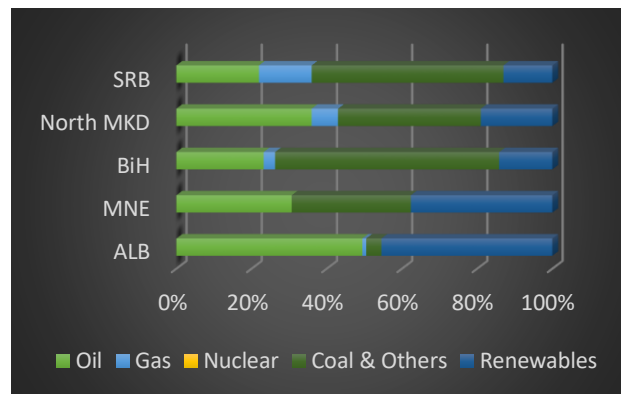
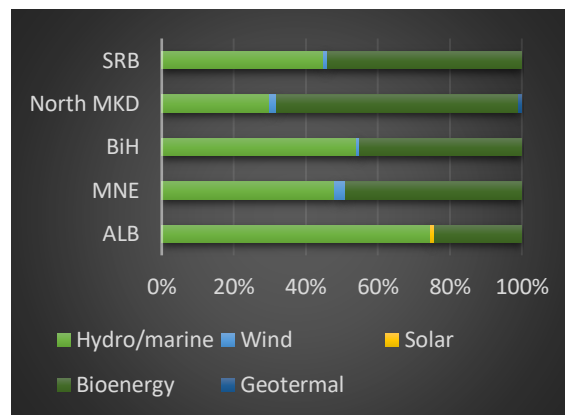


Figure 4 - Renewable energy supply Western Balkans, 2017



Source: Aggregated data have been extracted per country from Statistical Profiles. Available at: <https://www.irena.org/Statistics/Statistical-Profiles> [Accessed: 24 May 2021].

Yet, particularly, BiH, Montenegro, Serbia, and Albania have optimal geological and climate characteristics for geothermal exploitation, given the presence of an average-

⁶⁶Two-speed energy transition in the Western Balkans, *CEE Bankwatch Network*, Briefing, 4 June 2020: 4 & 6, *op. cit.*

⁶⁷Igor Todorović. Virtual power plant in Turkey balances renewables with geothermal capacities, *Balkan Green Energy News*, 9 September 2020 [online]. Available at: <https://balkangreenenergynews.com/virtual-power-plant-balances-renewables-with-geothermal-capacities/> [Accessed: 1 June 2021].

temperature sedimentary basin throughout the western Adriatic coast. Also, there are three reasons for opting for geothermal energy. First, it can be extracted anywhere. Second, the depreciation period hovers between 4 and 7 years. Third, the resource is inexhaustible and management costs become non-existent over time. This type of energy source is particularly suitable for heating and cooling (EU average 50%).⁶⁸

Targeted efforts should, therefore, be undertaken in terms of building new infrastructure and providing technical assistance, as well as of establishing cross-border supply chains with the aim of uniting different types of skills – including architects, engineers, geologists and companies, for exploiting these three key renewable sources in the region.

With a view at the renewable energy consumption per segment, Albania outperforms again for its usage in electricity, whereas North Macedonia and Serbia have the highest share in bioenergy. However, its usage in the heating, solar and geothermal sector is either minimal or completely absent across the region, thus reflecting the supply trend as outlined above. With a look at the renewable energy consumption the leading role is played by the households with North Macedonia leading the group, and followed respectively by Serbia, Montenegro, BiH and Albania. By contrast the share of renewable energy consumption in the industry sector is either very meagre or almost absent in the transport. All the WB6 should promote small-scale renewable energy use along with the households in small businesses too, while boosting its consumption in the transport industry.

Figure 5 - Renewable energy consumption per segment, 2017

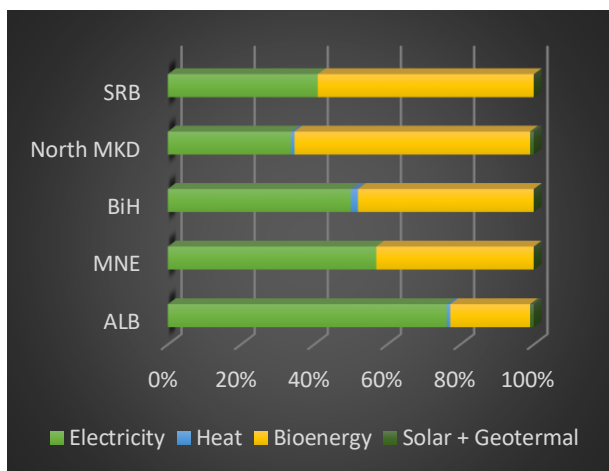
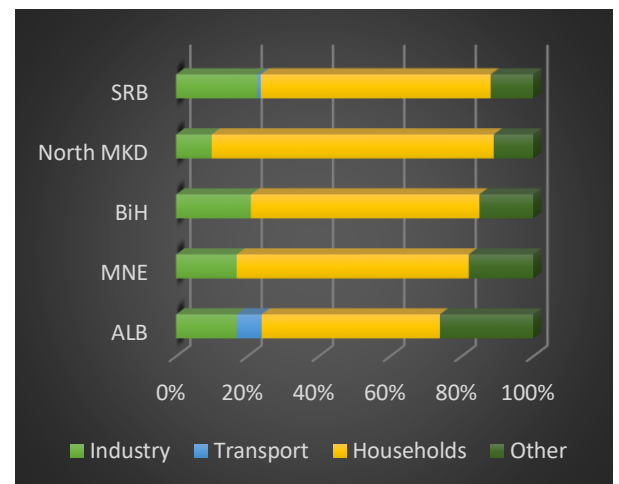


Figure 6 - Renewable energy consumption per sector, 2017

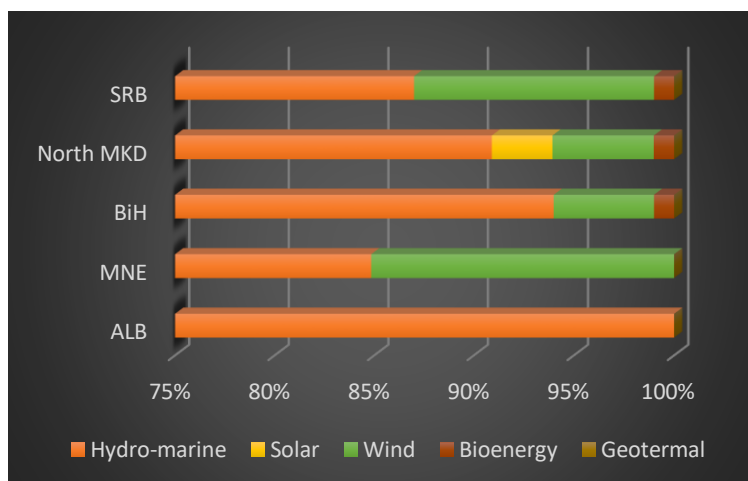


Source: Aggregated data have been extracted per country from Statistical Profiles <https://www.irena.org/Statistics/Statistical-Profiles> [Accessed: 24 May 2021].

