Balkan Green Foundation

Western Balkans Sustainable Policies towards EU Integration

A snapshot of the energy developments in the Western Balkans countries

INTRODUCTION

On their way to the European Union family, the countries of the Western Balkans are bound to complying with specific EU regulations and the same applies to the energy sector. The European Integration path has set a fairly similar roadmap which these countries ought to follow as a mean to join the Union. Being one of the most prominent factors for the economic development of each of the region's countries, this sector is one of the most strategic elements that brings all of them together to seek for plausible and sustainable long term solutions for their individual and at the same time joint development planning in this area.

Countries of the Western Balkans together with Moldova and Ukraine are all contracting parties of the Energy Community Treaty, the international organization dealing with energy policy and aiming to extend the EU internal energy market to South East Europe and beyond on the basis of a legally binding framework. The Western Balkans are on the road to rebuilding their energy systems, guided by the 2005 Energy Community Treaty, which expresses a shared commitment to energy market reforms and the operation and vitalization of an integrated regional market. It is worth noting that, the party states party to the Energy Community Treaty have pledged approximately EUR 28.8 billion in energy investments for the period 2012-2020.

Yet, on the other hand, the Western Balkans region is characterized by lack of reliable electricity supply, which represents a serious obstacle to economic development and investment in this region. Electricity demand is distinguished for its seasonal and weather related peaks, which are mainly a direct consequence of poor insulation and lack of the implementation of EE measures in all of the countries in the region. These uncontrolled demand variations, often lead to electricity black-outs and rationing. These circumstances have a direct impact on the economic development of the countries as well as the wellbeing of their citizens. Additionally, lack of bill payment discipline and the generally low tariffs limit the revenue collection outcome in the energy sector, which circumcises the potential for new investments and the assurance of the necessary maintenance.

Despite the infrastructure and consumer behaviour related problems, the developments in this sector are further tainted by serious and continuous corruption scandals in each of the countries. Each of them is characterized for major corruption allegation cases, which further impede the long term sustainable development of this sector.

Additionally, no matter the 'pressure' imposed on them by the Energy Community Treaty, the approximation in legislation and policies in line with the EU requirements is still experiences a slow or rather moderated progress. Many of them have failed or are risking to fail in meeting certain criteria set by the Community, which requires a better harmonization of their endeavours towards responding positively to the set requirements.

Ultimately, this short report is drafted with the idea to offer a brief yet comprehensive reflection of the developments in the energy sector in each of the 6 countries of the Western Balkans, respectively Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, and Serbia, which are not yet part of the EU family. Undergoing a highly dynamic integration process, a reflection on the current strengths, weaknesses, opportunities and challenges, becomes and imperative in order to ensure the proper coordination at the national as well as the regional level to ensure a long term and sustainable development in the energy sector.

Snapshot of electricity patterns in the Western Balkans countries

Country	Electricity production [GWh]	Net imports [GWh]	Net exports [GWh]	Total electricity supplied [GWh]	Gross electricity consumption [GWh]	Losses in transmission [GWh]	Losses in transmission [%]	Losses in distribution [GWh]	Losses in distribution [%]	Consumption of energy sector [GWh]	Final consumption of electricity [GWh]
Albania	4,726	3,356	288	7,794	7,815	161	2.1%	2,622	37.8%	21	5,011
Bosnia and Herzegovina	15,030	3,178	5,998	12,210	12,210	304	1.7%	1,018	10.7%	14.12	10,873
Kosovo	4,894	966	475	5,385	5,399	109	1.42%	1,526	33.5%	112	3,652
Macedonia	4,982	3,073	66	7,989	8,026	152	1.9%	914	15.5%	205	6,755
Montenegro	3,038	886	634	3,290	3,290	125	3.9%	433	17.6%	9	2,723
Serbia	32,151	3,180	1,021	34,310	34,130	948	2.44%	4,215	14.4%	1,303	27,664

Source: Individual 2014 Country Reports submitted to the Energy Community Secretariat

Albania

Rich in water resources, Albania's huge water potential swings between being a blessing and a curse for the country. Almost exclusively reliant on hydropower generation, which in turn ensures greater environment preservation; there are many cases when due to hydrological conditions, the country was exposed to catastrophes and serious energy restrictions. However, with Shah Deniz II choosing the Trans Adriatic gas pipeline (TAP) project to become the route for gas in Europe, Albania is now part of a strategic crossroad for the gas supply in Europe and will directly benefit from it.

Albania's current electricity production capacity reaches, on average, 5 TW/h per year. Its yearly production fluctuates heavily due to rainfall variances. Based on 2014 statistics of the, Albania's electric energy demand amounted to 7.8 TWh/year. Out of these, 4.7 TWh/year were produced domestically. Albania became net importer of energy in the 1980s when its petroleum production suffered from inadequate investments and depressed international prices. Oil production peaked in 1976 at 2.6 mln tons, but production fell to 1 mln tons of oil by 1982. Electricity production increased steadily during 1980s due to the commissioning of two major hydropower plants, Fierza (1979) and Komani (1986) which projects didn't manage to cover losses from falling petroleum extraction. After 1991 Albania satisfied its petroleum consumption through imports and faced frequent electricity outages due to the poor management of its electricity sector. With 2014 being an exception, since 1999 Albania is a net importer of electricity as the demand surpasses generation capacities. However, since 2004 Albania moved to a second phase in its petroleum extraction industry mainly as result of improved extraction techniques. In 2014 its petroleum production experienced probably the second peak reaching about 1 mln tons, which is expected to decrease.

Albania acceded the Energy Community in 2006 and is ever since working towards complying its domestic legislation and planning in the energy sector with the EU energy standards. It is among the first Contracting Parties that has managed to mark significant progress in the transposition of the Third Energy Package.

General country information	
Area	Total 28,748 km2 Water 4.7%
Population (2011 census)	2,821,977
GDP (PPP)	$34.282 billion (2016 estimate)
GDP per capita (PPP)	$12,484 (2016 estimate)
Energy sector	
Ministry:	Ministry of Energy and Industry
Regulatory body:	Albanian Energy Regulatory Entity

Bosnia and Herzegovina

The energy sector in Bosnia and Herzegovina shares the country's fragmentation and complexity, with three regulatory frameworks, three (different) main producers, four suppliers and a single, barely functional transmission company. Yet its main problem is transmission. The state transmission company is chronically largely incapable of performing its legal obligations for maintenance, development, planning and investment in the transmission infrastructure. Gas supply is politically divisive with the Federation of BiH participating in the planned Ionian Adriatic Pipeline (IAP) project while RS sought to join the planned South Stream line in Serbia which is now abandoned. . Bosnia's gas sector lags behind all the other [Energy Community parties] including the newcomers on compliance. Bosnia and Herzegovina is also extensively reliant on hydropower.

Bosnia and Herzegovina has considerable reserves of brown coal, lignite and peat, estimated to amount to over 6 billion tons. Three major coal deposits are situated in the Tuzla region, the region of Central Bosnia and Gacko basin. There are four thermal power plants (TPP) in these areas, and they use domestic sources of coal and lignite, and exploit their full capacity. Besides these four TTPs, a privately owned plant has been completely built in January 2016 and will be fully operational in May, and it should produce 2.000 GWh per year. According to data gathered from the State Regulatory Commission for Electricity (DERK), BiH produced 15.029GWh of electricity, while 12.209 GWh was utilized by consumers in country in 2014. Excess of electricity was produced in previous years, as well, and it regularly exported to neighbouring countries with electricity deficit. Problem with TPPs is that most of them are more than 30 years old, with service time in the range of 97,000–312,000 hours, and use equipment that is mostly outdated. All are characterized by low energy efficiency. TPPs use in average between 11.500 - 14.500 kJ of coal thermal energy for production of 1KWh of electricity, with energy efficiency between 25-31%, while that percentage in modern TPPs is above 41 %.

The energy sector in BiH is considered its greatest long-term development potential. According to research conducted in 2009, main sources of energy in BiH were hydro and thermal power plants, which cover 62% of total primary energy consumption. At the same time, BiH is the only country in the region with a positive balance of electricity exports, and the eighth country in Europe in terms of hydro power - just over one third (37%) of the hydropower potential is being used. Also, it is estimated that BiH has the greatest potentials for energy production from renewable sources (wind, solar, biomass, and geothermal energy) in the Balkans, and they are 30% higher than the EU average. Moreover, BiH has more than six billion tons of coal reserves. BiH imports oil and gas, although there is some capacity for oil refining. There are significant opportunities for potential investors, and those opportunities are mostly related to infrastructural projects on Drina, Neretva, Bosna, Una, Trebisnjica and Vrbas river, but also to the development of over 200 small hydropower plants on other rivers.

General country information	
Area	Total 51,197 km2 Water 0.8%
Population (2014 census)	3,871,643
GDP (PPP)	$38.08 billion (2015 estimate)
GDP per capita (PPP)	$9,800 (2015 estimate)
Energy sector	
Ministry:	Federal Ministry of Energy, Mining and Industry
Regulatory body:	Regulatory Commission for Energy in FBiH

Kosovo

Kosovo energy situation is quite fragile and the electricity sector is vastly dependent on exploitation of lignite. Still to this date, constant electricity supply remains one of the biggest impediments for the country's economic development and the flourishing of the business sector. It is valued that Kosovo is the 5th largest reserve of lignite in the world Kosovo with an estimated 10.9 billion tones economically exploitable, yet the coal is of relatively poor quality and highly polluting. Lignite provides for roughly 97% of electricity produced in Kosovo, hence accounting for almost all of Kosovo's electricity production and heat. Electricity produced from lignite comes from two power plants, Kosovo A and Kosovo B with a total installed generation capacity of 1478 MW combined, out of which only 850 MW are available today. The energy mix has no gas or oil plants and minimal renewable sources; roughly 3% of electricity is produced by hydro power plants. Due to the old electricity grid, more than a third of electricity is lost. However, Kosovo has a well-established transmission network which includes 6 lines of 400 kV voltage, 13 lines of 220 kV, and 45 lines of 110 kV.

Kosovo is a net importer of energy products. The imports represented 677.12 ktoe, whereas the exports represented only 48.06 ktoe in 2014. As far as Kosovo's export potential is concerned, lignite constitutes the most promising product for export, nevertheless, the Kosovo Government has failed to develop any long-term strategy of export promotion with regards to coal. Energy consumption is inefficient in Kosovo. Final energy consumption represented 1261.37 ktoe in 2014. The household sector is the main consumer (38% of the overall consumption), followed by the transport (27%) and the industry sector (22%).

As far as electricity generation is concerned, the latter stood at 4,894 GWh in 2014. For heat generation, mostly biomass (in particular logwood) and electricity are used. The non-sustainable extraction of logwood is causing problems such as deforestation, degradation of the soil, etc. The district heating system faces significant problems and challenges due to an old infrastructure and is only available in 3 cities (Prishtina, Gjakova and Mitrovica). Kosovo doesn't produce enough electricity to fulfil the consumption demand and thus needs to import electricity from abroad. In 2014, the power plant Kosova B was the biggest supplier of electricity in Kosovo with 68.3%, followed by the power plant Kosova A with 29.5% and Gazivoda and other small hydro with 2.2%. Net imports account for 3% on average of electricity in Kosovo. Kosovo energy situation trends at the moment relate heavily to the prospects of building a new power plant, respectively, Kosova C, which would lead to the decommissioning of Kosova A. Currently, the whole process is characterized by non-transparent legal procedures, however the Government insists that the project has to be implemented and finalized under the justification that this project will serve the economic development of the country.

