

According to a World Bank study, over 1,000 people die each year as a result of air pollution in North Macedonia. At the end of 2019, the government led by Social Democrat Prime Minister Zoran Zaev adopted the Strategy for Energy Development until 2040, in line with global energy policies, especially those of the Energy Community.

As the world moves towards decarbonisation and green energy, North Macedonia is executing an ambitious national energy strategy, which foresees a 66% reduction of greenhouse gas emissions from the energy sector compared to 1990 by 2030. Lignite, which is used for more than a half of the country's power generation, has been responsible for huge air pollution in the country in the last decade, particularly in winter. With the new energy strategy until 2040 the Balkan country, with a population of 2mn, is now aiming at phasing out coal, to focus on renewable energy sources and gasification projects.

This April, "the government adopted the revised national contribution to the Paris Agreement, which states that by 2030 greenhouse gas emissions from the energy sector should be reduced by 66%," the government said in a statement emailed to bne IntelliNews. There are several renewables projects underway in North Macedonia, making the country an unexpected frontrunner in the region as it embarks on its energy transition. The Energy Community said recently that North Macedonia remains the only country in the Western Balkans that has expressed its intent to gradually phase-out coal. Zaev also said that in the field of energy transition and procedures for closing coal-fired power plants, North Macedonia is ahead of several European countries. In the second strand of the transition away from coal, in March the country signed three documents with Greece making it an official partner in a major gas projects in the neighbouring country.

Energy generation after REK Bitola

The country's biggest thermal power plant complex REK Bitola, which uses coal from the adjacent mine, has been the most important energy producer in the country for the last 40 years. However, it already reached the final years of its life, while the available quantities of lignite in the mines are decreasing gradually. Additionally, the quality of lignite is getting worse.

"Given the lifespan of REK Bitola, as well as reduced exploitation opportunities of lignite, it is clear that we can expect the closure of REK Bitola's units, one by one by around 2030.

The closure of the first block can be expected in 2025," the government said.

The government and the state-run power producer ESM are already taking concrete steps to find a solution to replace the electricity production from REK Bitola thermal power plant. At the moment, technical documentation is being drafted for the construction of several

photovoltaic power plants at the site of the old mine in REK Bitola, with an installed capacity of 200 MW to 300 MW, the government told bne IntelliNews. Construction of a gas-fuelled power plant with capacity of 200 MW to 450 MW is also planned, taking into account that the construction of the gas network in the country is advancing at an accelerated pace. The planned investment is expected to be implemented in the next two to five years.

“We should be aware that the energy transition and decarbonisation of the Macedonian economy is a process with financial implications. The implementation of the strategy’s programme, which is in the final phase of preparation, envisages investments in the energy sector of approximately €4.7bn in the first five years,” the government said.

The projects will be implemented through various models, including budget funding, private investment, concessions and public-private partnerships, as well as through grants and donations by international financial institutions. Government investments would range from 10% to 15%.

As in other parts of the Central and Eastern Europe (CEE) region, notably Poland, there are concerns about the future of communities in areas that rely on coal mining or coal-fuelled power plants.

“The process of energy transition in North Macedonia will not be successful unless a fair transition is made to the coal-intensive regions, and for that purpose the government in cooperation with the EU Delegation in Skopje and the European Bank for Reconstruction and Development (EBRD) has launched a project dubbed Just Transition Diagnostic,” according to the statement.

The project will last one year and should provide a complete overview and plan on how to make a fair transition in the affected regions, the costs of the transition, as well as sources of funding. Preparation of strategic and legal documents has been supported by the USAID, the UK embassy in Skopje, the EBRD, the European Investment Bank (EIB), KfW and the World Bank.

Renewable energy sources

One of the biggest projects contracted lately is that of two photovoltaic plants at the former TPP Oslomej coal mine. In April, North Macedonia selected Turkey’s Fortim Energy Electric and Bulgaria’s Solarpro Holding as private partners for this project with capacity of up to 50 MW each. The project, the first solar park to be built by ESM, is estimated to cost €80mn. Located in the western part of the country, the park is expected to supply 20,000 families with electricity. The public-private partnership (PPP) agreement will be granted for a period of 35 years, after which the private partner will be obliged to transfer the ownership rights

of the photovoltaic (PV) power plants to ESM. This is the second significant investment by Bulgaria's Solarpro in North Macedonia, it won the tender for construction of a 10MWp solar power plant in the village of Manastirec, Makedonski Brod in 2020.