The renewable capacity across the WB6 in 2019 is still chaired by hydropower (ALB, BiH, North MDK, SRB, and MNE), followed by solar (North MKD only), bioenergy and geothermal, whose potentials are still unexplored, and wind power (MNE, SRB, North MDK, and BiH).

⁶⁸Nataša Stuper. Legend: geothermal energy in the Balkans, *Osservatorio Balcani e Caucaso*, 17 December 2014 [online]. Available at: <https://www.balcanicaucaso.org/eng/Areas/Balkans/Legend-geothermal-energy-in-the-Balkans-157844> [Accessed: 1 June 2021].

Figure 7 - Renewable capacity Western Balkans, 2019



Source: Aggregated data have been extracted per country from Statistical Profiles <https://www.irena.org/Statistics/Statistical-Profiles>

Whether the full potentials of solar, wind, bio- and geothermal energy remain unexplored, some steps have been undertaken in this regard. Montenegro hosts, for instance, the largest solar farm project (200 MW⁶⁹) in the Western Balkans, via a public calls in 2018 won by the Finnish utility, Fortum.⁷⁰ This crucial step is in line with all the other countries' commitment to increase their share of renewable energy, so as to reach between 25% and 40% of their energy mix, as part of their obligations under the Energy Community Treaty. At the same time some countries across the region have been planning to build nearly 3.000 MW of new coal power plants for more than EUR 5 Bill. This move is both against the Paris Agreement's target (i.e., limiting the average global temperature increase to 1.5°), and it contradicts the EU's trend of giving up building new coal plants with Germany announcing to end its reliance on coal power plants by 2038.⁷¹

Besides discouraging a still widespread use of coal and continuous investments in gas power plants, coupled with the need of further investing in solar, wind and geothermal power beyond hydropower's usage, major steps should be undertaken across the WB6 for boosting energy efficiency. Just as an example, Montenegro's energy intensity – although decreasing in recent years – is still more than twice of the EU-27. Inefficient practices such as using traditional electrical heaters for heating and for air conditioning are widespread, while more innovative technologies such as heat pumps have high potential but are hardly known country-wide.⁷² Investing in energy efficiency is not just a question of downsizing demand, while meeting environment-friendly needs (i.e., decrease of carbon dioxide emissions and of fair pollution). It

⁶⁹Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 4, op. cit.

⁷⁰Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 14, op. cit.

⁷¹Western Balkans Solar Photovoltaic (PV) and Wind Power Market Overview in 2019, Renewable Market Watch, op. cit.

⁷²Two-speed energy transition in the Western Balkans, CEE Bankwatch Network, Briefing, 4 June 2020: 5, op. cit.

also generates new jobs.⁷³ Yet, some actions in boosting energy efficiency have been undertaken. The USAID Serbia Energy Efficiency Activity (SEEA), a two-year (Sep. 2018 – Dec. 2020) \$1.1 Mill project, is intended to reduce gas fuel consumption and dependency on imported fuel through improved energy efficiency in the provision of heating at the local level.⁷⁴ The Makedonska Kamenica and Chesinovo Obleshevo are the first two municipalities in North Macedonia to implement Energy Savings Performance Contracts (ESCO). With Makedonski Telekom as an Energy Service Company (ESCO), they will work on developing energy efficient street lighting.⁷⁵ Yet, the impact of these two projects is still premature to assess. In Albania a recent study showed that institutions of public education are the ones taking the most evident measures to reduce electricity consumption (64.34%), thus contributing to energy efficiency, followed by public administration (61.72%), and hotels (43.44%).⁷⁶ So, there are few initiatives and more awareness-raising campaigning in reducing unnecessary energy consumption, while improving its efficiency and taking care of the environment, is encouraged with the participation of key stakeholders (i.e., municipalities, energy suppliers, investors, etc.), as well as the wider populace.

V. Decarbonising Kosovo: List of options

Kosovo lags far behind its neighbours in terms of usage of renewable energy sources, despite its ample availability.⁷⁷ Particularly, Montenegro has made a relatively quick switch from a country relying on a new coal plant to one that is clearly oriented towards renewables.⁷⁸ On the contrary, Kosovo relies on a highly inefficient, outdated, inadequate and undependable fossil fuel-based energy system, posing a significant challenge to economic growth and development and depending overwhelmingly on domestic lignite (low-grade coal) to meet energy demand. Annual lignite production in Kosovo varied between 7 Mill and 9 Mill tonnes for the past decade, in line with annual lignite demand.⁷⁹ In 2019, lignite accounted for 94.5% of total generation, followed by hydropower (3.7%), wind power (1.6%) and solar (0.2%).⁸⁰ The country's renewable energy potential cannot provide the firm capacity Kosovo needs.⁸¹ Also, many citizens still burn firewood and coal for heating and/or cooking generating air pollution that in turn causes respiratory and other health problems. The country, together with BiH and Serbia, subsidizes in

⁷³ Energy-efficient consumption generates new jobs in BiH, 16 June 2017 [online]. Available at: https://www.ba.undp.org/content/bosnia_and_herzegovina/en/home/presscenter/articles/2017/06/16/projekti-energetske-efikasnosti-kreiraju-nova-radna-mjesta-u-bih/ [Accessed: 2 June 2021].

⁷⁴ USAID. Serbia Energy Efficiency Activity [online]. Available at: https://www.usaid.gov/sites/default/files/documents/SEEA_Energy_Activity_Fact_Sheet_Serbia_ENG.pdf [Accessed: 2 June 2021].

⁷⁵ EBRD and EU support energy efficiency in North Macedonia, European Bank for Reconstruction and Development, 5 August 2020 [online]. <https://www.ebrd.com/news/2020/ebrd-and-eu-support-energy-efficiency-in-north-macedonia.html> [Accessed: 2 June 2021].