General country information	
Area	Total 10,908 km2 Water 1.0 %
Population (2011 census)	1,739,825
GDP (PPP)	$17.780 billion (2015 estimate)
GDP per capita (PPP)	$9,570 (2015 estimate)
Energy sector	
Ministry:	Ministry of Economic Development
Regulatory body:	Energy Regulatory Office

Macedonia

Macedonia relies on hydro, coal, gas and oil-fired plants for its power and has a partly liberalised market with an Austrian-owned supplier, EVN Makedonija. Yet important market rules remain unimplemented and its regulator is weak. Macedonia has an installed electricity generation capacity of 1836 MW. Of this, 1,010MW is generated in thermal power plants (TTP). Hydro power accounts for the remainder of generation in Former Yugoslav Republic of Macedonia and consists of 7 large HPPs and a number of other small HPPs with a combined capacity of 580MW. Utilisation of these is highly variable however, due to fluctuations in water levels. The 3 gas fired facilities have maximum installed capacity of 250MW and are rarely used, due to non-liberalized gas market till 2015. Since 2014 the electricity sector was empowered with 36 MW wind park and it is account for around 2% of domestic electricity production. Fuelwood forms around 11% of total produced energy or 6% of the total consumed energy and is primarily used for residential heating.

Much of the population continues to use fuelwood (supplemented with electric stand-alone heaters) for heating as district heating system operates only in City of Skopje. For City of Bitola in December 2015 the Government of Macedonia signed loan agreement with the Government of Germany and KfW for realization of the project for construction of a new central heating system that according to the initial plan should be operational in 2018. Fuelwood used for residential heating has a very low efficiency of around only 22%, fed into light heating stoves. With this calculation it can be concluded that Macedonia is a country with extremely high dependence on fossil energy - around 80% of primary energy in our country comes from coal and oil. Also, Macedonia is a country that imports energy - dependency on imported energy varies on yearly basis, while occasionally it reaches almost half of the primary consumed energy in the country.

Macedonia is characterised with high level of energy intensity (40% higher than in the European Union), largely due to the use of lignite in electricity generation, use of electricity for heating, as well as its dependence on old and inefficient plants. The two operational TPP (Bitola 1, 2 and 3 and Oslomej) were technically due for retirement in 2013. TPP Bitola is already expected to be extended to 2034 through the exploitation of deep lignite reserves further from 2 new mines in Mariovo and Zivojno although this will substantially increase the costs of generation. In 2033 new 300 MW TPP (Bitola 4) is planned to replace some of the capacity of existing TPP in Bitola. Regarding TPP Oslomej the phase out is projected for 2017 due to unfulfilling LCP Directive standards according the Energy Community Treaty. It is projected to be reconstructed on import coal and operational till 2021.

General country information	
Area	Total 25,713 km2 Water 1.9%
Population (2002 census)	2,022,547
GDP (PPP)	$22.147 billion (2012 estimate)
GDP per capita (PPP)	$10,718[(2012 estimate)
Energy sector	
Ministry:	Ministry of Economy
Regulatory body:	Energy Regulatory Commission

Montenegro

Coal is the most significant energy source in Montenegro. However, with around 670, 000 inhabitants, Montenegro's electricity needs are currently satisfied by only one 210 MW coal power plant based in the city of Pljevlja situated in the northern part of the country. The power plant generates approximately one third of electricity in the country, while the hydropower plants generated the remaining two thirds. Hydropower is generated mainly from the 307 MW Perucica and 342 MW Piva plants, with the remainder part generated from other much smaller hydro facilities. It is estimated that approximately 40% of the potential of the small watercourses, which varies between 800-100GWh, could be useful through these smaller hydro facilities. New forms of renewable energy are hardly used if at all in the country, despite significant potential identified in some regions. Montenegro has no infrastructure for natural gas distribution and does not currently extract oil, though the government is continuously expressing interest in oil and gas production in the Adriatic Sea.

Though, it is worth emphasizing that in the last 10 years, Renewable Energy Sources (RES) accounted for almost 25% of the energy mix in the country, whereby hydro energy counts for 11.1% - 21.4% of the total (depending on the hydrologic conditions), whereas fuelwood and wastes contribute with 3.2-5.5%.

Montenegro's current electricity production capacity reaches, on average, 3 TW/h per year. Based on 2014 statistics, Montenegro's electric energy demand amounted to 3.2 TWh/year. Montenegro's net imports for 2014 reached 886 GWh, while net exports reached 634 GWh.

It was until 2009 that Montenegro imported significant amounts of electricity. However since 2010 the electricity deficit has closed down due to the decline of the KAP aluminium plant, which has at times accounted for up to 40 percent of the country's electricity consumption. Additionally, the plant's shut down has caused the country a huge financial loss when they made "unauthorised and unpaid" withdrawals from the energy grid, causing the state system to draw on other European providers at high cost, which in turn created a total burden on the state that reached 3% of GDP.

General country information	
Area	13,812 km2 Water 1.5%
Population (2011 census)	676,872
GDP (PPP)	$10.436 billion (2016 estimate)
GDP per capita (PPP)	$16,655 (2016 estimate)
Energy sector	
Ministry:	Ministry of Economy
Regulatory body:	The Energy Regulatory Agency

Serbia

Serbia is heavily lignite and hydropower-dependent, with a fleet of ageing power stations. Energy system of the Republic of Serbia consists of the following sectors: Coal sector, natural gas sector, oil sector, power sector, direct heating systems, and industrial energy system.

In terms of gas it continues to rely on imported gas from Russia, although the South Stream project was cancelled in December 2014. South Stream project has been identified as a violation of EU Acquis, by the Energy Community and the European Commission.

Country import dependency in 2013 stood at 24% of total primary energy supply with lignite dominating supply mix. In total primary energy production lignite accounted for 68%, more than two thirds of all energy produced with domestic fuels and energy. Final consumption was largest in household sector (34% according to Statistical office) that is covered in Government statistics jointly with communal services and agriculture.

Households also dominate electricity consumption consuming more than half of all electricity in the country. Industry consumption slightly exceeds losses and own electricity consumption of power sector. Grid is inefficient and characterized with comparatively high transmission and even higher distribution losses. Indicators on security and continuity of supply are lagging behind domestic and international standards.

The main producer of electricity in Serbia is Elektroprivreda Srbije, with an installed capacity of 8,379 MW and generation potential of 38.9 TWh of electricity per year. EPS produces around 37 million tonnes per year and is also the largest producer of lignite in Serbia. In order to enhance the efficiency of the sector and to incorporate and activate market mechanisms in the production and supply of electricity, the Government adopted the Law on Energy in 2004 in order to introduce competition in the electricity sector. This has regulated the market by making electricity retailer responsible to supply tariff customers within Elektroprivreda Srbije at regulated prices.

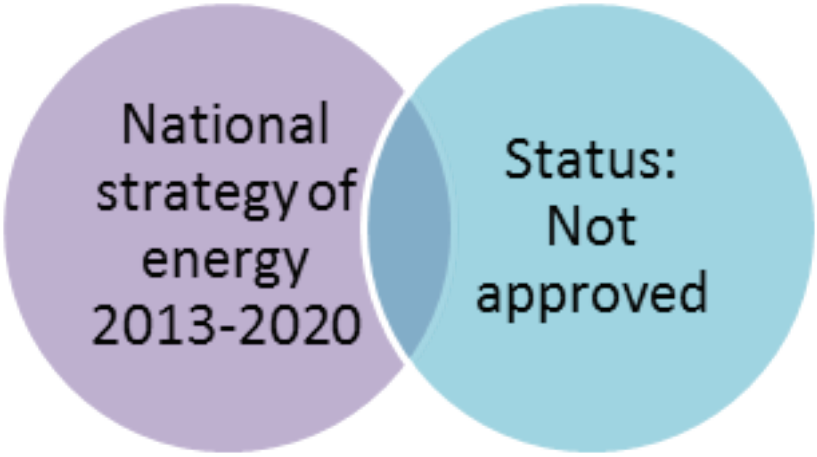
Serbia, as well, acceded the Energy Community in 2005 and is ever since working towards complying its domestic legislation and planning in the energy sector with the EU energy standards.

General country information	
Area	Total 77,474 km2
Population (2016 estimate)	7,041,599
GDP (PPP)	$100.180 billion (2016 estimate)
GDP per capita (PPP)	$14,047 (2016 estimate)
Energy sector	
Ministry:	Ministry of Mining and Energy
Regulatory body:	Energy Agency of the Republic of Serbia

Country energy strategy

The development of the Energy Strategies for each of the Western Balkans countries remains a major challenge for them, as while some of them might have succeeded to draft and adopt them, the major problem that all these countries are facing is the implementation of these strategies and mainly a lack of accompanying thorough action plans. On the other hand, a great portion of these countries have not yet adopted the newly drafted and revised strategies, which at first glance give the impression of being a modified replica of the older strategies. Whatever the case, all of the countries of the Western Balkans, given their current development plans in the sector, threaten seriously the chances for long term sustainable development in the sector.

Albania

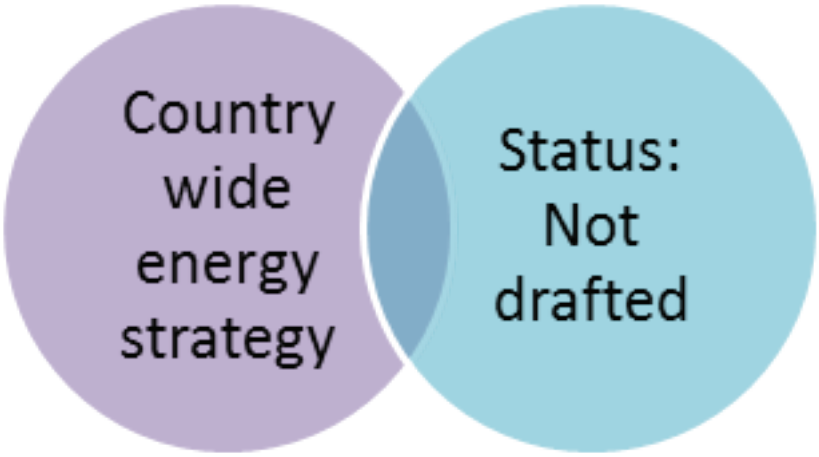


The last national strategy of energy 2013-2020, prepared in 2012, calls for increased energy efficiency, increased electricity interconnection lines with the rest of the Balkans, continued support for new hydropower plants and connecting Albania with regional gas pipelines. Currently this strategy is considered outdated and Albanian Ministry of Energy and Industry is working on a new strategy.

Albania hopes to further develop its hydropower sector by adding new hydropower plants both small and large ones and also hopes to improve hydropower production by increasing electricity exchanges with neighbouring countries (basically Kosovo). Dozens of small hydropower plants are actually under construction along with a large one, Devolli project, which is expected to add some 1 TW/h per year in its production. This HPP is expected to be completed by 2019. Another project Skavica HPP which could add up to 1.8 TWh in its production had faced many obstacles over the years.

Moreover, Albania is now part of the gas corridor as planned by the TAP project, which aims to build a Southern Corridor for gas supply for the Central Europe and is expected to be completed by 2020.

