



The Republic of

MACEDONIA

The Republic of Macedonia

Fifth Edition

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Preface

This is the fifth edition of the monograph entitled *The Republic of Macedonia*. The first edition appeared in 1993, a few days after the country had been admitted to the United Nations. During the ensuing twenty years since the proclamation of its independence, Macedonia has passed through a process of transition with much enthusiasm as well as with some slowdowns, carrying out an historic and profound reform, and creating new economic, legal, political, cultural and educational systems.

Major advances in parliamentary democracy and local government have been made, and Macedonia has been developing a model of functional multiethnic democracy. It has become a responsible exporter of security via several NATO and EU missions, through the transformation of its army and a comprehensive security system. The 2008 NATO Summit in Bucharest and the 2010 Summit in Lisbon confirmed that Macedonia had fully met all the standards to join the Alliance. In October 2009 and November 2010, the European Commission recommended that the Council open negotiations with the country as well as proceed with the second phase of the Stabilization and Association Agreement implementation. In 2010, the European Parliament adopted the recommendation for opening negotiations, but the Council has not yet made a decision regarding either the Commission's or Parliament's proposals. It remains to be seen whether European and international politics will continue to be frustrated by Greek nationalism in this, the second decade of the 21st century. The achievement of Macedonia's Euro-Atlantic integration, supported by between 80% and 90% of its citizens, has been hampered by the Greek veto, which runs contrary to the Interim Accord signed between Greece and Macedonia under the aegis of the United Nations.

There is no doubt that the proclamation of Macedonia's independence has considerably changed the geopolitical appearance of South-East Europe. The Macedonian Assembly, Government and all citizens have overwhelmingly chosen Euro-Atlantic integration from the very outset. Macedonia's European identity can be recognized in the 1903 Manifesto of the Kruševo Republic and also during the time of the Yugoslav federation (1945-1990), when, as a federal unit with its own constitution and statehood, it exercised its ethnic, linguistic and cultural identities independently and in cooperation with many European and other countries around the world. In fact, only a nation with such a strong cultural identity and vast intercultural capacity could make the Ohrid Summer Festival one of the most prestigious international music and drama festivals, and turn Struga into the world's capital of poetry.

During the Second World War Macedonia was a member of the anti-fascist coalition and, as a successor state to the former Yugoslavia, was also one of the founders of the United Nations. A full 129 UN members recognize the Republic of Macedonia by its constitutional name. Three of them are permanent members of the UN Security Council, and most other countries, including the world's largest and economically strongest, use Macedonia's constitutional name in their bilateral and multilateral contacts and cooperation. Macedonia chaired the sixty-second session of the United Nations General Assembly, as well as also having chaired the Committee of Ministers of the Council of Europe in 2010. People all over the world have come to understand that no nation other than the Macedonians have identified themselves

with the names Macedonia, Macedonians, Macedonian language and Macedonian culture in both distant and recent history.

Macedonia is a very different country in 2010 from what it used to be in 1993. Monographs, like most other books, have the privilege of being impartial witnesses of events. *The Republic of Macedonia* testifies to all these efforts and aspirations, highs and lows during a long transition. It witnessed the influx of about 400,000 refugees from Kosovo in 1999 to whom it offered shelter and protection, making this one of the most successful international humanitarian missions ever. Macedonia is a regional leader according to its reforms for visa liberalization, and the World Bank has several times included it among the top countries in the world in terms of its enhanced business climate. Major reforms have been carried out in the economy and state administration, and most institutions are already fully functional and efficient European institutions according to their standards. Favourable institutional and legal prerequisites have been introduced to attract foreign investment, whilst Macedonia has the lowest flat rate tax (10%) in Europe.

Macedonia achieved the best results in its recent economic history in 2007 and 2008. The world financial crisis had a delayed onset, and the strongest adverse effects were felt in 2009. Yet the careful priming of the economy, low taxes, reduced contributions, anti-crisis measures and successful economic policies have all contributed to Macedonia achieving the third best result in Europe. Specifically, the 2009 GDP fall was only 0.6%, the total public debt amounted to 32% of GDP and the foreign debt was 24% of GDP. The country has a low inflation rate, and the budget deficit has been around 2.5% of GDP for a number of years in a row. As compared with many other countries in the region, the banking sector has shown great resilience, whereas Macedonia belongs to the group of less-indebted countries, retaining a constantly high level of foreign reserves. The maintenance of a low budget deficit and public debt levels below 40% of GDP, as well as securing a fiscal and monetary stability, are the central points of the country's strategy of development.