⁷⁶ Lira Hakani. Evaluation of energy performance of buildings in Albania from the perspective of energy poverty, *Balkan Green Energy News*, 7 September 2018 [online]. Available at: <https://balkangreenenergynews.com/evaluation-of-energy-performance-of-buildings-in-albania-from-the-perspective-of-energy-poverty/> [Accessed: 2 June 2021].

⁷⁷ Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020 [online]. Available at: <https://reglobal.co/kosovo-should-leapfrog-directly-to-a-renewables-based-economy/> [Accessed: 26 May 2021].

⁷⁸ Two-speed energy transition in the Western Balkans, *CEE Bankwatch Network*, Briefing, 4 June 2020: 5, *op. cit.*

⁷⁹ Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 6, *op. cit.*

⁸⁰ Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

⁸¹ Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011: 3 [online] Available at: https://issuu.com/world.bank.europe.central.asia/docs/kosovo_options_study/91 [Accessed: 24 May 2021].

absolute terms coal significantly more than renewables.⁸² But the amount downsized about three times between 2015 and 2017. And, this might be seen as a positive step.

Table 3 - Amount of state support to production of electricity from renewables and coal

Contracting Party	Paid Incentives for production from renewables			Paid direct subsidies for production from coal		
	2015	2016	2017	2015	2016	2017
BiH	17.595	20.160	25.040	21.233	31.998	45.807
KOS	1.630	7.670	5.560	30.894	8.768	7.501
MNE	960	3.960	4.100	881	1.156	700
North MKD	15.462	20.526	20.085	4.379	3.722	2.927
Serbia	17.170	24.470	34.800	90.746	115.751	80.606

Source: Energy Community, September 2019

There are two key problems with coal's subsidization and coal-based production. First, it distorts electricity markets. Selling electricity below actual cost undermines the principles of fair market competition, distorts the selling price of electricity in domestic and foreign markets and represents a serious obstacle to the establishment of a fair, transparent and open electricity market. Second, it sends wrong signals to investors in competitive technologies, as well as to electricity consumers, de-incentivizing their efforts towards energy savings and energy efficiency. Shortly, entities regularly subsidized have no incentive to improve their own operation, to cut costs or work on market principles. Rather they rely on political support and assistance via different subsidization mechanisms. By doing so they become a permanent burden for governments and public finances. Besides that, this kind of support is many times difficult to detect and end consumers are not aware of it.⁸³

In recent years, demand for electricity has far exceeded supply – a problem that is expected to worsen with the decommissioning of one of the major lignite plants (Kosovo A) providing about 1/3 of local electricity generation.⁸⁴ Between 2000 and 2010 electricity consumption and peak demand in Kosovo grew more than 90%, with an average annual rate growth respectively of 6.7% and of nearly 6%.⁸⁵ Most electricity demand is residential (approx. 63 % in 2010) followed by the industry.⁸⁶ Demand was flat from 2009 to 2016, but has grown incrementally since then, rising up to 5.8% in 2019 to a new peak of 6.001 GWh. Also, electricity

⁸²Energy Community. Rocking the Boat: What is Keeping the Energy Community's Coal Sector Afloat?, September 2019: 5[online]. Available at: file:///C:/Users/nicas/Downloads/EnC_Coal_Study_092019.pdf [Accessed: 28 May 2021]

⁸³Energy Community. Rocking the Boat: What is Keeping the Energy Community's Coal Sector Afloat?, September 2019: 7, *ibid*.

⁸⁴Energy in Kosovo. World Bank, 2018 [online]. Available at: <https://www.worldbank.org/en/country/kosovo/brief/energy-in-kosovo> [Accessed: 24 May 2021].

⁸⁵Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011: 1, *op. cit*.

⁸⁶Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011: 1, *ibid*.

demand shows strong seasonality, partly as a result of household electric heating with domestic generation rising up 7.7%, to 5.718 GWh in 2019.⁸⁷

Kosovo's electricity supply options are heavily constrained due to: i) ageing and unreliable lignite-fired generation plants; ii) under-usage of renewable sources (i.e., wind, solar, geothermal) and alternative sources (i.e., gas); and iii) supply shortages in neighbouring countries especially during peak demand, thus limiting Kosovo's ability to import electricity. To start with, Kosovo's electricity system largely consists of state-owned generation and transmission companies. Electrical capacity is currently covered by two lignite power plants, Kosovo A (three units, net capacity 432 MW, commissioned in the early 1970s) and Kosovo B (two units, net capacity 528 MW, commissioned in the mid-1980s). The two power plants are owned by KEK, the state generation company. Both are old, inflexible and inefficient, contributing to poor security of supply and high load shedding.⁸⁸ In the meantime, the Government of Kosovo initiated the rehabilitation of the Kosovo B power plant (more than 30 years old) to bring it into compliance with relevant EU Directives, with a view at building a new, more efficient, lignite-fired power plant, and replacing the 45 years old highly polluting Kosovo A.⁸⁹

However, this move should be strongly discouraged. On the contrary, the potentials of renewable energy sources like wind, solar and geothermal should be exploited. Whether multiple smaller hydropower and renewable energy facilities⁹⁰ exist, their capabilities are not fully used. With a look at gas, Kosovo neither has an infrastructure nor the market for it. Also, investing in this type of energy source is to be viewed at as a short-term alternative only.

Further investing in coal production and consumption is not an option for Kosovo for three key reasons: it is expensive, it is not environment-friendly, and it is dangerous for the health. Back in 2011 the then Government of Kosovo requested the World Bank for a partial risk guarantee (PRG) to support for a new, coal-fired independent power project (IPP),⁹¹ the *Kosova e Re Power Plant* (KRPP). The main motive was that of capitalizing the country's vast lignite reserves, while replacing its ageing lignite power plants for an estimated cost between € 1 Bill (Kosovo Government), \$ 1.3 Bill (Contour Global) and \$ 2 Bill (World Bank). However, the World Bank withdrew its guarantee in 2018 and decided not to provide credit for coal projects. The proposed power plant has still not been initiated in 2020, and it is unlikely to be launched.⁹² The World Bank's final decision was backed by the lowest cost option for new power generating capacity in Kosovo, and coal was definitely not the alternative.⁹³ Also, Contour Global, a London-listed investor declined to support the proposal for a new lignite power plant with an off-take price for the project of EUR 80/megawatt- hour (MWh) in 2020.⁹⁴ In comparison the largest solar farm project in the region hosted by Montenegro saw a cost on the market price, as determined

⁸⁷Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 7, *op. cit.*

⁸⁸Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 1, *ibid.*

⁸⁹Energy infrastructure in Kosovo, 26 September 2013 [online]. Available at: <https://www.worldbank.org/en/country/kosovo/brief/energyinfrakosovo> [Accessed: 24 May 2021].