Bosnia and Herzegovina:

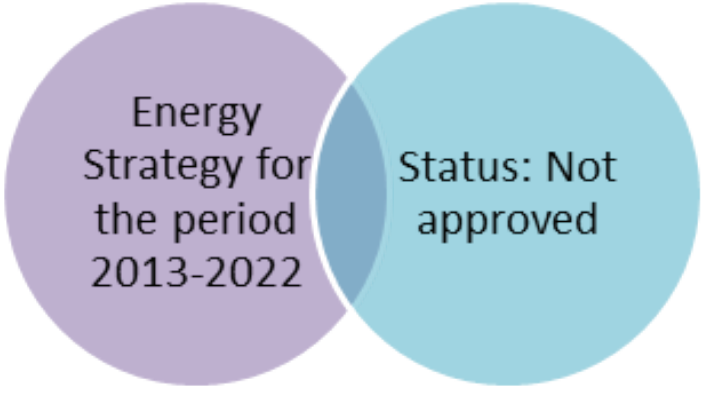


Due to a complex constitutional structure of Bosnia and Herzegovina, its mixed competencies and unclear chain of command between state, entity and cantonal institutions, it is no surprise that country is struggling in fulfilling obligations undertaken by the Energy Community Treaty. Despite the deadlines set by various international documents, comprehensive national energy strategy has not been made, and investment plans have not been agreed upon. Preparation of a comprehensive development strategy for the BiH energy sector has been announced for years, but the country has not invested any significant effort into developing a country-wide energy strategy.

Both entities have adopted strategies for energy sector development in respective territories, but they are not harmonized, and lack coordinated approach to security of supply of oil, gas and a comprehensive strategy for future investments. In addition, overall legislative framework needs to be fully aligned with the acquis, which include harmonization of strategies, legal framework and procedures in other sectors as well (including public procurement). Further, due to political obstructions and lack of common approach, BiH still doesn't have legislation at national level dealing with emergency stock holdings and no such stocks are currently held in the country.

Kosovo

The Government of Kosovo has drafted the latest Energy Strategy for the period 2013-2022, however, the document is not approved yet. According to this Strategy, which is indeed almost identic to the content of the previous one, Kosovo's energy strategy can be classified in three separate scenarios. According to option one, it envisages maximal utilization of the country's main energy resource – lignite.

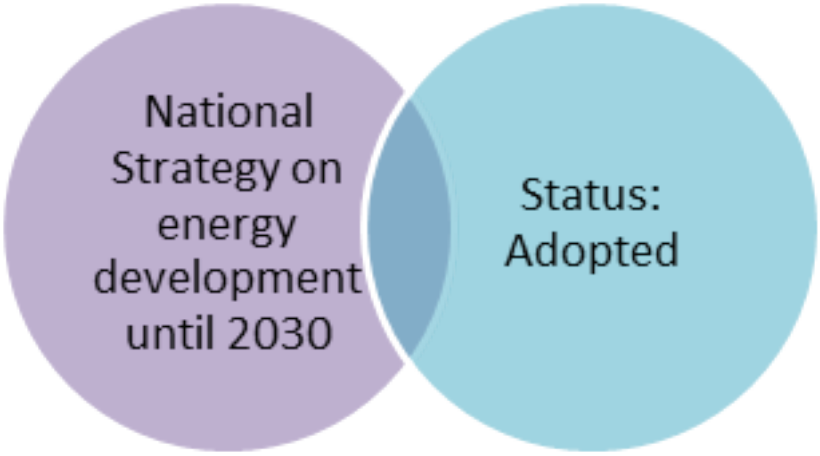


According to this option, all existing capacities will be operational and new lignite-based energy generation capacities will be constructed, to fulfil the domestic demands, and export an amount of electricity to fulfil event regional market demands. In addition to lignite capacities, renewable energy sources are also planned to be developed and the existing hydro potential to be utilized, however at an almost inferior level compared to lignite.

Based on option 2, under this option, electricity supply is planned to be provided by TPP Kosova B, TPP Kosova e Re, while TPP Kosova A shall be decommissioned within the timeline planned in line with EnCT requirements. Electricity gap as a result of increased demand shall be mainly covered by imports and potential RES capacities, as well as the utilization of the existing hydro potential and the building of new Hydro Plants.

Ultimately, the third option envisages electricity supply from TPP Kosova B, TPP Kosova A (until the commissioning of TPP Kosova e Re), TPP Kosova e Re and RES. Electricity gap and required reserves shall be covered through the optimization of two electricity systems of Kosovo and Albania. And the remaining gap would be filled by existing and new hydro plants, whereby Hydro Plant Zhur would consist the main hydro pillar.
This strategy is founded on three fundamental pillars. These pillars comprise the framework for the compilation of policies and action plans on future energy sector development.

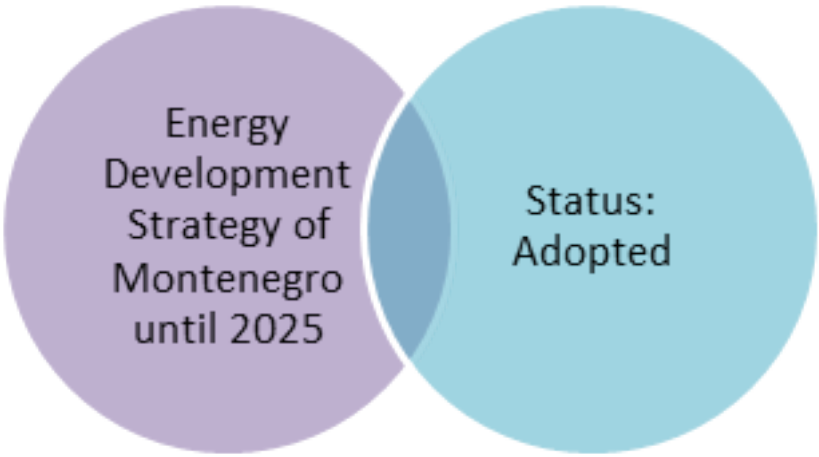
Macedonia



In 2010 Macedonia adopted the National Strategy on energy development until 2030. The strategy in 2020 foresees over 70% of primary energy in Macedonia to be fossil energy (from about 39% coal, mostly from domestic production). As for 2030, the vision in this strategy foresees two "lignite" scenarios and a "nuclear" one. According to the scenario one Macedonia in 2030 energy will be mostly (over 60%) fossil. In 2015 revised draft version of the Strategy on energy development till 2035 was published. According to the draft strategy in 2035, basic scenario 81% of the final energy consumed will be from fossil fuels (33% Oil, 23% lignite and 25% natural gas) and 18% from RES (from which 7% biomass).

Montenegro

Energy Development Strategy of Montenegro until 2025, was adopted in the end of 2007. The strategy gives basic guidelines for the energy progress and sustainable development which include: increasing energy efficiency, bigger use of renewable sources of energy, revitalization of existing and construction of new power facilities creating balance between energy development and environmental protection. The problem is that neither the strategy nor the action plans that are being developed in this area, have no adequate implementation in practice or in the field.

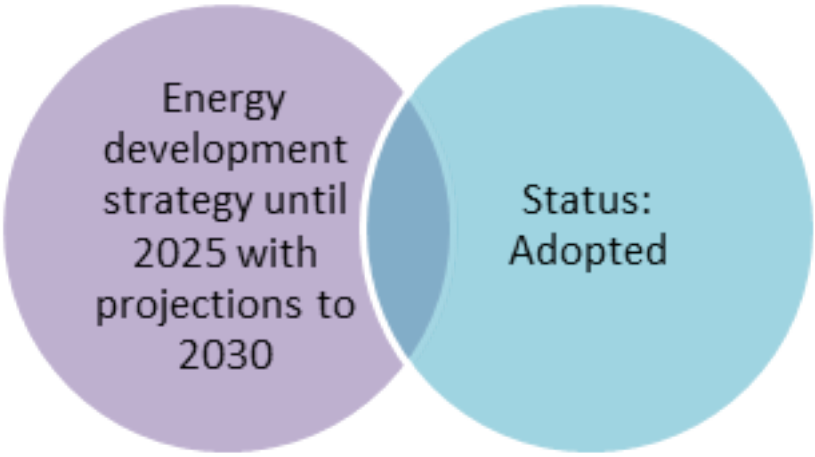


Montenegro has planned in the Energy Development Strategy until 2025 to work on reaching agreements with neighbouring countries (Bosnia and Herzegovina, Croatia, Serbia and Albania) on the optimal utilization of the joint hydro and water use and management, as well as planning new electric interconnection lines in order to eliminate its dependency from the import of electrical energy. However, the cooperation is not operationalized and all neighbouring countries are planning individually without consultations across borders breaching particularly ESPOO convention.

Same strategy notes an interest of foreign investors for the possible construction of liquid natural gas (LNG) terminals in the coastal zone of Montenegro, i.e. area near the Port of Bar, with preliminary capacity of terminals defined by at least 5 billion m3 of LNG per annum along with power plant (combined cycle) of 1,200 MW. The project would be synchronized with the announced construction of submarine transmission connection with Italy (direct current 400 kV) in a unique development project of regional significance. However, both investment projects are largely disputed by environmental NGOs claiming that the negative effects on the environment will be greater than any benefits from those projects.

Serbia

In December 2015 the new energy development strategy was adopted by Serbian Parliament. This strategic document, being heavily criticized by civil society and independent experts, strengthens the position of lignite as a main power source, with envisaged new 2, 8 GW of lignite power plants.



According to this document, the country tends to rely heavily on domestic coal in primary energy supply. Strategy proposal envisaged primary energy supply in 2030 composed of 79% of fossil fuels (reduction from 82% in 2010) with lignite accounting for 43% (down from 50% in 2010).

It is important to note that both strategy scenarios envisage an increase in primary energy production (30% and 22%) in 2030 comparing to 2010, and absolute increase in use of each fossil fuel category, as well as absolute increase in final energy consumption.

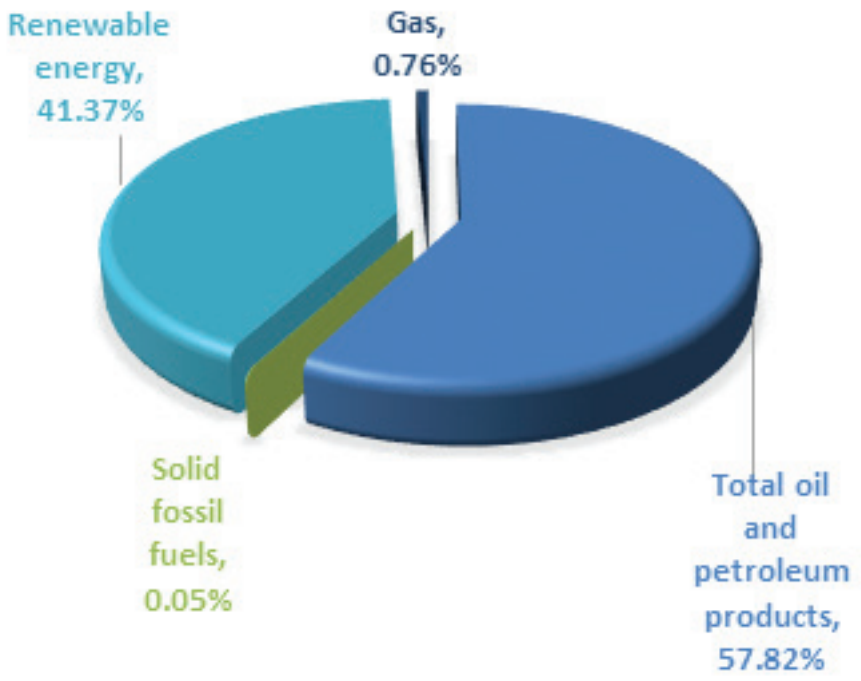
Energy mix - production and use

The structure of the energy mix of the countries of this region is completely diverse with some countries having a balanced portfolio of energy sources and others being dependent only on a few types of energy. As far as fossil fuels are concerned, the prevalence of coal/lignite generation in the fuel mix is significant. While, in terms of Renewable Energy Sources (RES), currently, hydropower is the most commonly used type of renewable energy, which has further growth potential across the entire region.