Macedonia is changing rapidly. Investment in education and information technology increases daily. More than half of the population actively uses the Internet. According to the International Telecommunication Union, Macedonia has had the highest growth of broadband Internet (ADSL, cable, Wimax and Wi-Fi) in the region. With the completion of the 'Computer for Each Student' project in 2010, the computer-student proportion will reach 1.4:1. A nationwide Wi-Fi project aims to spread information technology in rural areas via free wireless Internet connections, extremely important for businesses and the general development of these areas.

The fifth edition has twenty chapters more than the previous one. This means lots of new things have happened in the meantime in Macedonia. Many projects and reforms have been completed while others have begun. We have used, as we always do, official domestic and international data and facts. This monograph is a testament not only to history and heritage, but above all to the present-day generations and their contribution to the very idea of Macedonia. The foreign reader is offered a wide variety of subjects, data and photographs to discover and ideally come to love Macedonia. We, the authors, try to be nothing more than eyewitnesses of a *timeless Macedonia*.



ELEM, the Globočica hydroelectric power plant

ENERGY

Energy Resources

Energy is the basis of the economy and industry, and of the sustainable development of any nation. Macedonia, not being so rich in primary energy resources, has to import nearly 50% of its energy needs: for the most part crude oil, natural gas and high-calorie coals. In recent years, it has also imported electric power as a secondary energy source.

As far as fossil fuels are concerned, Macedonia abounds in low-calorie coals such as lignite, to be found throughout the country at a relatively low depth, near the earth's surface. Total lignite reserves are estimated at approximately two billion tonnes, of which 670 million are geologically confirmed reserves, and of which only about 420 million tonnes are economically profitable for exploitation. Of the geologically established reserves of 670 million tonnes, approximately 38% can be excavated directly from the surface, while underground and mine shaft excavation methods must be used for the remaining reserves. The major lignite deposits in Macedonia are to be found in the regions of Pelagonija, Kičevo, Mariovo, Tikveš (Negotino), Pehčevo and Berovo. There are also some reserves in the regions of Katlanovo, Vevčani and Prespa. At this moment, Macedonia has no known reserves of crude oil or natural gas, but there are studies stating that some

reserves of these energy sources could be found in the region of Ovče Pole.

Macedonia has considerable yet insufficiently utilized renewable energy sources, mostly in the form of the water potential of the major and small hydroelectric power plants, geothermal springs, solar energy, as well as wind and biomass energy. Along with the growth of its energy needs, and with the decrease of fossil fuel reserves and the rise of their prices on the world markets, Macedonia has started paying greater attention to various new options for increasing investments in renewable energy sources. To this end, in recent years, the state has adopted what are known as feed-in tariffs have been adopted, which guarantees that it will buy any energy generated from renewable sources, in particular electric power generated by small hydroelectric power plants, as well as solar and wind power plants. At the same time, the country is making serious efforts to improve energy efficiency and increase savings, and thus decrease specific energy consumption per unit of gross production. All these efforts are aimed at providing sustainable development of the Macedonian economy at the lowest possible costs of primary and secondary energy, which is becoming increasingly deficient.

Electricity

The basis of Macedonia's energy sector is the generation, transmission, distribution and supply of electricity. The electricity sector embarked on a process of restructuring and privatization in 2002. The Macedonian Electricity Transmission System Operator (MEPSO) was established in early 2005, and was further restructured later that year by division into three separate companies: (1) ELEM, a joint-stock company for electricity generation, consisting of all major thermoelectric power plants using lignite, as well as seven major hydroelectric power plants; (2) Negotino Thermoelectric Power Plant, a separate company for electricity generation using mazut (fuel oil); and (3) ESM (Elec-

tric Power Company of Macedonia), a joint-stock company for electricity distribution and supply. ESM was privatized in 2006 by selling 90% of its shares to the Austrian company EVN. The other three companies, MEPSO, ELEM and TE Negotino, remain in full state ownership.