In March, North Macedonia launched the construction of a new 30MW wind park in the south of the country, a project worth €40mn, with the help of Slovenian investors. This will be the second wind park developed in North Macedonia and will be located in the southern Bogdanci municipality. The new wind park project dubbed Gevgelija will produce electricity of 72 GWh. The investors are Slovenian company Interenergo, part of Austrian Kelag group, and Trigal, which is a joint venture founded by Germany's KGAL and Slovenian insurer Zavarovalnica Triglav.

ESM is currently implementing the second stage of the Bogdanci wind park by adding 13.2 MW capacity with installation of four new windmills, a project worth €21mn. The first stage of the Bogdanci wind park, worth €55mn, was completed in 2014 with the installation of 16 wind turbines and capacity of 36.8 MW. It launched operations in summer 2015. The government announced in February that North Macedonia will receive a €2.4mn grant from Germany's KfW bank aimed for renewable energy source projects and the energy transition from coal. The projects do not stop here. Zaev recently announced that Germany's WPD plans to develop a major wind park project in the country's northeast with installed capacity of 400MW, a potential investment of €500mn. The project has not yet been approved.

According to the International Renewable Energy Agency (IRENA), North Macedonia increased the production of energy from renewable sources to 827 MW last year, which is up by an annual 10.1% and is in line with the global average of 10.3% growth. With this growth, North Macedonia is in third place among the countries in the wider region, behind Cyprus, which recorded an increase in energy production from renewable sources by 15.2% to 371 MW, and Turkey with a growth of 10.8% to 49.4 GW. The energy transition plan envisages an increase of renewable sources to 43% of total energy production until 2040, and a 55% reduction of greenhouse gas emissions compared to the 1990 level. There are a total of 276 power plants in North Macedonia, with a total installed capacity of 2,069.21 MW, including 155 photovoltaic plants with total capacity of 34 MW, 103 small HPPs (112 MW), one wind park (36.8 MW) and three biogas plants (7 MW).

According to the energy strategy, energy produced from renewable energy sources (RES) is mostly used for the heating and cooling sector, while the largest greenhouse gas emission savings are in the electricity sector. The county has a technical potential of 7.3 GW for the use of RES for electricity, especially from solar and wind power sources.

The positive scenario foresees an increased use of RES will lead to a reduction of North

Macedonia's dependence on energy imports, a less negative impact on the environment and greater participation of local population in the energy sector. This would also have a positive impact on the health of the population as a result of a reduction of air pollution and proper waste management.

Gas projects in Greece

The gas projects in Greece, in which North Macedonia will participate, are very important for the tiny Balkan country. They are related to the construction of a liquefied natural gas (LNG) terminal in Alexandroupoli in northern Greece and a nearby gas-fired power plant. North Macedonia has launched an ambitious gasification plan for the entire country, which is being implemented in three phases, and is expected to bring natural gas to the entire territory of the country. Complete gasification is expected after 2022.

Zaev said recently that the country will invest around €400mn in the LNG terminal to gain a 10% share in this project and €370mn in the 800-MW Alexandroupolis gas-fired plant equal to a 25% participation.

The floating LNG terminal approximately 17.6km southwest of Alexandroupoli, Greece in the Aegean sea will have storage capacity of 5.5bn cubic metres.

Currently North Macedonia has only one connection for import of natural gas with Bulgaria and is 100% dependent on imports. In order to ensure security of supply, the country is developing other supply routes.

The projects are of geostrategic interest, as they will make North Macedonia a major transit gas point from Greece to Serbia, Kosovo and further to Western Europe. This will also end the monopoly in gas supply, from Russia via Bulgaria, and will create an opportunity for a permanent and stable supply of natural gas to the country.