Other RES are less exploited and the incentives and regulations for their full exploitation is still lagging behind significantly. Although highly limited, gas is part of the energy mix in some of the countries of the Western Balkans, however, major gas projects are expected to be implemented soon, hence increasing the participation of this energy sources in the energy mix of these countries.

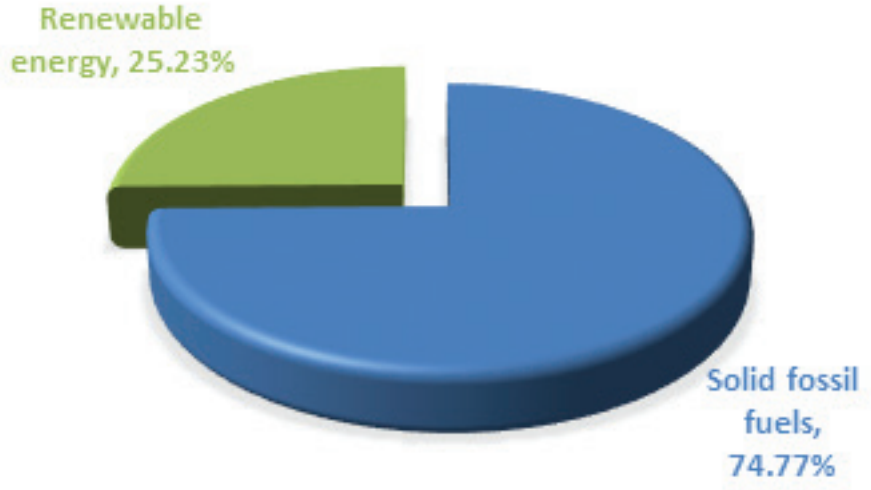
Albania

In 2014, petroleum was the main source of energy production in the country (57.82%) followed by electricity from hydropower plants and firewood. As for energy consumption, petroleum and petroleum products makes 60% of the overall consumption followed by electricity (25%) and firewood (11%). Albania doesn't have significant coal resources while its gas production is minimal. Firewood production had been severely decreased due to the exhaustion of its forest due to the overuse. These data are for 2011. Albania doesn't have a good system of statistics on energy production and use.



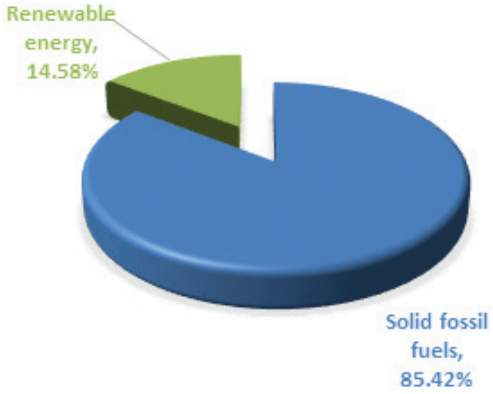
Bosnia and Herzegovina

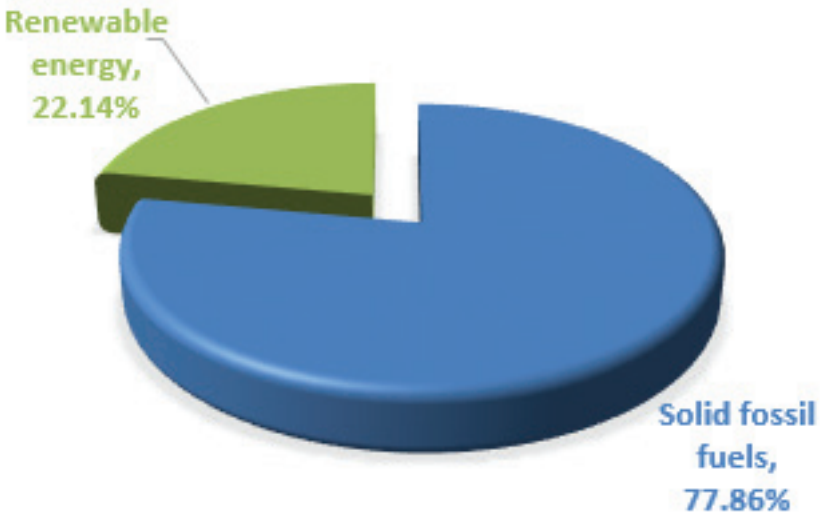
Approximately 50% of electricity production in BiH is generated by thermal power plants, (TPP) fuelled by domestic coal with a rather high emission of carbon dioxide (1.3 t CO2/MWh). The remainder of electricity is generated mainly by large hydro power plants (HPP), with a minor contribution from small hydro power plants. A conservative assessment of the mitigation potential of renewable energy sources is 0.88 Mt for biomass, 0.11 Mt for hydro and 0.15 for wind, by 2025. Coal will remain the main source of electricity generation and the generating capacity could more than double. There are significant reserves of coal available and it is a sector which employs a large number of people. Taking this into account, greenhouse gas emissions from electricity generation are set to increase. When it comes to CO2 limits and pollution, LCP Directive aims to reduce emissions of acidifying pollutants, particles, and ozone precursors, through imposed control of emissions from large combustion plants (rated thermal input is equal to or greater than 50 MW), which is directed to combat acidification, eutrophication and ground-level ozone as part of the overall strategy to reduce air pollution.
The energy mix in primary production is dominated by solid fossil fuels (74.77%) followed by renewable energy (25.23%).



Kosovo

Electricity generation in the country is mainly provided by the Kosovo Energy Corporation, operating through its two Thermal Power Plants 'Kosova A' and 'Kosova B', supplied by open cast coal mines (Sibovc Southwest and Sitnica sectors) and in smaller amounts from hydro power plants (Ujman, Lumbardh, Radac, Dikanc and Burim). Installed capacity of thermal power plants is 1478 MW; however, due to their age, their current operational capacity is around 1171 MW. Gross generation of electricity from existing power plants in 2014 was 4,742,544 GWh. Installed hydro capacities amount to 48.18 MW, which have generated in 2014 a total of 151,369 GWh. The structure of the primary energy consumed in Kosovo in 2014 has not changed compared to the previous year (2013). It consists of: coal, petroleum products (gasoline, diesel, fuel oil, kerosene and liquefied petroleum gas - LPG), biomass, hydro, wind, solar and biofuels. Coal is followed by petroleum products and biomass.





Macedonia

Currently, coal is the major energy carrier, accounting for almost half of total primary energy supply, whereas natural gas usually accounts for only 2 percent. To meet the needs of final for primary energy supply in 2014 8, 026 GWh were secured, from which approximately 3, 073 GWh is electricity imports and the rest was provided by domestic production. Solid fossil fuels supplied 77.86% of the total energy mix primary production, whereas renewable energy accounted for 22.14%.

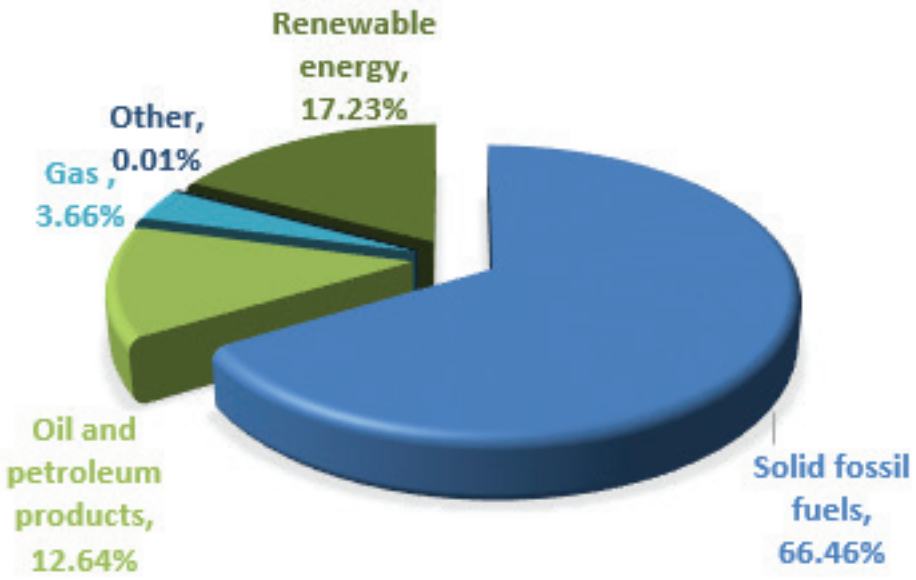
The biggest consumers of electricity in 2012 were the households with a share of 36.5%, the industrial sections (energy section plus industry) with 26.6%, and the other sections (including transport, commercial sector, agriculture and forestry, etc.) with 17.2% of the gross national electricity consumption. Own consumption (in production, transmission and distribution) of electricity in 2012 was 5.2%, while losses were 14.5% of the gross national electricity consumption.

Montenegro

Of primary energy sources in Montenegro, brown coal, lignite, and firewood are produced, hydro energy and industrial wood wastes are used, but there is no oil and natural gas production. In the period 1997 – 2006, the most important primary forms of energy were hydro-energy, depending on hydrological conditions, and lignite, then firewood and industrial wood wastes. Based on the 2014 data, one can easily understand that they energy mix in primary production in Montenegro is quite simplified, being a mere combination of solid fossil fuels (51.18%) and renewable energy (48.82%) which comes mainly from hydropower and solid biomass.

