Energy systems in countries of West Balkans (Serbia, Croatia, Bosnia, Macedonia, Montenegro) rely dominantly on the fact that its two thirds of total electricity quantity are being produced from coal, specifically for Serbia where 70% of electricity is being produced from coal while the electricity from the renewable sources makes only a little bit over 20 percent of the total consumption. This ratio will be slightly changed in the next few years, since the planned investments in green energy until 2020 project that the share of renewable sources in electricity production will increase from current 29 to 37 percent, but coal will still remain the main material for energy production. Without big hydro power plants, which are according to the European Union regulations classified as renewable energy sources (RES), but they are not acceptable from the environment point of view, the share of RES would be rather small.

The signatories of the contract on founding the Energy Community are obliged to apply the European Union Directives in the field of renewable energy sources (RES). The Directive from this field obliges the EU member states that by 2020, the renewable energy should make 20 percent of the total consumption. Practically, it means that each country has to increase its share of renewable energy compared to the state of reference from 2005, with the coefficient of the total increase of 5 percent and taking into account GDP, so that the wealthier states have more challenging goals. The usage of green energy in electricity production at the European level, including the hydro power plants, amounts to only 16 percent, while the greatest share is still being generated from fossil fuels, so the countries which are wealthier and more developed than others in the region will face the challenge of reaching the projected goals.

Along with the investments in renewable energy sources, the countries of the region prepare themselves for the application of the Large Combustion Plants Directive, which is essential for Energy Community member states. This directive prescribes the limit values of the certain pollutants in the air from the large combustion plants.In accordance with the decisions of Ministerial council of the Energy Community, the closing of the thermal capacities which do not satisfy the high ecological standards is postponed for 2027.The transfer period is agreed upon after the Serbian delegation’s proposal which explained that the closing of TPP “Nikola Tesla” and MB “Kolubara” would leave Serbia without 50% of electricity. Had the previous decision about the application of the directive by 2018 stayed effective, the decrease in electricity production in thermal power plants would have been a serious threat to the stability of energy system, since the projects directed towards alleviation of the quantity of sulfur and nitrous oxides are financially and technically quite demanding and time consuming. The projects realized by EPS with the aim of alleviation of particles emission are worth 625 million EUR. The most expensive item is desulfurization in thermal power plants in Obrenovac and Kostolac, with the total value of 426 million EUR. The assessments given in the draft for Strategy of Energy Development by 2025, say that

Serbia has a significant potential in the field of RES which is 5.65 million tons of oil equivalent (TOE)per year, which is equal to a half of the country's needs for energy. The greatest potential in this respect is in biomass, then there are hydro potentials and solar energy, geothermal springs and eventually wind energy.
Coal is significant support of energy systems of the countries in the region. According to the data from European Association for Coal and Lignite EUROCOAL,in Bosnia and Herzegovina the share of coal as the primary energy generating product is 67 percent. In 2102 the country produced 6.3 million tons of lignite and 6.3 million tons of brown coal. With the proven reserves of some 1,272 million tons, lignite will stay the dominant energy generating product in the years to come. The total capacities for the electricity production are 3,800 megawatts. The thermal power facilities provide 46 percent of that quantity, while the rest is produced by hydro power plants.
Coal exploitation in Bosnia and Herzegovina is encumbered by numerous problems- unfavorable geological conditions and lack of maintenance and investment in plants are in the first place. By attracting investments, the governmentplans to implement new projects such as power plant on brown coal "Banovići" and power plant near Tomislavgrad, which will be supplied by lignite from the new basin "Kongor". Besides, there are numerous potential mines and power plants: mine " Koteži" which would supply the new power plantof 350 MW near Bugojno; new power unit of 350 MW near the existing mine "Stanari"; capacity expansion of power plants "Ugljevik" and "Kakanj"; new power unit of 450 MW near Tuzla, and two power units of 450 MW near the mine "Kamengrad". B&H is already a net exporter of electricity to neighboring countries, and the export would significantly increase if these projects were implemented .
Two main renewable energy sources in B&H are water energyfor electricity production and biomass for thermal energy production. Small hydropower plants make 12.6 percent of the total hydro potential, their power is greater than 1,000 MW i.e. 3,520 GWh of electricity annually. Almost half of the B&H territory is covered by forests due to which there is a great biomass potential, but this potential is consumed without any control.
The latest member of the European Union, Croatia does not produce coal, but in 2012, it imported 1.3 million tons. According to HEP "Supplies" over the last year 43 percent of electricity was produced in hydropower plants; thermal power plants cover 21, nuclear power plant 13, while 19 percent was provided from the imports. The smallest part of only 3.6 percent is provided by new renewable energy sources- solar and wind power plants.
Over three-quarters of imported coal is used in TPP "Plomin,"of installed power capacity of 335 MW, owned by HEP, and the co-owner of the power unit "B" is RWE. One of the priorities of the Croatian government is the construction of the third power unit of 500 MW, which will replace the block A.For the greatest project in Croatia, in the past thirty years, worth 800 million euros, three consortium have applied. Although the names of the bidders

are officially kept secret, Croatian medias have reported that in recently finished tender bids were submitted by Daewoo with the partners, consortium of Samsung and Edison and as the third bidder Marubeni and Alstom. The Croatian Government should choose the best offer by September and according to the expectations, implementation of the project will start in 2015.