Three memorandums of understanding were signed by North Macedonia's National Energy Resources (NER) and ESM with Greek companies Kopelozu Group, Gastrade and Damco Energy for these projects.

The gas interconnector with Greece is supported by the EU and bilateral donors to the Western Balkans. The interconnector will be built between the villages of Bogorodica and Stojakovo in North Macedonia.

The interconnector with Greece is also important as it will enable the potential connection of North Macedonia with the Trans Adriatic Pipeline (TAP) gas pipeline and LNG terminals on the Aegean coast.

Revision of energy strategy sets more ambitious goals

The revised Strategy for Energy Development until 2040 foresees promoting the use of

renewable energy sources and energy efficiency, participation in regional and international energy markets and reducing the use of fossil fuels for energy production.

The aim of the strategy is to reduce dependence on imports and increase energy security.

In comparison, the EU's energy strategy sets more ambitious goals — at least 27% of total energy generation to be from RES by 2030, which in June 2018 was revised to 32%.

The EU ambitions continue with new strategic long-term vision for a prosperous, competitive, climate-neutral economy to be achieved in 2050.

These include reducing greenhouse gas emissions, improving energy efficiency and increasing the share of renewables. The EU has also created an energy roadmap for 2050, in order to achieve its target of reducing greenhouse gas emissions by 80-95% compared to 1990 levels.

North Macedonia's target for renewable energy sources for 2020 was 23% of gross final energy consumption, according to the strategy.

The energy sector accounts for about 70% of total greenhouse gas emissions. Greenhouse gas emissions from the energy sector include emissions from fuel combustion in energy transformations, transport, industrial, residential, commercial and agricultural subsectors, as well as fugitive emissions (from mines). Other contributing sectors include waste, industrial processes and agriculture.

Forestry is the main purifier of CO₂ emissions. Out of the country's total area of about 2.5mn hectares, forests and forest land cover about 1.3mn hectares. Due to intensified forest fires, significant fluctuations in net emissions are evident.

North Macedonia's greenhouse gas emissions per capita are approximately 30% lower compared to the EU. Most of the SO_x and NO_x emissions in the energy sector came from REK Bitola.

Putting a price on carbon

Coal-fired and hydropower plants are the main power generation facilities in North Macedonia. The total installed capacity for electricity generation is 2.06 GW with about 48% from thermal power plants, 34% from large and small hydropower plants, 15% from combined natural gas plants and 3% from other renewable energy sources.

State-run power producer ESM accounts for approximately 70% of the total installed capacity. ESM owns two large coal-fired power plants, REK Bitola and Oslomej. Suvodol and Brod Gneotino are the largest mines, responsible for 98% of the total coal produced for electricity production.

Electricity produced by coal-fired power plants accounts for approximately 60% of the total

domestic production.

Average electricity prices in North Macedonia are lower than the average price in the region. Market integration in the region is expected to reduce energy costs, which will lead to a reduction in the total electricity price.

Costs for natural gas in North Macedonia are higher than in the wider region, but market integration and diversification could bring them in line with the region

ESM recently informed the Energy Community that it will start internal calculation of the carbon price, as the company prepares for the introduction of mandatory legislation which, in line with the global energy and climate trends, will impose higher prices for electricity produced from coal.

For ESM's internal needs, the price of electricity produced by thermal power plants will be taken into account with an additional calculated price of carbon, which will show what the real price of electricity produced by coal is and how the price will look in future following the imposition of payment of the so-called carbon credits per tonne of CO₂ emitted into the atmosphere by manufacturers.

The purpose of the internal calculation of the carbon price (which will not be included in the sale price), is for the company to have a realistic picture of the profitability of certain investments in new facilities or reconstructions of existing production plants, as well as to be an indicator in which direction the production portfolio should be developed based on the calculated prices.

The Energy Community secretariat invited all power manufacturers in the Energy Community contracting parties to design and implement internal carbon pricing with its support, but so far only ESM has accepted. Montenegrin power utility Elektroprivreda Crne Gore (EPCG) is already in the carbon pricing system, introduced in 2020.

Source: bne.eu