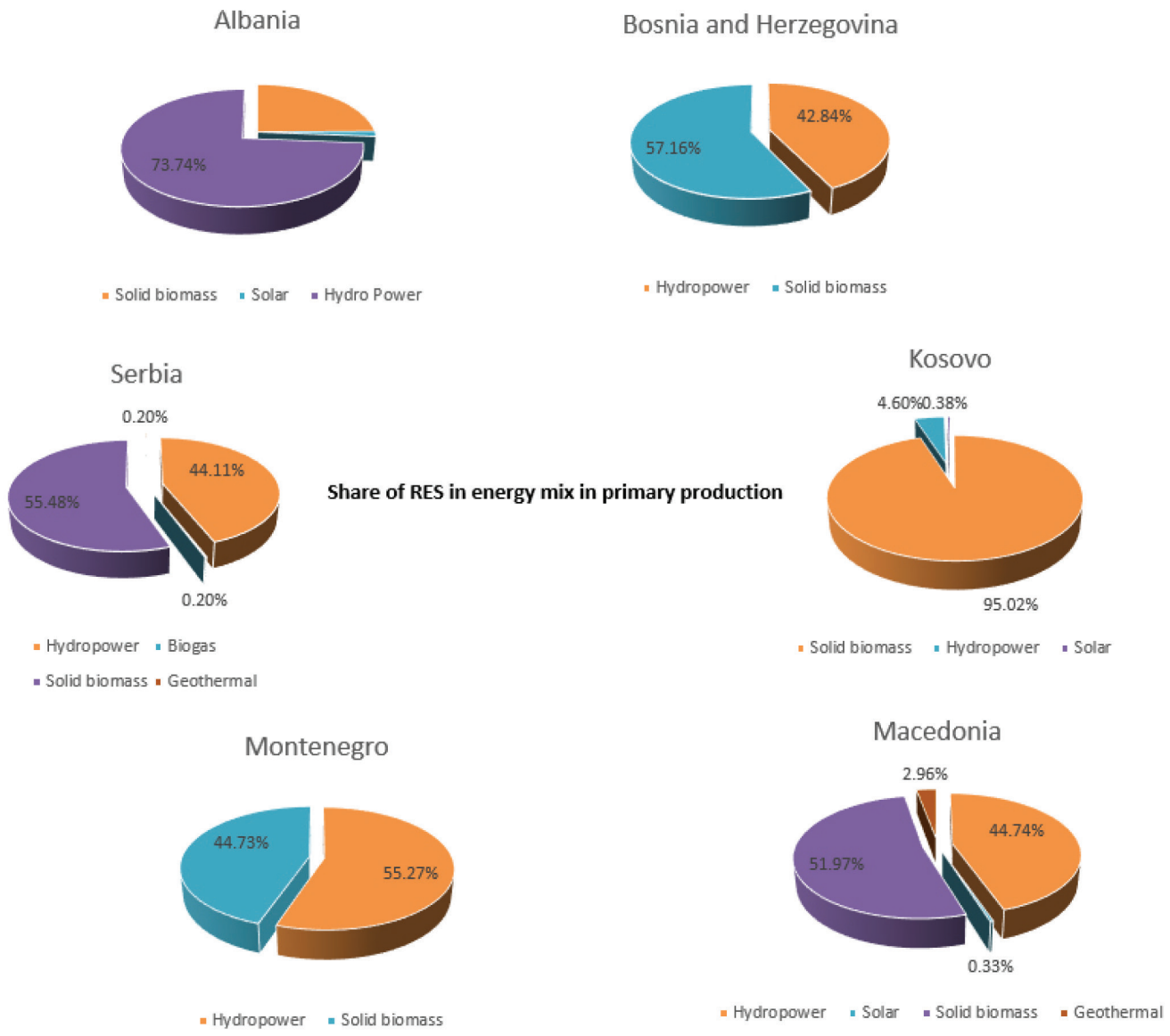
Serbia

Production of primary energy includes exploitation and/or use of domestic resources of coal, crude oil, natural gas and renewable energy sources (hydro-potential, geothermal energy and biomass). In Serbia in 2011, 11.163 Mtoe of primary energy was produced (70% of the total primary energy needs). In particular, the structure of the domestic primary energy is as following: production of coal makes 7.823 Mtoe, while the remaining portion is based on the production of crude oil, hydro-potential, firewood and natural gas.



Participation of renewable in the energy mix

From what is elaborated thus far, one can easily establish that the participation of RES in the energy mix is highly incomparable to the presence of solid fossil fuels. Nonetheless, it is the hydro energy that dominates the share of RES in all of the countries of the region. While this is the most exploitable RES, there is significant potential for the exploitation of other RES as well. However, many countries are lagging behind in this regard, partly due to their lack of interest to commit more seriously to integrate a higher share of other RES in the energy mix and partly because of stagnating with the completion of the legal base and all the necessary requirements to facilitate the diversification of the energy mix.



Losses and grid efficiency

Much of the energy infrastructure in the Western Balkans was damaged during the conflicts related to the break-up of the Socialist Federal Republic (SFR) of Yugoslavia in the 1990s. As in other transition countries, ageing energy generation infrastructure in Western Balkans countries needs to be decommissioned within the next decade. The challenge remains, how to proceed and assure a proper replacement.

A common feature of the Western Balkans region is that key elements of the energy infrastructure (e.g. major thermal power plants) were built in the 1960s and 1970s, with standard Eastern Block technology. This concentration in age and type of technology, combined with inadequate maintenance in the 1990s, is now creating serious policy challenges. There is an urgent need for widespread rehabilitation and replacement of infrastructure. Some markets are particularly affected by low day-to-day efficiency and the constant risk of technical failure

Albania

About half of electricity distributed in the grid in Albania get lost as technical or nontechnical losses or due to the unpaid bills. About 39. 9% of the electricity is lost due to the ageing grid but some experts dispute this figure due to the tendency from electricity distributor to hide some of the electricity theft as technical losses. In 2014, approximately 37.8% account for losses in distribution, while 2.1% are the losses in transmission. A great part of these losses comes as a result of the lack of tradition to pay electricity bills, leading to massive commercial losses as well. However, the new Government has adopted punitive measures to improve the situation in this regard, hence leading to serious penalties for the ones who do not conform to the law and do not pay their electricity bills.

Bosnia and Herzegovina

In 2014, total distribution and transmission losses amounted to 12.4%, out of which 1.7% were losses in transmission and 10.7% were losses in distribution. The district heating systems also generate high losses. On the other hand, waste of energy at the consumer level is another problem. Billing by square meter, without individual metering does not give any incentive to consumers to save energy or reduce losses. Ultimately, building regulations in the country have also been a cause for concern in terms of energy efficiency, with average energy losses in the winter months of up to 30%.

Montenegro

Montenegro has the potential to be a regional energy hub, but it still suffers from high commercial and technical losses, such as distribution losses and a low revenue collection rate. Modernization of the distribution grid is a strategic priority for the EBRD's work in the country, as Montenegro adapts to the requirements set out by the European Union. Based in the 2014 data, total losses in transmission and distribution accounted for 21.5%, whereby losses in transmission accounted for 3.9% while the losses in distribution accounted for 17.6%.
As far as the commercial losses are concerned, in 2010 the EBRD signed the original loan of €35 million to fund a €43 million project to introduce over 175,000 smart electricity meters. To date, 164,000 of these have been installed. The original project has already proved highly effective at improving energy efficiency and reducing CO2 emissions; as a result, distribution efficiency and accountability for consumption revenues have increased.

Kosovo

Losses in transmission and distribution amounted to 34.92% in 2014. Out of these, 1.42% were the losses in transmission while 33.5% were the losses in distribution. In general, energy losses remain an important issue for Kosovo. As far as the commercial losses are concerned, the installation of smart meters could be, for example, a first step towards the reduction of technical and commercial losses. However, there is still lack of significant capital investments in this regard, and the installation of the first smart meters resulted in a public scandal due to the inappropriate metering which caused the citizen to pay higher amounts of electricity bills.

Macedonia

According to the Energy Strategy large scale improvements to the electricity distribution system are needed to significantly reduce distribution losses. In terms of this further development of the transmission grid is needed. According to MEPSO (state own company authorised for transmission), the activities for improvement of the transmission grid refer to revitalization of the existing and construction of new power lines of 110 kV within Macedonia, as well as investment activities for connecting the EPS of Macedonia with the EPS of the neighbouring countries with over 400 kV power lines. Aside from the planned activities by MEPSO there are no further planned developments or goals regarding the transmission grid. Also, there are no recommendations or goals regarding the necessary infrastructure to integrate renewable energy into the system.In 2014, losses in transmission were 1.9% while losses in distribution amounted to 15.5%, which in total summed up to 17.4%.

Serbia

The losses in the transmission network in Serbia amount to 2.44% in 2014. However, the major problem is faced in the distribution network. Currently, there are 5 Electric Distribution Companies operating within the vertically integrated holding company PEEPS –Electric Power Utility of Serbia. They are licensed for distribution and supply of tariff customers. It is estimated that the losses in the distribution network in Serbia amount to 14.5%, out of which, an average of 5% qualify as financial losses.

Corruption and fraud in the energy sector

The energy sector in the Western Balkans countries is characterized by a substantial number of corruptive actions and corruption allegations for different parties and stakeholders. The need for structure and massive changes in these countries in the energy sector, has led to many people and parties making use of this transitory phase for personal gains and benefits.

Albania

Liquefied natural gas market is also controlled by few companies but it has also legal and infrastructural bottlenecks. A gas import and storage capacity built near Durres is often accused for using its legal monopoly as the country's only gas hub to control the market . One of the main operators of the gas market is currently awaiting trial suspected for commissioning the assassination of its competitor.

Corruption and fraud are considered widespread in electricity, oil, gas and firewood markets in Albania. Petroleum imports are controlled by a limited number of companies and their respective market shares fluctuates heavily when the government changes. Low quality of petroleum products is a daily concern for Albanians.

On the other hand, Albania imposed a ten year ban on firewood and timber export last year aiming to save its last forests but illegal lodging seems to continue undisturbed due to the poor law enforcement capacities of the government. In general, corruption in the electricity sector is widely discussed. Electricity import procurements are often subject of accusations for corruption and has been subject for formal investigation by the country Competition Authority and as well, Vienna based Energy Community. Unlawful access to the electricity grid or lack of punishment for electricity theft is often used as a form of payment for electoral support or votes in various parts of the country. Most famous corruptive cases are the case of Ms. Argita Berisha, the daughter of the then Prime Minister, who was accused in 2007 of ties with a Bosnian businessman, Mr. Damir Fazlić, investing in land properties in Albania. She was accused for making use of first-hand information on the plans of the government affecting property values, which information could have been used by her client, Damir Fazlić, to buy land cheaply and then sell it at higher prices. The businessman was referred by the Albanian embassy to use her as legal advisor for a thermal power plant project he wanted to carry out in Albania. As well as, the case of the former Prime Minister, Ilir Meta, who was accused by the then Minister of Economy, Dritan Prifti, of asking him to favour a business in the tender procedure for a hydropower concession.

Bosnia and Herzegovina:

EPBih and EPHZHB are the two state-owned electricity companies in the Federation of Bosnia and Herzegovina, one of the political entities making up the sovereign country of Bosnia and Herzegovina.

Federation of BiH authorities on two occasions, more than ten years apart, decided to trade EPBih's surplus electricity through traders, which was detrimental for the state companies and made a significant profit for the private ones.

Former Prime Minister Edhem Bičakčić and Vice Premier Dragan Čović made a contract with German company Debis International on the sale of surplus electricity from EPBih for six years in 1998. After the SDP's arrival to power, Zlatko Lagumdžija annulled the agreement at the end of 2003, one year before the contract's expiry. However the same Zlatko Lagumdžija, SDP leader, when his party regained control over EPBih after the 2010 elections, allowed the same practice of EPBih using a private trading company to sell electricity to EP HZHB, just changing the mediator. EPBih Director, Elvedin Grabovica, also a member of the SDP, sold part of the electricity surplus for 2011 through the Serbia-based company Rudnap without a tender. In 1999 USAID gave the Montenegrin government a donation of 11.9 million USD (then equivalent of EUR 13.4 million), part of which was to cover EPCG's debts for electricity imports from Elektroprivreda Republike Srpske in Bosnia and Herzegovina. However Serbian businessman Vuk Hamović, then Director of London-based GML, bought up EPCG's debts shortly before the USAID donations, giving rise to suspicions that the USAID money was being purposely diverted to GML. Investigations by the UK Serious Fraud Office, BiH Prosecutor and USAID Inspector General ended without prosecutions.

Kosovo

When it comes to large scale corruption, a citizens poll in 2009 conducted by UNDP has indicated that the institutions which they find as most corrupt are the energy corporation (Kosovo Energy Corporation), Kosovo Trust Agency (the agency for privatization), customs, the Post Telekom Company, central administration, courts and healthcare.