⁹⁰Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

⁹¹Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011, *op. cit.*

⁹²Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 10 & 22, *op. cit.*

⁹³World Bank Pulls Out of Kosovo Coal Project, *IEA Clean Coal Centre*, 13 November 2018 [online]. Available at: <https://www.iea-coal.org/world-bank-pulls-out-of-kosovo-coal-project/> [Accessed: 27 May 2021].

⁹⁴Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 1, *op. cit.*

on the Hungarian Power Exchange (HUPX), of EUR 33.63/MWh.⁹⁵ Besides that, a 2018 cost analysis region-wide reveals that a large-scale project combining wind and solar power with battery storage could be achieved at a lower cost than new lignite-fired generation (i.e., at a leveled cost of energy [LCOE] of €60 to €70/MWh vs. €80/MWh). Also, the same study suggests that combined large-scale solar (400MW), wind (170MW), and battery storage (120MW/350MWh) project, could deliver an additional 1.100 GWh per year to the region.⁹⁶ Last but not least, the right to emit CO₂ will become more expensive over time, following the number of emission rights' shrinking. This is an important incentive for energy-intensive industries to shift to low-carbon technologies, so that they can stay competitive in the future. CO₂ emission production will become more expensive in the years to come, because of emissions' high costs.⁹⁷

Besides cost effectiveness, a further coal usage is not in line with the EU's 2050 net zero targets. Also, it is dangerous for the health. The Energy Community's recent analysis reports that Kosovo's lignite power plants today exceed on average the EU's Large Combustion Plant Directive (LCPD) dust limits by 400%, and nearly double applicable Nitrous oxide (NOX) limits. Dust and NOX are major contributors to premature death from cardiovascular and respiratory diseases.⁹⁸

In addition to the three key reasons above for discouraging the use of coal in the future, the way coal production is currently managed in Kosovo, and in some other neighbours with the exception of Montenegro recently introducing a carbon pricing system,⁹⁹ is worrying. In fact, Kosovo does not apply a carbon price, as it is the case for EU member states. Failing to do so when assessing the economics of investing in lignite will lead to wrong investment decisions, while having implications both for the profitability of power plants and for the user electricity price.¹⁰⁰ In general terms this legal loophole enables coal-based electricity generators from the Energy Community Contracting Parties, Kosovo is part of, to take advantage of a hidden subsidy resulting in their EU competitors having significantly greater operating costs. Moreover, hidden subsidies, if not properly addressed, may amount to EUR 1.9 Bill on an annual basis.¹⁰¹ This trend is against the Energy Community's principle and rationale. Also, considering Kosovo's European perspective, its alignment with EU energy policies is one requirement for proceeding towards the European path. Therefore, it is negligible that the country, as well as the other contracting parties who are willing to join the EU, will have to impose a carbon pricing mechanism and be part of the EU Emissions Trading Scheme.¹⁰² Yet, the road ahead is still long to go.

If compared to its neighbours, Kosovo's renewable energy supply is minimal, despite its enormous potentials. Therefore, major efforts should be undertaken in this endeavour.

Table 4 - Technical Potential vs. Installed Capacity and Consumption, for Renewable Electricity, Lignite, Biomass.

⁹⁵Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 14-15, *ibid.*

⁹⁶Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 2, *ibid.*

⁹⁷Melina Gkionaki, *op. cit.*

⁹⁸Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 5, *op. cit.*

⁹⁹Two-speed energy transition in the Western Balkans, *CEE Bankwatch Network*, Briefing, 4 June 2020: 5, *op. cit.*

¹⁰⁰Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 18, *op. cit.*

¹⁰¹Energy Community. Rocking the Boat: What is Keeping the Energy Community's Coal Sector Afloat?, September 2019: 5, *op. cit.*

¹⁰²Energy Community. Rocking the Boat: What is Keeping the Energy Community's Coal Sector Afloat?, September 2019: 7, *ibid.*

Fuel source	Units	Technical potential	Installed capacity, 2019
Large-scale solar	MW	3,006	10
Onshore wind	MW	13,860	34
Hydropower	MW	4,853	95
Exploitable reserves			Consumption, 2019
Lignite	mln t	10, 400	8
Sustainable annual potential			Consumption, 2013
Woody biomass	ktoe	216	441
All biomass incl. energy crops	ktoe	665	441

Sources: ERO 2019, IRENA 2019, World Bank 2017. Available at: <https://reglobal.co/kosovo-should-leapfrog-directly-to-a-renewables-based-economy/> [Accessed: 26 May 2021].

Recent studies estimate that the country could target a 34% to 39% share of renewables in all energy consumption (not just electricity), in 2030. This will be possible via the use of bioenergy in the heating sector, hydropower, followed by onshore wind and solar power.¹⁰³

Heating in Kosovo is dominated by household burning of biomass (60% of total residential heating demand) as well as lignite, followed by electric heating, and some limited district heating (equivalent to around 5% of space heating demand), using captured waste heat from the Kosovo B lignite power plant and from oil-fired heat plants. But burning biomass in inefficient stoves is a serious health risk. Therefore, Kosovo should upgrade – according to a recent World Bank study – biomass stoves in single houses and biomass boilers in multi-storey apartments. Also, it should expand biomass supply to include energy crops, beyond woody biomass which is over-exploited.¹⁰⁴ Besides that, centralized heating has advantages over household-level heating, including no indoor air pollution and better access to more energy sources, including waste heat and renewables, as well as centralised heat plants. Currently, Kosovo has four district heating systems, in Pristina, Gjakova, Zvecan and Mitrovica. As far as the latter is concerned, and due to the political issues with Serbia, less data is available. On the whole district heating losses are estimated at 15% to 20% of delivered heat.¹⁰⁵

By undertaking the World Bank’s suggested measures mentioned above, the country is highly encouraged to align with its neighbours’ efforts at boosting energy efficiency. Also, another way of upgrading energy efficiency is by downsizing non-technical losses, while reducing demand. This implies properly addressing theft and non-payment for electricity consumption. In fact, a large proportion of non-technical ‘losses’ are actually electricity that is consumed but not paid for.¹⁰⁶ A World Bank analysis suggests that investment for reducing network’s losses downsize unbilled losses including thefts on the distribution network, as well as technical losses in both transmission and distribution. Recent data report losses in the low-voltage distribution network of an extraordinary 26% (1.378 GWh) of total distribution network demand, shared equally between technical losses and ‘unbilled energy.’¹⁰⁷ Upgrading energy efficiency is in line with the EU’s circular economy discourse, whereas Kosovar and other Western Balkan authorities are asked,