ELEM is the largest electricity producer in Macedonia with a total installed capacity of 1,331 MW, of which 800 MW are from the Bitola (3 x 225 MW = 675 MW) and Oslomej (1 x 125MW) thermoelectric power plants, whereas the remaining 531 MW comprise the installed capacity of Macedonia's major hydroelectric power plants (Vrutok, Vrben, Raven, Tikveš,



Coal mining at REK Bitola

Globočica, Špilje and Kozjak). Electricity production from all thermo- and hydroelectric power plants in an averagely good hydrological year is between 5.5 and 6 billion kWh, and it satisfies between 75% and 80% of the country's electricity requirements. For the normal operation of the two thermoelectric power plants at Bitola and Oslomej ELEM excavates and uses about 7 million tonnes of lignite from its own coalmines at Suvodol (Bitola region) and Oslomej-Zapad (Kičevo region). A new surface coalmine, Brod-Gneotino, situated near the existing Suvodol mine, is currently being opened, planned to provide up to 2.5 million tonnes of lignite annually for the needs of the three thermo-blocks of the Bitola thermoelectric power plant.

TE Negotino is the second largest electric power plant with a capacity of 210 MW. Yet, owing to the high price of crude oil used in this power plant, it is only ever activated in cases of necessity, for system maintenance purposes, or as a cold reserve for the needs of the electricity generation system.

There are several small hydroelectric power plants in Macedonia with a total installed power of approximately 40 MW. They are not of any major significance for the country's energy balance, but they nevertheless contribute to the improvement of the energy situation, raising the percentage of electricity generation from renewable sources. These small hydroelectric power

plants are partly privately owned, partly owned by the EVN distribution company. The seven most important small hydroelectric power plants are used in what is known as the ROT pilot project (Rehabilitate, Operate and Transfer), which was used for the first time in Macedonia in 2002, and which proved to be a successful model for the entrance of private capital into the energy sector.

The total electricity consumption in Macedonia reached about 8.6 billion kWh in 2008, and it has continued to grow by approximately 4% every year. About 26% of this figure is consumption by what are known as eligible (direct) consumers, mainly consumers within the metal industry directly connected to the high-voltage network. Individual households with nearly 700,000 electric meters, along with the small and medium-sized industries, belonging to the category known as 'tariff consumers', consume some 5 billion kWh annually, whereas the rest is accounted for by electricity losses in the transmission and distribution networks.

The heart of Macedonia's electricity transmission system consists of 400 kV power lines, four 400/110 kV power transformer stations, as well as an extensive network of 110 kV long-distance power lines. The electricity transmission system boasts 524 kilometres of 400 kV power lines, 103 kilometres of 220 kV

power lines, and 1,480 kilometres of 110 kV power lines. Macedonia's electric power system is connected via two 400 kV long-distance power lines to Greece (Salonika and Florina), one 400 kV power line to Kosovo, as well as one 400 kV long-distance power line to Bulgaria, constructed in 2008. Preparations are currently under way for the construction of another 400 kV long-distance power line to Serbia. The building of a new 400/110kV power transformer station in Štip is also being planned. Both projects will considerably improve the power transmission rating and reliability of Macedonia's electricity system and reduce transmission losses.