Over 500 public tenders issued by KEK (amounting to over 550 mln Euros) have been reviewed by investigative reporters, the beneficiaries of which were 200 local and international companies. The investigative reports clearly showed that companies have continued to be rewarded with million-euro tenders, despite the fact the equipment they sold to KEK became defunct within a very short period of time. Among these, there are two companies which are the biggest beneficiaries in KEK, “Eco Trade” of Zhugolli family from Podujeva, and “Intering” of Shoshi family from Banja e Pejes.

In regards to the preparations for the construction of a new power plant “Kosova e Re”, the resettlement process has also failed to meet international standards on human rights. The current resettlement framework does not meet the involuntary resettlement policy standards of the WB, IFC, OECD or EBRD. This was re-affirmed after a field study conducted in Kosovo by the President of the International Network on Displacement and Resettlement (INDR), Dr. Ted Downing.

After 1999, the Kosovo Energy Corporation (KEK) was managed by international management appointed by UNMIK. From 2000–2002 Jo Trutschler was KEK’s leading manager. During his tenure it was discovered that he had acquired about USD 4.3 million (then around EUR 3.7 million) and transferred the sum to fake companies in Gibraltar. UN investigators discovered that in addition Trutschler had falsified his diploma and claimed greater experience in management than he really had. As a result of this fraud, a German court sentenced him to three years in prison for breach of trust and mis-using an academic title. Most of the money was recovered. Also, in April 2012 in the daily newspaper Zeri was published an article commenting that the Zhugolli brothers businessmen were financially supporting Prime Minister Thaçi’s election campaign and that in return, they won lucrative contracts at the Kosovo Energy Corporation (KEK).

Another famous public scandal was the case of digital electric meters " AEF.TF - 01 " produced by the Turkish producer "Kohler", which the company "Calik & Limak" has contracted directly at the factory in Turkey and have been installed in the households. In the end of 2014, with a decision of the director of Metrology Agency of Kosovo, this meters had to be removed from the market as they did not meet the standards set in our country.

The most recent incidence in this regard is the fiasco with the procurement procedure for Kosovo C, when the Kosovo Government proceed with a one-sourced offer, afer numerous failed procurement procedures in the past where many international companies and consortiums have withdrawn their bids, leaving much room for speculation. The latest decision of the Kosovo Government to proceed with a one-sourced offer for Kosovo C was not only done in a non-transparent process, but it is also against the articles outlined in Kosovo Procurement Law.

Macedonia

Similar to the developments in the other countries of the region, the energy sector has been characterized by some major corruptive scandals, one of such cases is with the Macedonian electricity trading cartel case in which four companies allegedly dictated the price for electricity imports in a 2012 tender.
In 2012 the Macedonian Commission for Protection of Competition filed misdemeanour charges against four electricity trading firms on suspicion that they created a cartel so they could dictate the price for electricity imports through their bids in a January 2012 tender. Later in the year the customs office also charged three electricity trading companies additional customs duties, saying that they had used various methods to evade paying these fees

Montenegro

However, in practice this happens, particularly when the suspected companies are close to the ruling party-DPS, specifically the Prime Minister of Montenegro, Mr. Milo Djukanovic. Furthermore, the field of solar energy is dominated by the company of his son who gets the tenders for the reconstruction of schools, health centres or residence buildings. In addition, owners of small hydroelectric power plants, that were put in operation last year or should begin to work during this year, are owned by close associates/friends of Montenegrin Prime Minister. Financial incentives for encouragement of electricity production from renewable energy sources in 2015 are provided from the electricity bills paid by Montenegrin citizens and this item on the bills has increased seven times compared to last year. Also, Montenegro is an importer of electricity that is very expensive, and 1/3 in 2012 and ¼ in 2014 is consumed by the Aluminum Plant (KAP) which is now in liquidation, but whose owner until recently was the Russian oligark Oleg Deripaska. Government decided to subsidize electricity for KAP while the company was owned by Deripaska, even though citizens have not benefited from that – except for higher taxes. Regardless of enormous air pollution, which is evident in the municipality of Pljevlja, Montenegrin authorities are not giving up on building yet another thermal power plant (TE) in this city. According to them, the project is justified as the block of the second TE will be built according to ecological standards (even though the first block of power plant isn't adapted to ecological standards).

Corruption in the energy sector is a major issue for Montenegro, starting with the privatization of Montenegrin power energy company (EP), whose shares were bought under suspicious circumstances and conditions by Italian company A2A. Recently the information was revealed that A2A has paid 15 million euros over three years for „consulting services" to sister company „A2A Montenegro" which is not in compliance with public procurement standards not allowing the tenders to be given to the same company.

Finally, there are fears among activists for environment protection that the senior officials of the Government of Montenegro and the Republika Srpska may try to revive the plan to start building a power plant „Buk Bijela" on the Drina River, that due to the size of its reservoir would sank lower part of the Tara river canyon, residual part of the Piva river canyon and gorge of Sutjeska river. In 2004, such initiative resulted in public outcry and successful environmental campaign "Necu baru, hocu Taru" following on professional foreign and domestic public assessments that sinking of Tara, would be an environmental disaster, while construction of the „Buk-Bijela" is not economically justified. Tara River is a monument of nature protected since 1976 through the UNESCO program „Man and Biosphere" (M&B).

Serbia

Serbia experiences various corruptive allegations and accusation regarding the developments in its energy sector. However, the major corruptive action is marked on 3 October 2011, when Dragan Tomić was arrested along with 16 other people from the Kolubara mining company and private companies which re-sold lignite or leased machinery to Kolubara. Tomić had from 2004–2008 been General Director of the Kolubara lignite mine and was until August 2009 also Deputy General Director of EPS. From 2008 he was also a member of the Kolubara Assembly. In total 28 people are accused of irregularities around the hire of equipment for the Kolubara mine, causing serious damage to the company's finances.

Same as with other countries of the region, corruption represents a major obstacle to the sustainable development of the energy sector in Serbia.

Emissions and Climate Change Criteria in comparison to EU regulations and criteria

Current patterns of energy use in the Western Balkanss lead to significant impacts on the environment. The region as a whole has high carbon intensity due to its heavy dependence on lignite. Other environmental concerns include pollution from energy combustion (e.g. indoor and local air pollution from inefficient and improperly used stoves), deforestation and land degradation (from excessive use of wood for fuel). These patterns of energy use also have harmful consequences for human health – often with a disproportionate effect on poorer parts of the population. In 2005, CO2 emissions in the Western Balkans region ranged from a low of 3.9 Mt in Kosovo to a high of 50.4 Mt in Serbia, which accounts for almost half the region's emissions. Serbia also has the highest CO2 intensity, reflecting the fact that it produces a smaller volume of GDP in PPP terms. Albania emits the lowest amount of CO2 and its GDP is less CO2 intensive, reflecting the fact that its electricity is almost entirely based on hydropower.

Albania

GHG Emissions (MtCO2) in 2010	*Percentage of global total (%)*
7.10	*0.0%*

Albania government states that greenhouse gas emissions are 4-5 times lower than the average of the industrialized countries. In 2010, total GHG emissions amounted to 7.10 MtCO2e. Nonetheless, Albania doesn't produce regular estimates on Greenhouse gas emissions. The last data available shows that the main contributing sector is Energy (44.00 %), followed by Agriculture (27.12 %) and Land Use Change and Forestry (21.60 %). However, since these data were produced, Albania had added several cement factories which are considered highly pollutant industries.

In March 2015, the process of setting up gas emissions limits started. On climate change, however, Albania still needs to draft a strategy consistent with the EU 2030 framework. In this regard, the country has started with the preparation of the national plan for adaptation to climate change. While, the establishment of a monitoring, verification and reporting system for greenhouse gas emissions has not started yet.

Albania has missed its Energy Community deadline to implement the 1999 Directive on Sulphur Content in Fuels. Regular breaches of the standard values for air quality persist, while air quality in cities remains very problematic.

Bosnia and Herzegovina

GHG Emissions (MtCO2) in 2010	*Percentage of global total (%)*
27.22	*0.1%*

In Bosnia and Herzegovina, negative impact of greenhouse gas emission is affecting various sectors. Agriculture, due to its exposure and sensitivity to natural changes, is the sector most vulnerable to climate change: of the total area of the country, 46% is agricultural land. The impact of future climate change on the agricultural sector is forecasted to be largely – but not entirely – negative. Despite the abundance of water resources in the country, irrigation infrastructure is very limited. For instance, only 0.65% of arable land is irrigated (before the war the total was 1.0%, but has decreased markedly due to war damage, landmines and lack of maintenance). Predicted rises in temperature, coupled with changes in rainfall and evaporation, are likely to significantly and negatively impact farming systems in BiH, particularly in Mediterranean areas and in the North. Attention should be focused on improved water management and irrigation, new farming systems appropriate for hotter and more arid environments, and varietal improvements of local crops to maximize agricultural production under more acidified conditions. When it comes to transport, BiH has low emissions of carbon dioxide from transport (25% below the global average and 77% below the OECD average).

Furthermore, the proportion of greenhouse gas emissions from the transport sector is lower than in EU countries: less than 7% of total emissions compared to approximately 20% in the EU. Greenhouse gas emissions in this sector come mainly from road transport (more than 90% of total emissions): according to statistics in 2012, BIH had 22.740,20 km of roads of all categories, with less than 100 km of highways, with another 100km under construction or in the negotiation phase; total number of registered motor vehicles in 2011 was 950.915 – around 130% more than in 1991, out of which most are on average 15 years old. Living standards will not allow technical measures (better combustion with lower emission) to become a high priority in dealing with greenhouse gas emission reduction. However the transit traffic in BiH is on a low level and average speed on roads is slow, which do not add to emissions levels. Energy sector is one of the greatest pollutants in BiH. Average annual emissions are 23 Mt. Greenhouse gas emissions, per capita, are just over half of the EU average: 5.18 tons CO2 equivalent per capita per annum in 2008, compared to an EU average of 9.93 tons. But compared to relative wealth, Bosnia and Herzegovina's emissions are almost four times higher than those of the EU. Greenhouse gas emissions per unit of GDP were 1.59 kg CO2 equivalent per EUR in 2008, while the EU average was 0.4 kg per EUR. These statistics illustrate the economic and social situation of Bosnia and Herzegovina: caught in the poverty trap with low emissions but even lower GDP per capita. While numbers are generally lower than EU average, one should bear in mind that BiH industry is underdeveloped, electricity power plants are outdated and over-utilized and, in general, BiH is overall poor country.

Four large thermal power plants in BiH consist of 9 units and total installed capacity of 1,775 MW, and all are using lignite (low energy efficiency) as a fuel. One of them, TPP Ugljevik has the highest sulphur dioxide emission concentration in the Energy Community. However, TPP Tuzla in average pays about 1,5 mil EUR/year as a fee to practices pollution, that are used for funding ecological projects in the region. To date, no desulphurization measures have been implemented. TPP Ugljevik has started the implementation work for the desulfurization process. Contrary to experts' opinion, Ugljevik used desulphurization method that drains 19 mil EUR/year in average, and decided against proposed gasification method.

Kosovo

GHG Emissions (MtCO2) in 2010	Percentage of global total (%)
10.5	0.0%

In comparison with other countries in Europe, Kosovo has relatively low emissions per capita (5.7 t CO2 equivalent per capita per annum in 2008, while greenhouse gas emissions per unit of GDP (0.84 kg CO2 equivalent per EUR in 2008) are higher. Per capita emissions are just over half of the EU average (9.93 t) and emissions per unit of GDP are almost double of those in the EU average (0.4 kg/EUR).