¹⁰³Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹⁰⁴Beyond Coal: Investing in Kosovo’s Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 8, *op. cit.*

¹⁰⁵Beyond Coal: Investing in Kosovo’s Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 8-9, *ibid.*

¹⁰⁶Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011: 3, *op. cit.*

¹⁰⁷Beyond Coal: Investing in Kosovo’s Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 2, *op. cit.*

when issuing permit requirements for industrial installations, be it in the resource use, waste generation and management, of recurring to EU best practices in the different industrial sectors, so as to promote innovative and more efficient ways of producing and consuming.¹⁰⁸

Along with a more efficient energy production and consumption of biomass, hydropower may represent an alternative to coal, even though a short-term one being hydrological conditions-dependent as outlined in the previous pages. Also, the recent inconvenient with the Decan hydropower plant highlights the need of guaranteeing the environmental impact and legality of such projects. At the end of May 2021 the Basic Prosecution in Peja filed a lawsuit against Kelkos Energy, the Austrian company operating hydropower plants in Decan, in the district of Gjakova, for damages caused by the plant pipeline. The prosecution said Kelkos Energy had caused 'general danger'. Specifically, a segment of three kilometres of highway, ready to be asphalted, for the Decan-Plava highway connecting Kosovo to Montenegro, was badly damaged. This happened as a result of the water flow from the canal (pipeline) serving for the circulation and collection of water and its delivery for the supply of the hydropower plants administered and managed by LLC Kelkos Energy. Following the rapid flow of water, the whole soil collapsed. Kelkos Energy is accused of operating illegally.¹⁰⁹

Inevitably, a long-term green and energy-efficient alternative to coal and hydropower is wind energy. First plans of investing in wind energy in Kosovo go back to 2013. At that time the St.Gallen-based Swiss renewable energy-focused engineering company, NEK Umwelttechnik AG, expected to start the construction of Kosovo's first wind park (Zatric wind farm), with a capacity between 30 MW and 45 MW, by autumn of the same year. Its total cost was estimated to be around € 53.15 Mill. The site is located in the municipality of Rahovec. Preliminary calculations foresaw an annual output between 87.8 GWh and 127.6 GWh. The project, extending over an area of 6 km², was scheduled to come online in 2014.¹¹⁰ However, it is on hold due to a Power Purchase Agreement (PPA) with too short validity (12 vs. 15-20 years),¹¹¹ as well as because of the height of the feed-in tariff, says Stefan Schneeberger, responsible of NEK Umwelttechnik AG.¹¹² Schneeberger also reports that negotiations with the Kosovar Government are currently not being pursued any further. A number of attempts have been made by NEK Umwelttechnik in the past, with a look at reviewing the formalities of the PPA, but they were not successful for changing the key parameters.

A large wind farm is under construction and its functioning may allow the country hitting its 150 MW wind power target in 2021.¹¹³ Other sources talk about a 105 MW wind park, consisting of the development of three adjacent wind farms stretching over an area of approximately 80 km² with an annual electricity generation estimated to approximately 320 GWh/year.¹¹⁴ The wind farm (Bajora wind project) is located in Selac, a remote and uninhabited area, in the municipality of Mitrovica/Mitrovicë. The project, a joint venture between Germany

¹⁰⁸European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 7, *op. cit.*

¹⁰⁹Xhorxhina Bami. Kosovo Prosecution Sues Power Plants's Austrian Manager for Damages, *Balkan Insight*, 21 May 2021 [online]. Available at: <https://balkaninsight.com/2021/05/21/%e2%80%8bkosovo-prosecution-sues-power-plants-austrian-manager-for-damages/> [Accessed: 26 May 2021].

¹¹⁰ Kosovo's first wind farm takes shape, 8 March 2013 [online]. Available at: https://nek.ch/images/Downloads/nek.ch/Articles/2013_03_08_EIEE_Kosovo.pdf [Accessed: 28 June 2021]. See also Zatric Wind Park. Capturing the Wind on the Hilltops, [online]. Available at: <https://www.upwindinternational.com/projects/zatric-xk> [Accessed: 28 June 2021].

¹¹¹Zatric Wind Park. Capturing the Wind on the Hilltops, *ibid.*

¹¹²Answer to the author's question per E-Mail on the 29th June 2021.

¹¹³Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹¹⁴See Project Brochure [online]. Available at: http://sowikosovo.com/wp-content/uploads/2020/06/brochure_sowi.pdf [Accessed: 29 June 2021].

and Israel and under development by SoWi Kosovo, is funded by the European Bank for Reconstruction and Development (EBRD) and Slovenian NLB Bank, among others, with an investment of € 165 Mill. This is supposed to be the largest source of renewable energy in the country, while helping Kosovo reducing its CO₂ emissions and reach its clean energy targets. Conversely, carbon dioxide emissions savings are estimated at 247.000 tons per year.¹¹⁵ The project started in March 2020, and still ongoing, is expected to be finished by the end of 2021, says Mimoza Istrefi, Data Management Team Lead at Sowi Kosovo.¹¹⁶

In 2019 Transmission System and Market Operator in Kosovo (KOSTT), which in the meantime started operating independently across the country, including the Serb-majority northern part,¹¹⁷ reached an agreement for the power that will be generated by the 15 turbines in a wind park (46 MW) planned to be built by Bondcom Energy Point LLC. The site is located on the territories of Theranda, Shtërpçë, and Ferizaj. Early estimates foresee an annual output up to 130 GWh. The start of the project was scheduled for 2021.¹¹⁸ Currently, there are no updates¹¹⁹ about its effective launch.

Together with boosting the country's energy supply via wind power, Kosovo has the potentials of investing in solar energy too. Its usage, however, remains underexploited. The country has only an insignificant rooftop solar photovoltaic (PV) market, but it does have the required legal and financial framework, including a net metering scheme. Therefore, expanding the market 10-fold with solar prosumers (i.e., customers who both generate and consume power on the grid) could deliver an additional 10 GWh annually. Encouraging private household investment in solar PV can reduce pressure on scarce state resources and downsize network losses.¹²⁰

Despite a still underexploited solar energy's usage, there have been some projects going on. Slovenian manufacturer Rudis d.o.o. Trbovlje launched Kosovo's first photovoltaic power plant on the 21st October 2015 in Gjurgjevik, in the Kline municipality. The plant was fitted with an initial capacity of 102 kW and it was to be tripled, as agreed with the Energy Regulatory Office (ERO).¹²¹ Whether this plant is operational is unknown at present.¹²²

Another solar park, stretching on the hills around the village of Madanaj, in western Kosovo, launched in October 2018 is to be positively greeted as a move towards clean energy. But the conditions under which this has taken place are undesirable. Blerim Devolli is behind six companies which have been awarded rights to produce a combined 16.7 MW, more than half of Kosovo's total solar power production, despite the existing legislation ruling that no single

¹¹⁵ Hoti: 105 MW wind park Bajgora in Kosovo to come online by April, 16 July 2020. Available at: <https://balkangreenenergynews.com/hoti-105-mw-wind-park-bajgora-in-kosovo-to-come-online-by-april/> [Accessed: 28 June 2021].