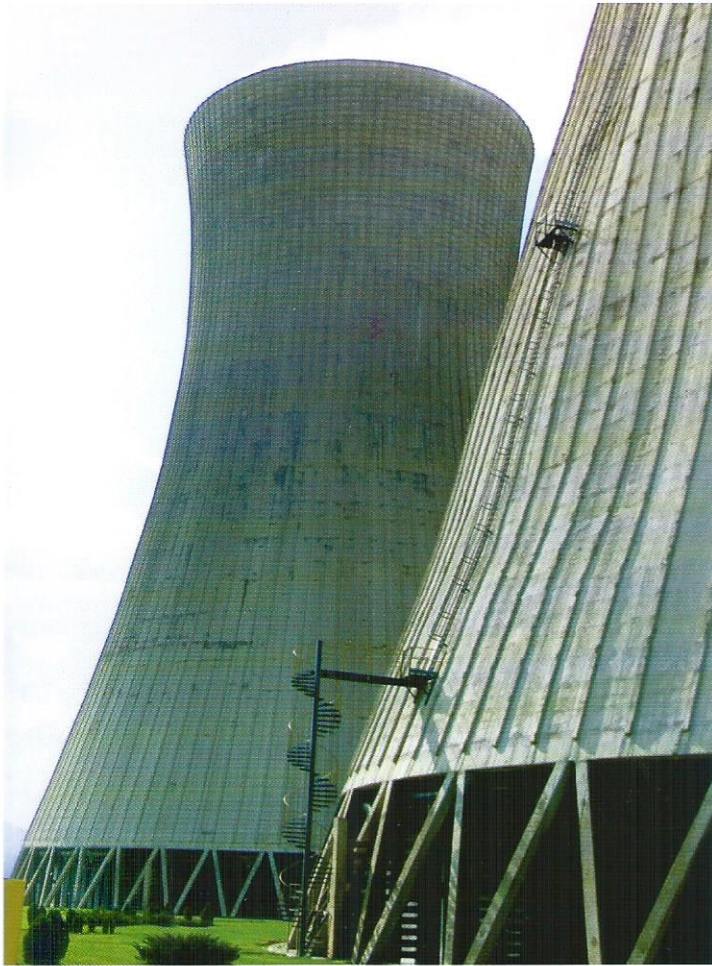
The country's development plans envisage the construction of new generation facilities, independently or in partnership with local and/or foreign companies. An electric power and heating plant, Te-To, is currently being built in Skopje (240 MW) by the Toplifikacija joint-stock company, Skopje and foreign partners, which became operational in 2010. The construction of the Sveta Petka hydroelectric power plant (formerly Matka, 36.4 MW) on the River Treska should be completed by mid-2010. Other projects of interest to foreign investors include the two hydroelectric

power plants, Čebren (333 MW, the first reversible hydroelectric power plant in Macedonia) and Galište (194 MW) on the River Crna, the Boškov Most hydroelectric power plant (70 MW), as well as the cascade system of 12 hydroelectric power plants on the River Vardar (with a total installed capacity of 325 MW and annual production of 1.3 billion kWh) known as the Vardar Valley. According to the studies made so far, there are about 400 potential locations in the Republic of Macedonia for the construction of micro- and small hydroelectric power plants, and the plan is for them to be constructed through private initiatives.

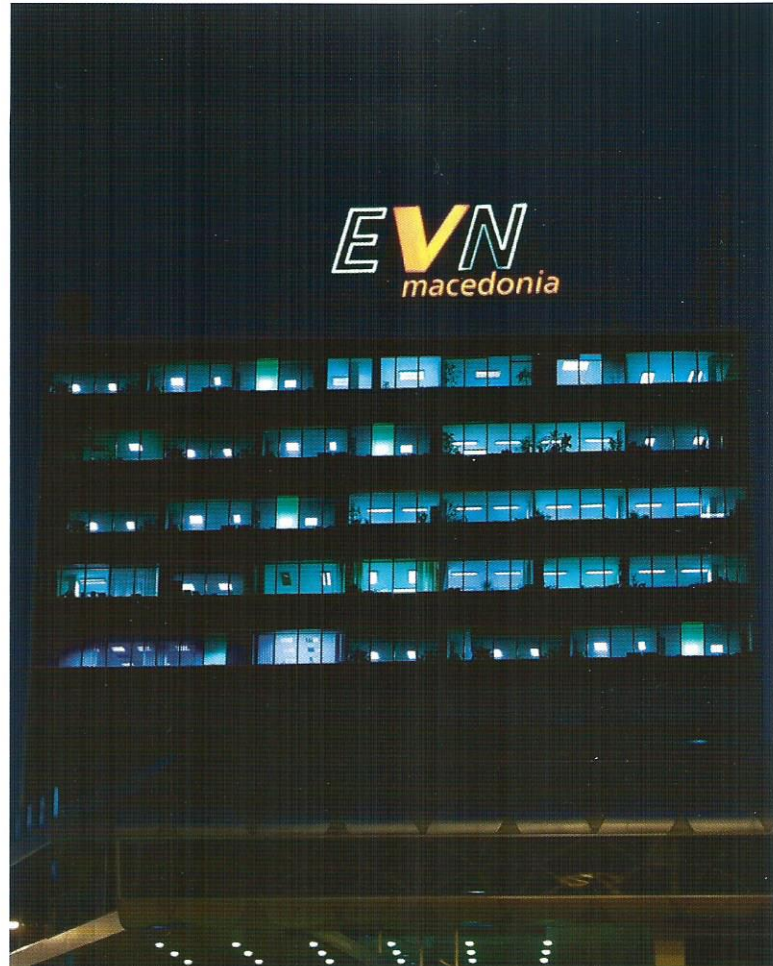
Among the thermoelectric power plants planned the construction of the combined gas electric power and heating station within the framework of Železarnica (Iron Works), Skopje, was completed in 2009. Two thermoelectric power plants using local lignite, Negotino 2 (300 MW) and Mariovo (300 MW), are to be finalized in the near future. At the same time, Macedonia is seriously thinking about and preparing for its own nuclear programme, whose end result will be the construction of the first nuclear power plant before 2030, once the country exhausts most of its lignite reserves.