The energy sector, mainly fuel combustion activities, is the largest polluter in Kosovo. The overall emission of greenhouse gases in 2010 amounted to 10.5 MtCO2eq. with the energy sector producing itself approximately 8.6 MtCO2eq. For example, the power plant Kosovo A is considered to be one of the biggest polluters in Europe. Apart from the energy sector, agriculture, forestry and other land use are also responsible for considerable amounts of emissions of greenhouse gases (1370.4 MtCO2eq. in 2009). Within this category, aggregate sources and non-CO2 emissions sources on land on one side and livestock on the other, were responsible for the vast majority of emissions. Besides this, waste, mainly emissions from landfills, produced 292.9 MtCO2eq. Industrial processes, mostly metal and mineral industry, produced 254 MtCO2eq. in 2009.

Air pollution, heavy metal pollution and waste management affect particularly the health of Kosovo citizens. For example, Kosovo has the lowest life expectancy in the Balkans and the highest child and infant mortality rate. According to a study of the World Bank's Draft Kosovo Country Environmental Analysis, air pollution impacts, in particular lignite coal combustion represents the most costly component of environmental damage in Kosovo. The data from World Bank also state that greenhouse gas emissions are responsible for economic damages of up to 100 million Euros annually and the loss of 835 lives per year (premature deaths). In turn, 61.2 million euro have been promised to Kosovo in order to implement different energy efficiency measures and projects. However, these financial resources have not been used properly yet, mainly because of the lack of project ideas and policies.

According to the statistical yearbook of Kosovo for 2014, the production and distribution of electricity, gas and water accounted for 2.9% of the GDP in 2012.

Macedonia

GHG Emissions (MtCO2) in 2010	Percentage of global total (%)
12.39	0.0%

According to the National Communication on Climate Change in 2014 the electricity sector is responsible for 73% of the GHG emissions. Presently Macedonia has no quantified obligations to reduce the emissions of the greenhouse gasses. However, in the future, it would have to be involved in the common European efforts and goals regarding the climate changes.

Based on the Action plan for air quality the target set for 2020 is to reduce the CO2 equivalent emissions by 30% in comparison to the value attained with the scenario based only on coal. In addition, the specific emission of greenhouse gasses from the electrical and power sector (the grid factor) will be reduced by 22% by 2020 in comparison to 2006. Unfortunately, the fulfilment of these obligations is lacking since Macedonian government

still has not implemented suitable mechanism for monitoring of the GHG emissions and there is no transposition of the EU climate legislation in Macedonian Law.

The total direct emissions of greenhouse gases in Macedonia in 2009 amounted to 10,252 kt CO2eq, and include land use, changes in land use and forestry. In that year, the national emissions per capita was 5.6 t CO2-eq. Emissions, mainly resulting from the energy sector (73%, mainly ranging between 8,500-9,000 kt CO2-eq per year), followed by agriculture (13%, this rate is reduced each year because decreases and the number of animals) and waste (7% increases due to population growth). Looking at the direct emissions of greenhouse gases, CO2 emissions account for 75-80% of total emissions (mainly from combustion of fuels in the energy sector).

Unfortunately, air pollution in Macedonia is the highest in Europe. The ratio of emissions greenhouse gases (GHG) in gross national product (GDP) is 5 times higher than the EU average and 1.5 times higher than the average in the region. For example, in 2005 the country produced 0, 64 kg CO2 per 1,000 USD of GDP which is almost three times higher than the world average and more than five times the average of the OECD countries. Macedonia has serious problem with PM10 air pollution. According to World Bank report in 2014 Macedonian is the "leader" in PM10 pollution in Europe. Only in Skopje the national limits for PM10 (50µg/m3) in 2014 was exceeded 300 days (usually, the emission was 10 times above the limit). According to the World Bank report in 2014, every year the pollution with PM10 in Macedonia is responsible for 1350 premature deaths and it costs the Macedonian economy around 253.000.000 € (3.2% from the GDP in 2011).

The pollution from the two operational thermal power plants according to a recent study using the HRAPIE model and based on the pollution in 2012 is responsible for 447 premature deaths and cost the Macedonian economy around 500.000.000 € per year.

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Montenegro

GHG Emissions (MtCO2) in 2010	*Percentage of global total (%)*
3.5	*0.0%*

Montenegro has adopted following documents related to Greenhouse gas emissions and Climate Change: The national strategy on climate change by 2030 (Sep, 2015), Strategy for adaptation to climate change in the public health sector and an action plan for heat waves, The National Strategy for Air Quality Management 2013 – 2016, Impact of climate change on coastal areas, impacts of climate change on forestry, Assessment of technological needs for mitigation of Climate Changes and adjustments for Montenegro, Climate change and water resources, Measures to reduce greenhouse gas (GHG) in KAP and Steel Plant (KAP is dominant source of man-made GHG), Development of the manufacturing industry 2014 - 2018 year. There are envisaged measures in the agricultural sector, forestry and waste management.

Montenegro does not exceed the limits of CO2 and legislation in this segment of the air quality is compliant with EU. The results of the Montenegro's Initial National Communication on Climate Change for total equivalent greenhouse gas emissions (CO2eq), i.e. the emissions resulting from the use of global warming potential of individual gases (GWP), by economic sectors, not including Land Use Change and Forestry (LUCF), indicate that the main emissions in Montenegro in 2003 (as in base year 1990) came from Energy sector with 49.9% share in total emissions, followed with Industrial processes with 35.5%, Agriculture 12.3% and Waste sector 2.3%. Upon joining EU Montenegro would need to pay for KAP and Steel Plant who do not have the systems and standards of purification plants built and would pay separately for the urban area of municipality Pljevlja due to excessive air pollution. Apart from TE, and plans to build second block of TE, an active coal mine and landfill Maljevac are also located in Pljevlja and are further polluting the environment. The increased number of children in this city is suffering from respiratory diseases, while there is large number of deaths from cancer. The research published by UNDP (2004) "Stuck in the Past, Energy, Environment and Poverty in Serbia and Montenegro" states that the proportion of acute respiratory illness in total morbidity in children in Pljevlja area increased from 23% in 1985, to 35% in 1995 and up to 50% in 2001. It also states that in 1985 3% of children in this area were treated for asthma and that until 2001 this figure rose to 11%.

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Serbia

GHG Emissions (MtCO2) in 2010	*Percentage of global total (%)*
50.14	*0.1%*

Despite an energy mix that is one-third hydro power, Serbia's large environmental footprint remains a serious challenge. It has extremely high, although gradually improving, levels of CO2 emissions from electricity generation, and continuing problems with air and water pollution. Regarding its contextual performance, Serbia's political and societal indicators improve, while economic strength weakens due to decreasing macroeconomic stability.

Serbia has prepared official inventory of greenhouse gases (GHG) only for years 1990 and 1998. Both inventories are part of Initial National Communication to UNFCC and both inventories include emissions from Kosovo. Although, during the process of negotiations of global climate agreement Serbia has associated itself with the EU the country representatives have never pledged to reduce absolute level of emissions. Serbia's position was that the country is able only to curb the rise of its GHG emissions.

Energy sector is dominant emitter of GHG emissions. No offical scenario envisages reduction of emissions form this source. On the other hand, coal pollution health costs have been estimated to be in the range between 1.8 and 4.9 billion EUR annualy by one study while the other quantifies those costs at 3.5 billion EUR.

Energy Community Treaty and Regional Cooperation Commitment

The main frameworks for regional co-operation are the Athens Process and the 2005 Energy Community Treaty, which was the first legally binding regional agreement for the Western Balkanss since the wars of the 1990s.

Albania

Albania is part of the Energy Community Treaty since 2006. It has already unbundled the electricity market in 2007 and fully liberalized the electricity market for customers supplied by high voltage and intends to liberalize the market also for customers supplied in the medium voltage segment. Albania is in the process of discussing law on energy efficiency of buildings. As for Renewables, Albania as issued several permits for wind farms but construction works has not yet started. Interconnection electricity lines in Albania are managed by OST and are open for business. Albania has two lines of high voltage electricity connections with Greece and Montenegro.A third one with Kosovo is under construction. The project "Secondary regulation frequency/power between Kosovo and Albania project and the completion of works on the 400 kV transmission line to the border with Albania" was inaugurated on 17 December 2015. This project for the construction of the high voltage line 400kV Kosovo-Albania, is composed of two lots, the first one related to the construction of the interconnection line connecting substations SS Kosova B (Kosovo) and SS Tirana 2 (Albania), with a distance in Kosovo of 91 km and total distance of 241.5 km. While, LOT 2 involves the construction and installation of high voltage equip-

ment in these substations. The completion of the 400 kV interconnection line between Kosovo and Albania is expected to contribute to the strengthening of the role of Kosovo in the region and an enhanced security of supply in both countries.

According to the latest updates with regards to the level of progress in compliance with Community requirements, Albania has managed to adopt the National Renewable Energy Action Plan in Jan 2016. Moreover, the new Energy Efficiency Law was adopted in November 2015 and it is complaint with Directive 2006/32/EC. Additionally, in December 2015, ERE amended the Electricity Market Rules in line with the PSL 2015 in relation to balancing. Ultimately, in November 2015, The Secretariat and the Ministry of Energy and Industry reached an agreement on the gas market secondary legislation Action Plan.

Bosnia and Herzegovina

Energy Community was established by a Treaty, signed in Athens on October 25, 2005, and came into effect on July 1, 2006, aimed toward creation of one of the biggest internal market in the world for electricity and gas, with effective participation of the European Union on one side, and Contracting Parties, including Bosnia and Herzegovina. Main goals of the Energy Community is creation of a stable and singular regulatory framework and market space that ensures reliable energy supply and attracts investments in the electricity and gas sectors. In addition, it assumes development of alternative sources of gas supply and improvement of environment, through implementation of energy efficiency and utilization of renewable sources. By signing the Treaty, the contracting parties from the region are obligated to establish a common electricity and gas market that will operate in accordance with the standards of the EU energy market into which it will integrate. It is to be achieved by gradual transposition of the EU acquis, which means the implementation of the relevant EU directives and regulations pertaining to electricity, gas, environment, renewable energy sources, energy efficiency, oil and statistics.8 However, as in majority of other sectors, BiH made a limited progress in fulfilling requirements of the Treaty. The complexity of the administrative structure, divisions of jurisdictions within the sector, along with the lack of political will result in the country's failure to meet its commitments. Limited progress is made in operation of state-level electricity transmission, but genuine commitment geared toward reinforcing and developing the country's electricity transmission system is needed. Similar commitment is required in other areas of the energy sector, particularly with regard to alignment of electricity legislation with the Third EU Energy Package, and development of legislation at State level for renewable energy sources and energy efficiency.

Particular concern is in the area of gas regulations, where serious and persistent breaches are identified by the Energy Community. In accordance with obligations under the Treaty, BIH was obligated to liberalize the energy market by January 01, 2015. As of this date, all consumers, including households have right to decide electricity provider and choose among 20+ registered companies. This is directly affecting monopoly of three major national electricity companies in BiH. When it comes to gas, transposition of EU directives into national legislation was set to July 01, 2007, while Directives from the 'Third Package' were adopted with the implementation and transposition deadline set for January 01, 2015. However, since state level decisions have been one of the key challenges, namely in adopting state level Law on Gas, Energy Community has offered adaptation of Belgium model into BiH context, where entity level legislations are to be harmonized with acquis, while entities would sign an agreement which would circumvent state level legislation requirement. Environment related acquis should have been implemented already as they affect network energy. According to Article 13 of the Treaty, the Contracting Parties recognize the importance of the Kyoto Protocol and shall endeavour to accede to it. Acquis on Renewable Energy Sources should have been transposed into national legislation and scheduled for implementation by January 01, 2014. Further, acquis on energy efficiency, oil and statistics are set for deadline until 2017 and 2023. Deadlines for the fulfilment of numerous obligations of Bosnia and Herzegovina have already expired, while a relatively short period of time has left for the remaining obligations. Regulatory structure follows country's political structure, which is not contributing to dynamics of processes.