¹¹⁶ Answer to the author's e-mail on the 29th of June 2021.

¹¹⁷ Sasa Dragojlo. Kosovo Electricity Grid Starts Operating Independently from Serbia, Balkan Insight, 15 December 2020 [online]. Available at: <https://balkaninsight.com/2020/12/15/kosovo-electricity-grid-starts-operating-independently-from-serbia/> [Accessed: 29 June 2021].

¹¹⁸ Budakova wind farm's developer inks supply deal with KOSTT, 17 December 2019 [online]. Available at: <https://balkangreenenergynews.com/budakova-wind-farms-developer-inks-supply-deal-with-kostt/> [Accessed: 28 June 2021].

¹¹⁹ The author's e-mail's sent to KOSTT, on the 30th of June 2021, about the effective launch of the project remained unanswered.

¹²⁰ Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020, *op. cit.*

¹²¹ Jaroslaw Adamowski. Kosovo launches its First Solar Power Plant, 23 November 2015 [online]. Available at: https://www.solarnovus.com/kosovo-launches-its-first-solar-power-plant_N9465.html [Accessed: 29 June 2021].

¹²² The e-mail's author sent to ERO on the 30th of June 2021 on the functioning of this PV plant remained unanswered.

investor can produce more than 3 MW of solar energy.¹²³ In the meantime, a large planning pipeline of solar projects may enable Kosovo meeting the 30 MW solar PV target soon. Besides that, ERO approved 20 smaller rooftop solar projects in 2019, with a total installed capacity of 0.5 MW.¹²⁴ In addition, Solar Energy Group plans to build a 150 MW photovoltaic plant in Gjakova, and production is expected to start in 2022. This is one of the biggest photovoltaic stations in the pipeline in the Western Balkans region.¹²⁵

On the whole Kosovo's wind and solar power projects foresee promising results. Also, the country can exploit battery costs to boost this resource by developing supply electricity from domestic renewables plus storage, totalling an additional 1.500 GWh annually.¹²⁶ The year 2019 provided the first data on the performance of renewables in Kosovo. It was the first year of full operation for a pair of 3 MW solar farms and a 32 MW wind farms. The wind farm performed with a 32% capacity factor (i.e., generating electricity equivalent to 1/3 of nameplate capacity). This wind power factor exceeded the UK's average, one of Europe's windiest countries in 2018. As for solar energy, this achieved capacity factor 16%, thus, surpassing any location in Germany, Europe's leader by installed capacity.¹²⁷

Renewables, besides being environment-friendly, are exceptionally fast to build and have a highly favourable financing condition.¹²⁸ Also, whether solar and wind power generation is highly encouraged to be further exploited in Kosovo, gas might be looked at as an alternative at the beginning only. In fact, there is a number of discouraging factors to do so on the long run. To start with, Kosovo has no gas infrastructure and establishing one will require consistent investments, as well as the setup of a gas market from scratch.¹²⁹ In the meantime the country is willing to develop such an infrastructure to connect with the Trans Adriatic Pipeline (TAP), expected to be completed in 2021 and supplying Azerbaijani gas to southern Italy via northern Greece and Albania.¹³⁰ Kosovo may connect to the TAP via the Albanian Kosovo Gas Pipeline project (ALKOGAP). On the one hand, the country has secured financial assistance from the Western Balkans Investment Framework (WBIF) – a joint donor initiative of the EU and financial institutions – to develop a 'Gas Master Plan'. On the other hand, it is not clear how much of the TAP's prospective gas is effectively available for contract or any. But ERO is part of various regional gas initiatives of the Energy Community and of the USAID-funded Southeast Europe Natural Gas Transmission and Distribution Grid Codes Project to investigate the feasibility of new gas infrastructure in the region. Also, the US-based Millennium Challenge Corporation (MCC), granted the Government of Kosovo US\$ 9.225.000 Mill with a view, among others, at supporting

¹²³Visar Prebreza and Jeta Xharra. Unclean Energy: The Kosovar Who Would Own the Sun, *Balkan Insight*, 2 June 2020 [online]. Available at: <https://balkaninsight.com/2020/06/02/unclean-energy-the-kosovar-who-would-own-the-sun/> [Accessed: 29 June 2021].

¹²⁴Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹²⁵Solar Energy Group to build 150 MW photovoltaic plant in Kosovo*, 1 March 2021 [online]. Available at: <https://balkangreenenergynews.com/solar-energy-group-to-build-150-mw-photovoltaic-plant-in-kosovo/> [Accessed: 29 June 2021].

¹²⁶Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 2, *op. cit.*

¹²⁷Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 13, *ibid.*

¹²⁸Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 22, *ibid.*

¹²⁹Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹³⁰ Trans-Adriatic Pipeline [online]. Available at: <https://www.tap-ag.com/infrastructure-operation/tap-route-and-infrastructure> [Accessed: 27 May 2021]. See also: Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 9, *op. cit.*

the development of a more reliable, high-quality, balanced and secure energy supply, including technical pre-feasibility studies' assistance in the areas of gas sector development.¹³¹

In addition to the technical and financial issues for building such an infrastructure, many countries and financial institutions view gas as a short-term option. Therefore, it would be auspicious for Kosovo to leapfrog past gas to a renewables-based economy.¹³² Whereas investing in gas seems to be both financially and in terms of infrastructural work a less attractive option, large-scale battery storage may represent a much credible alternative for Kosovo, so as to balance renewables and increase grid flexibility as well as resilience to shocks and fluctuations in demand and supply. The EU itself encourages this path. The European Investment Bank (EIB) was expected to deliver EUR 1 Bill in support of a strong pan-European battery industry in 2020. In the mid of the pandemic Europe has been fully exposed to its vulnerability to interruptions in the supply of critical materials and technologies. Therefore, creating a European battery industry is vital to protect Europe's competitive position in the world economy.¹³³

There are four key reasons for a large-scale battery storage being an attractive option. First, battery can smooth production and match variable supply better with demand, by making better use of wind and solar power, while avoiding reduction of excessive supply. Second, it can provide auxiliary services such as frequency control. This means keeping the frequency of the electrical signal within the required range (i.e., ~50Hz in Europe), by acting like a shock absorber with a view at rapidly responding to power fluctuations in the grid, over seconds and minutes. Batteries are well equipped for this purpose, unlike slower technologies like lignite. Third, it can reduce large transmission and investment costs. Fourth, it can provide reserve capacity and help reducing the risk of load shedding and blackout events.¹³⁴

A private consortium carried out a detailed modelling of a potential installation in Kosovo consisting of solar PV (400 MW), wind (170 MW) and batteries (120 MW/350 MWh) in 2018. The analysis assumed battery storage capital costs of \$ 331.000/MWh. But a Bloomberg study suggests that the costs have fallen to \$ 150.000/MWh. On the whole such deflation would cut the cost of the combined project to EUR 62/MWh from EUR 70/MWh. However, there is at present no scheme in place to support the build-out of energy storage capacity for grid ancillary services in Kosovo.¹³⁵ In the meantime, whether the country has set its goals for renewable electrical generating capacity in 2020, it is likely to miss its 2020 renewable targets.

Table 5 - Electricity Fuel Mix – Installed and Planned Net Capacity Versus National Targets, MW.

¹³¹Grant and Implementation Agreement between the Millennium Challenge Corporation and the Government of the Republic of Kosovo acting through the Office of the Prime Minister for the Development and Facilitation of Implementation of a Millennium Challenge Compact, 18 October 2019 [online]. Available at: <https://assets.mcc.gov/content/uploads/agreement-kosovo-609g.pdf> [Accessed: 27 May 2021].

¹³²Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 22, *op. cit.*

¹³³EIB reaffirms commitment to a European battery industry to boost green recovery, *European Investment Bank*, 19 May 2020 [online]. Available at: <https://www.eib.org/en/press/all/2020-121-eib-reaffirms-commitment-to-a-european-battery-industry-to-boost-green-recovery> [Accessed: 28 May 2021].

¹³⁴Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 16, *op. cit.*

¹³⁵Beyond Coal: Investing in Kosovo's Energy Future, Institute for Energy Economics and Financial Analysis, September 2020: 16, *ibid.*

Net Capacity MW	Installed (2019)	Under construction (in 2020)	Installed + under construction (2019-2020)	Renewables target (2020)	Licence applications (submitted in 2019)	Authorisation applications (submitted in 2019)	Pipeline	Prelim authorization (in 2019)	Tot. pipeline
Lignite	960	-	960	N/A	450				450
Hydro	95	6	101	240	34	13			47
Wind power	34	114	148	150					-
Solar PV	10		10	30				66	66
Biomass	-	1	1	20					-
Total	1,099	120	1,219	420	484	13		66	563

Source: ERO Annual Report. Available at: https://ieefa.org/wp-content/uploads/2020/09/Beyond-Coal_Investing-in-Kosovos-Energy-Future_September-2020.pdf [Accessed: 27 May 2021, p.11]

The still very much meagre use of, and in some cases still unexplored, renewable sources renders Kosovo a net importer of electricity for meeting its seasonal and daily peaks.¹³⁶ Imports, however, are constrained, among others, by geopolitical factors (i.e., the interconnection with Serbia cannot be relied on) and hydrological conditions¹³⁷ undermining the availability of transmission capacity. To properly address the first issue, the in 2011 initiated EU Pristina-Belgrade Dialogue should finally bring results and allow for a normalisation of relations between the two countries. By achieving this step, cooperation in the energy sector should be considerably upgraded. To face possible hydrological conditions, Kosovo has built eight interconnections with its four neighbours (i.e., Albania, North Macedonia, Montenegro and Serbia/400 kV; Albania and Serbia/200 kV; Serbia/110 kV) with a combined net transfer capacity of 3.200 MW, three times Kosovo's installed generating capacity, and more than double peak demand.¹³⁸ Also, Kosovo's deal in April 2020 with the association of European transmission system operators (TSOs) to form a new connection with continental Europe is of crucial importance. In fact, the deal allows Kosovo to exit the Serbian-led control bloc, join a new control bloc with Albania, and fully operationalise the Albanian interconnection. A recent analysis suggests that full use of the interconnection will increase Kosovo's margin (the difference between available capacity and peak demand) by 50%.¹³⁹

So there are a few options for Kosovo to shift to less costly, environment-friendly and energy efficient renewable sources. Yet, the use of modern technologies has to be accompanied

¹³⁶Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹³⁷Background Paper: Development and Evaluation of Power Supply Options for Kosovo, *World Bank*, December 2011: 2, *op. cit.*

¹³⁸Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *op. cit.*

¹³⁹Kosovo should leapfrog directly to a renewables-based economy, *REGLOBAL*, 2 November 2020, *ibid.*

by a better investment environment.¹⁴⁰ All in all, the capacity of the whole region to respond to the effects of climate change relies to a large extent on its political stability and governance.¹⁴¹

CONCLUSION

The European Union Green Deal, targeting no net emissions of greenhouse gases by 2050, acknowledges that climate neutrality is an asset for our future. Particularly, decarbonization is given highest consideration. Likewise, renewables are viewed as the future direction. Yet, whether their usage has been increasing across the EU, the scenario is quite gloomy at its close neighbourhood with the Western Balkans lagging far behind. And, given the region's future EU perspective, as well as their mutual consistent trade relations the importance of achieving climate neutrality there is crucial. To be said otherwise, for the EU to undertake a long-lasting climate policy, it needs to bind more significantly its strategic partners. In fact, the Western Balkans still make a considerable use of carbon-emitting and conventional technologies responsible for CO₂ emissions three times higher than the EU average. Also, the transition to a green economy is not just in the interest of the EU, but of the countries in the region as well. T

These have been witnessing flooding, drought, and various natural disasters in the last years, making them realize about the urgency of phasing-out of coal, while investing in renewables. Yet, whether some commitments have been undertaken in the region over time, coal is still crucial to the energy sector there. Particularly, Kosovo and Serbia are the main coal's users, with Albania, North Macedonia and Montenegro making efforts at downsizing its usage, sometimes, however, without considering sustainability. Concretely, Albania and Montenegro have been investing in hydropower, which is weather-dependent, and therefore, is not a long-term solution. Besides that, Albania, Montenegro and North Macedonia have put money into gas. However, this type of source cuts gas emissions by around 30% only, that is far from the Paris Agreement's target. But solar and wind power could be a way of diversifying beyond gas. And, geographically all the WB6 are suitable for the production of photovoltaic energy throughout the whole year. Especially, some investments have been undertaken in North Macedonia, Albania, Montenegro, Serbia, and minimally in Kosovo in these sectors. Yet, whether hydro-, solar-, and wind-power are weather-dependent, geothermal power plants rely on technology. Therefore, these might be looked at as a credible alternative in the region. However, their usage is limited in North Macedonia. But BiH, Montenegro, Serbia and Albania have optimal geological and climate characteristics for geothermal exploitation. At the same time, while the WB5 have been considering various ways for stepping out of coal, Kosovo lags far behind its neighbours notwithstanding renewables' ample availability. What are the options? Surely, coal is not the way forward.