Te-To, electric power and heating plant, Skopje



The REK Bitola thermoelectric power plant



EVN Macedonia



The MEPSO dispatching centre



OKTA refinery

Oil and Oil Derivatives

Macedonia has a single refinery for crude oil processing, OKTA, situated in the vicinity of its capital, Skopje, and owned by the Greek company Hellenic Petroleum. OKTA has an annual capacity for the processing of 2.5 million tonnes crude oil, even though it has so far processed a maximum of 1.36 million tonnes, in 1988. Following the construction, in 2002, of the oil pipeline between Salonika and Skopje, this refinery became a leader in the region and now supplies not only Macedonia's market with its 'white' derivatives and mazut, but has also recorded considerable exports to Kosovo and south Serbia.

There are two other major suppliers of oil and oil derivatives on the Macedonian market. These are the Macedonian company Makpetrol, boasting the largest number of forecourt petrol pumps in the country (44%) and the largest share of retail petrol trade, and the company Lukoil (10.4%), showing the highest growth rate in the market of oil and oil derivatives in the past few years. About 14% of the pumps are run by OKTA (14%), while the remaining 38% are privately owned. Most of the oil and oil derivatives are used for transport, central heating, and industry; additionally, a part of it is also used for electricity generation.



Lukoil, petrol station in Skopje

Natural Gas

The use of natural gas in Macedonia is still in the developing stage. The GAMA 800 gas pipeline was built in the period 1993-1996 and extends from Deve Bair to Skopje; it is 98 kilometres long and has a diameter of 530 mm. This gas pipeline is run by the GAMA joint-stock company, which is 50% state-owned and 50% owned by the Makpetrol company. The total nominal quantities that can be conveyed through this gas pipeline system amount to 800 million cubic metres of natural gas at a working pressure of 40 Bar. Yet the system has only been utilized by up to between 8% and 12% of its maximum capacity over the past ten years. The chief users of natural gas in Macedonia are some 21 industry plants situated near the gas pipeline in Kumanovo and Skopje, in addition to the central heating companies Toplifikacija, Skopje, and Energetika, Skopje, which utilize it as primary fuel in

their production systems. Natural gas has a huge potential as an energy source, particularly in households, and also for electricity production in combined electric power and heating plants, whose construction is planned for in the future. A national strategy is currently being prepared for the development of the gas transmission network throughout the country, as well as a feasibility study for the economic viability of some branches of this network. The major routes of development of the gas transmission network are Skopje-Tetovo-Gostivar, and Skopje-Veles-Štip, with extensions to Prilep and Bitola, as well as Strumica. Particular attention should be paid in the future to a faster natural gas development of the country, development of gas distribution networks in the urban areas, and a large-scale use of natural gas in industry, households and transport.

Renewable Energy Sources

Geothermal Energy

The presence of powerful volcanic and seismic activities has afforded the Republic of Macedonia a large number of significant geothermal and thermo-mineral springs. At least 18 geothermal fields have been discovered so far with more than 50 geothermal springs, wells and boreholes, and a total flow of 1,000 litres per second. Of particular significance are the regions of Gevgelija, Strumica, Kočani, Skopje and Debar. The temperature of these geothermal and geomineral springs is moderate, usually between 20°C and 70°C; it is rare to find springs with water temperatures

of up to 100°C. These thermal springs cannot be directly used for electricity generation, but they can be used in a process of electricity substitution, such as water heating, or central heating of rooms, buildings and greenhouses in agriculture. Greater attention will be paid to this area in the future; the explorations will be focussed on the possibilities for the discovery of new springs and the utilization of geothermal springs as an important renewable resource, particularly because of the exceptionally favourable environmental aspects and the wide range of possible uses.

Solar Energy

Macedonia has excellent weather conditions for the use of solar energy, either in the form of photovoltaics for electricity generation, or as a thermal energy source for water heating, and thus as a substitution for other energy sources. Macedonia abounds in sunny days, on average 200 days annually; more specifically, the number of useful sunny hours averages between 2,100 and 2,500 each year. This is a good basis for investments in equipment for direct (photovoltaic) and indirect (thermal) exploitation of this type of renewable energy. Following the introduction of extremely favourable tariffs at which electricity produced by solar power plants will be purchased, the interest in the construction of solar power plants in Macedonia has grown considerably. The

first power plants of this kind are expected to be built soon. In the meantime, in order to increase the efficiency of energy use, the Government has launched an initiative for subsidizing up to 30% of investments, to the maximum of €300 per household, for all users who are willing to include solar panels for water heating in their homes. The initiative was widely accepted and a large number of households have decided to buy and install such solar panels. The Government continues to encourage the use of solar energy in households, in particular as a substitute for a much more sophisticated energy resource – electricity – in water heating and domestic heating.

Wind Energy

Macedonia is a predominantly hilly and mountainous country, cut by rivers, valleys and ravines, which provide moderately good conditions for the production of energy harnessed from the wind. Starting from 2005 and in cooperation with the Ministry of Economy, ELEM launched a campaign for the determination of the potential for electricity generation using wind, and also of the possible locations for the construction of future wind farms. Four measuring stations on four potential sites were built in 2006, and satellite measurements give promising figures and parameters about the use of wind energy. Continuous measurements have been performed at these sites (Šašavarlija, Štip region; Bogoslovec, Sveti Nikole region; Mt Kožuf and Bogdanci) of wind quality and strength over a period of more than two years, and the conclusion is that viable wind farms can indeed be built there.

In cooperation with the EU, ELEM has prepared a feasibility study about the justification of investment in wind farms, and has ranked the quality of conditions on these four sites. At the same time, in cooperation with the World Bank, ELEM is currently installing measuring instruments on four new potential sites for the development of water farms. Electricity generation using wind is one possible way in which we can increase the percentage of what is known as green energy, i.e. energy generated from renewable sources. This should be one of ELEM's developmental objectives, bearing in mind that special tariffs are offered for electricity generated in this way by the electricity market operator. There are also other projects for the construction of wind farms for electricity production, such as those carried out near the town of Kruševo and along the valley of the River Vardar by private investors.

Biodiesel and Bioethanol

Important efforts have been made in the past few years for organization of the production of primary energy sources using natural bio-products, such as biodiesel or bioethanol. The first biodiesel production plant of the Makpetrol company opened in 2008; it has an annual production capacity of 25,000 tonnes and is based on imported raw materials. Makpetrol has also started the production of the environmentally more acceptable B6 fuel,

which, in addition to fossil diesel, contains up to 6% biodiesel. Macedonia has good preconditions for the organized production of bioethanol, based on wood industry waste materials such as sawdust, or cut vine-branches, fruit tree branches and rice peel, which are ubiquitous in this country. Bearing in mind this fact, we can expect to see the first bioethanol production plants in Macedonia very soon.



Makpetrol, biodiesel production plant

Energy Regulatory Commission

The Energy Regulatory Commission was established in January 2004 and has so far greatly contributed to the liberalization of the energy market in the country. It is independent in its activity and decision-making. The Commission is composed of five members, who are appointed and dismissed by the Assembly at the proposal of the Government.

The Energy Commission monitors the energy market in order to provide effective competition and efficient operation of the market and promote the protection of the rights of energy users. It is authorized to issue licences for the performance of energy activities, it adopts methodologies for price setting and sets the prices of electric power, natural gas, thermal and geothermal

energy, oil derivatives, as well as tariff systems for the sale of specific types of energy.

A complaint can be lodged against any decision of the Regulatory Commission to a commission established by the Assembly of the Republic of Macedonia. All decisions are published in *The Official Gazette of the Republic of Macedonia* and on the Commission's website (www.erc.org.mk). The decisions are obligatory for energy companies.

The Commission cooperates with other regulatory bodies, furthering the development of regional energy markets. It is a member of the Regional Regulatory Board of South-East Europe and of the Energy Regulators Regional Association (ERRA).