Model according to which HEP and the selected partner will establish the new company, in which they will own a share of 50 percent each, is new in Croatia. HEP is committed to repurchase half of the total amount of produced electricity, while the other half will be sold in the open market.On the other hand, the partner provides guarantees for loans that will be used for building the power plant. “Plomin C” will cover approximately 25 percent of Croatian needs for electricity.In HEP they are satisfied with the project, as it will, in addition to providing new jobs, reduce the dependence of Croatia on imported electricity.

As for the new renewable energy sources, in Croatia there are 12 wind farms, with a total installed power capacity of 280 MW. 148 wind turbines,which deliver 810 GWh of electricity annually, are in operation. To compare, the Plomin thermal power plant has a power of 330 MW and deliver 2,173 GWh of electricity annually. In June Croatia got the largest wind farm Danilo near Šibenik, which consists of 19 wind turbine generators, of total installed power of 43.7 MW. It is expected that wind farm will produce 100 GWh of electricity annually, by which the production of energy from wind will be increased by 20 percent. It is planned that five new wind farms will be built.

In June, near Virovitica, Solar power plant Brana I, of the total installed power of 30 KW was put in operation. That is the first power plant of the rotary-type, because it uses trackers to turn over the sun. The production of electricity in the largest Solar power plant in Croatia, Solar power plant in Kozjak, started with operation in March. The power of the power plant is 300 KW and annual production is 460 KWh of electricity.

FYR of Macedonia is significant lignite producer. According to the EUROCOAL data, some 7.5 million tons of coal have been produced in 2012 in the OPMS „Brod-Gneotino“, „Oslomej-Zapad“ and other smaller open pit mines. The lignite reserves amount to 332 million tons in the Basins „Pelagonija“ and „Kičevo“ with additional potential in the Basins „Marnovo“ and „Tikveš“. TPPs that use lignite , „Bitola“ and „Oslomej“ produce about 77% of total amount of electricity in FYR of Macedonia. The Government of FYR of Macedonia plans the construction of the new TPP in Mariovo, of the 300 MW installed power.

The capacities of renewable energy in FYR of Macedonia make eight HPP, of the total power of 504 MW, 40 small HPP of the total power of 40 MW, 38 Solar power plants of the total power of 38 MW, 16 wind turbines of the power 35 MW and one biogas power plant that has the capacity of 1 MW.

According to the results of the explorations performed until now, the coal represents the most important nonrenewable source of energy in Montenegro and it will hold that role in

the next couple of months. The reserves of brown-lignite coal in the wider area of Pljevlja, according to the Strategy of the development of energy in Montenegro until 2025, are estimated to be 200 million tons, while the hypothetic reserves of brown coal in the area of the municipality of Berane are 18.5 million tons, with higher out of balance reserves. Montenegro produced 2 million tons of lignite during 2012. The largest part of lignite is used in thermal power units, having in mind that half of the electricity is produced out of coal.

According to the expectations, the dominant usage of coal in Montenegro will be the usage in thermo energy facilities for production of electricity and perhaps heating energy. At the moment, the state of the Company for exploitation of coal can be validated as problematic, that is the consequence of the economy restructuring and disappearance of the large coal consumers. Because of that, efforts are made in order to ensure their long term and stabile business through the processes of privatization of the mines.

To the problems of climate changes, increase in pollution globally and spending deposits of fossil fuels, modern energy systems respond by turning towards renewable energy sources and modern technologies directed towards decrease of the fuels with the greenhouse effect. Construction of the capacities on the new renewable sources (fuels) is long and expensive process followed by many uncertainties.

Among the highest priority problems of the use of RES are complex procedures for investments, high level of initial investments and instability of energy supply, especially if we have in mind solar and wind energy. Energy inefficient use of biomass and consequent forest destruction and gradual loosing of stable electricity sources as well as insuficcial investing in the conventional power plants that loose on the market because of the high subventions for RES are some of the problems that are part of the time schedule.

Accordingly, it is expected that coal even by activating all available green capacities in the energy systems of many countries, in Serbia as well, remains indispensable energy source. This is supported by the recent recommendations of the European Committee to end the expensive subsidization of the RES. These guidelines are although not binding and should ensure much needed investments in the conventional power plants.