Yet, the potentials of renewable energy sources like wind, solar and geothermal are still largely underexploited countrywide. Some timid attempts are on the way for the first two ones only, and that is definitely not enough.

RECOMMENDATIONS

EU/Worldwide

¹⁴⁰European Commission. Commission Staff Working Document. Guidelines for the Implementation of the Green Agenda for the Western Balkans, SWD(2020)223 final, 6 October 2020: 4, *op. cit.*

¹⁴¹ Climate Change in the West Balkans, 2012: 10 [online]. Available at: <http://archive.zoinet.org/web/sites/default/files/publications/Climate-change-west-balkans.pdf> [Accessed: 25 June 2021].

- Existing policies EU-wide will only reduce gas emissions by 60% by 2050. Therefore, **EU Member States should embrace a more ambitious climate action** for the coming decade.
- The **proposal of the IMF to create an international carbon price arrangement, with the aim of restricting global warming to below 2°C** should be implemented, thus making the right to emit CO₂ more expensive over time, while being an incentive for energy-intensive industries to shift to low-carbon technologies.

Western Balkans/WB5

- WB5 still make a considerable use of obsolete and conventional technologies contributing to a significant share of gas emissions. **There is an urgent need for a green modernisation in enterprises across the region and investments in the co-operative linkages in the industrial eco-systems.**
- WB6 should **finalize their National Energy Climate Plans' drafts by the beginning of 2022** with a view at pursuing a **green energy transition, reducing energy imports, develop renewable energy sources, and strengthening regional security, pursuant to the European Commission's Clean Energy for All Europeans Package.**
- Rail still relies on fossil-fuel with more than 30% of the TEN-T Core across the region. Therefore, **policy cooperation and provision of alternatives to fossil fuels are crucial.** Specifically, **major investments in terms of technical and financial assistance** should be undertaken. Concretely, **the existing transport strategies should be reviewed and a greener and more sustainable transport network should be promoted.** Besides that, it is urged of thinking about **alternatives to road transport (i.e., investment in inland waterway).** Also, **digitisation in the public transport system should be encouraged.**
- Hydropower is still widely used as an alternative source to fossil fuel with its production and consumption chaired by Albania. Montenegro and North Macedonia are undertaking efforts to increase its usage too. However, **hydropower is strictly reliant on hydrological conditions, while increasing the dependence on imports.** Therefore, there is an **urgent need of diversifying beyond hydropower, which is investing in wind and solar photovoltaic (PV) renewable energy** being used in the region in a limited way, notwithstanding their ample availability.
- Being solar and wind power highly dependent, like hydropower, on weather conditions, an additional alternative the Western Balkans should exploit, and whose usage is still very limited in the region with marginal attempts in North Macedonia, is that of investing in **geothermal power plants** relying on technology. **Targeted efforts should be, therefore, undertaken in building new infrastructure and providing technical assistance, while building on cross-border supply chains uniting different types of skills (including architects, engineers, geologists, etc.)**
- **Further investments in gas production and consumption across the region should be discouraged,** since it only cuts gas emissions by 30% far from the Paris Agreement's targets.
- **Major efforts should be undertaken region-wide in investing in energy-efficiency.** To be said otherwise, inefficient practices (i.e., usage of traditional electrical heaters and air conditioning) should be discouraged, while **more innovative technologies such as heat pumps should be promoted.** **Awareness-raising campaigning to reduce unnecessary energy consumption, while improving efficiency and taking care of the environment, involving key stakeholders and the wider populace should be supported.**

Kosovo

- Further consumption, production and usage of coal (amounting to 94.5% of total generation in 2019) should be highly discouraged. Concrete actions should be undertaken to exploit renewable and abundantly available sources like wind and solar photovoltaic from now till 2026. Also, subsidization of coal is advised against, while major incentives for investing in renewables should be promoted and implemented.
- The Government of Kosovo should strongly discourage the rehabilitation of Kosovo B power plant
- In line with the IMF's proposal, and pursuant to the Energy Community's principles, Kosovo, like Montenegro, should apply a carbon pricing.
- Kosovo should upgrade the necessary infrastructure (i.e., having biomass stoves in single houses and biomass boilers in multi-storey apartments, including energy crops) for making the use of biomass energy-efficient, thus limiting unnecessary electricity losses, as well as health-caring. Also, it should set in place ad hoc mechanisms for properly addressing non-technical losses (i.e., theft, non-paying bills).
- Further investments in hydropower should be looked at as a short-term alternative only. Also, the environmental impact and legality of hydropower plants projects should be properly secured.
- The government of Kosovo should reactivate negotiations with NEK Umwelttechnik AG and change the key parameters for starting the Zatric wind farm (30 to 35 MW) project by mid-2023 latest
- Local authorities should make sure that the Bajora wind project (105 MW) is completed as expected by the end of 2021
- The wind park (46 MW) in Theranda, Shtërpçë, and Ferizaj should be launched by December 2021-latest
- The photovoltaic market should be expanded 10-fold, and key local and international stakeholders should look at the way this can be better achieved, considering that the required legal and financial framework is in place.
- ERO's 2019 approved small rooftop solar projects should be initiated and launched by mid-2023 latest.
- Local authorities should properly enforce the current legislation ruling that no single investor can produce more than 3 MW of solar energy, while enabling fair competition and fighting corruption.
- The planned photovoltaic plant (150 MW) in Gjakova should be made operational, as agreed upon, by 2022.
- Investing in gas should be looked at as a short-term alternative only, while building up the necessary infrastructure and the market.
- Major investments in large-scale battery storage should be boosted, and a proper scheme should be put in place.

Policy Analysis

Policy Analysis in general is a policy advice paper which particularly aims to influence the key means through which policy decisions are made in both local and central levels of government. The purpose of Policy Analysis is to address, more in-depth, a particular problem, to examine the arguments related to a concerned policy, and to analyze the implementation of the policy. Through Policy Analysis, Group for Legal and Political studies seeks to stimulate wider comprehensive debate on the given issue via presenting informed policy-relevant choices and recommendations to the key stakeholders and parties of interest.



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