Bosnia and Herzegovina just recently, in April, adopted its National Renewable Action Plan while in December 2015, it has submitted to the Secretariat its National Emission Reduction Plan.

One of the most important developments in the area of security supply is the signing of a contract on the establishment of the Security Coordination Center (SCC) in Belgrade between TSOs of Bosnia and Herzegovina, Montenegro and Serbia, NOS BiH, CGES and EMS, in April 2015.

Kosovo

Kosovo is a contracting party to the Energy community treaty and thus needs to adopt EU environmental legislation. The latter foresees a reduction of at least 20% compared to the 1990 level. By 2030, greenhouse gas emissions should be reduced by at least 40% below the 1990 level. By 2050, greenhouse gas emissions should be reduced by at least 80% compared to the 1990 level. Apart from these overall goals, Kosovo is obliged to fulfil specific targets on energy efficiency as well as on renewable energy sources.

Most Contracting Parties, including Kosovo, committed to an energy saving indicative target of 9% of the final energy consumption between 2009 and 2018, through their National Energy Efficiency Action Plans. In 2012, the Ministerial Council of the Treaty agreed on the renewable energy targets for the parties (Kosovo shall increase the share of renewable energy sources from 19.9 to 25%) and in October 2013 they agreed to introduce the obligation to implement the new EU Industrial Emissions Directive under the Treaty25.

The Kosovo Government, as a signatory of the acquis communautaire is obliged to decommission the Kosovo A thermo power plant by 2017. In addition, the Kosovo Government had also made a public promise that it will comply with the LCP directive, while in reality the government continued to investment millions in electro-filters and various repairs in Kosovo A, which clearly indicate there is no plain in motion for the decommissioning of this plant. Conversely, if the Government fails to comply with the LCP directive by 2017, it will also forfeit from the promised financing from EU to cover the cost of decommissioning of Kosova.

A regional electricity market is likely to be established in the future. One of the main projects includes the common Kosovo-Albania market, which is expected to provide a more efficient utilization of energy generation sources and improve the electricity supply conditions. Moreover the 400 kV interconnection line between Kosovo and Albania is expected to contribute to the strengthening of the role of Kosovo in the region, which will ultimately contributed towards the improvement of the reliability and security of the energy system in the region. Additionally, the secondary regulation project between Kosovo and Albania is highly important for KOSTT, the operator of electricity transmission, as it will contribute towards the breaking of the dependence from Serbian Energy System. Another positive aspect of this common market would be the decrease of costs. The market would constitute a sole trade zone and could thus merge more easily with wider regional markets. However, the legal frameworks of Kosovo and Albania need to be harmonized firstly.

The latest developments with regards to the fulfilment of the Energy Community obligations is the submission of the National Emission Reduction Plan to the Secretariat in December 2015.

Macedonia

Government priorities set in the Energy Efficiency Strategy are: safe energy supply, sustainable economic development and competitive economy, and for the first time a legal document sets national targets for EE - 9% savings compared to the average energy expenditure of 2002 - 2006 till 2012 and 20% savings to 2020. Unfortunately, the target of 9% was not achieved.

Also, given the fact that the primary energy intensity in Macedonia is 40% higher than the average in the European Union, which plans to cut at least 20% by 2020, i.e. up to 40.6% in 2050, it is clear that our current energy

policy country sets very differ path from the European energy policy in the area of energy efficiency. Even with implementation of really ambitious measures for energy saving in various sectors, as long as our main energy source is domestic lignite poor quality, the achievement of the EE targets is impossible.

According to the National Strategy on utilization on RES Macedonian target is 21% till 2020. According to the proposed scenarios in the strategy mainly propose utilization of hydro and biomass (around 80%). We have to point that according to the Macedonia faces real challenge with illegal logging. Even the Energy Community in their report in 2010 points that …" At the moment there is no sustainability criteria for biomass, yet it would seem perverse to set Parties a target that required ongoing unsustainable consumption (for example based on illegal logging) in order to meet it". Also, another challenge is the proposed planned HPP since most of them are in protected areas (future NATURA 2000 sites). For example, in the last Macedonian progress report in 2015, the European Commission notes that the concerns remain about the potentially detrimental environmental impact of the planned construction of two large hydropower facilities, Lukovo Pole and Boškov Most. Additionally, points out that investments in hydropower need to be in conformity with relevant EU environment legislation, respecting EIA, water legislation and nature protection obligations, especially for national protected areas and areas of high natural value, potential protected Natura 2000 sites. The concerns were confirmed by the Bern Convention Standing Committee in December 2015 recommending suspension on all hydropower on the territory of the Mavrovo National park (future NATURA 2000 site).

We have to point out that the Energy Community, after several analysis of the RES utilization possibilities, suggested setting the national target on 27%. If Macedonia is imposed a goal to increase the share of RES to more than 27.6%, additional efforts will have to be made mainly for reduction of the final energy consumption and greater utilization of other RES and not focusing only on biomass and hydro.

The long-term existence of low (distorted) price of electricity, i.e. treatment of electricity as a welfare category, in the previous social-economic system, but also long term afterwards (practically till this very day) aimed at protecting the standard of the residential sector, i.e. the citizens. Back in 2008, Macedonia launched a partial opening of the market, allowing large industrial companies to choose their suppliers. In April 2014, this was extended to medium-sized companies - calculated as those with over 50 employees and an annual turnover or total assets of more than €10m. However, extending the new system to households was an important step, since households account for around 50% of total consumption. According to the Energy Community Treaty by 2015 Macedonia should introduce market price of the electricity also for the residential sector. Unfortunately, several days after the EC progress report, Macedonian government decided to postpone the liberalization of the electricity market till 2020. In January 2015 the Secretariat of the Energy Community started dispute settlement case against Macedonia for its failure to comply with the Energy Community's eligibility rules by postponing full opening of the electricity market noting that the postponement until 2020 of full market liberalisation represents a severe breach of the Energy Community Treaty. Mr. Kopac, Director of the Energy Community Secretariat questioned the claim that prices will rise on liberalisation, warning that, "consumers will be stuck with the incumbent utility EVN, which has a monopoly. According to the Energy Community this monopoly will be allowed to continue because of the support of the government, which is not looking out for the best interests of the electricity consumers.

Recently, Macedonia submitted its National Renewable Action Plan to the Secretariat in January 2016 and National Emission Reduction Plan to the Secretariat in December 2015.

Montenegro

Only in December 2014 proposals in relation to the obligations and targets coming from Athens Treaty came into parliamentary procedure and were discussed before the competent committee which adopted Proposal for Law on confirming Athens Treaty on transport of passengers and their language through sea routes.

The state is dependent on energy imports and because of that the energy prices are relatively high comparing to the standard of living, thus energy efficiency (EE) is recognized as one of the priorities from both economic and political aspects. In its strategic energy documents Montenegro has opted for a higher level of efficiency of energy use, while as a candidate to the EU and a member of the Energy Community, is committed to the implementation of the legal framework in EU energy sector. For the report on the screening of the legislation in Montenegro for Chapter 15, which concerns the energy - the EU has stated that the Regulation 1222/2009 of the European Parliament and of the Council on labelling of tires in terms of fuel efficiency and other key parameters is not regulated; neither was Regulation 2422/2001 of the European Parliament and of the Council on the Community program for energy efficiency labelling of office machines and equipment. Montenegro has indicated that it intends to regulate this by the 1st January 2018. The remaining provisions with respect to EE, Montenegro intends to transpose with the new Energy Law which is planned for first quarter of 2015. For complete harmonization of the Montenegrin legislation with the EU will be necessary to make significant bylaws, as well as update of relevant regulations which are intended to be implemented by 1st January 2016. For now energy efficiency in Montenegro is at a low level. Primarily the awareness of society about energy efficiency and expenditure of energy is very low; in the industrial sector an outdated technology is still used, also building sector is in bad condition. The responsible authorities did not apply the Law on Energy Efficiency, while the new Law on Efficient use of Energy has just been adopted.

Montenegro has planned in the Energy Development Strategy until 2025 to work on reaching agreements with neighbouring countries (Bosnia and Herzegovina, Croatia, Serbia and Albania) on the optimal utilization of the joint hydro and water use and management, as well as planning new electric interconnection lines in order to eliminate its dependency from the import of electrical energy. However, the cooperation is not operationalized and all neighbouring countries are planning individually without consultations across borders breaching particularly ESPOO convention.

Same strategy notes an interest of foreign investors for the possible construction of liquid natural gas (LNG) terminals in the coastal zone of Montenegro, i.e. area near the Port of Bar, with preliminary capacity of terminals defined by at least 5 billion m3 of LNG per annum along with power plant (combined cycle) of 1,200 MW. The project would be synchronized with the announced construction of submarine transmission connection with Italy (direct current 400 kV) in a unique development project of regional significance. However, both investment projects are largely disputed by environmental NGOs claiming that the negative effects on the environment will be greater than any benefits from those projects.
As far as the recent updates regarding the progress marked in relation to the Energy Community undertakings, the most important development is the adoption of the Energy Law in December 2015 as part of the process of adaptation of the Third Energy Package.

Serbia

In electricity sector Serbia is mostly in line with the time schedule when transposing certain elements of the Acquis. However visible changes envisaged when Energy Community has been created are not materialized. Internal market is still dominated by one utility in both electricity and gas with intact public supply for major share of the electricity markets, while integration into regional market is insufficient.

Serbia is seen as regional electricity hub. Around 10% of energy transmitted over Serbian transmission system in 2013 was transit energy (lowest value for five years). Still openness of Serbian transmission system and conversely of Serbian electricity market could be improved. EMS does not participate in any regionally coordinated capacity allocation mechanism at this moment, which means that Serbia is currently violating Article 3 of the Annex of Regulation (EC) 1228/2003. In the second half of 2014 Serbia started to address outstanding obligations identified as critical in the Energy Community Annual Implementation Report for 2013/2014. EMS and KOSTT signed an Inter-TSO Agreement on network and system operation management, completing the highest priority task addressed in the Implementation Report 2014. In December 2014 Serbian Regulatory

agency approved bilateral agreements on joint auctions for cross-border capacity allocations between EMS and neighbouring transmission system operators for 2015. Secretariat of Energy Community welcomed this move but reiterated that hat EMS should take part in a regionally coordinated capacity allocation platform such as the SEE CAO in Podgorica.

In natural gas, Serbia is end of pipe country (with minor exception of the pipeline extension to Bosnia) with single supply route and single supply source. Energy community unfavourably assessed participation of transport system operators in regional cooperation. After the official cancellation of South Stream project development of new concepts for better integration of Serbian gas market is needed. Just recently, in February 2016, SEEPEX a.d. Beograd (SEEPEX) power exchange started operating a day-ahead wholesale electricity market. Also, in December 2015 Serbia submitted to the Secretariat its National Emission Reduction Plan. Moreover, in December 2015 it published The Rulebook on public procurement.

This report was prepared by: