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Energy management in South East Europe
(Achievements and Prospects)

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Preface

The study “**Energy Management in South East Europe (Achievements and Prospects)**” examines the energy characteristics and energy policy of the region as a whole and provides a detailed review of each of the twelve countries situated in this part of Europe.

Particular attention is focused on the development of nuclear energy, the furthering of regional energy cooperation and the establishment of South East Europe as a transit corridor for the Europe-bound exports of oil and natural gas from Russia and the Caspian region.

Furthermore, there is an in-depth analysis of the headway achieved in the implementation of the regional and Pan-European energy infrastructure projects, including Pan-European gas pipelines South Stream and Nabucco. The South East European countries’ prospects in terms of energy policy and development are also extensively outlined.

The author expresses his sincere gratitude to prof. Kari Liuhto – the Director of the Pan-European Institute in Turku, for the readiness to present the study in the Institute’s electronic publications.

Sofia, December 2012

PART I: SOUTH EAST EUROPE AT THE START OF 21st CENTURY

1. Which countries constitute South East Europe?

South East Europe (SEE) is commonly identified with the Balkan Peninsula, generally called the Balkans. It borders the Black Sea to the east and the Mediterranean Sea to the west and south (its arms are the Aegean Sea located between Turkey and Greece, the Ionian Sea between Greece and Italy and the Adriatic Sea locked between the Apennine peninsula and Dalmatia). The northern border of the Balkan Peninsula is however hard to define but is predominantly considered to go along the Danube, the Sava river and its tributary the Kupa river (1).

Map 1. The Balkan Peninsula



Source: http://en.wikipedia.org/wiki/File:Balkan_topo_en.jpg

A total of 13 countries are situated entirely or partly in SEE (the Balkan Peninsula). Albania, Bosnia and Herzegovina, Bulgaria, the Republic of Macedonia, Montenegro and Kosovo lie entirely within the boundaries of the region. Greece has 84% of its territory in the designated region, Serbia – 74%, Croatia – 49%, Slovenia – 27%,

Romania – 9% and Turkey’s share is 3%. Since a mere 0.2% of Italy’s territory belongs to that area, it is practically not regarded as a SEE country (**see Appendix 1**). Geographically Turkey has the most disputable place in the region. Encyclopedia Britannica doesn’t classify it as a Balkan state, whereas Columbia Encyclopedia and Wikipedia consider that part of Turkey’s territory which is located in Europe as legitimately belonging to the Balkans (2).

Below is provided a short overview of each of the countries.

Albania is situated in the Western Balkans with a territory of 28 748 km² and a population of 3.2 million people. It declared independence on 28 November 1912. Under the current Constitution its form of government is defined as a parliamentary republic. Albania has been a member state of the UN since 1995, of the Organisation for Security and Cooperation in Europe (OSCE) since 1991, of the Council of Europe since 1995, of NATO since 2009. In April 2009 the Albanian government formally submitted its application to join the European Union (EU).

Bosnia and Herzegovina is situated in the western part of the Balkan Peninsula. It has a territory of 51 129 km² and a population of 3.8 million people. It became an independent state on 5 April 1992 and is governed as a federal democratic republic. It comprises two entities, Republika Srpska and Federation of Bosnia and Herzegovina, with a third region which is the autonomous Brčko District. The country has a multi-ethnic structure: Bosniaks account for 48% of the population, Serbs – for 37.1% and Croats – for 14.3%. It has been a member state of the UN and OSCE since 1992 and of the Council of Europe since 2002.

Bulgaria is situated in the eastern region of the Balkan Peninsula. Its territory is 110 912 km² and its population amounts to 7.3 million people. The country’s origin dates back to the 7th century (681). Under the national Constitution its form of government is defined as a parliamentary republic. Bulgaria has been a member state of the UN since 1955, of OSCE since 1973, of the Council of Europe since 1992, of NATO since 2004 and of the EU since the beginning of 2007.

Greece is located in the eastern part of the Balkan Peninsula. It has a territory of 131 475 km² and a population of 11.3 million people. The country historically inherited the ancient Greek civilization. Under the current Constitution it is defined as a parliamentary republic. Greece has been a member state of the UN since 1945, of the

Council of Europe since 1949, of NATO since 1952, of OSCE since 1973 and of the EU since the start of 1981.

The Republic of Macedonia is situated in the Western Balkans. Its territory is 25 713 km² and its population is estimated to be 2.1 million people being comprised of two major ethnic groups: Macedonians (around 65%) and Albanians (approx. 25%). The Republic of Macedonia became an independent state on 8 September 1991 and under the current Constitution is a parliamentary republic. It was admitted as a UN member state in 1993 under the name of The Former Yugoslav Republic of Macedonia (FYROM). It joined OSCE and the Council of Europe in 1995 and was formally granted candidate country status by a European Council decision of December 2005.

Romania is situated in the north-eastern part of the Balkans. It has a territory of 238 396 km² and a population of 21.5 million people. Romania is the historical descendant of the ancient land of Dakia. Under the current Constitution it has a parliamentary republic form of government. The country has been a member state of the UN since 1955, of OSCE since 1973, of the Council of Europe since 1993, of NATO since 2004 and of the EU since the beginning of 2007.

Serbia is situated in the Western Balkans with a territory of 77 474 km² and a population amounting to 7.3 million people. The Serbian state was founded back in the 7th century. It has been existing as an independent state in its present-day form since 5 June 2006. Under the current Constitution Serbia is a parliamentary republic. It has been a member state of the UN and OSCE since 2000 and of the Council of Europe since 2003. It was granted EU candidate country status in December 2011.

Slovenia is situated in the Western Balkans. Its territory is 20 273 km² and it has a population of around 2 million people. The Slovenian state originated in the 7th century. It has been existing as an independent state in its present-day form since 25 July 1991. Under the current Constitution it is a parliamentary republic. Slovenia has been a member state of the UN and OSCE since 1992, of the Council of Europe since 1993, of NATO since 2004 and of the EU since 1 May 2004.

Croatia is located in the Western Balkans with a territory of 56 594 km² and a population of 4.4 million people. As a state it originated in the 9th century. It has been an independent country in its present-day form since 21 June 1991. Croatia is a democratic republic and has been a member state of the UN and OSCE since 1992, of

the Council of Europe since 1996, of NATO since 1996. It is expected to join the EU officially in 2013.

Map 2. The SEE countries*



* Without Kosovo that is in process of international recognition

Source: http://www.geographic.org/maps/europe_africa_middle_east.html

Turkey is situated in the south-eastern part of the Balkan Peninsula and largely in Asia. Its territory is 783 562 km² of which just a mere 3% (23 764 km²) is in Europe. Its population amounts to 72.5 million people. The modern Turkish state is the historical descendant of the Ottoman Empire. It was declared a republic on 29 October 1923. Turkey has been a member state of the UN since 1945, of the Council of Europe since 1949, of NATO since 1952 and of OSCE since 1973. It was granted EU candidate country status in 1999.

Montenegro is in the Western Balkans. It has a territory of 13 812 km² and a population of approx. 630 000 people. It has a multi-ethnic demographic composition:

Montenegrins are 43 % and constitute the largest group, Serbs are 32% and Bosniaks are 8%. Montenegro is the historical descendant of the medieval state of Duklja which was established between the 5th and 6th century. It has been an independent country in its present-day form since 3 June 2006. Under the current Constitution it is defined as a parliamentary republic. It is a member state of the UN and OSCE since 2006 and of the Council of Europe since 2007. As of December 2010 Montenegro has EU candidate country status.

Kosovo is situated in the Western Balkans with a territory of 10 908 km² and a population of 2.2 million people. Prior to its independence declared on 17 February 2008 Kosovo didn't have a sovereign state status. Under the current national Constitution it is a parliamentary republic. The young country is still undergoing a process of international recognition and until mid-2012 a total of 90 states in the world have formally done it.

2. Specific place of the region in Europe

In terms of their territory size and population the majority of the SEE countries belong to the group of small and medium-sized European countries. An exception, however, is Turkey and, to a lesser extent, Romania. Turkey is the indisputable regional leader as it comes second with respect to territory size in Europe, being surpassed only by Russia, and third with respect to population. In its turn Romania ranks as the 12th largest country in Europe and 10th with respect to population.

The share of the SEE countries constitutes one fourth of the total number of states in Europe (48 in all). Their aggregate territory, no matter whether they lie entirely or partially within the region, is 1 549 000 km² which accounts for 7.7% of all European territory. At the end of 2010 their population stood at 138.3 million people, or 11% of all European inhabitants (**see Table 1**).

In 2010 the aggregate Gross Product (GP) of the SEE countries amounted to \$ 1 926.9 billion (the evaluation is on purchasing power parity basis). As a percentage share it was 5.7% of the aggregate GP of all European countries. On nominal value basis the Balkan states' GP was significantly lower - \$ 1 036.4 billion, or 3.7% of the overall European GP. That very year the Gross Product per capita in SEE, evaluated on purchasing power parity, was \$ 13 800, or 49% of the average European level.

Nominally, the performance was noticeably lower – \$ 9 630, which was 35% of the average European level (see Table 1).

Table 1. SEE countries in Europe (2010)

| Indicator | Value | Share in Europe (in %) |
|---|--------------------|------------------------|
| Territory (1000 square km) | 1 549.0 | 7.7 |
| Population (million inhabitants) | 138.3 | 11.0 |
| Total Gross Product of the SEE Countries (billion US dollars) | 1 926.9*/1 036.4** | 5.7*/3.7** |
| Gross Product per capita*** (US dollars) | 13 800*/9 630** | 49.0**/35.0** |

* On purchasing power parity basis

** On nominal value basis

*** Medium level

Source: The table is compiled on the basis of data from the National Statistics of the SEE countries, 2012, the International Monetary Fund, 2012 and the Vienna Institute for International Economic Studies, 2012.

A bit less is the SEE's share in the European export and import, amounting respectively to around 2.5% and 3% at the start of the present decade. The countries in the region turned out to be predominantly importers of foreign investments. In 2011 the value of foreign direct investments (FDI) that flew into SEE and that were conducted by the countries in the region was about \$ 380-400 billion, or about 2.5% of FDI in Europe. (3)

SEE is by no means a homogeneous region. There exist a number of significant differences among the SEE countries with respect to economic potential, level of development and standard of living. In 2010 the biggest GDP was achieved by Turkey and it was nearly one half of SEE's aggregate GP. Greece ranked second with a GDP of 16.7% of the Balkan states' aggregate GP. Romania came in third with a share of 13.1% (see Appendix 2). Each country proves to hold a different GDP per capita when juxtaposed with its counterparts in the region. Greece was the leader in that respect: in 2010 its GDP per capita evaluated both on purchasing power parity and nominal value basis was respectively twice and almost three times higher than the average score for the region. Closely behind it was Slovenia, which got ahead to rank first in 2011, while

Croatia remained third. The rest of the Balkan countries had a considerably lower GDP per capita **(see Appendix 2)**.

SEE plays a significant role in the European transport infrastructure. The region is traversed by five out of a total of ten Pan-European transport corridors, while one of them has a branch here. Transport corridor 4 connects Bulgaria, Romania, Greece and Turkey with Hungary, Slovakia, Austria, Czech Republic and Germany. Transport corridor 5 provides transport communication between Slovenia, Croatia, Bosnia and Herzegovina, Hungary and Ukraine. Transport corridor 7 passes along the Danube and will connect Bulgaria, Romania, Serbia and Croatia with the other Danube countries. Transport corridor 8 lies entirely within SEE and runs through Albania, Republic of Macedonia and Bulgaria. Transport corridor 9 connects Romania, Bulgaria and Greece with Ukraine, Finland and Russia, and Transport corridor 10 links Greece, Turkey, Bulgaria, Republic of Macedonia, Serbia and Croatia with Slovenia and Austria **(see the Map 3)**.

Apart from its role in the Pan-European transport network, over the past decade SEE has emerged as major transit corridor for oil and natural gas imports transported from Russia and the Caspian region to Europe. Therefore in the future the key emphasis will be placed on the Pan-European gas pipelines South Stream, carrying natural gas from Russia, and Nabucco, which is to deliver gas supplies from the Caspian region to Central and Eastern Europe.

Map 3. Pan-European transport corridors

Source: http://upload.wikimedia.org/wikipedia/commons/thumb/0/00/Pan-European_corridors.svg/400px-Pan-European_corridors.svg.png

3. Governance and political transformation

Over the last decade of the 20th century and the past decade of the current century SEE underwent landmark changes which were part of a global process sweeping through Eastern Europe and the former Soviet Union. They brought about the collapse of the communist regimes in Romania, Bulgaria, Albania and the Socialist Federal Republic of Yugoslavia (SFRY) founded during World War II. As a result the latter was dissolved and replaced by five independent states: Slovenia, Croatia, Bosnia and Herzegovina, Federal Republic of Yugoslavia and Republic of Macedonia. The break-

up inevitably stirred up military conflicts, the longest being in Bosnia and Herzegovina and in Croatia. They ended up with the signing of the Dayton Peace Accords in the mid-90s of the past century.

The break-up process in the Western Balkans, however, was not over. Kosovo, which was an autonomous province within Serbia, aspired to break away and become an independent state thus fuelling a new war conflict that was resolved after the NATO intervention in 1999. The following year, Slobodan Milosevic, the last communist dictator in Serbia, was ousted from power. In 2001 there burst another ethnic conflict, that time between the Albanians and Macedonians in the Republic of Macedonia, again settled after the EU and NATO intervention. In 2006 the state union of Serbia and Montenegro was dissolved and at the beginning of 2008 Kosovo declared its independence.

So, in the course of about twenty years the number of states in SEE doubled - from six they became twelve. The predominant trend in the region's development involved the stability in the Western Balkans, establishment of good neighbourly relations, implementation of democratic and market economy reforms, as well as the integration into the European and Euro-Atlantic organisations.

All Balkan states have a parliamentary republic form of government. Their development is underpinned by the principles of pluralistic political system and market economy. At the start of the second decade of the century all countries in the region, except for Kosovo, are member states of the UN, the Council of Europe and OSCE. A total of seven of them are NATO member states (Greece, Turkey, Slovenia, Romania, Bulgaria, Croatia and Albania) but only four of them belong to the EU (Greece, Slovenia, Romania and Bulgaria). In 2011 Croatia concluded the EU accession talks and signed a Treaty for Accession by virtue of which it will officially join the EU in 2013. Turkey, Republic of Macedonia, Montenegro and Serbia have been already granted EU candidate country status.

Despite the noticeable headway in the stability, promotion of good neighbourly relations, European and Euro-Atlantic integration, SEE continues to be one of the vulnerable regions in Europe. The achieved stabilisation in some of the countries – Bosnia and Herzegovina, Republic of Macedonia and particularly Kosovo – lacks sustainability and requires active international involvement. Now two multinational

peacekeeping forces are deployed respectively in Bosnia and Herzegovina and Kosovo.

A number of unresolved issues in the relations between the SEE countries have turned into an inevitable source of controversies. One of the issues that seem rather intractable is Kosovo's status since its independence hasn't yet been acknowledged by four states in the region, i.e. Serbia, Bosnia and Herzegovina, Romania and Greece. Another regional challenge is the 20-year-long naming dispute between Greece and the Republic of Macedonia. What pose yet another set of serious problems are the diverging positions of the countries with regard to the status of ethnic minorities living in the region.

At the dawn of the current decade the majority of SEE countries were considerably behind the developed European countries in terms of democracy and other principal spheres. That conclusion was highlighted in a series of independent surveys that benchmarked the progress on key issues achieved by the countries in Europe and the rest of the world. One of them was conducted by the Economist Intelligence Unit which annually compiles the Democracy Index reflecting the state of democratic values and principles in the electoral process, political pluralism, the functioning of government, political participation, political culture and civil liberties. Countries are placed within one of the four types of regimes: full democracies, flawed democracies, hybrid regimes and authoritarian regimes. In the 2011 edition published in December last year there was not a single SEE country in the first type of regime. Eight of them - Slovenia, Greece, Bulgaria, Croatia, Romania, Serbia, Republic of Macedonia and Montenegro - were among the countries with flawed democracies. Albania, Turkey and Bosnia and Herzegovina were among the countries with hybrid regimes and Kosovo was not included in the list (**see Appendix 3**).

Another distinguished ranking is that published by Freedom House. It measures the civil liberties and political rights on a scale from 1 to 7 as countries are classified into three groups: "Free", "Partly Free" or "Not Free". According to its latest ranking (January 2012) a total of seven Balkan countries were in the first group. Slovenia was placed ahead of the rest and was the only one scoring 1 on both criteria. Croatia was next getting 1 on political rights and 2 on civil liberties. Greece, Bulgaria, Romania and Serbia scored 2 on both criteria. Montenegro was the last one ranked in this group scoring respectively 3 and 2. The remaining five countries in the region were classified

as “Partly Free”. Kosovo came in last since it could not qualify as “electoral democracy” failing to satisfy Freedom House’s criteria for that (**see Appendix 4**).

It’s worth mentioning the Human Development Index which is compiled annually by the United Nations Development Programme on the basis of life expectancy, literacy, education, standards and quality of living in the countries in the world. In the most recent Human Development Report published in November 2011 only three SEE countries – Slovenia, Greece and Croatia – were ranked among the states with very high HDI. They claimed respectively 13th, 20th and 31st spot among a total of thirty-two European states included in this group. The other SEE countries were in the next group where were ranked between 32nd and 42nd place among forty-three European states with high HDI (**see Appendix 5**).

Finally, there is an overview of the SEE countries’ performance according to the Corruption Perception Index published annually by Transparency International to provide expert assessments of the existing level of public sector corruption. In the CPI rankings released in December 2011 Slovenia was considered the least corrupt country in SEE claiming the 19th place in Europe. It was followed by Turkey (26th place), Croatia and Montenegro (27th place) with the rest of the countries in the region ranking between 31st and 38th place among a total of forty-two European states that were assessed (**see Appendix 6**).

4. Economic development

During the initial ten years of the current century SEE experienced a rapid upward trend in its economic development. That was largely due to the market economy reforms, the termination of armed conflicts, the ongoing process of stabilization and advancement of the good neighbourly relations among the countries in the Western Balkans, the increased volume of foreign aid and the region’s determined involvement in the European integration. The average annual Gross Product growth rate in SEE in the period between 2000 and 2011 was 3.9%, or around one and a half times higher than the average rate in Europe. The greatest growth rate in the period prior to the economic recession was about 4.5% (**see Appendix 7**).

One of the results is that the share of SEE in the European Gross Product has increased by 2% since the start of the century. There was a change in the level of

Gross Product per capita in the region: in 2000 it was 43% of the EU average level and in 2011 it rose to 50% (**see Table 2**).

The volume of foreign direct investments (FDI) in SEE soared notably in the first decade. During the last 10 years of the past century they virtually doubled to rise four times over the first decade of the current century, i.e. from EUR 73.4 billion to EUR 325.1 billion. The biggest surge was recorded before the outburst of the economic recession in Europe in 2009 (**see Appendix 8**).

That trend manifested itself in the economic development of all SEE countries with each one achieving a different individual result. In the period between 2000 and 2011 the highest average rate of GDP growth per year was attained by Kosovo (6.9%), followed by Albania (5.7%) and Serbia (4.4%). At the bottom end of the scale were Slovenia (2.6%), Croatia (2.5%) and Greece (1.8%) (**see Appendix 7**). The most attractive destinations for FDI in the region were Turkey (with a share of 29.2% in the total FDI volume in 2011), Romania (18.3%) and Bulgaria (11.1%). Greece also belonged to the leading bunch of countries having the same share as that of Romania but owing to the financial and economic crisis in 2009 the FDI flow into its economy slumped dramatically to reach a point of withdrawal by foreign investors in 2010-2011 (**see Appendix 8**).

The development of the SEE countries was gravely affected by the global financial crisis of 2008. In the following year the region witnessed for the first time in the century a slump of 2.6% in the average GDP growth rate. Kosovo and Albania were the only countries not experiencing an economic downturn. In 2010-2011 the growth rate was restored in nearly all countries but the performance was considerably weaker compared to the pre-crisis period (**see Appendix 7**). In other words, at the turn of the past decade the trend of more rapid economic growth in SEE as juxtaposed to the majority of other European countries came to an end. As a result in 2009-2011 there was practically no change in the ratio between the GDP per capita in SEE and its average level in the EU.

However, the influx of FDI into the region suffered an abrupt decrease. In 2008-2009 its volume was EUR 21 billion whereas a year later it shrank to EUR 14 billion. It rose just slightly to around EUR 15 billion in 2011. A substantial part of the FDI – respectively EUR 6.8 billion and EUR 9.5 billion - was invested in a single country, i.e. Turkey (**see Appendix 8**).

Table 2. GDP per capita* in SEE (Index EC=100)

| Country | 2000 | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Greece | 84 | 90 | 93 | 94 | 90 | 79 |
| Slovenia | 80 | 88 | 91 | 87 | 85 | 84 |
| Romania | 26 | 42 | 47 | 46 | 47 | 49 |
| Bulgaria | 28 | 40 | 44 | 44 | 44 | 46 |
| Croatia | 49 | 60 | 63 | 62 | 61 | 61 |
| Turkey | 42 | 45 | 47 | 46 | 49 | 52 |
| Republic of Macedonia | 27 | 31 | 34 | 36 | 36 | 35 |
| Montenegro | 35 | 40 | 43 | 41 | 41 | 42 |
| Serbia | 30 | 33 | 36 | 36 | 34 | 35 |
| Bosnia and Herzegovina | 20 | 29 | 30 | 31 | 30 | 20 |
| Albania | 18 | 23 | 26 | 28 | 28 | 30 |
| SEE | 43 | 47 | 50 | 48 | 48 | 50 |

* Evaluated on Purchasing Power Parity (PPP) basis

Source: Eurostat, GDP per capita in PPS, 2012.

Therefore it's no wonder that Turkey was the first to overcome the recession generating one of the highest growth rates in Europe: 9% in 2010 and 8.5% in 2011 (**see Appendix 7**). It was propped up by the surge in the FDI inflow and the 6% rise (from 46% in 2009 to 52% in 2011) in Turkey's GDP per capita viewed as a percentage share of the average level in the EU (**see Table 2**). On the opposite end was Greece where the financial and economic crisis got worse despite the substantial financial bailout by the EU. The overall drop in the country's GDP over 2009-2011 was 10.8% (**see Appendix 7**). Meanwhile, the ratio between its GDP per capita and the EU average performance shrank from 94% in 2009 to 82% in 2011 when Greece was surpassed by Slovenia, which became the SEE leader with 84% (**see Table 2**).

The SEE countries are lagging not only politically but also economically far behind the developed European states. According to the Global Competitiveness Index published annually by the World Economic Forum (held in Davos) they were ranked between 25th and 40th place in Europe (**see Appendix 9**). In the IMD World Competitiveness Yearbook - the world's most renowned and comprehensive annual report on competitiveness based on 329 criteria - were included six SEE states. In 2012 they

were ranked between 19th and 31st place among 31 European countries (**see Appendix 10**).

Doing Business 2012 report which is published by the World Bank Group assesses the business regulations in the individual economies in the world and ranks them on the ease of doing business. The Republic of Macedonia was ranked 10th, Slovenia - 19th and the rest of the SEE countries were placed after 25th spot (**see Appendix 11**). According to yet another report - the Economic Freedom rankings compiled by the Heritage Foundation and the Wall Street Journal - the countries in the region varied between 20th spot (Republic of Macedonia) and 30th spot (Greece). In a similar report – the Economic Freedom of the World published by the Cato Institute in Washington and the Canadian Fraser Institute – their rankings stretched from 14th (Bulgaria) to 39th place (Bosnia and Herzegovina) (**see Appendix 12**).

5. Regional cooperation

The pivot on which the regional cooperation in SEE revolves is economy. In the first decade of the current century the intra-SEE foreign trade soared from EUR 10 to 90 billion which makes a whole nine times. The share of the SEE countries in the overall foreign trade went up too: from 5% in 2000 to around 15% in 2012. However, due to the financial and economic crisis the regional foreign trade experienced a decline in 2009 that was partially reversed in 2010-2011 (**see Table 3**).

The advancement of the regional economic cooperation was mainly a result of the growing industrial potential and the liberalization of foreign trade between the Balkan states. At the end of the first decade the best performance with respect to the foreign trade volume on the Balkans was achieved by Turkey, Greece, Romania and Bulgaria, which generated a total share of 60%. (4). The region-bound segment in the foreign trade volume of all Balkan states, except for Turkey, was more than 15% (5). The regional trade was of much greater importance for the countries in the Western Balkans and especially for those of them that had constituted the former Yugoslavia. The foreign trade volume with the neighbouring countries for the majority of them accounted for a 30-40% share, and for Bosnia and Herzegovina and Montenegro that chunk represented over 50% of their overall foreign trade. (6)

Table 3. Intra-SEE foreign trade and foreign direct investments (2000–2011)

| Intra-SEE Trade/FDI | 2000 | 2002 | 2005 | 2009 | 2010 | 2011 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Intra-SEE Trade (in bill. euro) | 10 | 15 | 50 | 80 | 90 | 95 |
| Share of the intra-SEE trade in the overall SEE foreign trade (%) | 5 | 5 | 8 | 15 | 15 | 15 |
| Intra-SEE FDI (In bill. euro) | 5.0 | 8.0 | 18.0 | 30 | 32 | 34 |
| Share of the intra-SEE FDI in the total FDI in SEE (%) | 2.5 | 3.5 | 5.0 | 8 | 8 | 8 |

Source: National Statistic of the SEE countries, 2002–2012; International Monetary Fund (IMF), UNCTAD STAT, World Trade Organisation (WTO), 2006–2012.

In 2010 the value of foreign trade transactions carried out among Bulgaria, Greece, Turkey and Romania was around EUR 30 billion thus forming a third of the total value of the regional foreign trade. (7)

Over the past 10 years the economic relations among the Balkan states emphasised on the cooperation in the investment field. Compared to foreign trade, the share of intra-SEE foreign trade and foreign direct investments (IFDI) in the overall volume of FDI was considerably smaller. The value of IFDI jumped from EUR 5 billion in 2000 to EUR 34 billion in 2011, but the sevenfold increase was accumulated on a low initial position. In the same period the share of IFDI in the gross regional FDI rose from 2.5% to nearly 8% (**see Table 3**). Measured against the total influx of FDI in SEE the specified percentage is rather negligible. The reason is that, irrespective of the individual Balkan state, the FDI exports were limited and rather less than the FDI imports. Greece and Turkey seemed to possess the greatest potential for carrying out FDI as their share in the FDI exports in SEE was almost two-thirds at the turn of the decade.

The chief role in the existing structures of regional cooperation is played by the South East European Cooperation Process (SEECP). It came into being during the first summit of the heads of state and government of the countries in the region initiated by Greece and held in 1997. SEECP is not a regional organization; it is a multilateral forum for SEE political consultations and initiatives. The eight founding states are: Albania, Bosnia and Herzegovina, Bulgaria, Greece, Republic of Macedonia, Romania, Serbia (by the name of the then state union of Serbia and Montenegro) and Turkey.

Later Croatia (2005), Montenegro (2007) and Slovenia (2010), as well as Moldova (2006) joined the club.

In 2000 SEECP adopted a Charter on Good Neighbourly Relations, Stability, Security and Cooperation, and in the following year - an Action Plan for Regional Cooperation. Over time SEECP has evolved to become the most influential forum in the region considering the current state and future prospects of relations, adopting joint positions, proposing various initiatives for strengthening stability, security and cooperation, and furthering the European and Euro-Atlantic integration.

In February 2008 there was set up within SEECP the Regional Cooperation Council (RCC) featuring all SEE countries. In addition to them, a total of 19 EU member states, USA, Canada, Norway and Switzerland, as well as 15 international organizations are also involved in the Council. The RCC priority areas are the economic and social advancement, infrastructure, justice and home affairs, security, human resources development, parliamentary cooperation, etc.

Another multilateral SEE cooperation organization is the Southeast European Cooperative Initiative (SECI) founded in 1996 with the participation of a total of 13 countries, i.e. all states that officially existed in the region at that time, plus Hungary and Moldova. Its principal purpose is the promotion of democratic development and market economy reforms in SEE. In 2006 was established the Central European Free Trade Agreement (CEFTA). The aim of this organization, also called the new CEFTA (since it has succeeded a previously existing structure composed of other Central and Eastern European countries) is the trade liberalization and cooperation expansion in the Western Balkans.

A number of SEE countries pursue the scaling up of their regional cooperation within geographically more inclusive international structures. Some of the more widely known are the EU (the four member states from SEE are Greece, Slovenia, Bulgaria and Romania), the Energy Community (there are eleven SEE countries in it), the Central European Initiative counting a total of 20 member states (nine of them are situated in SEE: Bulgaria, Bosnia and Herzegovina, Serbia, Romania, Slovenia, Republic of Macedonia, Croatia, Albania and Montenegro), the Organization of the Black Sea Economic Cooperation (BSEC) where Bulgaria, Romania, Turkey, Greece and Serbia are the regional players.

6. Participation in the European integration

Viewed from the current perspective the EU membership is the priority dimension of the foreign policy of all SEE countries. Greece and Turkey embarked on that path way back in the 1960s. Greece became the first SEE state to join the then European Economic Community (EEC) in 1981. For Turkey, however, that road proved to be far longer and it was only granted EEC associated country status. As to the integration of the rest of the SEE countries, it was practically launched after the right conditions for that were in place brought about by the cardinal political transformations in Eastern Europe at the end of the 1980s. Their membership into the EU turned to be the crucial aspect of the already ongoing process of overcoming the post-World War II division of Europe and was facilitated by the political and economic reforms implemented by the former socialist states in their quest to establish the fundamental principles of democracy and market economy.

The applicant countries had to fulfill the necessary requirements for joining the EU. In Article 49 of the Treaty on the European Union it is stipulated that each state which respects the values referred to in Article 2 and is committed to promoting them may apply to become a member of the Union. Article 2 expounds that the Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights persons belonging to minorities. These values are common to the member states in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail. (8)

Apart from those basic requirements the European Council endorsed in December 1993 an additional set of conditions known as the Copenhagen criteria which are to be met by each country aspiring to EU membership. Pursuant to them each candidate country should have:

- stable institutions that guarantee democracy, the rule of law, human rights and respect for and protection of minorities;
- functioning market economy, as well as the ability to cope with the pressure of competition and the market forces at work inside the Union;
- ability to assume the obligations of membership, in particular adherence to the objectives of political, economic and monetary union. (9)

The fulfilment of those criteria didn't happen overnight as the necessary reforms carried out by the SEE countries took time. As a way of encouragement the EU declared that all states in the region had their European perspective once the membership requirements were met. The EU policy in that respect was based on a uniform approach yet taking into account the specific conditions that characterised any individual applicant country. They were laid down in the European Agreements signed between the EU and the Eastern European candidate states.

The EU designed a new mechanism for cooperation with the countries in the Western Balkans known as the Stabilisation and Association Process (SAP). Its constituent elements were the Stabilisation and Association Agreements (SAA) and the Community Assistance for Reconstruction, Development and Stabilization (CARDS), replaced at the beginning of 2007 by the Instrument for Pre-Accession Assistance (IPA) benefiting all SEE countries in the Western Balkans and Turkey. The primary aim of SAP was the advancement of relations by promoting post-military conflicts stabilization, stepping up political and economic reforms and getting the countries associated to the EU. There was applied a tailor-made approach to Turkey as well being carefully adjusted to its domestic conditions and specific place in Europe.

The headway towards their EU membership was judged on the basis of each country's merits and state of preparedness which naturally brought about the uneven time pattern of their EU integration. After Greece, it was Slovenia that first managed to complete its integration, followed by Bulgaria and Romania which were included in a group of 12 Eastern European and Mediterranean states participating in the fifth consecutive EU enlargement. The integration process of the Western Balkan countries and Turkey also gained ground but was considerably slower. Until the end of 2012 the evolution of relations between the EU and the SEE states had the following dimensions:

Greece signed the Association Agreement with the then European Economic Community on 9 July 1961. It submitted an application for EEC membership on 12 June 1975 and consequently joined the Community on 1 January 1981.

Turkey signed the Association Agreement with the EEC on 12 September 1963. It filed an application for membership on 14 April 1987. On 12-13 December 1997 the European Council announced its assessment that Turkey had the potential to become

an EU member state in the future. On 10-11 December 1999 it was granted EU candidate country status. The accession talks were launched on 3 October 2004.

Slovenia signed the European Agreement (Association Agreement) on 10 June 1996. On the same day it filed an EU membership application. On 12-13 December 1997 the European Council made the decision to open accession negotiations with Slovenia. The Accession Treaty was signed on 16 April 2003 and officially entered into force on 1 May 2004.

Bulgaria signed the European Agreement (Association Agreement) with the EU on 8 March 1993. It submitted an application for EU membership on 15 December 1995. On 10-11 December 1999 the European Council came up with the decision to start accession negotiations with the country. The Accession Treaty itself was signed on 25 April 2005 and entered into force on 1 January 2007.

Romania signed the European Agreement (Association Agreement) on 1 February 1993. It filed an EU membership application on 22 June 1995. On 10-11 December 1999 the European Council announced its decision to open accession negotiations with the country. The Accession Treaty was signed on 25 April 2005 and Romania became an official EU member state on 1 January 2007.

Croatia signed the Stabilisation and Association Agreement (SAA) with the EU on October 29, 2001. It entered into force on February 1, 2005. The country submitted an application for EU membership on February 21, 2003. The Accession Treaty was signed on December 9, 2012. The country is to become the 28th EU member state on July 1, 2013.

Republic of Macedonia (under the name - the Former Yugoslav Republic of Macedonia) signed SAA with the EU on April 9, 2001. It entered into force on April 1, 2004. The country submitted its application for EU membership on March 22, 2004. Republic of Macedonia has EU candidate country status as of December 16, 2005.

Albania signed SAA on June 12, 2006 which entered into force on April 1, 2009. The country submitted an application for EU membership on April 29, 2009.

Bosnia and Herzegovina signed SAA on June 16, 2008.

Serbia signed SAA on April 29, 2009. On December 22, 2009 the country filed an EU membership application. Serbia has EU candidate country status as of March 1, 2012.

Montenegro signed SAA on October 15, 2007. It entered into force on May 1, 2010. The country filed an application for EU membership on December 15, 2008. Montenegro is an EU candidate country as of December 17, 2010. On June 20, 2012 the European Council declared that Montenegro has fulfilled the necessary conditions for starting the accession negotiations. The accession talks were launched on 29 June 2012.

Kosovo deepened its relations with the EU on the basis of European Partnership that was signed on March 22, 2004

Table 4. Contractual basis of the relations between the EU and SEE (By January 2013)

| Country | Contractual basis of the EU-SEE relations |
|---------------------------------------|---|
| Greece | The Association Agreement with the then European Economic Community (EEC) was signed on July 9, 1961. The country submitted application for EU membership on June 12, 1975. EU member as of January 1, 1981. |
| Slovenia | The European Agreement (Association Agreement) with the EU was signed on June 10, 1996. On the same day the country submitted application for EU membership. The Accession Treaty was signed on April 16, 2003. EU member as of May 1, 2004 |
| Bulgaria | The European Agreement (Association Agreement) with the EU was signed on February 18, 1993. The country submitted application for EU membership on December 15, 1995. The Accession Treaty was signed on April 25, 2005. EU Member as of January 1, 2007 |
| Romania | The European Agreement (Association Agreement) with the EU was signed on March 8, 1993. The country submitted application for EU membership on June 22, 1995. The Accession Treaty was signed on April 25, 2005. EU Member as of January 1, 2007 |
| Turkey | The Association Agreement was signed on September 12, 1963. The country submitted application for EU membership on April 14, 1987. EU candidate member as of 10/11 December 1999. The accession negotiations started on October 3, 2006 |
| Croatia | SAA* was signed on October 29, 2001, entered into force on February 1, 2005. The country submitted application for EU membership on February 21, 2003. The Accession Treaty was signed on December 9, 2012. The country is to become the 28th EU member on July 1, 2013 |
| FYRM** (Republic of Macedonia) | SAA was signed on April 9, 2001 entered into force on April 1, 2004. The country submitted application for EU membership on March 22, 2004. EU candidate member as of December 16, 2005. |
| Albania | SAA was signed on June 12, 2006, entered into force on April 1, 2009. The country submitted application for EU membership on April 29, 2009. |
| Bosnia and Herzegovina | SAA was signed on June 16, 2008. |
| Serbia | SAA was signed on April 29, 2009. On December 22, 2009 the country submitted application for EU membership. EU candidate member as of March 1, 2012. |
| Montenegro | SAA* was signed on October 15, 2007 and entered into force on May 1, 2010. The country submitted application for EU membership on December 15, 2008. EU candidate member as of December 17, 2010. The accession negotiations started on October 29, 2012 |
| Kosovo | European Partnership as of March 22, 2004 |

* Stabilisation and Association Agreement.

** The Former Yugoslav Republic of Macedonia

Source: European Commission, Enlargement, 2012.

The involvement of the SEE countries in the European integration until the end of 2012 may be summarized as follows:

- Four countries (Greece, Slovenia, Bulgaria and Romania) are members of the EU. Their accession has extended the EU boundaries to the Black Sea and has increased the Union's policy potential in SEE. The total size of territory and population of those four countries constitute one-third of SEE and their gross product accounts for more than 35% of the region's volume.
- Croatia has concluded its accession negotiation and has signed the Accession Treaty. It will join the EU as the 28th member state upon the completion of the ratification process which is expected to happen on 1 July 2013.
- Turkey and Montenegro are currently conducting accession negotiations with the EU. There has been specified no closing date. Turkey's membership is tentative since a number of EU member states, i.e. France (till the election of the new President François Hollande in May 2012), Germany, Austria and leading EU officials (as the President of the European Council Herman Van Rompuy) have reiterated that Turkey should be granted privileged partner status instead of a full-fledged EU membership.
- Three countries (Republic of Macedonia, Serbia and Albania) have filed an application for EU membership. Two of them (except for Albania) have already been granted EU candidate country status. The next step is the start of formal negotiations on EU membership.
- The only countries that haven't submitted applications for EU membership are Bosnia and Herzegovina and Kosovo (**see Table 4**). The former will do so once its SAA enters into force which is already ratified by the EU-27. As to the latter, the EU integration process will speed up when all EU member states recognize Kosovo's independence.

Should there exist favourable conditions for the advancement of the process, the European integration of all SEE countries is most likely to be over by the halfway point of next decade.

PART II: SOUTH EAST EUROPE'S ENERGY POTENTIAL

1. Energy resources

The main share of natural energy resources in SEE belongs to coal, most of it being lignite. The proven coal reserves in the region are estimated at a total of 32.3 billion tons and account for around 15% of the European reserves (**see Table 5**). The statistical figures also reveal the reserves in the whole Turkish territory, while the SEE's share in Europe is calculated on the basis of the proven reserves in the continent together with the part of Russia's territory lying within Europe. The author estimates their market value at EUR 250-300 billion.

The coal reserves are distributed unevenly among the SEE countries. The leader is Kosovo holding 35% of the regional potential. In terms of lignite reserves Kosovo ranks third in Europe, with Germany and Poland in front. They are considerably less in Turkey (3.9 billion tons), Greece (3.3 billion tons), Bosnia and Herzegovina (3.1 billion tons), Serbia (2.9 billion tons) and Bulgaria (2.6 billion tons). Further less are the reserves in the Republic of Macedonia (366 million tons), Romania (321 million tons), Slovenia (246 million tons) and Montenegro (157 million tons) and Croatia, where the amount is extremely limited (hardly 3 million tons) (**see Appendix 13**).

Proven oil reserves in SEE are close to 1.3 billion barrels which constitute around 3.5% of those in Europe, including the European part of Russia (**see Table 5**). US experts estimate their market value at \$ 4 trillion. (1) The author finds this estimation incorrect. At the start of the second decade of the century the market value of oil reserves in SEE didn't exceed \$ 500-600 billion. Comparatively, the greatest quantities are located in Romania: they are around 600 million barrels and account for almost half of the reserves in SEE. Romania together with Turkey (238 million barrels) and Albania (around 200 million barrels) hold almost 90% of the regional oil reserves. There has been discovered no oil in four countries, i.e. Bosnia and Herzegovina, Republic of Macedonia, Slovenia and Montenegro (**see Appendix 14**).

At the end of the first decade the proven natural gas reserves in SEE were nearly 280 billion cubic meters (bcm) accounting for 7% of the total reserves in Europe (**see Table 5**). The author argues that their market value at the turn of the decade is \$ 60-80 billion. Similar to other basic energy sources, the natural gas reserves are distributed unevenly among the countries in the region. Almost 95% of them are found in Romania

(185 bcm), Serbia (48.1 bcm) and Croatia (31 bcm). The rest of the Balkan states have limited quantities, while there is none whatsoever in Bosnia and Herzegovina, Republic of Macedonia, Slovenia and Montenegro (**see Appendix 15**).

2. Production, consumption, imports and exports of energy resources

In 2010 the volume of coal mined in SEE was 28% of the gross coal production in Europe (**see Table 5**). The biggest amount in the region was extracted by Turkey (27.5%), followed by Greece (22.0%) and Serbia (14.9%). Those three countries actually provided more than two-thirds of coal in SEE (**see Appendix 13**). The general trend in the initial 10 years of the 21st century revealed a slow but steady decrease in the regional coal production. While in 2000 as much as 300 million tons of coal was mined in SEE, 10 years later, in 2010, the volume shrank by 17 million tons. (2)

Except for Bosnia and Herzegovina, the volume of imported coal in all Balkan countries in 2010 exceeded the exports by a 6:1 ratio. During the past decade the coal imports to SEE marked a 20% increase which had to compensate the gap in the domestic production. Over the same period the regional coal consumption grew by roughly the same intake. (3) The SEE share in the European coal consumption nearly equaled its contribution to the total coal production in Europe (27%). The region's imports share was half as much (15%), and in terms of exports it represented just around 0.5% (**see Appendix 13**).

Table 5. Energy resources in SEE (Proven reserves, Production, Consumption, Imports, Exports)

| Indicator | Coal | Oil | Natural gas |
|--|--------------------|-------------------|---------------------|
| Proven reserves Share in Europe (%) | 3326 (1) 15.0 | 1284 (3) 3.5 | 278.5 (5) 7.0 |
| Production Share in Europe (%) | 282982 (2) 28.0 | 220.3 (4) 2.5 | 15700 (6) 3.0 |
| Consumption Share in Europe (%) | 321363 (2) 27.0 | 1726.7 (4) 9.5 | 66345 (6) 6.0 |
| Imports Share in Europe (%) | 40797 (2) 15.0 | 1783.0 (4) 2.5 | 47075 (6) 8.5 |
| Exports Share in Europe (%) | 653 (2) 0.2 | 469.0 (4) 0.2 | 1250 (6) 0.1 (6) |

(1) Million tons

(2) 1000 tons

(3) Billion barrels

(4) 1000 barrels per day

(5) Billion cubic meters

(6) Million cubic meters

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, U.S. Energy Information Administration, 2012; CIA World Factbook, 2012.

The number of oil barrels produced per day (bbl/day) in SEE was nearly 220 000 in 2010 which was a meager 2.5% of the oil production in Europe (see Table 5). More than half of it was extracted in Romania. The oil produced in Romania and three other Balkan states –Turkey, Croatia and Albania – constituted almost 90% of the total oil output in SEE. During the first decade of the century the overall oil production in the region appeared to not having moved up a notch. The consumption and imports of oil exhibited a similar trend. In 2010 the annual oil consumption in SEE stood at approx. 1.7 million bbl/day or close to eight times as much as the domestic production. The shortage was made up for by imports of oil and petroleum products. The oil production and refining facilities built in the region had the capacity to provide an output of 2.2 million bbl/day which was ten times as much as the extracted oil. The exports of oil and petroleum products (around 470 000 bbl/day) were just a quarter of the imported volume. The ratio varied greatly across the different countries. Romania reached a ratio of 1:2; in Greece, Bulgaria, Republic of Macedonia and Croatia it was 1:3; in Turkey and Slovenia it represented the unfavourable 1:8; a few countries (like Bosnia and Herzegovina and Montenegro) turned to be net importers (**see Appendix 14**).

In 2010 the production of natural gas in SEE was 15.7 bcm which accounted for nearly 3.0% of the overall gas supplies in Europe. Like oil, natural gas production in the past decade didn't grow but rather experienced a certain drop. The true picture is that in 2011 the gas output in SEE lost ground compared to 2000. (4) The annual gas consumption in the region (66.3 bcm) was four times as much as the generated production (**see Appendix 15**).

The trend manifested in SEE gas consumption over the past ten years was different from that in coal and oil. In 2011 it rose by one-fifth compared to its level in 2000 (5). The gas supplies in SEE were mainly provided through imports which amounted to 47 bcm in 2011. The imported volume was three times as much as the regional production and comprised around 8.5% of the gas imports in Europe (**see Table 5**). Apart from Romania and Croatia, the remaining countries imported such an amount of gas which almost entirely corresponded to their domestic needs. A couple of states (Albania and Montenegro) actually reported that their total gas consumption was satisfied by means of imports. Only two Balkan states (Turkey and Croatia) managed to export limited quantities (1.2 bcm). Therefore it's no wonder that the SEE share in the European gas exports was practically zero (**see Appendix 15**).

3. Electrical energy production

In 2010 the electrical energy production in SEE was 460 billion kilowatt-hours (kWh) which represented 11.0% of the gross output in Europe (**see Table 6**). During the past decade the regional electricity production went up by around 40%. Yet, its consumption surged by approx. the same measure. (5) The growth was primarily due to sizeable increase in the industrial and domestic consumption in Turkey whose regional share reached almost 45% (**see Appendix 16**).

Of the other Balkan states it was only Bosnia and Herzegovina that recorded a notable rise in the national electrical production and consumption, whereas the majority of other countries barely generated an increase between 10% and 20%, with the Republic of Macedonia, Albania and Montenegro being in stagnation. Apart from Croatia and Albania, the other Balkan economies produced enough electricity to meet their domestic consumption, constituting as a regional share 10% of the gross European consumption. Electricity proved to be the sole energy resource in 2011 which SEE countries exported rather than imported (**see Table 6**).

Table 6. Electricity energy profile of SEE (2011) (Production, Consumption, Imports, Exports)

| Country | Production (billion kWh) | Consumption (billion kWh) | Imports (billion kWh) | Exports (billion kWh) |
|--------------------------------|-------------------------------------|--------------------------------------|----------------------------------|----------------------------------|
| Albania | 5.2 | 6.6 | 1.9 | 0 |
| Bosnia and Herzegovina | 14.6 | 10.8 | 1.2 | 3.9 |
| Bulgaria | 43.1 | 28.3 | 2.7 | 7.1 |
| Croatia | 11.5 | 18.0 | 7.5 | 5.7 |
| Greece | 58.8 | 58.3 | 7.6 | 2.0 |
| Kosovo | 5.5 | 3.7 | 0.8 | 0.4 |
| Republic of Macedonia | 6.8 | 8.2 | 1.4 | 0 |
| Montenegro | 2.7 | 0.2 | 0 | 0 |
| Romania | 58.3 | 49.4 | 0.9 | 5.2 |
| Serbia | 35.9 | 34.1 | 0.8 | 1.3 |
| Slovenia | 15.0 | 14.7 | 6.2 | 7.8 |
| Turkey | 201.2 | 198.1 | 0.8 | 1.1 |
| SEE | 459.6 | 432.1 | 31.0 | 34.1 |
| SEE share in Europe (%) | 11.0 | 10.0 | 8.5 | 9.0 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, U.S. Energy Information Administration, 2012

Four countries – Turkey, Romania, Greece and Bulgaria – possessed 66% of the available electricity generating facilities in SEE. Turkey alone had a generating capacity of over 41.0%. The thermal power plants predominated in the power generation mix. They accounted for more than 50% of the generation mix in the majority of Balkan states, reaching 80% in the Republic of Macedonia, 90% in Greece and as much as 98% in Kosovo (**see Appendix 16**).

The biggest share of hydroelectric power plants was distributed among four Balkan states: Croatia, Montenegro, Bosnia and Herzegovina and Albania. The latter was at the top of the list with over 86% hydropower in its electric domestic mix. Nonetheless, the hydroelectric installed capacity in the region was half of the thermal power generation which was predetermined by the limited hydroelectric sources most of the SEE countries have. Five countries – Albania, Serbia, Republic of Macedonia, Montenegro and Kosovo – had only two types of electricity generating facilities, i.e. thermal and hydropower plants (**see Appendix 16**).

4. Nuclear energy

The third major source of energy in SEE after thermal and hydroelectric power generation is nuclear energy production. At the start of the second decade of the 21st century there were three nuclear power plants (NPP) in operation with a total of five nuclear reactors. The largest one is **Kozloduy NPP** situated in Bulgaria near the Danube river. Its first two units having a total capacity of 880 MW were installed in the autumn of 1974. It was the first NPP in South East Europe.

Subsequently it was upgraded twice: a couple of new units with a total output of 880 MW were constructed in 1980 and 1982 respectively, followed by Units 5 and 6 that were launched in 1988 and 1993 with a total capacity of 2 000 MW. The nuclear reactors were manufactured in the former USSR and with all six of them being in operation the total installed capacity reached 3 760 MW. At that time Kozloduy NPP produced around 46% of Bulgaria's electricity supplies.

Units 1 and 2 were prematurely taken off-line at the end of 2004 and only two years later, in December 2006, Units 3 and 4 followed suit. The shutdown took place under the pressure by the European Commission concerned that those units were not up to the European safety standards. Their decommissioning was one of the critical requirements Bulgaria had to fulfill in order to accede to the EU at the beginning of 2007. The total capacity of the two remaining units in operation in Kozloduy was 1 920 MW at the start of 2012 which stood for 17.5% of the national power generating capacity. In 2011 the nuclear power output was 16.2 billion kWh comprising 36.2% of Bulgaria's electricity supply. (6)

The second NPP in the region was constructed near the town of **Krško** in Slovenia and has been in operation since January 1983. It was built as a joint venture by Slovenia and Croatia and the operating company is co-owned by the two countries. The plant has a single nuclear reactor with a rated capacity of 730 MW produced by Westinghouse Electric Company. It accounts for 21.5% of Slovenia's power generating capacity and for 8% of Croatia's. In 2011 the power plant produced 5.9 billion kWh of electricity with a share in the domestic electricity supply of 43% in Slovenia and about 15% in Croatia. (7)

The third NPP in South East Europe is situated in the vicinity of the town of **Cernavodă** in Romania. Its first reactor with a total capacity of 700 MW was launched in December 1996. It was manufactured by the Atomic Energy of Canada Ltd, a provider of the

second reactor as well, which had the same capacity and was brought into operation in 2007. At the beginning of the present decade Cernavodă NPP accounted for 17.5% of Romania's power generating capacity. The plant produced 11.7 billion kWh of electricity in 2011 alone, which was 19% of the country's total electricity supply. (8)

Table 7. Nuclear energy in SEE (2011)

| Country | Number of reactors | Capacity (MW) | Output (Billion kWh) | Share in the electricity production (%) |
|-------------------------|--------------------|---------------|----------------------|---|
| Bulgaria | 2 | 1920 | 16.3 | 32.6 |
| Romania | 2 | 1400 | 11.7 | 19.0 |
| Slovenia - Croatia | 1 | 730 | 5.9 | 43 (Slovenia)/ 15 (Croatia) |
| SEE | 5 | 4050 | 33.9 | 7.4 **** |
| SEE share in Europe (%) | 2.7 * | 2.5 ** | 3.0 *** | |

* In 2012 the number of the functioning nuclear reactors in 17 European countries was 186, including 5 in the Asian territory of Russia. The SEE share is in percentage of the number of nuclear reactors in Europe.

** In 2012 the total capacity of the NPP in operation in Europe, including Russia, was 162 000 MW. The SEE share is in percentage of the total capacity of NPP in operation in Europe.

*** In 2011 the total electricity production in Europe, including Russia, was 1136.8 billion kWh. The SEE share is in percentage of the electricity production in Europe.

**** Atomic electricity share in the total electricity production in SEE. (in %).

Source: Compiled by the author using data of the European Nuclear Society (ENS), Nuclear Power Plants in Europe, 2012; Nuclear Energy Institute (NEI), World Nuclear Generation and Capacity in 2011; Energy Statistics of the SEE countries, 2012.

Bulgaria, Slovenia and Romania were among the seventeen countries in Europe having nuclear power plants in operation at the start of the decade. The total capacity of the NPP in the region was 4 050 MW, or 2.5% of the gross capacity of all functioning NPP in Europe. In 2011 the nuclear power generating capacity was 3.3% of the total installed capacity in the sector and the electricity supply produced by NPP in South East Europe was 33.9 kWh thus contributing 7.4% to the region's electricity output (**see Table 7**).

5. Other sources of electricity

The other sources of electricity – biomass, geothermal energy, solar energy, wind, etc, make up a relatively small share in South East Europe's power generating capacity. At the end of the past decade they accounted for 2% of the gross electricity supply in the region. (9) The construction of renewable energy facilities in SEE gathered pace in 2005, or thereabouts. At the end of 2011 wind power facilities were built in seven Balkan countries: Turkey, Greece, Bulgaria, Romania, Serbia, Slovenia and Croatia. Their total capacity was 4 400 MW representing 4.5% of Europe's capacity in this respect (**see Appendix 17**) and less than 1% of the SEE gross electricity output in 2011.

The solar power generating capacity was considerably less. At the start of the 2010s it was around 230 MW, making up just 0.5% of Europe's total functioning capacity. The solar energy output was less than 0.5% of the region's overall electricity supply (**see Appendix 17**). In 2011 there were constructed photovoltaic facilities in as few as four Balkan countries, i.e. Greece, Slovenia, Turkey and Bulgaria. As to biomass and geothermal energy, they comprised respectively 2% and less than 1% of the total electricity production in SEE. (10)

6. Energy mix and energy import dependence

In the first decade of the century the primary energy consumption in SEE rose by around 20%. The changes that occurred in the energy mix structure were relatively insignificant, mainly bringing about a 7-8% increase in the share of oil and natural gas at the expense of the reduction in coal use. In 2010 oil and gas comprised 55%, whereas coal accounted for 30%. (11)

Throughout the same period and particularly after 2005 there was an upward trend in the share of renewable energy sources (the solar thermal and photovoltaic energy, hydro, including tide, wave and ocean energy, wind geothermal energy and biomass, including biological waste and liquid biofuels). In 2010 it was approximately 12.5% corresponding to the average level in the EU (see Appendix 18). The key place in this type of energy sources belonged to hydropower plants. The nuclear energy in the mix structure dropped as a result of the closure of Kozloduy NPP units in Bulgaria whose potential output was only partially compensated for by Romania's Cernavodă NPP expansion.

Table 8. Total primary energy supply in SEE countries

| Country | Total primary energy (KTOE)* | Oil share (%) | Natural gas share (%) | Hydro share (%) | Biofuels and Waste share (%) | Nuclear share (%) | Geothermal/Solar/Wind share (%) | Coal and Peat share (%) |
|------------------------|------------------------------|---------------|-----------------------|-----------------|------------------------------|-------------------|---------------------------------|-------------------------|
| Albania | 1717 | 49.6 | 0.4 | 26.2 | 13.4 | - | 0.2 | 4.4 |
| Bosnia and Herzegovina | 5953 | 23.9 | 3.0 | 8.6 | 2.9 | - | - | 65.2 |
| Bulgaria | 17480 | 37.1 | 14.7 | 1.2 | 3.8 | 20.9 | 1.2 | 37.9 |
| Croatia | 8702 | 52.0 | 29.3 | 7.0 | 4.4 | - | 0.2 | 6.2 |
| Macedonia | 2781 | 35.5 | 2.4 | 4.1 | 7.4 | - | 0.4 | 52.0 |
| Montenegro | 750 | 37.0 | 0 | 20.5 | 5.0 | - | 0.5 | 37.0 |
| Serbia | 14450 | 27.1 | 9.6 | 6.0 | 2.0 | - | 0.3 | 55.0 |
| Slovenia | 6969 | 35.6 | 11.5 | 5.6 | 5.0 | 20.7 | 1.9 | 19.7 |
| Greece | 29436 | 53.3 | 10.0 | 1.5 | 3.4 | - | 1.5 | 28.6 |
| Romania | 34406 | 23.2 | 30.6 | 12.0 | 11.2 | 8.9 | 0.1 | 21.4 |
| Turkey | 97661 | 29.8 | 29.6 | 3.2 | 4.8 | - | 2.2 | 30.5 |

* 2009, in thousand tons of oil equivalent (KTOE)

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; 2009 Energy Balances for the countries in the World, International Energy Agency, 2012. Energy profiles of the SEE countries, Clean Energy Information Portal, 2012

The main reasons for the slow rate of changes in the SEE mix of sources of primary energy production and consumption in 2010 were the scarcity of domestic energy resources and the limited financial and technological potential of the majority of the countries for investment. The financial and economic crisis of the past decade had a notable negative impact in that respect, causing a fall in the energy consumption and a sizeable slump in the domestic and foreign investment. There were noticeable discrepancies across the countries within the framework of SEE energy mix structure. In the majority of cases coal, together with peat, represented a leading or at least an essential share in the energy mix. The highest proportion could be seen in some of the Western Balkan countries: in Kosovo it was over 90%, in Bosnia and Herzegovina – 65.2%, in Serbia – 55%, in the Republic of Macedonia – 52%. It was relatively high in Bulgaria – 37.9%, in Turkey – 30.5% and in Greece – 28.6%. In the other SEE countries it was quite lower, standing respectively at only 6.2% in Croatia and 4.4% in

Albania (**see Table 8**). Greece had the highest oil share in the energy mix (53.3%), followed by Croatia (52%) and Albania (49.6%). Natural gas constituted a significant proportion in just three countries: Romania (30.6%), Turkey (29.6%) and Croatia (29.3%). Except for Albania, all the countries in the region had a hydropower share in their primary energy mix of less than 10% (**see Table 8**).

As to the share of renewable energy sources (RES), it varied among the individual countries. It was highest in Albania where it made up nearly 40% of the energy mix, but in the period between 2005 and 2010 Romania actually reported the most notable increase in the percentage of RES in the energy use reaching 23.4%. Slovenia was next with almost 20%, followed by Croatia with 14.6% and Bulgaria with 13.9%. As a matter of fact, these countries had a higher RES share than the average level attained in the EU (**see Appendix 18**). In 2012 the nuclear power was a primary energy source in as few as four Balkan countries: Bulgaria, Romania, Slovenia and Croatia. The energy generated from biofuels and waste was included to bit greater extent in the energy mix of only Albania (13.4%) and Romania (11.4%), whereas in the other SEE countries it ranged between 2% and 7% (**see Table 8**).

Table 9. Energy dependence* of the SEE countries

| Country | 2000 | 2005 | 2008 | 2009 | 2010 |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| Bulgaria | 46.5 | 47.5 | 52.0 | 45.34 | 40.5 |
| Greece | 69.5 | 68.5 | 73.5 | 68.0 | 69.0 |
| Slovenia | 52.5 | 52.0 | 55.0 | 48.0 | 49.0 |
| Romania | 22.0 | 27.5 | 28.0 | 20.0 | 22.0 |
| Croatia | 53.0 | 58.5 | 60.0 | 51.0 | 52.0 |
| Republic of Macedonia | 40.5 | 43.5 | 46.0 | 45.0 | 44.0 |
| Turkey | 66.0 | 72.0 | 72.0 | 70.5 | 69.0 |
| Bosnia and Herzegovina | 30.0 | 32 | 36 | 34.0 | 33.0 |
| Albania | 25.0 | 28.0 | 30.0 | 28.0 | 27.0 |
| Montenegro | 34.0** | 42.0** | 52.0 | 51.5 | 51.3 |
| Serbia | 34.0** | 35.0** | 36.0 | 36.0 | 37.0 |
| Kosovo | 30.0 | 32.0 | 32.0 | 34.0 | 35.0 |
| SEE | 55 | 62 | 65 | 60 | 60 |

* **Energy dependence** shows the extent to which an economy relies upon imports in order to meet its energy needs. The indicator is calculated as net imports divided by the sum of gross inland energy consumption plus bunkers.

** The data is for the former state of Serbia and Montenegro.

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; Eurostat, Energy Dependence, 2012

The domestic primary energy production in SEE was 102 865 KTOE (thousand tons of oil equivalent on a net calorific value basis) in 2009 (**see Appendix 19**). Throughout the first decade it grew at a slower rate compared to the surge in the primary energy consumption. In all SEE countries the domestic production fell short of meeting the energy needs. It's worth noting that at the end of 2010 the energy use in the region was twice as high as the domestic energy production. This ratio varied among the different economies in SEE. The biggest importer of energy resources was Turkey which has the greatest industrial potential. Its domestic energy production represented just a third of its consumption volume. In Greece the ratio was roughly 1:3. Somewhat more favourable was the situation in Romania (consumption was 21.6% higher than domestic production), in Bosnia and Herzegovina (by a margin of 33.1%) and in Albania (by a margin of 36.9%) (**see Appendix 19**).

During the first decade of the century the SEE energy import dependence rose from around 55% in 2000 to approx. 65% in 2008, later followed by a 60% decline due to the economic recession that came about and the consequent fall in the energy use and imports. Its extent was considerably higher than the average in the EU (52.7%). (12) The degree of dependence varied among the Balkan countries. It was highest in Turkey and Greece (69%), Croatia (52%) and Montenegro (51.3%). Better positioned were the Republic of Macedonia (44%), Bulgaria (40.5%), Serbia (37%), Kosovo (35%), Bosnia and Herzegovina (33%) and particularly Albania (27%) and Romania (22.0%) (see Table 9)

7. Energy sector of SEE economy

The energy sector is one of the key components of SEE economy. The author's estimate reveals that at the beginning of the current decade it contributed 7% of SEE's Gross Product (PPP). Its share was different in the individual countries: from 5 - 6% in the Republic of Macedonia, Montenegro, Croatia, Bulgaria, Albania, Bosnia and Herzegovina and Kosovo to 7 - 8% in Greece, Turkey, Romania and Serbia. According to the author's estimate, the share of energy sector investments in the overall volume of investments made in the SEE countries' economy during the first decade of the century was 14-16% on an average annual basis.

The energy companies topped the national corporate rankings of all states in the region. In 2010 six out of the ten biggest companies in SEE operated in the energy sector. The leader was the Turkish petrochemical company "Tüpraş" with an annual turnover of EUR 10.8 billion (**see Table 10**). The same year companies from seven SEE countries ranked among the 20 regional leading energy companies (with the biggest annual turnover). Turkey, Greece and Romania provided four companies each, Bulgaria – three companies, Serbia and Croatia – two companies each and Slovenia – just a single company. As many as fifteen of them operated in the field of production, refining and marketing of oil and natural gas, the remaining five in the electricity sector. All of them reported an annual turnover of more than EUR 1 billion.

Some of those companies ranked among the top players worldwide. Forbes annual ranking of the world's biggest companies published in April 2012 included a total of 23 companies from SEE. The scope of activity of four out of the twelve companies operating outside the baking sector was exclusively or mainly energy. The Turkish conglomerate "Koc Holding" was in the 340th place having an annual turnover of

\$ 40.2 billion and being one of the main shareholders in Tüpraş, a leading petrochemical company in Turkey and SEE. The others featured in the ranking are “Public Power” (Greece) with a turnover of \$ 7.8 billion (ranked 1000), “Hellenic Petroleum” (Greece) with a turnover of \$ 8.5 billion (ranked 1669) and “INA Industrija Nafte” (Croatia) with a turnover of \$ 5.2 billion (ranked 1777). (13)

The majority of the big energy companies in the region are either affiliates of or set up through the solid investment participation of non-SEE energy corporations (Gazprom, Lukoil, OMV, RWE, Shell, Chevron, MOL, etc.). They are actually incorporated into wider foreign production and distribution structures and as such most of them have carried out investment and distribution activities in the energy sector of other countries, both in and outside SEE. In 2010 the top 20 SEE energy companies had a total annual turnover of around EUR 70 billion. It approx. corresponded to the amount of GDP generated the same year by Bulgaria and Slovenia taken as a whole and represented around 5% of the region’s aggregate gross product. The author’s estimate shows that at the beginning of the present decade of the century the turnover of all SEE energy companies was EUR 100-120 billion (\$ 130-140 billion). Furthermore, the energy sector, together with all energy projects implementation activities, created 200 000 – 250 000 jobs, which made up 5% employment of the active work force in the Balkans. (14)

The financial crisis that hit Europe at the end of the first decade and the recession that followed afterwards affected severely the SEE energy sector. The economic downturn caused a slump in the region’s energy consumption of around a fourth in 2009-2010. That, in turn, brought about a reduction in the local production and energy resources import. The structural reforms and technological upgrade of the production process were practically suspended.

Over the same period energy sector investments shrank by more than twice. It was mainly due to the sluggish flow of FDI which inevitably led to a significant number of energy projects being slowed down and even cancelled. There were instances of large foreign energy companies withdrawing from the execution of contracts they had already signed. At the start of the second decade the sector exhibited a trend of slow and bumpy recovery. Until 2012 the majority of the countries in the region haven’t still managed to regain the levels of consumption and FDI reached in 2008. The sole benefit from the crisis was that the decrease in the domestic consumption contributed to a certain limitation of the energy import dependence.

Table 10. The biggest energy companies in SEE (2010)

| Company | Country | Field | Sales (billion euro) |
|------------------------------------|----------------|---------------------|---------------------------------|
| 1. Tüpraş | Turkey | Petrol/natural gas | 10.8 |
| 2. Hellenic Petroleum | Greece | Petrol/natural gas | 8.5 |
| 3. Aegean Marine Petroleum Network | Greece | Petrol/natural gas | 7.5 |
| 4. Motor Oil Hellas | Greece | Petrol/natural gas | 6.2 |
| 5. Public Power Corporation | Greece | Electricity | 5.8 |
| 6. Eüaş Elektrik Üretim A.S. | Turkey | Electricity | 4.5 |
| 7. OMV Petrom SA | Romania | Petrol/natural gas | 3.6 |
| 8. INA Industrija Nafta | Croatia | Petrol/natural gas | 3.3 |
| 9. Lukoil Neftochim Burgas | Bulgaria | Petrol/natural gas | 2.8 |
| 10. Petrol Group | Slovenia | Petrol/natural gas | 2.5 |
| 11. Rompetrol Rafinare SA | Romania | Petrol/natural gas | 2.0 |
| 12. Aygaz | Turkey | Petrol/natural gas | 1.8 |
| 13. Naftna Industrija Srbije | Serbia | Petrol/natural gas | 1.7 |
| 14. Lukoil-Bulgaria EOOD | Bulgaria | Petrol/natural gas | 1.7 |
| 15. Hrvatska Elektroprivreda d.d. | Croatia | Electricity | 1.7 |
| 16. NEK | Bulgaria | Electricity | 1.6 |
| 17. Rompetrol Downstream SRL | Romania | Petrol/natural gas | 1.4 |
| 18. Petkim Petrokimya Holding A.S. | Turkey | Petrol./natural gas | 1.3 |
| 19. JP Elektroprivreda Srbije | Serbia | Electricity | 1.2 |
| 20. OMV Petrom Marketing SRL | Romania | Petrol/natural gas | 1.1 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012

PART III: SOUTH EAST EUROPE'S ENERGY SECTOR AND ENERGY POLICY

1. Albania

At the end of the past decade Albania's was one of the SEE countries with relatively low energy import dependence (27%) which was less than half the region's average (**see Table 9**). It was thanks to the country's capability to meet the greater part of its energy needs by domestic supplies. Albania didn't resort to natural gas imports because of its rather limited demand. It produced almost half of the amount of oil it consumed and mainly imported petroleum products. The biofuels and waste share in the energy mix was the highest in SEE (around 12.5%) and were entirely generated on home ground (**see Appendix 20**). Hydropower accounted for a fourth in the energy mix, yet it produced around 86% of electricity. According to this indicator the country is a regional leader and occupies one of the foremost places in Europe (**see Appendix 16**).

The author has calculated that at the start of the current decade the energy sector produced nearly 6% of Albania's GDP. The largest energy company is the state-owned Albanian Power Corporation (KESH) holding a monopoly position in the production, imports and exports of electricity. In 2011 it reported an annual turnover of EUR 253 million. AMRO operates two oil refineries - one of them located in the town of Ballshi and is the largest nationwide with a production capacity of 1 million tons of oil per year. The corporate turnover was EUR 100 million. In 2008 ARMO was privatized - 85% of shares was sold out to the U.S -Swiss consortium Refinery Associates of Texas, Anika Enterprises SA and Mercuria Energy Group for EUR 128.7 million in all. (1)

Shpëndarie is another big Albanian energy company whose majority stakeholder is the Czech company ČEZ, a monopoly player in the electricity distribution. In 2010 it reported a turnover of nearly EUR 70 million. Taci Oil International Trading and Supply (Taci Oil) is also amid the biggest energy companies, owning the largest national petrol stations network and generating an annual turnover of EUR 65 million. Considerably less is the turnover (EUR 3 million) gained by Albpetrol which was a state-owned company privatized at the end of 2011 (**see Appendix 21**).

Albania's energy policy is underpinned by the National Energy Strategy endorsed by the government in 2003 which features an action plan, both updated in 2005 when the

Albanian Parliament passed the Energy Efficiency Law. It was announced that in 2009 that the Albanian government had worked out an updated energy strategy by 2020 which was submitted for deliberation and voting in Parliament. The document emphasized on two key priorities:

- to guarantee the security of the energy supply in general and electricity in particular;
- to promote efficient and economic use of energy with minimal environmental effects in order to support the sustainable development of all economic sectors.(2)

The main goals outlined in the Strategy and Action Plan are increasing the volume of investments in energy development, boosting energy efficiency, restructuring and modernizing the energy sector, streamlining the energy supply, energy mix and energy consumption, developing the investment and legislative basis of the sector, liberalizing the energy market and allowing for market competition, fulfilling Albania's commitments to the regional energy cooperation. (3)

The Energy Efficiency Law adopted in 2006 laid down some important aims of the long-term energy policy such as: to create the legal framework required for the promotion and improvement of the efficient use of energy in all stages of its cycle; to establish the economical use of energy sources and to minimise the negative energy impact on the environment; to set up an Energy Efficiency Fund, etc. (4) They were revised in the adopted in 2010 National Energy Efficiency Action Plan for the period 2011-2018.

The pivotal endeavour of Albania's energy policy in the first decade of the century was the production increase and the energy efficiency enhancement with respect to electricity supplies since the existing capacity was not enough to meet the domestic needs. Albania and Republic of Macedonia were the only net electricity importers in SEE. Throughout the specified period the country experienced critical electricity shortage on numerous occasions and especially in the wintertime when the government was forced to impose energy usage austerity measures and even planned power cuts.

The energy strategy envisaged the construction of a few large hydroelectric power plants to harness the huge local hydropower potential. Only a third of the available potential was actually put into use till the start of the second decade. In 2011 the capacity of the 7 big and 26 smaller HPP in operation was 1 466 MW which generated

5 283 GWh of electricity. The hydropower resources, however, allow for the construction of power facilities with the capacity of 4 500 MW being able to produce around 16 TWh of electricity per year. (5)

Pursuant to the Concessions Law enacted in 2006 the Albanian government contracted foreign energy companies to construct new HPP in addition to the existing ones (7 big and 38 small power plants). From 2002 to 2010 were signed construction contracts for 293 hydropower facilities with a total capacity of 1 296 MW. (6) The construction of three new HPP on the Devolli river commissioned to the Austrian EVN and the Norwegian Statkraft is the most significant one and is considered to be the biggest on Europe being worth EUR 950 million (\$ 1.4 billion). The installed capacity is estimated to be 340 MW with an annual energy yield of 1 000 MWh. Another key project is the HPP on the Drin river with a capacity of 250 MW for which the selected contractor is the Italian TGK Group. Furthermore, as many as 7 HPP with a capacity of 400 MW and an annual output of 2 144 MWh are being planned to become operational on the Vjose river. (7) At the end of the past and the start of the present decade speculations appeared that during exploratory drillings performed by foreign companies in Albania's continental shelf in the Adriatic Sea were discovered substantial oil and gas deposits. Experts assume that the exploration carried out within an area of 5 600 km² by Petromnas Energy Inc., a Scotland-based energy company, revealed potential deposits of 3 billion barrels of oil and 84 bcm of natural gas. At the beginning of 2012 another foreign company – the Ireland-based San Leo Energy which also performs exploratory drilling in the Adriatic Sea coast – announced that it came across oil and gas deposits. Owing to the foreign exploratory operations the oil production in Albania doubled in the period between 2004 and 2011 and consequently reduced the volume of imports. Even with the deposits at hand the national production of oil is projected to more than triple by 2015. In case this target is accomplished the financial gains for the Albanian economy might be tantamount to nearly \$ 1 billion which represents 7-8% of its GDP. (8)

The country also relies on discovering new gas fields and increasing gas production. It's however questionable and therefore couldn't be considered as a potential source of supplies which are to meet the growing demand for natural gas between 2010 and 2025. The consumption is estimated to undergo a tenfold increase – from 100 mcm of gas in 2010 to almost 1 bcm in 2025. That's why the construction of the Gas Ring in the Western Balkans promoted by the Energy of SEE is of paramount importance for

the country, since the project main objective is to provide the necessary gas supplies and diversify the imports in the region. (9)

In addition, the Albanian government is considering a substantial increase in the electricity generated by wind power. As a result, at the beginning of the present decade it started the construction of two wind energy parks, respectively in Vlore and Kryevidhi, with a total capacity of 472 MW and expected annual output of around 2 000 GWh. Should these projects be implemented Albania could become the top European producer of wind energy generated by facilities located along the coastline. (10) This seems a bit unlikely as the implementation of such large-scale projects requires enormous investments. The site in Kryevidhi alone, which originated in 2007, needs capital investments of EUR 200 million, subsequently reestimated to be EUR 300 and even EUR 400 million. (11)

Even if the country succeeds in partially completing its plans for hydropower and alternative energy facilities, the share of RES in the energy consumption will go up. The Prime Minister Sali Berisha has stated that Albania's goal is to establish itself as "a small superpower of renewable energy in the region... With its rich water resources, Albania resembles a small Norway in the Balkan Peninsula." (12) Till the end of 2011 the government hasn't adopted a National Renewable Energy Action Plan providing for reaching the target for the share of renewable energy in the final energy consumption in 2020.

There are currently no nuclear power facilities in Albania but in 2007 when the country was confronted with a severe energy crisis the government declared it was ready to construct a nuclear power plant. It relied on the support by the neighbouring countries, especially Italy and Croatia. In 2009 Albania and Croatia reportedly announced a plan to jointly construct a 1 500-MW nuclear power plant on the shores of Lake Shkoder near Albania's border with Montenegro. The construction costs were estimated to be \$ 5.3 billion (13)

At the beginning of the following year a National Nuclear Agency was set up and its primary aim was stated to be the construction of a NPP. The completion was scheduled for 2020 and involved the installation of next generation nuclear reactors. The main contractor was announced to be the state-owned Croatian energy company Hrvatska elektroprivreda (Croatian Electricity Company, or HEP) since Croatia was going to use the bulk of the generated electricity. (14)

Those announcements proved false as the official representatives from both sides went as far as discussing only the Albanian proposal for a NPP joint venture. At the start of 2012 the Albanian cabinet shelved the project taking into account the difficulties in attracting foreign investments and the number of the environmental concerns. Furthermore, Montenegro opposed any construction of a NPP close to its sovereign territory.

At the end of January 2012 the Albanian Prime Minister Sali Berisha was quoted to say that “the nuclear energy is the cleanest and cheapest electricity” but the Fukushima nuclear disaster in March 2011 “has called for this decision to be revised”. He further pointed out that the cancellation of the NPP construction was due to the vulnerability of Lake Shkoder area to “tectonic changes”. (15)

Albania’s National Energy Strategy outlines the likely scenarios for the development of the national energy system. The first one, qualified as passive, may occur if the Strategy goals are not fulfilled which in turn would lead to enormous handicaps for the energy sector, including the electricity generation. The second one, characterized as active, presupposes not only the execution of all measures in the Strategy, but also the implementation of additional steps by 2015. The second scenario is believed “to render stability and development of the energy sector transforming the energy system into a supporting pillar for the advancement of the Albanian economy and standard of living”. (16)

The analysis of Albania’s energy mix evolution throughout the past decade provides no grounds for concluding that the main goals laid down in the Strategy have been attained. Therefore, the period leading up to 2015 proves crucial in this respect.

2. Bosnia and Herzegovina

At the end of the first decade of the 21st century Bosnia and Herzegovina displayed a relatively low degree of energy import dependence (33%). This was half the average in SEE with only Romania and Albania being ahead (**see Table 9**). The domestic energy mix was dominated by coal and peat, accounting respectively for 82.9% and 65.2% (**see Appendix 22**). In this respect Bosnia and Herzegovina was a leader in the region and among the countries in Europe having a significant share of coal in their energy mix. In the past decade it kept almost the same level. The coal production volume

increased by a third over the 2000-2010 period. It was enough to meet 90% of the domestic coal demand, the remaining portion was imported. (1)

The natural gas share in the country's energy mix was quite small (around 3%) and was entirely imported. Due to the lack of oil fields Bosnia and Herzegovina relied exclusively on imported oil and petroleum products which accounted for 23.9% of the primary energy consumption (**see Appendix 22**). The oil import dependence may reverse in the positive direction if the assumptions for rich oil fields in the northern and southern parts of the country with potential reserves of more than 500 million tons prove true. In 2010 the Russian company Zarubezhneft and the Serbian NIS signed a Memorandum on exploratory drilling in Republika Srpska. (2)

The most notable changes during the first decade of the century took place in the electricity sector. Bosnia and Herzegovina's electricity output rose by six and a half times and was enough to meet the domestic consumption entirely which in the meantime grew by nearly five times. (3) At the turn of the century the country neither exported nor imported electricity, whereas in 2011 it exported three times as much as it imported (**see Table 9**).

Unlike the primary energy mix, the prevailing share in the electricity mix was held by hydropower. It stood at 56% which was among the highest percentages in SEE (**see Appendix 22**). A total of sixteen large hydroelectric power plants were constructed nationwide and the bulk of electricity output was generated by ten of them. The biggest one is Capljina power plant in the town of Popovo pole with a capacity of 430 MW. The share of electricity produced by thermal power plants was 44% (**see Appendix 16**), the biggest of them being Kakanj (400 MW), Ugljevik (300 MW) and Tuzla (250 MW).

The author's estimate shows that at the start of the current decade the energy sector constituted 5% of Bosnia and Herzegovina's economy. The largest energy companies were among the top national corporate organizations (**see Appendix 23**). Elektroprivreda Bosne i Hercegovine had the highest annual turnover and in 2010 generated sales totalling EUR 452.5 million. It ranked among the 100 biggest SEE companies (excluding Turkey). (4) A couple of the big companies are JP Elektroprivreda HZ HB d.d. established by the Croatian community in Federation Bosnia and Herzegovina and the other one is JP Elektroprivreda Republike Srpske. In the oil and gas sector stood out the largest private company called Energopetrol where the majority stake of 67% is held by the joint Croatian-Hungarian venture INA-MOL. At

the end of the past decade it reported an annual turnover of EUR 100 million (**see Appendix 23**).

Till 2012 the country was the only one in SEE that didn't draw up a national energy strategy. In March 2009 the ministry of energy, mining and industry of Federation of Bosnia and Herzegovina, one of the two autonomous entities in the state, published a Strategic Plan and Energy Sector development programme. The document was prepared by an expert group in compliance with a parliamentary resolution adopted in the summer of 2007. The main goal set in the Strategic Plan is intensifying the effort toward the Federation's energy sector reforms, modernizing the available energy facilities and infrastructure and constructing new ones, channeling more investments, raising energy efficiency and maintaining sustainable energy sector development.

The document also outlines the short- and long-term measures for achieving the goals by 2020 and offers an energy sector development forecast by 2030.⁽⁵⁾ In the autumn the same year the government of Republika Srpska released a draft of 2030 Energy Strategy which was officially endorsed in February 2012. It contains the main objectives of the energy sector long-term development. The key ones are: facilitating sustainable and safe energy development, predominantly using local energy sources to reduce foreign energy dependence, promoting renewable energy, applying the EU-27 practices and guidelines in the energy domain. The Strategy focuses on the need for sustainable increase in the sector investments, reaching the total amount of EUR 5.9 billion by 2030. ⁽⁶⁾

A series of projects aimed at expanding and upgrading Bosnia and Herzegovina's energy facilities are already in the pipeline or even underway. The largest energy company Elektroprivreda Bosne i Hercegovine is planning to invest by the end of the current decade \$ 1.1 billion in constructing new hydro and thermal power plants and infrastructure, modernizing old energy facilities, increasing efficiency in energy generation, transportation and consumption, developing alternative energy sources. In March 2009 JP Elektroprivreda Republike Srpske announced details about one of the huge energy projects. It envisages the construction of four hydroelectric power plants on the Drina river close to the border with Serbia. The project cost is estimated to be EUR 750 million and will be implemented as a joint venture with Elektroprivreda Srbije. The same company has signed an agreement with Britain's Energy Financing Team (EFT) which is going to construct two thermal power plants worth around EUR 800 million. ⁽⁷⁾

Considerable emphasis is laid on the increase in gas imports expected to be delivered by the South Stream gas pipeline. Republika Srpska is the only one eager to take part in the project and has already negotiated with Russia the construction of a pipeline branch from Serbia where the future pipeline route is designed to run. The gas interconnector will enable Republika Srpska to largely increase the volume and security of imported gas supplies which will inevitably contribute to energy diversification. Its government has conferred on South Stream a national project status and has declared that its implementation is a national strategic goal. The pipeline will facilitate the gasification-based electricity in all cities and municipalities in the republic. In 2012 the government authorized the state-owned company Gas Republike Srpske to arrange the setting up of a joint venture with Gazprom. (8)

Bosnia and Herzegovina is one of the involved countries in the Gas Ring in the Western Balkans project initiated by the Energy Community of SEE with the aim to provide the necessary gas supplies and diversify imports to the region. The domestic gas demand is projected to rise from 600 mcm in 2010 to 1.4 bcm in 2025, or more than twice. (9)

Till 2012 there were no solar and wind power stations in Bosnia and Herzegovina. Future construction plans were only announced towards the end of the past decade. The pilot project will have to be completed in the southern part of the country by the end 2012. The construction of the 44-MW power plant worth EUR 78 million will be financed by the German bank Kreditanstalt fuer Wiederaufbau which pledged a total of EUR 200 million for similar facilities in Bosnia and Herzegovina. (10)

As to nuclear energy use, the country doesn't have nuclear power plants in its territory and neither does it aspire to construct any in the future.

3. Bulgaria

During the first decade of the current century Bulgaria was one of the SEE countries with energy import dependence being on the downturn: from 46.5% in 2000 to 40.6% in 2010. It was much less than the average level in the region and over that period it was only Bosnia and Herzegovina that succeeded in reducing its dependence to a greater extent. What should be noted is that the downward trend appeared in Bulgaria after 2008 when the country's energy import dependence reached a national record of 52.2%. The following couple of years witnessed a slump of nearly 12% (**see Table 9**).

That was largely a result of the 2009-2010 economic recession which brought energy consumption and imported volumes down by a third. Therefore the decrease in Bulgaria's energy dependence was mainly due to temporary situation-driven factors.

Over the past decade no significant changes were to be seen in its energy mix. The lignite constituted the largest share as the country possesses substantial deposits ranking it fourth in SEE. The domestic coal production increased by 10% between 2000 and 2010. (1) Towards the end of the period the share of coal in the energy generation stood at 46.8% and in the overall consumption it was 36.6%, as 10% of the used volume was imported (**see Appendix 24**).

In 2009 the share of oil in Bulgaria's energy consumption was 36.1%. There were no domestic oil supplies and the existing needs were met through imports that almost entirely were coming in from Russia. Together with petroleum products where the exports exceeded the imports twice this share was 12% lower. The country imported nearly 85% of the gas it needed predominantly from Russia. The gas share in the energy consumption accounted for 12.4%. The units of Kozloduy nuclear power plant supplied a fifth of the utilized energy which established the country as a regional runner-up in this respect with Slovenia being the leader. The hydropower represented less than 2% in the energy mix. The energy output produced from biofuels and waste was twice as high (**see Appendix 24**).

The electrical energy occupies a core place in Bulgaria's energy sector. During the first decade the electricity production grew by nearly 10%, while the consumption shrank by a fifth. (2) The country stood out as one of the electricity exporters in SEE. In 2010 its share in the total SEE electricity exports was some 20%. (3) The break-down of the power generating facilities reveals that the biggest output of 55% was yielded by thermal power plants, while the nuclear power units supplied 38%, hydropower – 8.5% and RES – just 1.5% (**see Appendix 16**).

According to the author's calculations the energy sector accounted for around 6 % of Bulgaria's GDP in 2010. It was one of the national economy sectors with high concentration of industrial and financial resources, as well as consistent involvement of foreign companies. In 2010 five out of the six Bulgarian companies with the largest annual turnover operated on the energy market. The same applies to eight of the top ten companies in the country. As many as four of the energy market players were either owned or controlled by foreign corporations – two by Lukoil (Russia), one by

OMV (Austria) and one by CEZ (Czech Republic). Gazprom owned 50% of the shares in another energy company called Overgaz. A total of five companies were involved in the oil and gas sector, whereas only a couple of them dealt with electricity (**see Appendix 25**).

From the start of the current decade up to now the Bulgarian state institutions have adopted a few fundamental documents elaborating on the energy development. In July 2002 the Parliament gave the green light to the Energy Strategy proposed by the government which replaced an earlier adopted National Strategy for Energy Development and Efficiency by 2010. The Ministry of Economy, Energy and Tourism drew up and the government endorsed in 2011 a new 2020 Energy Strategy. The key priorities outlined therein are:

- ensuring security of energy supplies;
- increasing RES-based power generation;
- raising energy efficiency;
- promoting a competitive energy market and a policy towards fulfilling energy needs;
- safeguarding consumer rights.

The main goals of the Energy Strategy are ensuring a safe and sustainable energy system, keeping energy industry as one of the leading sectors of the Bulgarian economy, expanding the nuclear power and RES-E (electricity from RES) generating facilities, raising the management efficiency of energy companies, etc. (4) In terms of timing the objectives are differentiated to cover a mid-term agenda which runs up to 2013 and are as well grouped into two separate scenarios (base and target-oriented) respectively spanning the period up to 2020 and 2030.

In addition, there is a set of specific tasks in the Strategy providing for the convergence with the EU long-term energy policy: a 20% reduction by 2020 in greenhouse gas emissions (GHG emissions) compared to 1990; increasing the share of hydro energy generation and RES-E respectively by 20% and 10% over the specified period. The major challenges the Bulgarian energy industry is expected to face are the existing high energy intensity of GDP, high energy import dependence, one-sided dependence on oil, gas and nuclear fuel imports provided by the Russian Federation, necessity of environmental sustainability in the energy sector. (5)

Here are some of the main objectives of Bulgaria's Energy Strategy. According to the base scenario the GDP will rise by around 60% in 2020 compared to the reference year, which is 2005, and by nearly 100% in 2030. The primary energy generation will grow respectively by 10% and 16% with the energy demand rising by 7.5% and 9.5%. The consumption of fossil energy resources and oil will go down, while natural gas use will increase by 6.7% in 2020 and 15.2% in 2030. The margin of the gas consumption rise will be bigger: respectively by 14.3% and by almost 25%. The nuclear energy consumption will make the most noticeable leap: 14.3% by 2020 and 35.2% by 2030. The nuclear power units will account for 22.3% of the generated electricity in 2020 and for 30% in 2030.

The electricity consumption will go up respectively by 9% and by 23%. The production will exceed this rate increasing by 13% and by 32% whereby it will not only meet the national demand but also allow for a surge in exported volumes. The energy import dependence will be reduced to 45.8% in 2020 and 43.3% in 2030. The share of RES in the final energy consumption which was 10.3% in 2005 will climb to 12.7% in 2020 and 13% in 2030. As regards the RES share in electricity consumption will amount respectively to 10.6%, 16.5% and 16.7%, while in the transport sector its distribution will be 1.1%, 1.9% and 2.8% (**see Appendix 26**). (6)

In the first decade of the current century the Bulgarian government managed to push through a number of documents laying the statutory basis of the pursued energy policy. Among the key ones are: Energy Act (2006), Energy Efficiency Act (2007), Renewable and Alternative Energy Sources and Biofuels Act (2007), National Renewable Energy Action Plan (2010), etc.

A series of energy projects were prepared in alignment with the energy policy aims. Some of them deal with the modernization and upgrade of the electricity production capacity of Maritza East Mines, the largest energy complex in SEE, situated in the southern part of the country and exploiting its richest lignite field. The Italian company ENEL has put forward a bid for the construction of a 700 to 800-MW power unit and the German RWE is ready to construct a whole power plant with the same power generation parameters. The total cost of both projects is around EUR 2 billion. The Japanese company Toshiba has also expressed in the construction of two 600-MW thermal power stations. The pivotal hydro energy project is Gorna Arda Cascade which dates back to 1999 but has eventually been suspended. It is expected to be launched in 2013 and the contactor will be the Austrian energy company EVN.

Until March 2012 Bulgaria's top priority project was the construction of a second nuclear power plant – Belene NPP – its site is situated on the shore of the Danube. The works commenced back in 1981 when the facility was designed to consist of four Russian-built reactors packed with a total capacity of 4 000 MW. Due to financial considerations it was postponed in the early 1990s. In December 2002 the Bulgarian government decided to re-open the project. That was done much later, in the autumn of 2008, when it was agreed that the revised NPP design will feature two reactors with a total capacity of 2 000 MW. Earlier that year the Russian company Atomstroysport and Bulgaria's National Electric Company (NEC) signed a contract which stipulated that the first reactor should be completed in six and a half years and the second – in seven and a half years. The initial cost of the project was EUR 4 billion which rose to EUR 6.4 billion four years later. (7)

On 28 March 2012 the Bulgarian government declared it had given up on the project. Financial considerations were said to prompt the decision, particularly the high cost of the undertaking which was estimated by the project consultant HSBC to have reached EUR 10.3 billion. (8) The Bulgarian Prime Minister stated that the almost completed first reactor commissioned for Belene NPP would be deployed at Kozloduy NPP site becoming its seventh power unit while the construction site itself would be used for a new gas power station. During her visit to Japan the Chairperson of the National Assembly Tsetska Tsacheva invited Toshiba to invest in the construction of an alternative power plant situated at the former Belene NPP site. (9)

It appears that Bulgaria has dropped a project assessed by Russia and the International Atomic Energy Agency (IAEA) as having the highest degree of safety and equipped with cutting-edge technology. (10) Upon resuming the Belene NPP construction in 2008 the country has spent 1.6 billion BGN (approx. EUR 900 million). The compensation sum Russia is very likely to claim for terminating the contract is EUR 1 billion. (11) The view shared by a number of energy experts is that the prospective additional nuclear power unit in Kozloduy, if ever deployed, will be more expensive than the Belene project and could eventually become operational no earlier than the middle of the 2020s. (12)

The license of one of the two operational Kozloduy NPP units expires in 2017 and that of the other one in 2021. The government hopes that the term could be extended by 20 and even 30 years which in turn require the IAEA's permission and the European

Commission's approval. The country has already earmarked EUR 250 million for modernization of Kozloduy reactors (13) but those funds might prove quite insufficient.

It's very possible that Bulgaria could be left with no nuclear power units in the next decade. At the same time the Bulgarian government's decision on quitting the Belene project could easily be revised since the public and political support for it is limited and the main opposition party has called for a referendum on the issue. The dim prospects for the nuclear energy development defy the goal set in the 2020-2030 Energy Strategy of a significant increase in the nuclear power share both in the gross energy consumption and the electricity output. (14) It hinges on the construction of a new power plant.

One of the Energy Strategy priorities is boosting natural gas production, enhancing imports security and diversifying gas supplies. There has already been achieved some progress in this respect. Drilling activities for new gas fields have been going on for some time in the Black Sea waters. In the past decade were discovered gas deposits that were gradually explored and in 2011 they provided around 15% of the domestic gas consumption. Bulgaria's Minister of Economy has revealed the forth coming exploitation of another gas field in the northern part of the country which will push that share to 30-35%. (15) Unfortunately, the available deposits aren't so rich will be used up quickly.

In July 2012 Bulgaria's Council of Ministers approved the issuance of a permit to the French company Total that won the tender to perform, in cooperation with OMV (Austria) and Repsol (Spain), exploratory drilling for natural gas deposits in a region off the Black Sea coast spanning 14.4 km². It is very close to the Romanian waters where the neighbouring country revealed earlier that year to have discovered substantial gas deposits. The Bulgarian Minister of Economy and Energy stated that the preliminary explorations proved the existence of gas deposits off the Bulgarian coast as well and that their future exploitation would contribute to the diversification of supplies and reduction in prices. He went on to admit that due to the deeper waters location their use would pose a technological challenge. (16)

Further opportunities in this respect are Bulgaria's participation in the projects for the construction of Nabucco and South Stream Pan-European gas pipelines. The country plays a key role since, apart from Turkey, it's the only one in SEE to host both pipelines running through its territory. The projects are recognized to be of natural significance.

Nabucco and the planned extension of the Turkey-Greece gas pipeline to Italy (ITGI) are crucial for Bulgaria's gas imports diversification. They will enable the country to have a pivotal place in connecting the national gas grids of the SEE states and this is exactly why the Bulgarian authorities readily signed construction contracts with its neighbouring countries.

In March 2010 Bulgaria and Greece signed an agreement for the construction of a gas pipeline connection that should be completed by 2015 - 2016. The planned gas interconnector between Bulgaria and Greece will be a branch of the Turkey – Greece – Italy gas pipeline (ITGI). In January 2010 the Energy Ministers of Bulgaria and Turkey signed a memorandum on the construction of a new gas pipeline in addition to the one already in operation since the 1990s which provides for the gas transit from Russian across Bulgaria to Turkey. This pipeline is scheduled to be ready by 2016-2017 as an extension of the Nabucco Pan-European gas pipeline. Another gas pipeline should connect Bulgaria and Romania A road map agreement for building up the gas was signed in November 2010. The fourth project of that kind is between Bulgaria and Serbia and according to the agreement should be completed by 2015.

The projects mentioned above were included in the mid-term Energy Programmeme covering the period up to 2013 but in 2012 it became quite evident that they won't be completed within the deadline. By and large, the whole issue is contingent on the implementation of Nabucco, South Stream and ITGI pipelines which should carry the necessary gas supplies.

One of Bulgaria's energy policy goals is achieving a RES share of 12.7% in the energy consumption in 2020 and of 13.0% in 2030. The data published by Eurostat shows that the targeted level was already reached in 2010. It was a result of the launch of the new hydropower station and the rapid increase in the wind and solar energy, though their share in the energy consumption remained relatively small. The government declared its ambitious aims to construct alternative energy generation facilities but was forced to drop the majority of the projects. At the start of the present decade were issued permits for the deployment of alternative energy facilities with an expected capacity of 12 000 MW. However, due to the huge operational costs (ten times as high as the costs incurred by conventional energy sources) the Bulgarian authorities had to sharply slow down the rate of their expansion. (18)

4. Croatia

Croatia's energy import dependence in 2010 was 52% or considerably below the average in SEE. It didn't climb up compared to its level at the turn of the century which was a consequence of the financial and economic crisis of the recent years causing a sizeable drop in the domestic consumption and imports of basic energy sources. As a result, over a short period of just two years (2008-2010) Croatia's dependence went down by around 8% (**see Table 9**).

Natural gas accounts for the largest share in the national energy mix. In 2010 it was 54% of the domestic energy output but half that amount, or 27.6%, of the final energy consumption (**see Appendix 27**). The country ranked third in SEE in terms of natural gas deposits with the production volume having increased by some 40% throughout 2001-2010. (1) The largest deposits providing around 70% of the natural gas supplies are located near the town of Molve in the north of the country. They were discovered in the 70s of the 20th century and are operated by the state-owned energy company INA. Over the specified 10-year period the gas consumption grew by 12%. In the early 2000s Croatia didn't export gas but in 2010 it reported exports of approx. 600 mcm. Apart from Turkey it was the only other state in SEE exporting any quantities of gas. Yet, it's worth noting that the volume of gas imports was twice as large as exports. (**see Appendix 15**).

Croatia possesses limited oil deposits, hence its modest oil production which in 2010 represented 20.5% of the domestic energy output, much in contrast to the energy use, where the oil share was two and a half times as high (48%). More than four fifths of the oil consumption was provided through imports. Unlike the negative balance between oil exports and imports, it was positive with regard to petroleum products which in turn lead to a total share of both oil and petroleum products of around 45% in the national energy mix. (**see Appendix 27**). In 2008 the Croatian media announced that in a vast area near the town of Karlovac in the central part of the country was found a substantial amount of oil estimated by experts to be tantamount to those in Kuwait. Meanwhile other experts dismissed the information as not plausible. It if might happen to be true, any future exploitation of the deposits will require massive investment beforehand and will inevitably be associated with environmental risks. (2)

The other energy sources were on the periphery of Croatia's energy mix. The share of hydropower was 14.2% of the energy production and 6.7% of the consumption; the portion of coal and peat, both entirely imported, was 5.8% of the consumption; biofuels

accounted for 11% of the production and for 4.4% in the overall energy mix (**see Appendix 8**). The generation and use of RES-E (geothermal, solar and wind energy) were close to zero. (**see Appendix 27**).

The electricity generation in Croatia rose by nearly 15% during 2000-2011, while the consumption – much more noticeably, i.e. by one third. (3) The country was a net electricity importer with import/export ratio equal to 2.5:1. The hydropower plants held the biggest share of 50% in the electricity mix, whereas the thermal power plants represented just a third (36%). Croatia is one of the four SEE states relying on nuclear power. It is generated at Krsko NPP which is situated in neighbouring Slovenia and was built and later operated by them as a joint venture on an equal footing (each is entitled to 50%, or 338 MW, of the electricity produced by the sole reactor). In 2011 the share of Krsko NPP in Croatia's electricity mix was around 8.5% and in domestic consumption - just 15% (**see Table 7 and Appendix 16**).

According to the author's estimate, upon the start of the current decade the share of the energy sector in the national GDP was 5%. The biggest energy company ranked first nationwide on annual turnover (almost EUR 3.3 billion in 2010) is INA d.d., operating in oil and gas extraction, production and transportation. Some 47% of INA equity is owned by the Hungarian company MOL and approx. the same stock is state-owned. In 2010 INA was eight on annual sales revenue among the biggest companies in SEE (**see Table 8**). Out of the five largest energy companies in Croatia three of them operate in the electricity industry and two – in the oil and gas sector. They comprise half of the ten biggest companies in the country (**see Appendix 28**).

Croatia's energy policy follows the Strategy for Energy Development adopted by the Parliament in October 2009. In line with the Strategy were developed national energy programmes and a special fund for their subsequent implementation in various areas. The statutory basis in the energy sector consists of the Energy law that was adopted in 2001 and twice revised in 2004 and 2007, the Electricity Market Act, the Act on the Regulation of Energy Activities, the Act on Production, Distribution and Supply of Thermal Energy, etc. In 2010 were endorsed the National Renewable Energy Action Plan, the first National Energy Efficiency Action Plan, and the law on radiological and nuclear safety.

The Energy Strategy which covers the period up to 2020 envisages a 3.1% increase in the energy production and consumption. A couple of thermal and a couple of

hydroelectric power plants will be constructed. The future deployment of a new nuclear power unit should be deliberated and eventually approved in 2012. The total amount of investments considered to be allocated for the development of the energy sector is EUR 15 billion. Some EUR 2.6 billion will be earmarked for the electricity sector where the production capacity needs to double. Here are some of the forthcoming activities: constructing liquefied natural gas (LNG) terminal, connecting the national gas grid with Hungary's grid, modernizing and upgrading oil refining capacity, stockpiling emergency oil supplies which, in the event of temporary import disruption, will be able to cater for the domestic consumption for a period of three months. (4)

One of the key energy projects Croatia is involved in is the Ionian Adriatic Pipeline (IAP). It is being jointly carried out by Croatia, Albania, Bosnia and Herzegovina and Montenegro. Once completed, it will be hooked up to the planned Trans Adriatic Pipeline (TAP) which will transport natural gas from the Caspian region. In 2010 when the Croatian government adopted its Energy Strategy it also signed a contract with Russia for the construction of a Croatian extension of the future South Stream gas pipeline which is designed to run through neighbouring Serbia. Its significance is determined by the high share of gas supplies imported from Russia (40%) in the domestic consumption. (5) When IAP and South Stream are completed Croatia will be in a position to fully accommodate its needs projected by the Energy Community of SEE to rise from 3.6 bcm in 2010 to 4.2 bcm in 2025 (6) and will, in addition, manage to partially diversify its natural gas imports.

A number of Russian companies have taken interest in expanding the energy cooperation with Croatia. In the spring of 2012 Zarubezhneft stated its willingness to invest nearly 1 EUR billion (\$ 1.4 billion) in energy infrastructure projects in the country over the next five years. It offered, in particular, to build oil and gas pipelines from Slavonski Brod in the east of Croatia to Krk Island, oil depositories on the Adriatic Sea coast and its own petrol station network. (7)

The financial and economic crisis rampant at the end of the past decade and the start of the current one affected badly all energy projects no matter whether they were still in the pipeline or already in progress. Due to the shortage of foreign investment the implementation of the majority of projects was either delayed or suspended. Until the beginning of the current decade the country has failed to achieve one of the priority goals of its energy policy, which is to increase the RES-E facilities so as to represent 20% of the energy mix by 2020 as the national Energy Strategy has prescribed. (8) The

unsatisfactory results were partly caused by the lengthy administrative procedures regulating the sector. (9) The first wind power facility in Croatia was installed in 2004 but the gross generating capacity of that kind of power units reached barely 70 MW in 2011 (**see Appendix 17**). It was only at the end of 2011 that the first solar energy installation was reported to get under construction on the island of Hvar in the Adriatic Sea.

No nuclear energy units are located in Croatia's territory, yet in the past century the country took part in the Krsko NPP construction in Slovenia which was their joint energy project. In 2009 it was announced that Croatia was negotiating for the joint construction of a nuclear power plant in Albania's territory but was later refuted by the Croatian authorities. As a matter of fact, the country declared it was ready to sign a memorandum with Albania whereby a joint expert group could be assigned only examining the possibilities for a future undertaking of that kind. (10) The following year Croatia got the opportunity to participate in the project for Bulgaria's second NPP near the town of Belene, resumed a couple of years earlier. In 2011 the Bulgarian government decided to invite three Balkan states, one of them being Croatia and the other – Serbia and Republic of Macedonia, to invest in the NPP construction in return for a share of the future generated electricity. Bulgaria proposed a project participation share of 1%, 1.5% and even 3% but nevertheless the Croatian government turned the offer down. (11)

Croatia's Energy Strategy set out that the state authorities should decide in 2012 whether to go for a NPP located within the boundaries of the country. Ahead of that time official representatives stated that the government was not considering any deployment of nuclear energy facilities. At the end of 2011 the Minister of Environment M. Holy said that NPP construction was a very expensive endeavour which was beyond the nation's ability and what was more, it could pose a huge environmental risk. A further argument against the project was that it was likely to become operational around 2030, while the country was in need of fresh energy facilities much earlier. (12) Still, it's possible for Croatia to opt for a joint project with one of its neighbouring countries in the future. Slovenia seems to be the preferred partner because of the successful record of the two countries' involvement in the construction and operation of Krsko NPP and in the context of Slovenia's intention to expand it by an extra power generating unit.

5. Greece

At the start of the 2010s Greece was one of the two states (together with Turkey) with the highest energy import dependence (69%) considerably exceeding the average level in SEE. Prior to the financial and economic crisis that engulfed Greece in 2009 it was even higher (72.5%) but underwent a certain drop due to the reduction in consumption and energy resources imports (**see Table 9**). The main reason for the high energy dependence is that apart from coal (in terms of proved reserves the country ranks second in the region) Greece imported nearly 100% of the supplies of crude oil and natural gas. The share of coal in the domestic energy production was 81.1% but as regards the consumption the share was noticeably smaller – 28.6% (**see Appendix 29**).

The production and consumption of coal went down by around 10% throughout 2000-2010. (1) The portion of oil and gas in the energy supply and demand was respectively 66.8% and 10.1%. There was a positive balance between the exports and imports of petroleum products. The biofuels and waste accounted for 9.2% of the production and 3.3% of the consumption, whereas the share of geothermal, wind and solar energy in all was respectively 4.6% and 1.5% (**see Appendix 29**). Over 2000-2011 the electricity output rose by a fourth and the demand by approx. a third which consequently made Greece import more electricity than it exported. (2) In terms of electricity generating capacity the only SEE country it was behind was Turkey and as to electricity output it ranked third after Turkey and Romania. The main source of electricity production was the thermal power plants which delivered 75% of the overall output. The share of hydroelectric power stations was quite smaller, i.e. 20% and the alternative energy sources provided just 5% (**see Appendix 29**).

It was estimated by the author that at the start of current decade the energy sector generated nearly 7% of Greece's GDP. Its distinctive feature is that the production capacity and financial resources are to a greater extent concentrated in a handful of companies regarded as the leading ones in the country. A total of five out of the ten largest Greek companies operate in the energy sector - four of them are specialized in the oil and gas production and distribution, while the other one deals with the electrical industry (**see Appendix 30**). In 2010 four of those companies were among the top five energy businesses in the region (**see Table 10**). Unlike the majority of SEE countries whose energy sectors are dominated by foreign players the largest energy companies in Greece are owned either by the state or by local equity funds.

The advancement of the energy sector in Greece is based on the Energy Strategy endorsed in March 2004 which outlined the following priority guidelines:

- access to a wide variety of energy sources
- construction of oil and natural gas pipelines within international networks
- increased use of domestic energy sources and stocks
- reduced dependence on certain high risk energy sources
- development of Renewable Energy Sources (RES) installations with the granting of incentives
- use and diffusion of clean and efficient environment friendly technologies
- liberalisation of the market, increased competitiveness and putting an end to monopolies in the electricity and natural gas sectors.
- establishment of a healthy investment climate for businesses in the energy sector
- energy savings for industry, transport, buildings and homes
- establishment of national targets for the increased penetration of energy generated from RES, the reduction of greenhouse gas emissions and energy saving. (3)

During the second half of the past decade the country enacted legislation on the liberalization of the electricity and natural gas markets as well as laid down a statutory framework for the implementation of the EU directives aimed to converge the energy market regulations in all member states. Those regulations were designed to remove the existing monopoly on the energy market, attract more investment, liberalize electricity and natural gas production, transportation and consumption, raise energy policy efficiency, facilitate and encourage Greece's participation in the international energy cooperation. In 1999 was adopted a law promoting the investment in RES-E generation as defined by Directive 2001/77/EC. Later was introduced a national Action Plan and a separate law (Law 3851/2010) stipulating in accordance with the EU directives that the share of RES by 2020 should reach 20% of the gross energy consumption, 40% of electricity production, 20% of heating energy and 10% of transport. (4)

The latest document dealing with the energy sector is the Greek Energy Roadmap to 2050. It was compiled by the National Energy Strategy Committee in the spring of 2012. The Strategy envisages reducing dependence on imported energy, maximizing the penetration of RES, achieving a significant reduction in emissions of carbon dioxide

(CO₂) by 2050, and reinforcing the protection of final consumers are the main pillars of the national energy planning. It also contains a few scenarios for the fulfilment of national and European targets. The main goals of the base scenario are:

- reduction of the greenhouse gas emissions by 60 % - 70 % by 2050 in relation to 2005;
- 85 % - 100 % electricity generation from RES;
- raise of the RES use in gross final energy consumption by 2050 at a rate of 60 - 70%;
- stabilization of energy consumption due to energy saving measures;
- significant reduction of oil consumption;
- increase of the use of biofuels in transportation sector at the level of 31% to 34% by 2050;
- improvement of the energy efficiency for the entire building stock and a large penetration of RES in buildings, etc. (5)

A number of Greek energy companies (Endessa Hellas S.A., Heron S.A., Thessaloniki Energy S.A., Enelko S.A., Mytilineos Power Generation and Supply S.A., etc.) have been granted licenses and some of them have already started the implementation of multiple energy projects, the most prominent of them being the construction of power plants with a total capacity of 3 500 MW. The unprecedented financial and economic crisis raging in the country since the end of the past decade has caused suspension or at least delay of most of the projects.

Over the past ten years solar energy was the fastest growing electricity generating capacity. From 2002 to 2011 it rose by six times to reach 1 629 MW. The first larger solar energy installations were constructed in the middle of the past decade and their capacity became 550 MW in 2011. Greece ranked at the top of the list in SEE in 2010-2011 on installed wind and solar energy facilities which amounted for a fifth of the overall capacity region-wide (**see Appendix 17**).

One of the most notable projects is the gas pipeline connecting the Greek and Turkish national gas grids which was successfully brought into operation in the autumn of 2007. It supplies natural gas from the Caspian region and has the capacity to transport a total of 11 bcm of gas. At the beginning of the current decade it enabled Greece to meet nearly half of its natural gas needs. Apart from ensuring more secure supplies the pipeline is instrumental in diversifying the gas imports. Greece is one of the few SEE

states which, primarily thanks to the pipeline from Turkey, has succeeded in noticeably reducing the extremely high dependence on Russian gas. While in 2005 Russia's contribution to Greece's gas imports was 85%, only five years later it slumped to 57%. (6) The pipeline will increase its influence when its extension to Italy, scheduled for 2015, is completed. The project called Interconnector Turkey-Greece-Italy pipeline (ITGI), regarded as a priority by the EU, was included in the Southern Energy Corridor. (7)

Greece is also keen on the implementation of South Stream gas pipeline designed to carry gas supplies from Russia to a number of European countries. It was one of the ten SEE states to sign a participation contract and to declare willingness to be part of this Pan-European energy infrastructure project. Its initial version included a branch from Bulgaria via Greece to Italy. However, the more likely route is expected to have Greece as its final destination. (8)

There are no nuclear power facilities deployed in the territory of Greece. Refraining from any NPP construction is a long-standing national policy duly justified by the environmental impact assessment for potential risks since the country is situated in a region highly susceptible to seismic activity. Such an issue was discussed in the past: in the 70s of the past century there was established a special commission to the National Electricity Company which was assigned the task to explore the conditions for the construction of a NPP in Greece. In the wake of the earthquake that hit the country in 1981 the issue was dropped from the agenda. During temporary periods of power shortage the country could resort to electricity imports from Kozloduy NPP in neighbouring Bulgaria.

6. Republic of Macedonia

Over the initial ten years of the current century the Republic of Macedonia's energy import dependence increased from 40.5% at the outset to 46% in 2008. In the following couple of years there was an insignificant drop brought about by the lower consumption and the subsequent reduction in the imports of energy resources, all of which is typical of an economic recession period. In 2010 the dependence stood at 44%, a quite lower level than the average in SEE (**see Table 9**).

The main portion in the Republic of Macedonia's energy mix belonged to coal - 80.5% of it was used in energy generation and 48% in consumption (**see Appendix 31**).

Throughout 2000-2010 the coal supplies maintained a relatively constant level until 2008 when, as a result of the financial and economic crisis, their volume shrank a bit. The coal consumption replicated that trend. (1) The oil share in the gross primary energy consumption was 35.7%. A somewhat different picture existed with regard to petroleum products output and demand. The sole refinery in the country has a production capacity of 2.5 million tons which was not utilized to the full. Nevertheless, it proved enough to meet the entire domestic demand and even to leave some of the produced quantities for export. In 2010 there was a balance between the exports and imports of petroleum products.

The country imported and used limited supplies of natural gas which accounted for less than 2.5% in the primary energy consumption (**see Appendix 31**). The imports came from Russia via a pipeline running through the territories of Ukraine, Moldova, Romania and Bulgaria. The pipeline capacity is 800 mcm of gas per year with an option to be increased to 1.2 bcm. (2)

The amount of electricity output in the Republic of Macedonia in 2010 fell short of fulfilling the existing demand and the country was compelled to resort to imports. That very year Macedonia was among the three SEE states (together with Albania and Montenegro) which only imported electricity. Some 70% of the power generating facilities are thermal, while the rest are hydroelectric power plants. The country hasn't produced electricity using any other sources (**see Table 7 and Appendix 31**).

The author has estimated that at the start of the present decade the energy sector generated around 5% of the national GDP. Half of the top ten companies operating in the Republic of Macedonia have an energy-related profile. A couple of them are involved in the oil and gas industry, and the rest deal with the production, distribution and consumption of electricity. The highest annual turnover (over EUR 510 million) has been reported by OKTA which owns the sole oil refinery in the country. In 1999 the company went under the control of the Greek oil refining company Hellenic Petroleum. In 2010 OKTA was the only Macedonian enterprise ranked among the top 100 largest companies in SEE (excl. Turkish companies). The other Macedonian companies possess a significantly lower potential (**see Appendix 32**).

In 2004 the government of the Republic of Macedonia endorsed "Energy Efficiency Strategy until 2020" whose main aim is the implementation of technologies providing for efficient energy use, as well as guidance for the energy efficiency policy in the

country. A couple of years later was enacted the Law on Energy laying down the activity framework of the Energy Agency, Energy Regulatory Commission and Energy Sector established in 2005 within the Ministry of Economy. In the autumn of 2009 was adopted the Action Plan for further harmonization of the national legislation with the *acquis communautaire* in the fields of electricity and natural gas.

The strategic goals and objectives of the national energy policy are outlined in the Strategy for Energy Development in the Republic of Macedonia until 2030 officially adopted in 2010. Its key priorities are:

- maintenance, revitalization and modernization of the existing and construction of new, modern infrastructures to the purpose of energy production and utilization;
- improvement of energy efficiency in the production, transmission and use of energy; utilization of domestic resources (reserves of lignite, hydropower potential, wind and solar energy) for electricity production;
- increase of the use of natural gas and renewable energy sources; establishment of economic energy prices;
- integration of the national energy sector in the regional and European market of electricity and natural gas by constructing new connections and by harmonizing the legislation with the existing *acquis communautaire* for energy, environment, competition and renewable energy resources. (3)

The Energy Strategy hinges on two scenarios envisaging an average annual rise in the domestic energy needs over the 2008-2020 period respectively with 2.64% and 2.2%. According to the base scenario the average growth rate of the energy consumption will be 2.5% in the 2020-2030 time span. (4) A number of scenarios have been drawn up focusing on the electrical industry development. The most prominent one features the construction of a 300-MW thermal power station by 2020, reconstruction of the existing hydroelectric power facilities and addition of new units with a gross capacity of 690 MW, improvement of the electricity transmission grid. The coal production will be expanded by the opening of three new mines.

In the subsequent period, from 2020 to 2030, there is planned the construction of a couple of new thermal power plants with a total capacity of 600 MW, a 1 000-MW nuclear power plant, a 93-MW hydroelectric power plant and RES-E generating facilities with a gross capacity of 200 MW. (5) The natural gas needs will be provided

for through the expansion of the national gas pipeline network and its connection to the regional pipelines thus ensuring a greater degree of security and import diversification.

In the period after 2020 a new pipeline delivering gas imports will have to be put into operation as the domestic needs are expected to increase by 9.8% on an annual basis - a rate nearly four times higher than the common energy consumption - eventually reaching 1.8 bcm. (6) In 2012 the Macedonian government declared its willingness to take part in the construction in the Pan-European pipeline South Stream. In July the same year the Republic of Macedonia and Russia were reported to have agreed on a South Stream branch running through the territory of Macedonia and likely reaching Albania and Kosovo. (7) In this way the country will be able to import 1.2 bcm of gas supplies per year which is calculated by the Energy Community of SEE to constitute its gas needs in 2025. (8) Around the same time the Russian company Sroytransgaz on the one side and Macedonian Energy Resources on the other managed to conclude a contract for the gasification of the country. (9)

The Energy Strategy concludes that the production capacity of the existing refinery is enough to satisfy the demand for oil and petroleum products. Yet, it is highlighted that the construction of AMBO oil pipeline passing through Bulgaria, Republic of Macedonia and Albania is of crucial importance. The Strategy also says that “the pipeline is likely to be complete by 2015.” This appears to an unattainable goal since the project has been shelved due to the failure to attract investment and the lack of oil supplies. (10)

According to the various scenarios by 2020 the RES-E production will have grown to be more than twice as high as the volume in 2005. The main part will be provided by hydro energy (over 90%) as there are plans for the construction of a total of seven big hydroelectric power plants and a number of smaller facilities. Although wind and solar energy generation hasn't been included in Macedonia's energy mix until the start of the current decade, it is projected to yield 194-402 MWh of electricity in 2020 and to increase by another 200-400 MWh over the next decade. (11)

In 2020-2030 the share of RES in the gross energy consumption will reach 19-24% and in the electricity output – 30.3%. The investments needed to drive the energy sector forward are estimated to be EUR 4-5 billion. (12) As to the energy mix composition, the share of coal, oil and petroleum products in the supply is expected to decrease from 81% in 2006 to 70.8% in 2020. Over the same period the natural gas share is targeted to soar from 2.4% to 16% and that of RES – from 11.5% to 13.3%.

Another major objective set in the Strategy is the reduction by 30% of greenhouse gas emissions coming from coal consumption and by 22% of those released by electrical industry. (13)

The Republic of Macedonia doesn't benefit from nuclear energy facilities and the government hasn't stated any intention in this respect so far. Nonetheless, such an option exists in the National Strategy for Energy Development. One of the three scenarios introduced for the expansion of electricity generating facilities in the period between 2020 and 2030 envisages the construction of both a hydroelectric power plant and a 1 000-MW nuclear power station. In case this option prevails the NPP construction should get started in 2026. A facility of this kind is believed to have an edge over the deployment of new thermal power plants as it will enhance energy security, diversify energy sources and measurably reduce greenhouse gas emissions.

Provided that a NPP is constructed in the Republic of Macedonia it will generate 40% of the national electricity output, while the remaining amount will come from RES (23%) and gas power plants (22%). The share of lignite-fired thermal power stations will shrink to 15%. (14) Should the Macedonian government proceed with its NPP project, it will most probably go for a joint venture with one or more neighbouring countries. An opportunity already emerged in 2010 when Bulgaria's cabinet officially invited the country to join the Belene NPP construction but got no response. (15)

7. Kosovo

Kosovo's energy import dependence went upward from 30% to 35% over the period between 2000 and 2010. Despite that fact, it's one and a half times lower than the average SEE level (**see Table 9**). Kosovo was one of the two countries in the region (Albania was the other) whose economy didn't experience a recession at the end of the past decade and in turn its energy output and consumption weren't on a declining path. The key role in the domestic energy mix is played by coal with proven reserves of 12.4 billion tons, of which 10.9 billion tons are actually utilized. The type of coal is lignite and it constitutes Kosovo's main natural wealth. (1) According to an estimate by the World Bank its value amounts to around EUR 6.5 billion, which is half of the value of all mineral resources to be found in Kosovo (EUR 13.6 billion). (2) The country owns the biggest coal deposits in SEE with a share of 49% of the gross quantity of proven reserves in the region (**see Appendix 13**). The lignite deposits which are in operation rank Kosovo third in Europe, with only Germany and Poland in front. (3)

The lignite production is concentrated in two local areas: one is Kosova with the bulk of the deposits of around 10 billion tons and other one is Dukajini where the deposits are estimated to be some 2.5 billion tons. The biggest mining sites are Sibovc, near the city capital of Prishtina, and Mirash where coal is on the ground surface. In 2010 the annual coal production was almost 8 million tons (**see Appendix 13**). Over the first decade of the current century it grew by a third, mirroring the growth rate in consumption. The coal production went as far as to meet almost entirely the domestic demand. (4)

At the beginning of the present decade the share of coal in Kosovo's electricity output was roughly 98% and a bit smaller in the national energy mix – around 80%. The remaining portion was comprised of oil and natural gas imports since the country doesn't possess any deposits. Between 2004 and 2010 the oil imports rose by a third and those of natural gas by five times. Still, their share in the energy mix, and particularly gas, was small – less than 20% altogether. (5)

In 2011 the domestic electricity output was 5.7 billion KWh having surged nearly twice compared to 2002. The share of electricity generated by hydroelectric power plants was around 1.5%. (6) The ratio among energy sources evident in Kosovo is unique not only in SEE but in Europe as a whole. In fact the country started using hydro energy in 2007. The electricity production is delivered mainly by two thermal power stations brought into use in the distant period of 1962-1984. The first is called Kosovo A whose capacity is 700 MW and the second is Kosovo B having a capacity of 620 MW. (7)

In 2011 the electricity consumption was around 3.5 billion KWh or 40% less than domestic supplies. (8) Yet, there was a significant shortage of electricity in Kosovo caused primarily by the huge technical, commercial and transportation losses which misspent between 33% and 45% of the electricity generated in 2010. (9) In the Energy Strategy of the Republic of Kosovo for the period 2009 - 2018 it is pointed out that between 2000 and 2007 the technically incurred losses of electricity per year represented 17-18%, while the commercial losses were twice as much, or 31%-35%. (10) In terms of quantity they accounted for almost half of the gross electricity consumption. Kosovan energy experts who analyzed the condition of the national energy sector concluded that the annual electricity losses at the start of the current decade were tantamount to the entire annual output of Kosovo A power plant and all hydroelectric power stations, plus a fraction of the output of Kosovo B. (11) That was the reason why the country was forced to import electricity. In 2011 the import/export ratio was roughly 2.5:1. (12)

According to the author's calculation at the start of the decade the energy sector generated 5-6% of Kosovo's GDP. The biggest energy company is Kosovo Energy Corporation (KEK) which is entirely owned by the state and integrates the production and distribution of electricity in the country. KEK possesses all energy facilities, including thermal power plants Kosovo A and Kosovo B. In 2006 the government decided to establish the energy company called KOSTT (Kosovo Electricity Transmission System and Market Operator). It came to the fore as a result of the structural reforms carried out in the energy sector in compliance with the requirements set by the Energy Community of SEE founded in the middle of the past decade. KOSTT is in charge of operating the national electricity transmission system and the interconnectors to the energy grids of the neighbouring countries – Montenegro, Republic of Macedonia, Albania and Serbia.

A number of smaller-scale energy companies provide the heating of the local regions - Prishtina, Gjakova, Mitrovica, etc. The key state institutions entrusted with the implementation of Kosovo's energy sector policies are the Ministry of Economic Development (the former Ministry of Energy and Mining) and the Energy Regulatory Office (ERO) set up in 2004. Another important administration unit is the Independent Commission for Mines and Minerals created in the following year which issues licenses for prospecting, exploration and mining of natural resources. During the first decade of the 21st century the relevant institutions adopted a series of statutory acts and other related regulations. Among them are the Law on Environment Protection (2003), the Law on Energy, the Law of Energy Regulator and the Law on Electricity (2004), the Law and Action Plan of Energy Efficiency 2010 -2018, etc. In May 2010 was endorsed the Energy Market Model, designed to boost the energy sector investment.

A core document treating Kosovo's long-term energy policy is the adopted in 2003 White Paper: Energy Strategy and Policy of Kosovo. In 2005 the Parliament ratified the Energy Strategy for the period 2005-2015, revised in April 2010 and renamed to Energy Strategy of the Republic of Kosovo for the period 2009 – 2018. In the incumbent Energy Strategy drawn up in close collaboration with the World Bank, the International Financial Corporation, the EU and the USA are outlined the following priorities:

- secure reliable energy supply
- restructure and develop the energy sector in compliance with the Energy Community Treaty

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- develop and rehabilitate lignite-fired power generation capacities
 - develop energy and distribution infrastructure
 - promote foreign investments in the energy sector
 - optimize exploitation of all available energy resources, including both indigenous and imported resources
 - promote environmental protection awareness in energy activities
 - ensure efficient use of energy and promote the use of RES; develop gas infrastructure. (13)

The fulfilment of the Strategy priorities requires the development of new power generation capacities, implementation of Kosovo's obligation under the Energy Community Pact, facilitation of the private participation and investments in the energy sector, creation of a sound and comprehensive legal and institutional framework for concessions to and privatization by strategic investors, promotion of energy efficiency and private investments for developing RES, a sound policy towards connecting to the regional gas networks and diversification of energy sources. (14)

Here are some of the leading objectives and projects in the energy field in Kosovo. The lignite production will increase by two and a half times: from 7.2 million tons in 2009 to 18.7 million tons in 2018. The electricity generation will grow at a higher rate than consumption and will therefore compensate the electricity shortage of the end of the past decade and create a positive trade balance. The existing thermal power plants will undergo rehabilitation and a new 398-MW hydroelectric power facility (Zhur) will be deployed by 2015. Particular effort will be taken for the reduction of losses caused by technical and other faults in the production, transportation and consumption of electricity.

The pivotal energy project is the construction of Kosova e Re thermal power plant scheduled to be in operation by 2015. It is expected to generate 7 500 GWh of electricity in 2018 thus accounting for nearly 60 % of the total amount of domestic output. (15) Another prominent project is the 400 KV electrical pipeline between Kosovo and Albania conceived to enhance the supplies and raise the energy security, especially in the wintertime. The project kick-off took place in May 2011. Its costs are estimated to be EUR 75.5 million and are to be covered by Germany's government and the German Development Bank. (16) The International Financial Corporation has also stated it's ready to fund some of Kosovo's energy projects (upgrading of Kosovo B thermal power plant, construction of a new coal mine in Sibovc, etc.). (17)

Within the energy infrastructure context the crucial projects are construction of distribution networks and connections with the gas pipelines in SEE – existing ones, those under construction and the future ones. The diversification of used energy sources is planned to take effect through the increase of RES to 7% by 2016. (18) Kosovo's government hopes to deploy wind energy facilities providing 309 MWh of electricity in 2016. (19) The natural gas consumption will also rise. Over 2012-2025 it is forecast to grow by 15.5% on an annual basis reaching nearly 1 bcm by the end of the period supplied entirely by the future Gas Ring in the Western Balkans, which is an initiative of the Energy Community of SEE. (20)

Kosovo's Energy Strategy which encompasses the period to 2018 doesn't specify the projected costs for the fulfillment of its goals. During the initial decade of the century the total amount of investment in the energy sector was over EUR 1.1 billion. More than a half was granted by international donors, mainly the European Agency for Reconstruction to the European Commission (EC). (21) The author's forecast is that in the current decade the energy sector will be in need of at least twice as much domestic and foreign investment.

Until 2012 no nuclear power facilities have been built in the country, nor does the government contemplate such plans for the future.

8. Montenegro

Montenegro declared its independence in May 2006. Prior to that moment the statistical data on its energy sector development was incorporated in the aggregate energy statistics of former Yugoslavia, and from 1990 the country had common records with Serbia. At the turn of the century its energy import dependence was around 35%. Until the economic recession of 2009 it displayed an upward trend reaching 52%, which was followed by a slight drop and in 2010 it stood at 51.3%. In this respect Montenegro was below the average SEE level (**see Table 9**).

The national energy mix is dominated by hydro energy whose share was 40% in 2010. Coal by itself accounted for 25%, while oil and petroleum products represented the third major energy source (around 25%) (**see Table 8**). Montenegro has managed to meet two thirds of its energy consumption relying on domestic supplies. As regards the main mineral energy sources – coal, oil and natural gas – the country possesses only coal deposits located in two regions - Pljevlja area (184.5 million tons) and Berane

basin (158 million tons, of which merely 18.5 million tons are exploitable reserves). (1) The coal production in the second half of the past decade increased by around 10% and proved enough to satisfy domestic needs. (2) Montenegro has no natural gas deposits in its territory and until the second decade didn't even import gas supplies, which generally covered an insignificant fraction of the primary energy consumption. In 2010 gas consumption was 600 mcm. (3) The most noticeable change occurred with oil as the imports rose ten times over the second part of the past decade consequently pushing its share by 5%. (4)

Throughout 2006-2010 the electricity production didn't go up, conversely, it practically shrank towards the end of the period due to the limited consumption in a time of economic recession. During that period there was a balance between electricity supply and demand. Montenegro has neither exported nor imported electricity. Hydroelectric power plants form the most distinctive share in the mix since the country has a vast hydropower potential. Experts have estimated its extent as being enough to deliver 9 846 GWh of electricity, yet until the beginning of this decade the existing facilities have harnessed a meager 17%. (5)

The biggest hydroelectric power plant in Montenegro with a capacity of 342 MW is Mratinje, built in 1975 in the canyon of the Piva river. Together with Perucica, a 307-MW hydroelectric power plant, it generates around 65% of the domestic electricity. The Pljevlja power station constructed in 1982 is the only coal-fired thermal plant. With a capacity of 210 MW it provides a third of the power supplies in the country.

According to the author's estimate at the start of the current decade the energy sector generated around 5% of the national GDP. Nearly 50% of the largest companies in the country operate in the sector. Elektroprivreda Cerne Gore (EPCG) is the company with the greatest amount of assets and highest turnover, which on sales revenues (EUR 301.6 million) in 2010 ranked 55th among the top hundred companies in the Adriatic-Balkan region (**see Appendix 33**). EPCG's scope of activity is the production and distribution of electricity supply. It runs the three biggest power plants in Montenegro and is owned jointly by the state and the Italian energy company A2A S.p.A., the latter possessing 43.7% of its equity. Another large Montenegrin electricity company is Crnogorski Elektroprenosni Sistem AD (CGES) which operates the national transmission electricity network. It was founded in 2009 as an autonomous spin-off from EPCG. Around 70% of its equity is owned by A2A S.p.A. and another Italian company called Terna S.p.A. A total of three out of the top five energy companies are

present in the oil and gas sector. The biggest one is Yugopetrol taken over by Hellenic Petroleum in 2002. The institutional mechanism and the legislative basis of Montenegro's energy policy started to take shape prior to its becoming an independent state. The central specialized body in this field is the Energy Regulatory Agency set up in 2004. After Montenegro's acquiring its new status the national energy policy was under the supervision of the Ministry of Economic Development. The Law on Energy was enacted in 2003 and a couple of years later the government adopted a document whereby it defined the main aims and objectives of Montenegro's energy policy.

In December 2007, following preparation work that lasted two years, was introduced the Energy Development Strategy by 2025. The same year were consequently adopted the Action Plan for the Implementation of the Energy Development Strategy, the Energy Efficiency Law, the Energy Efficiency Strategy and a number of other legislative acts.

The Strategy itself features nine general objectives:

- supplying consumers in a safe, quality and balanced way with various forms of energy
 - maintaining, revitalizing and technologically updating the existing infrastructure, and building new generation and exploitation energy facilities
 - reducing import dependence through investments in research and creating new energy sources and energy infrastructure
 - creating conducive legislative, regulatory and economic framework for private investments in the energy activities
 - increasing utilization of RES
 - establishing competition on the energy market
 - providing incentives for increasing energy efficiency and reducing energy intensity
 - sustainable energy generation and utilization with regard to all aspects of environmental protection in line with domestic commitments and the country's international obligations
 - supporting R&D and promoting new clean and efficient energy technologies.
- (6)

On the basis of these general objectives in the Strategy are determined the following strategic commitments in the energy field – the Strategy recognizes the international

obligations of Montenegro, EU energy policy guidelines and the obligations arising from the Energy Community Treaty that set forth the principles of reorganization of the energy market and the development of the regional energy market; it also recognizes energy as the mainstay of overall, sustainable and long-term national growth; energy efficiency in the period to 2025 should be raised to the level of medium-developed EU member states; the share of RES in the primary energy consumption should be at least 20 % in accordance with the objectives set by the EC; rational utilization of the existing hydropower potential in river basins in Montenegro; building a new thermal energy source; the existing generation and transmission/distribution system must be revitalized and technologically updated; minimizing the adverse effects of coal exploitation and deployment of thermal energy capacities on environment; reducing Montenegro's energy dependence to an affordable extent; systematic support for the integration of new RES by using solar energy, cogenerations from liquefied petroleum gas and liquefied fuels, as well as other local energy systems. (7)

Here is a short overview of some the key objectives of Montenegro's Energy Strategy. The energy policy is based on the national economic development prospects. According to the various scenarios the GDP rate in the specified period is projected to be within the 4.3%-7.7% range. The average annual rise in the final energy consumption is expected to be 1.9%-3%. The hydropower potential is assessed as crucial for the energy sector. To that end the emphasis lies on the modernization and capacity upgrade of the biggest hydroelectric power plants which are likely to cost EUR 166-180 million. The coal production is expected to reach 2.5-2.8 million tons per year secured through the construction of a new coalmine Pljevlja 2 and the increase in the capacity of Pljevlja 1 currently in operation. The overall implementation costs of those projects, including the installation of a central heating system in the town, are calculated to be EUR 274 million.

The Strategy also notes that the prospecting and exploration activities for oil deposits already carried out in two continental shelf regions have revealed potential reserves of 7 billion barrels of oil and 425 bcm of natural gas. If the predicted quantities prove true, the industrial exploration of the deposits might start after 2020. Compared to 2003, determined to be the base year, the production of oil and petroleum products is forecast to rise by 40%-60% by 2025 with imports accounting for bulk of oil supplies. There are also plans for the creation of strategic reserves providing for an emergency period of 80 days which is altogether estimated to cost EUR 18.3 million. The liquefied petroleum supplies need to be increased as well. Special emphasis is placed on

Montenegro's involvement in the construction of the Ionian Adriatic pipeline (IAP) meant to go through three more countries in the region, i.e. Albania, Croatia and Bosnia and Herzegovina. The investment contribution Montenegro is going to make for the project is EUR 60 million.

The share of RES in the gross energy consumption should reach 20%. The largest chunk (EUR 120 million) of investment allotted for new energy facilities will be spent on the construction of small-scale hydroelectric power plants with a total capacity of 250 GWh. As much as EUR 60 million is earmarked for solar energy installations with a capacity of 60 MW and some EUR 7.5 million for 5-10 MW energy generation from biomass. The average annual energy consumption is likely to go up by 1.2%-1.5% and one of the scenarios (qualified as "moderate construction") says that in 2010-2025 will be built 786.4-MW power production facilities estimated to cost EUR 958.7 million.

The electricity output is predicted to surge by approx. 50% and the RES share in it would in turn quadruple. Imports are going to shrink by around five times and equal the volume of exports. The amount of coal in the electricity consumption mix is expected to move up from 14.5% in 2010 to 27.6% in 2025. The use of hydropower will also go up from 7.7% to 11.7% and of RES – from 21.8% to 22.1%. Montenegro's energy import dependence is forecast to rise from 51.3% in 2010 to 68.7% in 2015 when it will gradually start going down to reach 59.3% in 2025. The expenditure on energy activities by 2025 will total EUR 1.96 billion and may easily hit EUR 2 billion with the addition of the national contribution for the construction of the gas pipeline running through Montenegro, Albania, Bosnia and Herzegovina and Croatia. (8)

This amount is very likely to increase owing to the country's participation in South Stream Pan-European gas pipeline. The government said in the autumn of 2011 it was interested in joining the project. It came to an agreement with Russia in February 2012 whereby the Russian energy company Gazprom will construct a pipeline branch to Montenegro. (9) The successful completion of both projects is critical to the Gas Ring in the Western Balkans which is one of the priorities of the Energy Community of SEE. The Ring will enable Montenegro to rely on secure gas imports. It's worth noting here that the domestic gas consumption is expected to swell to 700 mcm by 2025. (10)

The country doesn't possess any nuclear power facilities and neither does it consider the use of such source of energy in the future. At the start of 2012 the cabinet opposed the possible construction of a joint NPP by Albania and Croatia close to Montenegro's

territory. That was actually one of the reasons why the project proposed by the Albanian government was quitted. (11)

9. Romania

Romania's energy import dependence in 2010 was equal to its level at the turn of the century. The upward trend it followed was no exception to what experienced the majority of SEE throughout the period prior to the economic recession that wreaked havoc towards the end of the past decade. In 2007 it reached the record 32%, but afterwards, between 2009 and 2010, it sharply shrank to 20%-22% (**see Table 9**). That was primarily due to the lower domestic use which inevitably led to the reduction in energy imports, particularly oil and natural gas. By the start of the current decade Romania had the lowest level of import dependence compared all other SEE countries. It was just a third of the average in the region. Within the EU-27 Romania was the least dependent on energy imports except for Denmark. (1)

The advantage it has over the other SEE countries is that the domestic supplies are enough to meet the bulk of the national energy demand. The coal reserves are around 2.2 billion tons, two-third of them being lignite. Coal has accounted for 23.2% of the energy production and for 21.6% of the gross consumption (**see Appendix 34**). In the first decade of the 21st century coal production was on the rise by more than a fifth up to 2008 but suffered from the economic recession in 2009 and slumped to its volumes of 2000. Coal consumption experienced the same effect. (2) The share of imported coal in Romania's domestic consumption was a mere 12%. If the coal production volumes are kept unchanged the available lignite reserves in the country are very likely to be exhausted within the next 40 years. Provided that the production goes up by 4-5 million tons per year the reserves will suffice for a period of 14 years. (3)

At the end of the past decade the share of natural gas in the gross energy generation was 31.6% and only slightly less in the energy mix – around 30% (**see Appendix 34**). Romania has the largest gas reserves in SEE representing more than two thirds of the total reserves in the region. The domestic gas production was on a waning curve over the first decade of the century. In 2010 the amount was a third of what it used to be in 2000 but nonetheless was ample enough to satisfy around 80% of the demand, which declined likewise towards the end of the period. The imported supplies covered roughly 20% of the domestic needs. (4) If Romania retains its gas output volumes which were

10-11 bcm at the end of the past decade it will be able to rely on its own reserves in the next fifteen years. (5)

In February 2012 it was announced that Exxon Mobil and OMV Petrom had discovered new gas deposits off the Romanian Black Sea coast. The deposits potential was estimated to be 42-84 bcm and could cater for the domestic needs for a period of nearly 10 years. It was further reported that additional gas deposits were likely to be found in the same location. The Romanian President Traian Basescu stated that "Romania has the prospect of obtaining total energy independence. If several other deposits... have the same amounts of gas, as we suspect they do, our country will become a source of gas for other countries in Europe as well". (6)

The exploitation of the deposits could begin no earlier than the end of the current decade. They are located in deeper waters (between 1 000 and 3 000 meters down from the surface). The production process will require around EUR 10 billion's worth of investment. OMV Petrom has already stated it's planning to construct a large-scale power plant fired by the newly discovered gas supplies. (7) In the meantime Romania publicly staked a claim to an area of 350 km² situated in Bulgaria's Black Sea territorial waters and also supposed to be rich in natural gas. The Bulgarian authorities said that the sea area in question was in fact 17 km² and was disputed between the neighbouring countries for over 20 years. (8)

In terms of energy imports Romania is most dependent on oil supplies which at the end of the past decade accounted for 15.7 % of its energy production. The country imported nearly 60% of the oil it used, its share in consumption being 32.6%. Together with petroleum products, which in the greater part were up for export, oil provided less than 25% of national energy mix (**see Appendix 34**). The proven reserves of oil are limited and are forecast to reach a depletion point in 14 years if the oil production keeps its current rate of around 4.5 million tons per year. (9)

In 2010 Romania's electricity output was enough to meet domestic needs and secure a certain amount for export. Being a leader on the SEE electricity market the country has managed to achieve the best balance between exports and imports. Over the 2000-2010 period the electricity output increased by over 10% but the surge was brought to an abrupt end by the economic recession in 2009. The demand has retained its turn-of-the-century level, while the electricity exports have grown by 10 times. (10) The thermal power plants have generated 55% of the electricity output, or the largest portion of all.

The biggest thermal energy facilities in the country are Turceni (2 310 MW), Rovinari (1 420 MW), Mintia-Deva (1 285 MW), etc.

The share of hydropower plants was around 10%. The hydropower complex with the biggest capacity in Romania is Iron Gate I. It was built in 1960-1970 in cooperation with former Yugoslavia and is one of the largest in Europe. The part owned by Romania has a capacity of 1 200 MW. At the start of the present decade the country was one of the three states in SEE having nuclear power facilities on their territories. Cernavoda NPP is comprised of two reactors, respectively in operation since 1996 and 2007. In 2011 the power plant produced nearly 19% of the domestic electricity supplies (**see Table 6**).

According to the author's estimate at the beginning of the current decade the energy activities generated around 8% of Romania's GDP. A few almost 100% foreign owned energy companies dominated the national energy sector. A total of five of them operate exclusively in the oil and gas segment (**see Appendix 35**). OMV Petrom SA is the biggest Romanian company with a reported annual turnover of EUR 3.6 billion in 2010 which ranked it seventh among the top SEE energy companies (**see Table 10**). In 2004 it was privatized and the majority shareholder with 51% ownership became the Austrian OMV Group which also owns the fourth largest energy company in the country, i.e. OMV Petrom Marketing SRL. Apart from Romania, the OMV Group has subsidiaries in Bulgaria, Serbia and Montenegro. A couple of other Romanian-based companies - Rompetrom Refinery SA and Rompetrom Downstream SRL – are owned by the Kazakhstan KazMunayGas which in 2007 acquired 75% of their equity capital. Lukoil Romania SRE is a subsidiary of the Russian company Lukoil entering the Romanian energy market in 1998 by taking over Petrotel refinery in the town of Ploiesti.

The national energy policy is carried out under the supervision of the Ministry of Economy, Trade and Business Environment and with the participation of Ministry of Environment and Forests, Ministry of Transport and Infrastructure, Ministry of Justice, etc. A number of energy-related organizations were established: Agency for Energy Preservation (RAEP), National Agency for Natural Resources, Nuclear Agency, National Committee for Nuclear Activities Control, etc.

The Law regarding the efficient use of energy was adopted in 2000. It was amended and updated in 2006. Its main aim is to create the necessary legal framework for the development and implementation of national policies for the efficient use of energy. In 2001 Romania ratified the Kyoto Protocol to the United Nations Framework Convention

on Climate Change. According to it, Romania is obliged to cut its greenhouse gas emissions of by 8% from 1989 levels between 2008 and 2012. In 2003 the government approved the Road Map for Energy Sector and Strategy for the Promotion of RES. A year later (2004) it adopted the National Strategy for Energy Efficiency. The main objective of this strategy is the identification of possibilities and means to increase energy efficiency over the entire energy network through the implementation of suitable programmes. In 2007 Romania's electricity market was liberalized.

The basic document of the national energy policy is the Energy Strategy of Romania for 2007–2020 which was adopted in 2007. Four years later the government revised the Strategy formulating the energy policy aims and objectives in the period up to 2020. In the summer of 2011 the Ministry of Economy, Trade and Business Environment put forth for discussion a version of an energy strategy up to 2035. It says that “both the economic crisis in the past years and the new law packages adopted in the European Union in the field of energy and climate changes have deeply modified the context and the prospects in which Romania's energy strategy for 2007-2020, which is currently in force, was drawn up. The new strategy must secure the correlation of energy resources, economic capacities, technologic and economic-financial trends, and energy efficiency, environmental protection and conformity with the EU energy policy.”(11)

The key objectives in the revised Energy Strategy for 2011-2020 are as follows:

- providing adequate resources for a sustainable and secure development of the energy sector;
- reducing the national dependence on imported energy resources;
- diversifying consumption and imports of energy resources;
- modernising and expanding the existing energy infrastructure;
- raising energy efficiency;
- boosting RES-E generation;
- limiting negative environmental impact caused by energy production and consumption;
- further liberalising the energy market and fostering competitive market conditions;
- speeding up energy sector restructuring and modernisation. (12)

The reduction in the energy import dependence is contingent mainly on the increase of RES capacity which is expected to constitute 38% of the gross energy consumption in 2020. The revised version of the Strategy has moved this share up to 40% as RES should attain a 24% portion in the energy mix in 2020. (13) Other priority targets are the promotion of domestic coal use by introducing low-carbon emissions technologies and the expansion of nuclear power generation facilities. The energy production and demand in the second decade are related to the national economic development dynamics. There have been drawn up three GDP growth versions where the annual growth index varies between 161.1 and 192.5, the reference base being 139.7 achieved in 2007. (14)

Energy consumption is expected to stick to the level reached in 2010. Electricity use will increase by an average of 1%-2.6% per year. If no new gas deposits are discovered the volumes of extracted gas will stay unchanged and will even dwindle, while imports will grow from 7.5 to 8.5 bcm. (15) The Strategy prescribes the stockpiling of bigger strategic coal, oil and gas reserves, as well as the creation of a back-up energy generating capacity of 1 000 MW to be resorted to in the event of short-term electricity shortage.

The energy projects which are of paramount importance for Romania are also identified in the document. They are the participation in the Nabucco Pan-European gas pipeline, the construction of a gas connection between Romania, Azerbaijan and Georgia for LNG supplies, the construction of an oil pipeline from Konstanz through Serbia, Croatia Slovenia and Trieste as its final point, the construction of Tarnita – Lapustesti hydropower plant on the Someşul Cald river in Cluj county, which is aspiring to be the largest hydropower facility in the country with a generating capacity of 1 000 MW. (15) In 2009 Romania expressed its willingness to join the South Stream Pan-European pipeline project but until 2012 hasn't signed any agreement.

The upgrade of Cernavoda NPP capacity is also among Romania's energy targets. Back in 2002 the government revealed its intention to deploy a couple of new reactors at the site but the project was launched as late as 2008. Units 3 and 4 will have a total capacity of 1 440 MW and are scheduled to be operational respectively in 2016 and 2017. This, however, seems questionable as the project implementation which is estimated to be EUR 4 billion was temporarily suspended on 2011 due to the withdrawal of the four major investors - Czech group CEZ, GDF Suez of France, the German RWE and Spanish company Iberdrola. (16)

Once the two power units start functioning the share of Cernavoda NPP in the gross electricity production will reach nearly 40%. In 2008 the Romanian government stated that by 2020 a 5th reactor will be added up. A couple of years later the project was given the green light by the EC. It was subsequently revised to feature the construction of a new NPP comprised of up to four reactors with a total capacity of 2 400 MW and the selected location was the Transylvania region. The completion is scheduled for 2030. (17)

The accident at the Fukushima nuclear power plant in March 2011 didn't affect the government's decision to deploy new capacity at Cernavoda NPP. It was reflected in the revised version of the Energy Strategy by 2020. (18) Representative of the company operating the Romanian NPP (Nuclearelectrica National Company) stated that the power plant was designed to withstand earthquakes of a magnitude higher than 8 on the Richter scale. According to them there is no risk that such a massive earthquake could hit the country. The operator said safety of the Cernavoda plant helped to pursue the project of building the new reactors and continue its energy strategy. Just a year later the Economy Minister's advisor Tudor Serban said at an Energy Conference that "there are problems in the nuclear energy field, and countries get their strategies altered. Investments we have to make in safe operation are ever higher. Romania continues its nuclear power strategy, but changes are possible to happen in Romania, too." (19) The Prime Minister Victor Ponta assured that "Romania continues the project, while respecting all safety standards of course, especially after the Fukushima catastrophe" (20)

The fulfillment of the objectives of the Energy Strategy by 2020 will necessitate an investment potential worth EUR 30 billion. The greatest costs are expected in the electricity sector as the Ministry of Economy, Commerce and Business Environment reckons that EUR 40 billion is likely to be invested in its development. Another 5 billion are to be spent on increasing the RES-E generating capacity. (21)

As already happened in the past decade the bigger amount of the funds will be secured by foreign companies which invested around EUR 16 billion in Romania from the start of the century and created 54 000 new jobs. (22) In order to attract fresh investment into the sector the Ministry of Economy, Trade and Business Environment considers stepping up the privatisation process. In particular, it plans to sell 15% stakes in the national grid operator Transelectrica, the natural gas transporter Transgaz and the largest natural gas producer Romgaz, as well as 10% stakes in the leading electricity

producer Hidroelectrica and the operator of the country's sole nuclear power plant Nuclearelectrica. (22).

10. Serbia

Serbia's energy import dependence went slightly up over the past decade and in 2010 stood at 37% which was considerably lower than the SEE average level (**see Table 9**). The predominant energy source is lignite with a share of around 55% in the total energy supply. Kosovo's independence declared in 2008 stripped Serbia of 76% of its coal reserves leaving on its present territory only two major coal fields. One is Miocene lignite basin covering an area of 600 km² where reserves are estimated to be 2.2 billion tons. The other is Kostolac Miocene lignite basin situated around 90 km to the east of the city capital of Belgrade with reserves of some 700 million tons. (1) Both fields provide the bulk of the domestic coal supplies. In the period after Serbia starting to exist as a separate state (2006-2011) the coal production amounted to 40-41 million tons per year. (2) The coal demand didn't experience any noticeable surge either, but since it exceeded domestic output the gap was filled on an annual basis by around 1 million tons of imported coal (**see Appendix 13**). At the end of the past decade the coal share in the energy generation was 77.7% and together with imported quantities it represented 54.5% of the national energy mix (**see Appendix 36**).

Serbia owns limited oil and natural gas deposits and all additionally needed supplies are obtained through imports. In 2010 oil accounted for 7% of the energy production and 20.7% of consumption. The crude oil imports were three times as much as the domestic output and petroleum products, which had an import/export ratio of 3:1, managed to deliver just 28% of the respective overall amount. Hydro energy represented 9.3% of the primary energy generation and 61.1% of its consumption (**see Appendix 36**).

At the end of the first decade of the century the electricity production exceeded the domestic demand naturally resulting in a positive export/import balance. More than two thirds of the output was generated by thermal power plants, while 32% of it was delivered by hydropower stations (**see Appendix 36**). Nearly half of the electricity in Serbia is produced by Nikola Tesla A and B thermal power complex with a total capacity of 2 660 MW. It is situated on the shore of the Sava river and is powered by 37 million tons of coal per year. By far the largest hydropower facility is Iron Gate I and

II on the Danube, a joint energy project of Serbia and Romania, which renders at Serbia's disposal a generating capacity of 1 400 MW.

The author's calculations have proved that the energy sector generates around 8% of Serbia's GDP. Half of the top ten companies in the country are engaged with energy activities. The front-runner is Naftna Industrija Srbije AD (NIS) with an annual turnover of EUR 1.7 billion in 2010 (**see Appendix 37**). The same year it ranked in the 13th spot among the biggest SEE companies (**see Table 9**). NIS was established in 1991 following a comprehensive campaign of restructuring in Serbia's energy sector. In 2008 the government and the Russian energy giant Gazprom concluded an equity transfer agreement for 51% of NIS registered capital totalling EUR 400 million as well as for the future investment of EUR 550 million. In 2011 the Russian company's stake was increased to 56%.

Through Centex Group the Russian company also owns 25% of the equity of Serbia's fifth largest energy company, YugoRosGaz AD. NIS is the owner of the two biggest refineries - in Pancevo and in Novi Sad – which have a production capacity of 7.4 million tons of oil. The company has branch offices and ownership stakes in a few neighbouring countries – Bosnia and Herzegovina, Romania and Hungary. Another prominent energy company in Serbia is JP Elektroprivreda Srbije, which is involved in the electrical industry. It is state owned and runs the biggest coal mines (Kolubara and Kostolac) fuelling a total of four thermal power plants built on the sites with a capacity of nearly 1 550 MW.

The administrative bodies in charge of Serbia's energy policy are the Ministry of Infrastructure and Energy, the Ministry of Economy and Regional Development, the Ministry of Environment, Mining and Spatial Planning and the Ministry of Justice. In 2002 was set up the Serbian Energy Agency which upon the adoption of the Energy Law in 2004 was granted a national status. At that time was founded the Energy Agency which officially launched its activity in 2005.

A framework document underlying Serbia's energy policy is the e Energy Sector Development Strategy of the Republic of Serbia by 2015. It was ratified by the Parliament in May 2005 and shortly afterwards complemented by an implementation programme. The latter focuses on the integrated development of the overall energy system which excludes Kosovo though it was still part of Serbia, albeit formally. The Energy Strategy objectives are classified into three groups: basic-energy, specific-

technological and environmental objectives, and general-developmental and strategic objectives. There have been compiled energy programmes based on the following energy policy priorities:

- First - basic priority of continuous technological modernization;
- Second - directed priority of economical use of quality energy products;
- Third - special priority of use of NRES (new renewable energy sources);
- Fourth - optional priority for extraordinary/urgent investments in new power sources;
- Fifth - long-term development and regional strategic priority. (3)

The implementation of the Energy Strategy should prove instrumental in developing energy production; expanding the share of local energy sources; upgrading the technological and operational processing of available energy resources; raising efficiency in production, transportation, distribution and consumption of resources; diversifying production and use of resources through the increase of oil and gas supplies, as well as RES; restructuring the energy sector and applying market principles to its activities; establishing new technical regulations and standards in energy industry; fostering strategic initiatives designed to attract investment in fresh energy sources and technologies; cutting greenhouse gas emissions under the Kyoto Protocol; taking part in the Energy Community of SEE, etc. (4)

Here follows a short overview of the main goals and forecasts included in Serbia's Energy Strategy by 2015. The energy sector advancement depends on the national economic outlook. That's why there have been devised two scenarios: in case of prosperous economic development and in case of slow economic development. According to the first one the average GDP growth rate by 2015 will be 4.62%, whereas the second one opts for 5%. Both scenarios predict different energy production growth: in case 2003 is chosen as the base year with an index value of 100 then the expected growth in 2015 will be respectively 130 and 123 for each of the scenarios. The forecasts dealing with the increase in energy consumption are not the same: it is expected to start from 7.31 MTOE and reach 9.16-9.30 MTOE in 2015, which is a margin of 1.7-2.2% on an annual basis. (5) The prosperous scenario envisages a rise in the oil and petroleum products consumption from 3.77 to 4.54 MTOE, or by around 17% in the period between 2003 and 2015. The surge in the natural gas demand will be almost twice, from 2 322 to 4 039 bcm, while coal demand will go from 6.99 up to 9.05 MTOE, or nearly 23%. (6)

The share of coal in the energy mix fall down by 50% though the Strategy points out that a new 750-MW thermal power plant will be constructed and brought into operation by 2015. The share of oil will go down too – from 28% in 2002 to 25% in 2015. The natural gas supplies taken as a portion of the energy mix will display the opposite trend by soaring from 14% to 18%. It's estimated that by 2015 Serbia's energy import dependence will stand at 38.5%. (7)

The Strategy provides an assessment of the amount of investment needed for completing its goals. The preliminary calculations suggest a total of \$ 6.4 billion, but together with the costs related to the civil sector and municipal activities, the amount is very likely to swell to \$ 7.7 billion. (8)

Most of the energy projects have reached a different stage of completion at the start of the current decade. Among them are the modernization and capacity upgrade of the two biggest hydroelectric power plants (Iron Gate and Derdap), the construction of two thermal power facilities with a total capacity of 1 400 MW, the deployment of a few hydropower units on the Ibar river, the construction of a gas power station by Gazprom, etc. Another large-scale energy project is the installation of a solar energy facility which is to rely on a capacity of 1 000 MW, so far the greatest in Europe. The contract for that was signed in the spring of 2012. (9) It's worth noting that foreign energy companies will be invited to participate in the majority of those projects. (10)

One of the huge endeavours is the Serbian-based section of the South Stream Pan-European pipeline. In 2009 a joint venture between Gazprom and Srbijagaz was set up called South Stream Serbia AG which has been assigned the construction job and the subsequent operation of the Serbian part of the pipeline. The forecast for 2010-2025 reveals that the gas demand in the country will grow by 1.9% on an annual basis eventually getting to 3.6 bcm. (11) Once ready and in full swing, South Stream will supply the necessary additional quantities of gas and will ensure greater security for Serbia's imports. Yet, it should be clear that won't prove in any way conducive to the diversification of imports. Conversely, Serbia's energy dependence on Russia will deepen even further.

The Energy Strategy doesn't suppose the construction of any nuclear facilities. In the period following its adoption no amendment has been made to the contrary. Serbia's stance on the issue is motivated by the moratorium imposed on the construction of nuclear facilities in former Yugoslavia adopted by the Parliament in the wake of the

Chernobyl nuclear disaster of 1986. At the end of the past decade there emerged certain indications that made foreign observers believe Serbia was set to veer in the opposite direction. A similar view was expressed by the then Russian ambassador to Belgrade who said that "Serbia is seriously considering constructing a nuclear plant - and Russia is willing to help in that intention in a partner way and with joint investments." (12)

A comment of this kind could also be justified by the expressed interest on the part of the Serbian government in joining the construction of Belene NPP in Bulgaria. An invitation was personally extended by the Bulgarian Prime Minister Boyko Borissov in 2010. (13) The Serbian media reported that their country was willing to be involved in the project by investing \$ 100 million and by claiming in return a stake of 5%, twice the Bulgarian offer. (14) In the long run no agreement was reached and in the meantime Bulgaria's cabinet quit the Belene nuke project in 2012.

11. Slovenia

Slovenia's energy import dependence in the first decade of the 21st century evolved in the way witnessed in the majority of other SEE countries: it climbed up until 2008 when, due to the economic recession and the decline in both the domestic demand and imports volume, it fell even below the level recorded at the turn of the century. In 2010 it was 49% which was significantly lower than the average in SEE (**see Table 9**). The energy statistics shows that in 2011 the dependence went down a notch to 48%. (1)

Slovenia possesses a limited amount of energy sources. Its proven coal reserves total 246 million tons and the coal production in 2010 was 4.9 million. It was insufficient for meeting the demand which in turn made resorting to coal imports inevitable. Throughout the first decade the domestic coal yield and consumption shrank at the expense of the other energy sources. Coal represented 32.7% of the energy production and along with imports covered 20.4% of the overall demand for energy sources (**see Appendix 38**).

There are no oil and natural gas fields in the territory of Slovenia. It neither produced oil until the start of the current decade nor did it import any. Petroleum products alone participated in the national energy mix but they were mostly imported. Their share in the gross energy consumption was around 40%. Natural gas was imported as well and

constituted a meager 12% of the energy mix (**see Appendix 38**). As to RES, in 2010 they managed to deliver 19.9% of the energy demand. (2)

The nuclear energy generated by Krško NPP rendered 21.5% of the national energy mix thus putting Slovenia in the leading position among the four SEE countries which count on domestically produced nuclear energy. As a source of electricity output Slovenia's nuclear power capacity accounted for over 35%. In 2011 Krško NPP generated 42% of domestic electricity, thermal power plants contributed 38% and hydroelectric power facilities – 23%. (3) The electricity production went up by some 10% on an annual basis until the crisis-ridden 2009 when it sank to the turn-of-the-century level. (4)

The biggest thermal power plants in the country are in the towns of Ljubljana, Trbovlje, Brestanica, Šoštanj and Velenje. The hydroelectric facilities are deployed on the Drava, Sava and Soča rivers. In the past decade the electricity consumption grew by a third leading to an increase in the volume of imports which in 2011 was more than ten times as large as compared to 2000. The exports also went up at that time, albeit by a smaller degree. Whereas at the turn of the century the import/export ratio was 1:4, only ten years later, in 2011, the quantities of exported energy exceeded imports by some 10%. (5)

At the start of the present decade the energy sector generated approx. 16% of Slovenia's GDP, according to the author's estimate. Among the ten most prominent companies in the country, a total of four operate in the energy domain (**see Appendix 39**). The market leader with reported annual turnover of EUR 2.5 billion is the oil and gas company Petrol d.d. In 2010 it ranked 10th in SEE on sales revenues (**see Table 9**). Petrol d.d. is a state-owned company and occupies a foremost position in petroleum products distribution. It possesses a distribution network in a number of countries in the Western Balkans, i.e. Serbia, Croatia, Montenegro, Bosnia and Herzegovina and Kosovo. Another large Slovenian oil and gas company is OWV Slovenia d.o.o. It's a subsidiary of the Austrian OMV Group which entered the Slovenian market in 2004. The other three biggest energy companies operate in the electricity industry.

Slovenia's energy policy is conducted by the Ministry of Economic Development and Technology and the Ministry of Infrastructure and Spatial Planning. It's governed by a series of laws, statutory acts and framework documents outlining the energy sector

development priorities. The Energy Law was adopted in 1999 and later amended several times till 2011 when a new text was put forth for consideration. Its main objective was to reform the energy system in the country, taking into account the developments in the sector. The law also represented a step in the process of harmonisation of the Slovenian energy legislation with the *acquis communautaire* in the EU.

In April 2004 the National Assembly adopted the National Energy Programme that outlines the priority objectives and directions of the state energy policy for the next ten years. The strategic purposes in the programme were to assure the supply of reliable and quality energy, to diversify the primary energy sources and to ensure limited impacts of the use of energy on environment. A special attention was paid to the promotion of efficient use of energy and the increase of share of RES. According to the programme Slovenia was to increase the share of RES in primary energy balance from 9 % in 2002 to 12 % by 2010, in heat supply respectively from 22 % to 25 %, in electricity production from 32 to 33.6 %, etc. (6). Another important document adopted by the government in 2003 was the Operational Programme of Greenhouse Gas Emissions. Slovenia took the obligation to reduce the greenhouse gas emissions with 8 % by 2010 in accordance with the Kyoto Protocol. (7)

In 2010 Slovenia's cabinet published a couple of new documents dealing with the long-term energy development. One of them is the National Energy Programme by 2030 put forth for public discussion, the other is the National Renewable Energy Action Plan 2010 – 2020. The Energy Programme by 2030 was initiated in 2007 and two years later the then Ministry of Economy introduced the Green Paper on the national energy programme which highlights three priority objectives of Slovenia's energy policy by 2030, namely:

- raising the security of energy supplies;
- boosting economic competitiveness by providing affordable energy supplies;
- promoting sustainable development of the energy sector with due consideration of the climate change and possible social impact. (8)

The strategic directions of the long-term energy policy are the rational use of energy sources, upgrade of the energy-related technologies, expansion of the local energy systems, efficient functioning of the energy market, development of the electrical industry, revamping of the taxation and pricing policy as a way of enhancing energy

sector advancement, increase in the funds allotted for modernization and implementation of new energy projects. (9)

Here are some of the priority objectives of the National Energy Programme by 2030:

- raising energy efficiency by 20% by 2020 and by 27% by 2030;
- increasing the share of RES in the primary energy use so as to reach 25% in 2020 and 30% in 2030 ;
- reducing greenhouse gas emissions by 9% by 2020 and by 18% by 2030;
- cutting energy intensity by 29% in 2020 and by 46% in 2030. (10)

Other goals that stand out as important are the diversification of energy resources production, use and supply, as well as the expansion to the neighbouring energy markets. As many as five scenarios are listed in the Programme focusing on the use of the different energy sources by 2030. Natural gas and RES are expected to make the biggest leap in the national energy mix. The share of coal will dwindle and some of the scenarios even assume it will be no longer in use. As regards the composition of RES, solar energy will represent 38%, wind power – 31%, biomass – 15%, small hydropower plants – 9% and geothermal facilities – 7%. (11)

There exist a few scenarios envisaging the construction of new electricity generating facilities. The base scenario focuses on implementing the approved plans for modernizing the Sostanj thermal power plant and a hydropower facility on the lower Sava river, speeding up the construction of a new hydropower plant and extending the exploitation period of Krsko NPP. This scenario in particular consists of two alternative versions. One of them goes for expanding the nuclear energy generation capacity by 1 000 MW by 2025. The other one offers further diversifying the energy sources through the construction of two gas power stations by 2020. The Programme contains a couple of additional scenarios advocating the replacement of the Sostanj plant by two gas power stations with a total capacity of 800 MW or by a new 400-MW gas power facility along with a new 1 000-MW nuclear power plant. (12)

The largest multinational energy infrastructure project Slovenia is involved in is South Stream. The country came on board in November 2009 when it signed a contract with Russia by virtue of which the pipeline route will go through Slovenia's territory. When the gas pipeline is completed, which is scheduled for the beginning of 2018 it will provide the country with greater and more secure gas imports. Another key infrastructure project is the oil pipeline connecting Konstanz (Romania) and Trieste

(Italy) planned to traverse Slovenia's territory as well. Currently the prospects are somewhat dim because of the lack of fund and the unresolved issue of ensuring ample oil supplies for the proper functioning of the pipeline.

Extending the Krško NPP exploitation period and increasing nuclear energy generating capacity are also viewed as priorities of the national energy policy. At the start of the present decade the Slovenian government reiterated its commitment to the adopted in 2007 Resolution on the National Development Projects for the period to 2013. The document motivates the construction of a second NPP with a capacity of 1 100 – 1 600 MW, annual electricity output of 7.5 – 12 TWh and the installation of the latest atomic technology, i.e. Generation III or III+. (13). This will inevitably lead to the increase in the NPP electricity generation share by up to 50%. When and whether the project will get going is contingent on the possibility to provide the necessary funding of around EUR 5 billion. In all likelihood the second reactor of Krško NPP will be ready no earlier than 2025. (14)

The Fukushima NPP disaster in March 2011 hasn't altered Slovenian government' s decision to pursue a national policy in favour of using the available and constructing new nuclear facilities. In June 2011 the Minister of Economy Darja Radic declared that Slovenia would produce energy at its nuclear power plant for at least 20 more years despite the Fukushima disaster. At that time she submitted the draft of the new national energy programme in which the government had prepared five different energy supply options for Slovenia until 2030 and as she pointed out "all of them include the nuclear option." "Nevertheless, the final decision has yet to been taken" she said. (15)

12. Turkey

It's a fact worth starting with that although Turkey's territory is larger than of the other SEE countries taken together, it's not rich in energy resources. The bulk of the necessary supplies are imported and as a result of the ever increasing energy demand due to its brisk economic development, Turkey holds a steady upward trend in the energy import dependence. At the end of the past decade it was so high that placed the country, together with Greece, in the first place in SEE. Turkey's energy dependence hit 69% in 2010 which was significantly higher than the average level in the region. Yet, from 2005 onwards, when it reached a record 72%, the surge was put on halt and in 2009-2010 there was even a slight decrease (**see Table 9**).

Over the 2000-2010 period the coal production in Turkey went up by 15% but its coal demand increased faster – by more than a fifth – thus causing a rise in imported supplies. (1) At the end of 2010 the share of coal in the domestic energy output was 57.5%. The imports accounted for around 45% of the coal used, which represented 30.5% of the gross energy consumption. The insufficient domestic oil production which at that time stood at a meagre 8% of the generated energy made imports downright crucial for meeting the demand. At the start of the present decade the portion of oil and petroleum products in the domestic energy consumption equalled some 30% (**see Appendix 40**).

The country produces limited quantities of natural gas but nonetheless managed to keep an upward production trend in the past decade achieving a threefold increase. At the same time the demand rose more than twice but being by far greater in volume than the domestic production necessitated significant gas imports. The share of natural gas in Turkey's energy consumption grew by nearly 10% constituting a third of the overall supplies. (2)

Over the same span of time electricity proved to undergo the most hectic development in Turkey's energy history. The production rose by nearly 80% which made the country almost entirely self-sufficient in terms of its electricity needs. That in turn brought about a sizeable shift in the electricity imports/exports balance. Whereas at the start of the century it was extremely negative (export/import ratio was 10:1) in 2010-2011 it ended on a positive note. (3) Thermal power plants represented over two thirds of electricity generating capacity, with the remaining part being provided mainly by hydropower (**see Appendix 16**).

According to the author's estimate at the start of the present decade the energy sector accounted for around 8% of Turkey's GDP. Similar to the energy business topography in the other SEE countries, the big energy companies occupy foremost positions (**see Appendix 41**). A couple of them held the top spots in Turkey on annual turnover in 2010 and ranked respectively 1st and 6th among all SEE companies (**see Table 9**). As many as three out of the five largest energy businesses operate in the oil and gas segment, the other two are engaged in the electrical and mining industries.

The leading company Tüpraş operates petroleum products manufacturing facilities with a capacity of nearly 30 million tons per year which renders two thirds of the overall domestic output. It was founded by the US corporation Caltex which was later taken

over by Chevron. During the 80s it was owned by the state but was privatised after 2005. At that point the Turkish Koc Holding and the British-Dutch corporation Shell bought out 51% of Tüpraş equity capital valued at \$ 4 billion. The company also owns assets in other enterprises in and outside the energy sector. The second largest Turkish company Aygaz owns the greatest number of LNG facilities nationwide and is among the key European players in this respect.

The national energy policy is governed by the Ministry of Energy and Natural Resources and its General Directorate of Energy Affairs - the main policy-making body that applies the national energy policy. The other administrative units in charge of the energy activities are the General Directorate of Petroleum Affairs, the Electrical Power Resources Survey and Development Administration, the Energy Market Regulatory Authority and others.

The legislative basis of the Turkish energy policy was built up mainly during the first decade of the current century. Some of the core laws and statutory documents are: Electricity Market Law (2001), Natural Gas Market Law (2001), Petroleum Market Law (2003), Electricity Sector Reform and Privatization Strategy Paper (2004), Energy Efficiency Strategy (2004), which goal is to harmonize Turkey's energy legislation with that of the European Union, LPG Market Law (2005), Law on Utilisation of Renewable Energy Resources for the Purpose of Generating Electrical Energy (2005), Energy Efficiency Law (2007), Law on Geothermal Resources and Mineral Waters (2007), Law on Construction and Operation of Nuclear Power Plants and Energy Sale (2007), National Climate Change Strategy (2009), which objective is to reduce the greenhouse gas emissions in the energy sector by 7 % until 2020, Electricity Energy Market and Supply Security Strategy Paper (2009). (4)

In 2010 the Ministry of Energy and Natural Resources introduced a strategic plan outlining the main priorities and aims of Turkey's energy policy by 2014. The ultimate goal was the country's becoming the regional leader in energy and natural resources. (5) It is viewed as the outcome of 11 strategic aims which encompass 22 targets divided into 5 major fields. In the first field – Energy Supply Security – there are included five strategic aims:

- providing diversity in resources by giving priority to the domestic resources;
- increasing the share of RES within the energy supply;
- increasing energy efficiency;

-
- making the free market conditions operate fully and providing improvement of the investment environment;
 - providing the diversity of resources in the area of oil and natural gas and taking measures for reducing the risks due to importation.

In the second field – The regional and Global Influence of Turkey in the Area of Energy - the aims are:

- turning Turkey into an energy hub and terminal by using its geo-strategic position effectively within the framework of the regional cooperation process;
- minimizing the negative environmental impacts of the activities in the energy and natural resource area.

In the third field – Environment – there is a single aim which is:

- minimizing the negative environmental impacts of the activities in the energy and natural resources area.

In the fourth area – National resources - the main aims are:

- increasing the contribution of Turkey's national resources into the national economy
- increasing the production of industrial raw materials, metal and non-metal reserves and providing for their utilisation on a national scale;
- increasing the effectiveness of the management of energy and natural resources.

In the fifth field – Corporate - the aims are:

- increasing the effectiveness in the management of energy and natural resources;
- being the pioneer and supporter of innovation in the area of energy and national resources. (6)

Here are some of the most important targets in the Strategy: to compete the construction of the domestic coal thermal plants with total capacity of 3500 MW; to start by 2014 the construction of a nuclear power plant; to complete by 2013 the construction of hydroelectric power plants with total capacity of 5000 MW; to increase

the wind plant installed capacity from 802.8 MW as of 2009 to 10000 MW by 2015; to increase the installed capacity of the geothermal plants from 77.2 MW in 2009 to 300 MW by 2015; the reduction by 10 % of the energy intensity in 2008 – 2015; the completion of the privatization in the electricity sector is to be completed by 2014; by 2015 the formation of the electricity and natural gas market structure that works as based on the competition will be secured; Turkey will decrease the natural gas import share of the country from which the highest amount of imports is obtained and will diversify the source countries; the existing natural gas storage capacity (2.1 bcm in 2009) will be doubled in 2010 – 2015; by 2015 the foreign crude oil and natural gas production will be doubled in comparison to the production amounts on 2008; by 2015 the total mining production will be doubled in comparison to 2008; Ceyhan Region will be turned into an integrated energy terminal where crude oil may be offered for international markets and where refinery, petrochemical facilities and LNG terminal will be available. The total Ministry's cost for all aims are assessed at around EUR 1.5 billion, etc. (7)

The fulfilment of all these aims will undoubtedly require massive investments estimated to be around \$ 120 billion. (8)

Another crucial energy aim is the implementation by 2015 of the projects included on the agenda for the increase of Turkey's oil and natural gas supply security. The main projects are: Iraq - Turkey oil pipeline, Nabucco gas pipeline, Turkey - Greece - Italy gas pipeline, gas connections with Syria, Iraq, Turkmenistan and Qatar, South Stream gas pipeline, Blue Stream 2 gas pipeline, Sumsun - Ceyhan gas project, multiple pipeline projects with Israel. (9)

Provided that this ambitious agenda is successfully completed Turkey will achieve enormous progress towards increasing security and diversification of energy imports. The past decade was a step forward in this direction with the completion of a couple of large energy infrastructure projects, i.e. Blue Stream gas pipeline (2005) which transports gas from Russia (10) and Baku-Ceyhan oil pipeline (2006) which delivers oil from the Caspian region. (11) Thanks to the latter project Turkey succeeded in cutting the high natural gas import dependence on Russia: from 69.4% in 2000 to 52% in 2009. (12)

By the end of the current decade the country is expected to construct its pilot nuclear power facilities. Thus the number of SEE states producing and utilising atomic energy

will grow to five. The plans for the construction of a NPP date back to the 70s when in 1976 was announced the initiative for a NPP which was to be built in the area of Akkuyu on the eastern coast of the Mediterranean near the Mersin harbour. The project was granted a licence but because of to the lack of any financial guarantee by the government it was not launched. In 1983 it was included into a national investment programme. Following a series of postponements the government gave up on it in the spring of 2000. The idea was revived in 2006 when the authorities revealed their intention to construct three NPP with a total capacity of 4 500 MW in 2012-2015. The projects were approved by the Turkish Parliament in 2007. The Akkuyu NPP will be comprised of 4 reactors with a gross capacity of 4 800 MW and will be the biggest of its kind in SEE. The expected costs are estimated to be \$ 20 billion and the government's strategic plan (2010-2014) has fixed the launch time to be in 2014 and the completion - in 2019. (13)

Turkey and Russia signed in 2010 a bilateral agreement by virtue of which the project will be carried out by the Russian energy company Rosatom entitled to run the nuclear facility through the Turkish-based project company it owns. Several other Turkish companies will be involved as well and the produced electricity supplies will be purchased by the Turkish Electricity Trade & Contract Corporation (TETAS). The second Turkish NPP will be built in Sinop on the Black Sea coast. Its capacity will range between 3 000 and 5 000 MW. There have already been submitted expressions of interest by South Korean, Japanese, French and Canadian energy companies. If the project comes into being the power plant itself will be operational in the next decade. The third NPP is contemplated to be constructed in İğneada on the Black Sea coast and some 10 km away from Turkey's border with Bulgaria. In all likelihood it will be completed by 2030. (14)

Will all these projects brought to a successful end, Turkey will inevitably transform itself into a regional leader in atomic energy production. The share of nuclear power capacity in the overall electricity output will nonetheless be smaller than that of the other SEE countries relying on this kind of energy source. According to Experts' estimates it will reach no more than 5% by the middle of the next decade. (15)

PART IV: REGIONAL COOPERATION IN THE ENERGY DOMAIN

1. Evolution of the regional energy cooperation

The expansion of bi- and multilateral cooperation in the energy domain, including the participation in regional and Pan-European infrastructure projects, is one of the energy policy priorities of all SEE countries. It stands out as a key objective of the long-term national energy strategies. Joint energy projects in SEE were discussed and some of them were already implemented throughout the past decade, but it's worth mentioning that they were almost exclusively carried out as neighbouring countries' initiatives. An obstacle to the true and comprehensive development of multilateral cooperation was the context which existed in the region till the start of the 90s as a direct consequence of the post WWII military, political and economic division in Europe.

Among the notable energy projects of that time were the Iron Gate hydro energy complex on the Danube, jointly constructed and run by Romania and former Yugoslavia and considered one of the biggest in Europe as well as Krsko NPP, jointly built by Slovenia and Croatia. In the wake of the political transformation that swept through SEE, and especially after the end of the Western Balkans war conflicts in the 90s, more favourable conditions for regional cooperation arose, including in the energy domain. In 1997 was initiated the South-East European Cooperation Process (SEECP). Within its framework there was adopted in 2001 the Regional Economic Cooperation Action Plan which, as a key milestone, features the expansion of multilateral cooperation on energy issues. (1)

Despite the joint declarations and the multiple initiatives, until the start of the present decade there wasn't achieved any palpable headway. SEECP is a forum for political dialogue and consultations but it lacks a financially backed mechanism for implementing regional projects, including joint efforts in the energy field. The Regional Cooperation Council (RCC) was established in 2008 with a view to enhancing cooperation effectiveness in the region and was designed to be a kind of an operational structure within SEECP with adequate means to finance specific projects. The momentum in the initial years of its existence was negligible since it failed to secure substantial investment funds. As to the energy domain per se, there was promoted the Sustainable Energy Development Regional Initiative that aims at encouraging the construction of small-scale energy facilities among interested members of the RCC and

providing legislative, institutional and regulatory frameworks in this field. In fact the RCC will offer only administrative support. (2)

The reasons for the sluggish energy cooperation were the same as those witnessed in the other areas. The majority of SEE countries were rather reserved and not eager enough to drive multinational cooperation forward, even its institutionalisation by setting up a regional structure, because they believed that powerful potential could not be summoned within regional confines.

By and large the priority that loomed high on their political agenda was the EU integration and the regional cooperation was perceived just as an adjunct or part of this process. Therefore the advancement in cooperation appeared to be a sort of consequence of the headway made by the countries in their European integration and the EU commitment to the establishment of regional security, good neighbourly relations and effective reforms crucial for the full integration of the Eastern European countries into the EU.

In 1999 the EU launched the Stability Pact for South Eastern Europe (SPSEE). Its activity over the years till 2008 proved of great importance for raising and allocating international funds needed for the reforms and development in SEE. A couple of donor conferences were held in 2000-2001 whereby as many as 300 projects were granted financial assistance worth EUR 5.4 billion (\$ 6.5 billion). (3) The author has estimated that over EUR 1 billion, or just a fifth of the overall amount, was invested in national and regional energy projects in SEE.

At the start of the present decade the EU policy regarding energy issues in SEE was underpinned by the principles and goals embedded in the Union's long-term energy policy. It was further facilitated by the cooperation mechanisms devised to reflect the different local condition and the degree of integration of the countries in the region. The key goals of the EU energy policy are the increase of RES in the final energy consumption to 20 %, to 33-40 % in the total electricity production and to 10 % in transport by 2020, the enhancement of energy by 20 % and the reduction of greenhouse gas emissions by 20 – 30% to 2020. (4) The same goals are incorporated in the long-term strategies of the majority of SEE countries. A highly conducive factor for their fulfilment is the financial and other sorts of assistance the EU provides through its pre-accession instruments and funds. According to the author's calculations the amount of funds allocated to the energy sector in SEE (mainly spent on modernisation

of existing energy facilities and construction of new ones, energy efficiency enhancement, diversification of production, supply and demand of energy resources, as well as infrastructure energy projects) represents nearly a fifth of the overall assistance for the region within the EU 2007-2013 financial framework.

The EU energy-related policy towards the Western Balkan states is embedded into the Stabilisation and Association Process (SAP). The financial aid is provided through the so called Instrument for Pre-Accession Assistance (IPA) and from 2009 onwards under the Western Balkans Investment Framework (WBIF). By the middle of 2012 more than 110 projects have been supported by WBIF grants totalling EUR 122 million, which in turn has leveraged loans worth EUR 5.6 billion from different international financial institutions. The full value of the projects' complete development costs exceeds EUR 10 billion. The number of energy projects was 22 and the share of their costs in the aggregate financial assistance accounted for 25%. (5)

In 2007 the EC put to the fore a fresh initiative – the Black Sea Synergy – whose aim is to facilitate a wider cooperation among the countries bordering the Black Sea (the wider Black Sea Region). The initiative is part of the European Neighbourhood policy promoted by the EU in 2003 with a view of establishing privileged partnerships with the states to the east and south of the EU. (6) It covers three major sectors: transport, environment and energy. They are considered by the EU as being of critical importance for the region and their development is strongly aided by the so called sector partnership. The SEE countries participating in it are Greece, Bulgaria, Romania and Turkey. (7) At the end of 2010 the EC announced and in July 2011 the European Council adopted a Strategy and Action Plan for the Danube Region, which encompasses four SEE countries – Bulgaria, Romania, Serbia and Croatia. Encouraging more sustainable energy is one of the aims of the cooperation efforts set in the Danube strategy (8).

A notable component of the EU policy pursued in SEE is the strategic relationship with the Organisation of the Black Sea Economic Cooperation (BSEC) founded in 1999 and consisting of twelve participant countries, six of them situated in SEE – Romania, Bulgaria, Greece, Turkey, Albania and Serbia. The energy cooperation is amid the priority tasks of the BSEC activity which involves countries rich in energy resources – Russia and Azerbaijan – with key influence on the oil and gas supplies to the EU and SEE. The endeavour of participant countries in the recent years has been to strengthen the project-oriented dimension of the BSEC. (9)

2. The energy community

At the start of the current decade the Energy Community, also called Energy Community of South East Europe (ECSEE) or European Energy Community (EEC) occupied a pivotal place in the energy cooperation between the EU and SEE. The originator of the idea was the EC and the main driver of its coming through was SPSEE. In fact the Energy Community was a continuation of a cooperation process that had commenced earlier within the EU and which sought to build an internal energy market gradually incorporating the SEE states.

The effort started in 1996 when the EC enacted Directive 96/92/EC on common rules for the internal market in electricity. The Directive defined rules for the generation, transmission and distribution of electricity. The target was to create an internal market and to promote market opening of electricity. A couple of years later (1998) the Commission issued Directive 98/30/EC concerning common rules for the internal market in natural gas. At that time was set up the Electricity Regulatory Forum which had to promote the aims of the two directives by organizing discussions and floating new initiatives.

The suggestion for bringing the SEE countries into the process was made by the EC in the spring of 2002. There were two core aims behind it: creation of a regional electricity market in SEE and its integration into the internal energy market of the EU. The suggestion, updated the following year to include similar aims with respect to natural gas, was formulated within the context of the EU forthcoming initiatives for broadening the cooperation with the SEE as part of the notion for a wider Europe. The contemplated plans addressed not only the energy domain but also the nurturing of partnership political and economic relations which was precisely the aim of the European Neighbourhood policy of the EU. The putting in place of a single market for electricity and natural gas between the EU and SEE was an ambitious and to some extent a risky idea since its completion requires comprehensive technical upgrade, legislative and regulatory reformation of the energy sector.

The development of a single market between the EU and SEE meant that the energy integration would happen ahead of the overall process of European integration of the region. The rationale behind the EU plan was that it will step up the development and expansion of the regional energy cooperation expected to have a benevolent effect on the economic and social life in SEE. According to an estimate made at that time by the EC and the World Bank the investments needed in the following 15 years for

modernizing the existing energy facilities in SEE and for constructing new ones amounted to EUR 12.5 billion altogether, while the costs for energy transportation and distribution would take another EUR 8.5 billion. (1)

The countries in the region were in need of huge investments for reforming the energy sector and adjusting it to the EU standards. The electricity industry infrastructure alone was calculated to devour EUR 30 billion. On the other hand the EU was keen on assisting the energy sector development, expanding the regional cooperation and integrating it into the Union's energy policy as the region has crucial part in the future construction of new energy infrastructure designed to increase and diversify energy imports to Europe. The initiative for a single electricity market in SEE, which was later to cover natural gas, and its incorporation into the EU internal market was implemented within the framework of the so called Athens Process where Greece, belonging both to the EU and SEE, was in the driving seat.

The foundation was laid with the Memorandum of Understanding on Regional Electricity Market in South East Europe and its Integration into the European Union Internal Electricity Market (the Athens Memorandum 2002). It was signed on 15 November 2002 in Athens by nine adherent parties – Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Romania, Former Yugoslav Republic of Macedonia, Federal Republic of Yugoslavia and United Nations Interim Administration Mission in Kosovo (UNMIK), two non-participating sponsors – the EC and Stability Pact for South Eastern Europe, as well as five observers – Austria, Hungary, Italy, Moldova and Slovenia.

The major objective of the Memorandum is the creation of an integrated electricity market in the region by 2005 which will be included in the EU internal electricity market. It will function in compliance with the relevant EU principles and legislation. A special institutional mechanism for fulfilling the Memorandum was set up comprised of Ministerial Council, Permanent High Level Group, Electricity Regulation Forum, two task forces and a secretariat at the EC. (3)

A follow-up to the Athens Process was the Memorandum of Understanding on the Regional Energy Market in South East Europe and its Integration into the European Community Internal Energy Market (the Athens Memorandum 2003). It was signed on 8 December 2003 in Athens by nine participants - Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Romania, Turkey, the State Union of Serbia and Montenegro and

UNMIK for Kosovo and the European Community, three political participants to the process – Greece, Italy and Austria, a sponsor - the Special Coordinator of the Stability Pact, and observers - Hungary, Moldova and Slovenia.

The Memorandum emphasized on the need to establish an integrated regional energy in South East Europe by 2005 and progressively ensure its integration into the European Community's internal energy market. The participants will establish compatible state and regional electricity and natural gas market action plans. The mechanism employed for delivering the desired outcome was the one set up for the Memorandum of 2002. (4)

The culmination of the Athens Process was the Treaty establishing the Energy Community signed in Athens on 25 October 2005 by the European Community and the following contracting parties (adhering parties) – Albania, Bulgaria, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro, Romania, Serbia and UNMIK for Kosovo. Pursuant to Article 2 of the Treaty the task of the Energy Community shall be to organize the relations between the Parties and create a legal and economic framework in relation to Network Energy ... in order to:

- a) create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks, so that all parties have access to the stable and continuous energy supply that is essential for the economic development and social stability;
- b) create a single regulatory space trade in Network Energy that is necessary to match the geographic extent of the concerned product markets;
- c) enhance the security of supply of the single regulatory space by providing a sound investment climate in which connections to Caspian, North African and Middle East gas reserves can be developed, and the indigenous sources of energy such as natural gas, coal and hydropower can be exploited;
- d) improve the environmental situation in relation to Network Energy and related energy efficiency, foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space;
- e) develop Network Energy market competition on a broader geographic scale and exploit economies of scale. (5)

For these purposes the activities of the Energy Community shall include the implementation by the contracting parties of the *acquis communautaire* on energy, environment, competition, RES, the setting up of a specific framework permitting efficient operation of the Network Energy markets across the territories of the contracting parties, the creation of a market in Network Energy without internal frontiers, including the coordination of mutual assistance in case of serious disturbance to energy networks, etc. (6)

The institutions of the Energy Community are the Ministerial Council, The Permanent High-Level Group, The Regulation Board, several Forums and the Secretariat. The Ministerial Council is the decision making body of the Energy Community that meets once in a year. It consists of one contracting party representative and two representatives of the European Community. The Presidency of the Council is held in turn by each contracting party for a term of 12 months. As executive organ of the Energy Community the Ministerial Council is entitled to take measures, provide general policy guidelines and adopt procedural acts.

The Permanent High-Level Group ensures the continuity of and follow-up to the political meetings of the ministers and in some cases decides on implementing measures. The forums execute advisory functions and presently their number is four – for electricity, gas, oil and social issues. There are four task forces – for energy efficiency, renewable energy, environment and regional energy strategy. The seat of the secretariat is in Vienna. Its obligations are to provide administrative support to the institutions of the Community, to review the proper implementation by the parties of their obligations under the Treaty, to submit the yearly progress reports to the Ministerial Council, etc.

Following the ratification and notification process, the Energy Treaty entered into force on 1 July 2006. All SEE countries participate in it but their involvement status varies. By the middle of 2012 a total of seven SEE countries have the status of contracting parties to the Energy Community: Albania, Bosnia and Herzegovina, Croatia, Republic of Macedonia (under its provisional name the Former Yugoslav Republic of Macedonia), Montenegro, Serbia and Kosovo, represented by UNMIK. The same status has been conferred to Moldova (it joined the Energy Community in 2010) and Ukraine (it joined in 2011), as well as to the European Union. They have agreed to set up a legal and economic framework in relation to the Network Energy and a specific

regulatory framework, and to provide mutual assistance in case one of them experiences problems in the operation of the energy networks.

Greece, Slovenia, Bulgaria and Romania, the latter two having acceded to the EU at the beginning of 2007, have the status of participants. It is held only by member states of the EU. Until the middle of 2012 it has been granted to a total of eleven EU member states, excluding the ones already mentioned above. They are Austria, Cyprus, Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovakia and United Kingdom. The participants are per se subject to the obligations following from the *acquis communautaire*. They have the right to take part in all of the institutional meetings of the Energy Community. Turkey is the only country in SEE with a status of observer, which has also been granted to Armenia, Georgia and Norway.

Map 4. Map of the geographical dimensions of the energy community



Source: <http://www.energy-community.org/portal/pls/portal/docs/1/1204198.JPG>

The SEE states which are officially involved in the Energy Community have the opportunity to benefit from an energy domain cooperation encompassing a total of 28

countries and the EU. In fact their number is greater since not all EU member states have been willing to join the organization but nonetheless all of them are obliged to abide by the requirements of the common energy policy. Therefore the format proves to be widely inclusive and spreads beyond Europe's borders (**see Map 4**).

The Community's original aims focused on the adoption of two new directives the European Union endorsed in 2003 dealing with the establishment of common rules and the liberalization of the electricity and natural gas markets. Directive 2003/54/EC replaced the directive of 1996 for the creation of a single market in electricity and Directive 2003/55/EC was a revised version of an earlier directive, adopted in 1990, which was to the same effect but with regard to natural gas. In addition, the countries were to apply the European Community Regulation on conditions for access to the network for cross - border exchanges in electricity (1228/2003/EC). The completion time was scheduled for a year after the Treaty on Energy Community had come into force, i.e. 1 July 2007. There was a transition clause for market opening for non-household customers (from January 1, 2008) and for all customers (from January 1, 2015).

Furthermore, each contracting party was obliged to provide plans to the European Commission within one year of the date of entry into force of the treat to implement Directive 2001/77/EC on the promotion of electricity production from RES in the internal electricity market and Directive 2003/30/EC on the promotion of the use of bio fuels or other renewable fuels for transport. There were also special provisions on competition and environment. (7)

Once the Energy Treaty came into effect, the Energy Community passed resolutions on broadening the scope of its acquis which the member states had to adopt and embed into their energy policies. Further to the specified EU directives on electricity and natural gas, the Ministerial Council of the Energy Community extended at the end of 2007 the Energy Community acquis to include two new directives and new regulation adopted by the European Commission in 2004 - 2005: Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment, Directive 2004/67/EC concerning measures to safeguard security of natural gas, and Regulation 1775/2005/EC on conditions of access to the natural gas transportation networks. The closing date for their implementation was set for 31 December 2009. (8)

The Directives on energy efficiency were updated in September 2010 and are due to be applied by mid-June 2013. One of the most important resolutions added oil to the Community's scope of cooperation. To that end the term "Network Energy" used in Article 2 of the Treaty came to be interpreted in a broader sense covering electricity, oil and natural gas. That amendment brought about the establishment of the Oil Forum in 2009. At the request of the Permanent High-Level Group the secretariat probed into the possibility for removing the limits to the exports of crude oil and oil-derived products among the states involved. The conclusion that followed described the market as relatively open and competitive. (9)

One of the paramount initiatives of the Energy Community is the Gas Ring Concept. It aligns with the objective for the creation of a liberalized single natural gas market in SEE. When the Community came into being it adopted a Common Framework Programme. It is being executed on the basis of Road Maps prescribing measures for adaptation and implementation of the acquis, liberalization of the electricity and natural gas market and finally establishment of a trans-national energy market in SEE region. The programme includes five stages – drafting, agreeing, committing, implementing and monitoring the necessary measures in this field. Since November 2011 it has entered its final stage –implementation running in parallel with monitoring.

The deliberation of the initiative the Gas Ring Concept commenced in 2010 within the Permanent High Level Group (PHLG), the Energy Community Regulatory Board (ECRB) and later in the Ministerial Meeting at Skopje in September 2010. The idea became the core of the Implementation Plan for Gas Infrastructure Development in the Energy Community that was presented at the next Ministerial Meeting in Chisinau in October 2011. The Ministerial Council was urged to advance rapidly on the Gas Ring Concept, to establish a Road Map for its implementation and to ultimately establish a public-private partnership to progressively develop gas power stations and segments of the Gas Ring. It was noted that the European Commission had already made a political decision to prioritize the development of the Energy Community Gas Ring which is compatible with all three major Southern Corridor infrastructure projects – Nabucco, ITGI (Interconnector Turkey–Greece–Italy) and Trans Adriatic pipeline (TAP).

The Gas Ring is expected to allow for the SEE Energy Community countries to achieve two key objectives. On the one hand, they would increase the share of gas in their respective power generation mix and satisfy an increasing power demand. On the other hand, the Gas Ring would help the SEE countries to comply with their

environmental obligations in the context of the Energy Community framework. The implementation plan was approved by the Ministerial Council that empowered the PHLG to undertake the necessary actions. (10).

The Concept implementation consists of two stages. The aim of the first stage would be to bring gas to new power stations in currently non-gasified areas on the Adriatic coast. The next step envisages the development of additional sections of the Ring, gasification of new areas, incorporation of new entry points and expansion of the diversity of supply options, technical and commercial security of supply. (11)

A crucial factor for the successful completion of the Gas Ring project is the construction of new regional and Pan-European gas pipelines delivering supplies from Russia and the Caspian region. The gas volumes might be transported along the south-east axis via Greece through the ITGI, TAP or South Stream “Sud” pipelines. They might also be carried along the east axis via Bulgaria through South Stream “Nord” pipeline. Another route follows the north and north-east axis running via Romania, Hungary or Croatia through Nabucco, White Stream or White Stream pipelines.

Map 5. The gas ring in the Western Balkans



Source: <http://www.energy-community.org/portal/pls/portal/docs/1/242177.GIF>

In 2011 the EC assessed the performance of the Energy Community for the period after the Treaty on its establishment was signed. The conclusion was as follows: “The Energy Community model has proved an efficient framework in cooperation in the field of energy with the EU neighbours, which could possibly be extended to other countries and geographical areas”. (12) The assessment took into account the progress in fulfilling the aims of the Energy Treaty. It also acknowledged the speed-up of the energy acquis adoption manifested by the majority of participant countries after 2010.

All that prompted the decision on the third internal energy package launch which was taken during the ninth meeting of the Ministerial Council of the Energy Community in October 2011. The decision includes special deadlines for provisions such as the rules on unbundling or on certification of transmission system operators from third countries, and clarifies the role of the Energy Community institutions in the practical implementation of the adopted rules. (13)

Despite the headway, by 2012 the aims of the Energy Community Treaty were only partially achieved. The regular annual report released in the autumn of 2011 concluded there is no country in SEE that has complied with the decision made by the Ministerial Council that the first directives on the application of the acquis under the Treaty must be entirely implemented by the end of 2007 and the directives issued afterwards – by the end of 2009. What was more, the positive effect of the measures concerning the single regional market, especially the electricity market, was less than expected. (14) Yet, the assessment was that “all in all 2010/2011 significantly improved the implementation record of the Energy Community as a whole”. (15) It therefore meant that the level of the energy acquis implementation allowed for the launch of the third internal energy package as decided in 2011. The decision includes specific deadlines for provisions such as the rules concerning the unbundling or the certification of transmission system operators from third countries, and it also clarifies the role of the Energy Community institutions in the practical implementation of the adopted rules. During the ninth Ministerial Meeting in October 2011 the general implementation deadline was set to be 1 January 2015. (16)

The Community has had a modest investment record. It’s primarily due to the fact that it doesn’t possess financial resources for carrying out energy projects in SEE. Until 2012 a total of six major donors have provided contributions. The financial assistance by four of them - the European Agency for Reconstruction, the European Bank for Reconstruction and Development, the European Investment Bank and the European

Commission – was mainly part of their commitment to the EU pre-accession and other funds within the 2007-2013 period. The other donors are the Canadian International Development Agency and the German KfW Bankengruppe. On the whole they have managed to finance a limited number of energy projects.

The first projects the Community considered for financing were proposed in 2007. At that time was compiled the first indicative list with 154 projects from the seven Contracting Parties and one Observer (Moldova). The list was drawn up by using the criteria established in the EU Trans-European Networks – Energy Programme (TEN-E). It was sent to the investors and the international financial institutions, as well as to the participants of the Energy Community Investment Conference in September 2007. As a result, a shorter list of about 40 priority projects was prepared. Finally in 2010 the efforts were concentrated on six major energy projects, including three gas and three electricity infrastructure projects of regional importance. In addition, there were another 22 projects which will be carried out thanks to the technical assistance granted within the Western Balkans Investment Framework. (17)

Meanwhile a new investment approach was adopted that was based on more extensive criteria used for the final project selection. Their number is about ten, including the contribution to the development of the regional, competitive electricity and gas market, importance for the electricity interconnection and trade, importance for the gasification of the region, increase security of energy supply to customers and to the safety or reliability of the energy networks, link with other existing regional electricity or gas interconnections, contribution to improving the environmental conditions in the energy sector, etc. (18).

One of the latest initiatives within the ECSEE was announced at the eighth meeting of the Ministerial Council on Skopje in 2010. Mr Petar Skundric, Minister of the Mining and Energy of Serbia, suggested the development of a long-term regional energy strategy. He motivated it by the high oil and gas import dependence of SEE, the need for implementing energy infrastructure projects of regional significance, the enhancement of energy efficiency, the coordination and effective use of alternative energy sources, more investment in the energy sector (including the expansion and modernization of energy infrastructure), stringent environmental protection standards, etc. (19)

The pilot project of the regional energy strategy for a 10-year period (2011-2020) was drawn up by the ECSEE secretariat. In June 2011 it was deliberated on by the

Permanent High-Level Group. A consensus was reached that there is a need for concrete analysis of the energy needs at regional level and that concrete infrastructure projects should be included as part of the strategy. The recommendation was to adopt a two-step approach, including the preparation of a concept paper on guidelines for establishment of a regional strategy and the setting up of a task force with the mandate of elaborating a regional strategy (20).

In October 2011 the Ministerial Council decided on setting up a Regional Energy Strategy Task Force, which was assigned the development of a Comprehensive Regional Energy Strategy, including a special part on Regional Power Development and Investment Plan aiming at promoting investments. The adoption of the Regional Energy strategy, including an investment plan, was declared among the priorities of Montenegro's Presidency of the Energy Community in 2012. (21)

PART V: REGIONAL ENERGY INFRASTRUCTURE PROJECTS

1. SEE as a transit energy corridor

The participation in regional and Pan-European energy infrastructure projects is one of the priority dimensions of the long-term energy policies of all SEE countries. They aspire to provide the necessary energy sources and to achieve greater security and diversification of their production, imports and consumption. All this is contingent on the possibilities and prospects for international energy cooperation. Thanks to its geographic location SEE has come to assert itself as a key energy region. Since the beginning of the 21st century there has been an increasing interest in establishing the Balkans as a transit corridor connecting Russia and Caspian region with the European energy market. It was due to the need of building a new infrastructure that could carry the necessary quantities of oil and natural gas, diversify the sources and ensure more safety in the energy traffic towards and across Europe.

Since the 1990s the dependence of the EU on energy imports, particularly natural gas and, to a lesser extent, crude oil from abroad has been constantly increasing. From 45% in 1999 it reached 53.9% in 2009. Following the decrease in the internal energy consumption and the energy imports as a result of the financial and economic crisis at the end there was a temporary slight drop of this percentage to 52.6 in 2010. For a number of the big member states the dependence on energy imports remained considerably higher than the medium level in the EU (Italy – 83.8%, Spain – 76.7%, Austria 61.8%, Germany – 59.8%, etc.). (1)

In 1997 the share of the import in the gross inland consumption of natural gas in the EU was 45.2% but in 2010 it reached 60.3%. As to the crude oil the share was respectively 76% and 84%. (2) In a Communication on the energy policy in 2007 the EC estimated that the EU energy imports dependence will reach 65 % in 2030. The reliance on imports of gas is expected to increase to 84 % and for crude oil to 93%. (3) In the new EU energy strategy, presented by the Commissioner for Energy Günther Oettinger in November 2010, the EU dependence on imports of natural gas by 2020 is expected to be 73% - 79% and ten years later it may even grow to 81% - 89% of the total gas consumption in the member states. (4)

Another major reason for the increasing importance of the Balkan region as an energy transit corridor is the aim of the EU and most European countries to diversify the

foreign sources in their imports of oil and natural gas. In the core of this strategy lies their endeavour to reduce the high degree of their dependence on the imports of energy raw materials, and especially natural gas from Russia. In 2010 Russia's share in the EU oil imports was 31 %. Regarding the natural gas this share was 33 %, of which almost 90% was transported by using the pipelines running across Ukraine and Belarus built up at the time of the former USSR. In 2010 seven EU member states (Bulgaria, Romania, Finland, Lithuania, Slovakia, Latvia and Estonia) were totally dependent on the Russian imports. For the Czech Republic this share was 76.0 %, Hungary - 67 %, Austria – 66.7 %, Poland 47.0 %, Germany – 44.3%, etc. (5)

The SEE countries are strongly interested in transforming the region into a transit corridor for the transportation of oil and natural gas to Central and Eastern Europe. They were among the promoters of most energy infrastructure projects proposed to run through the area. Three major aims are the true drivers of their commitment in this respect.

The first one is the expansion of the available regional infrastructure, the construction of new facilities providing greater and more secure imports of energy sources, and the connection of SEE with the EU oil and gas market.

The second goal is the diversification of energy sources, the attraction of more foreign investments into the regional economy and the collection of considerable financial revenues from energy transit fees.

The third goal is the reduction of SEE high energy import dependence on Russia, especially with regard to natural gas and, to a lesser extent, crude oil.

According to data provided by the national statistics, in 2010 practically all of the natural gas imports to Bulgaria originated from Russia, while the share of crude oil imports amounted to 100 %. Turkey gets from abroad 98% of its natural gas used for domestic consumption. The percentage of the imported oil is 92 %. In 2010 the share of Russian gas and oil imports was respectively 46% and 35 %. Greece meets almost 100 % of its national demand for natural gas and oil via supplies coming mainly from Russia (respectively 57% and 40 %).

In 2011 Romania imported from Russia about 35% of the oil it needed. The share of imports of natural gas in the domestic consumption accounted for a fifth and came entirely from Russia. Although the share of natural gas in the national energy mix of the

countries located in the Western Balkans is, as a whole, considerably lower compared to the states mentioned above, most of them almost entirely imported it from Russia as well – Republic of Macedonia and Bosnia and Herzegovina – 100%, Serbia – 99%, Croatia – 96 %. The exception was Slovenia, for which Russia's share in the oil and gas imports was respectively 20% and 47 %. As the oil, the Russian share in the imports in the Western Balkan countries varied from one fifth (Albania, Slovenia) to 60% – 70 % (Serbia, Croatia, Republic of Macedonia) and even 100% (Bosnia and Herzegovina) (see Table 11).

Table 11. Russia's share in the oil and natural gas imports to SEE countries (2010) (in %)

| Country | Crude oil | Natural gas |
|------------------------|-----------|-------------|
| Albania | 20 | - |
| Bosnia and Herzegovina | 100 | 100 |
| Bulgaria | 100 | 100 |
| Croatia | 60 | 96 |
| Greece | 40 | 57 |
| Republic of Macedonia | 60 | 100 |
| Montenegro | 65 | 90 |
| Romania | 35 | 100 |
| Slovenia | 20 | 47 |
| Serbia | 70 | 99 |
| Turkey | 35 | 46 |

Source: Compiled by the author from data of the Energy Statistics of the SEE countries, 2012.

The vulnerability of the SEE countries ensuing from their high degree of dependence on foreign natural gas was made evident in January 2009 during the "gas crisis" in Russian - Ukrainian relations when the Russian imports to the region were for a short period totally cut off. For instance, the financial losses for Bulgaria amounted to around EUR 250 million (6). Exact data for the financial losses incurred by the gas crisis for all Balkan countries were not published, but the author's calculations show that the overall negative impact on the region following the temporary suspension of imports was approx. EUR 800 million.

The “SEE route” for transporting energy resources towards Central and Western Europe started being contemplated as early as the 1990s. The first projects for building new oil and gas pipelines across SEE were put forward in 1992–1993. However, more favourable conditions for them emerged more than ten years later. The factors of critical importance were the enhanced regional stability and the achieved headway in the European and Euro-Atlantic integration of the Balkan countries. Over that period a total of three of them joined the EU (Slovenia in 2004, Bulgaria and Romania in 2007) and five became members of NATO (Slovenia, Bulgaria, Romania in 2004, Albania and Croatia in 2009).

The transportation of oil and natural gas across the SEE from the Caspian region became a more attractive option as it was considered to be an alternative route bypassing the energy supplies from Russia. What’s more, it could avert the existing potential danger of Russia using its monopoly position as a dominant supplier of natural gas with the possible aim to exert political pressure on the European countries. In the long-term EU energy strategy the Southern gas corridor is among the priority energy infrastructure projects that will traverse the SEE territory. The region occupies a central place in the strategy for it is present in other EU energy priorities such as the North – South gas Interconnections and Oil supplies, and the Central/South-Eastern Electricity Connections (**see the Map**).

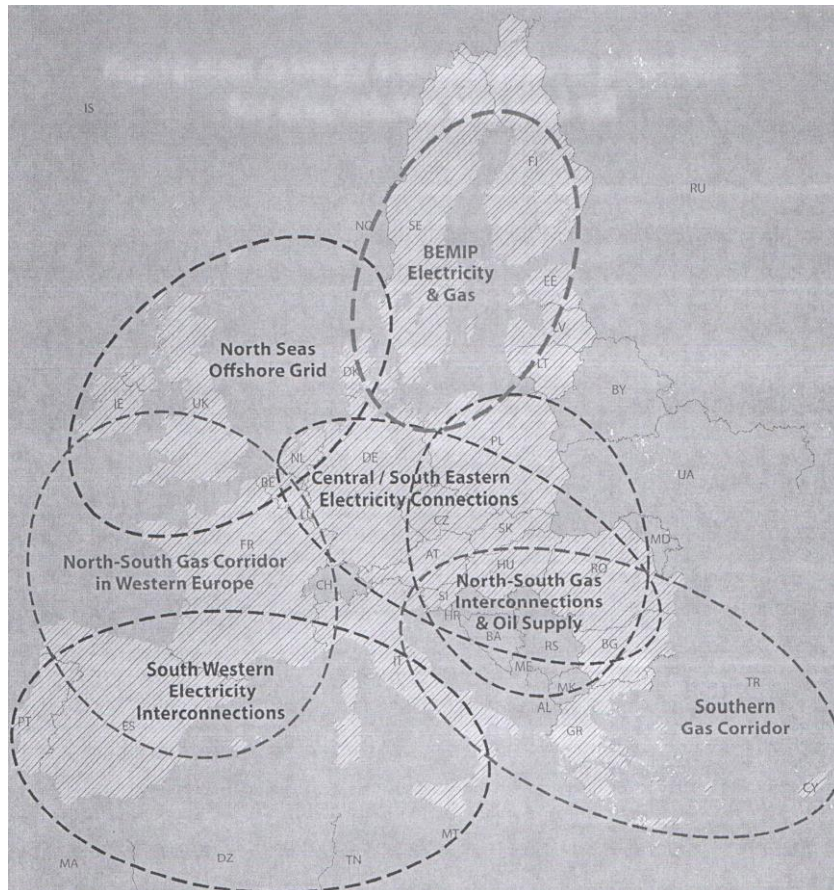
2. The biggest oil infrastructure projects

At the beginning of the present decade there are known around fifteen major projects for the construction of oil and natural gas pipelines on or via the Balkans. The participants willing to join the projects come from a number of EU member states (Italy, France, Germany, Austria, Hungary, Slovenia, Romania, Bulgaria, and Greece), as well as from Russia and practically from all Balkan countries. Four of these projects are for the transportation of crude oil from Russia or the Caspian basin to Central Europe:

- **The AMBO pipeline** from Bulgaria via the Republic of Macedonia to Albania and with extension to Italy;
- **The Trans-Balkan pipeline** from the Bulgarian coastal city of Burgas to the Greek port of Alexandroupoli on the Aegean Sea;
- **The Samsun-Ceyhan pipeline** from Black Sea to the Mediterranean sea;

- **The Pan-European oil pipeline** from the Romanian city of Constanta on the Black Sea coast via Romania, Croatia, Serbia and Slovenia to the Italian Adriatic city of Trieste.

Map 6. Map of the European energy infrastructure priorities for electricity, gas and oil



Source: http://ec.europa.eu/energy/infrastructure/strategy/doc/2010_11_17_infrastructur_e_map.pdf

Here is a brief overview of the projects and the prospects for their implementation.

The idea for the AMBO pipeline project dates back to 1993. (1) On 31 January 2007 the governments of Bulgaria, the Republic of Macedonia and Albania signed an agreement for the construction of the pipeline. Later the agreement was ratified by the parliaments of the three countries. The pipeline was planned to be built and operated by a joint Albanian Macedonian Bulgarian Oil Corporation (AMBO) with the financial participation of the American businessman Edward Ferguson. The project was backed by the US administration, which financed a feasibility study of the pipeline.

The length of the pipeline is 912 km, it has a capacity of 750 000 barrels per day and it is planned to transport annually around 35 – 40 million tons of Russian or Caspian oil to Western Europe and the USA. The initial cost of the pipeline was about \$ 1.5 billion. The three participant countries expect to get from its operation annual revenues totalling around \$ 100 – 120 million. The construction of the pipeline was originally intended to start in 2009 and be completed by 2011. (2) Following the lack of financial resources and the difficulty to provide enough oil for the pipeline, the implementation of the project has not commenced. By the end of 2010 all the activities regarding its realization were suspended. Under the current conditions seems inviable.

In March 2007 Bulgaria, Greece and Russia signed an intergovernmental agreement for the construction of the Trans-Balkan pipeline from Burgas to Alexandroupoli. (3) The project negotiations began as early as 1993. The pipeline is expected to be 279 km long, to be able to transport initially 15 – 25 million tons of Russian oil annually and to have a total capacity of 35 million tons per year. In 2010 it was announced that the project would cost EUR 1.5 billion.

The Burgas-Alexandroupoli pipeline was the largest joint commercial project between Bulgaria and Greece with the participation of Russia being the future oil supplier. The signing of the agreement was welcomed by the EC. An international project company (Trans-Balkan Pipeline B.V.) was established for the construction and the operation of the pipeline. The stake in it of the three Russian energy companies Transneft, Rosneft and Gazprom Neft was 51%, while the capital share of Bulgaria (through the joint stock company Oil Pipeline Burgas-Alexandroupoli BG) and Greece (through the Hellenic Petroleum SA, Helpe-Thraki AE and the government) was 24.5% each.

In April and May 2007 the national parliaments of the three participating countries ratified the agreement. Originally the construction was set to start in early 2009 and to be completed by 2011 but was delayed following the opposition by environmental organisations both in Bulgaria and Greece. The issue was even put to the vote in three local referenda in Bulgaria. The Bulgarian government, which assumed office in July 2009, announced it would review the negotiated conditions and demand an environmental impact assessment for the project. As a result the implementation of the project was temporarily stopped.

At the beginning of November 2011 the Bulgarian Ministry of Environment and Waters endorsed the final environmental impact assessment which was on the whole positive.

Yet, on 7 December 2011 the government decided to withdraw from the project and convince Greece and Russia that it should be cancelled by mutual consent. The reasons behind that were that “it seemed like an end in itself” and “there is no sound rationale”. (4) By the middle of 2012 the three countries haven’t officially agreed on shelving the project outright. It’s possible that, upon the parliamentary elections in Bulgaria due in 2013, the newly elected government might reconsider its stance on the project.

An alternative project to Burgas-Alexandroupoli pipeline is the Samsun-Ceyhan pipeline. (5) It will start from the Black Sea port of Samsun and across the territory of Turkey will reach the Mediterranean oil terminal in Ceyhan. The idea of building the pipeline dates back to 2000. After the necessary exploratory activities were over, the Turkish company Çalık Enerji and Italian one Eni S.p.A. signed in September 2005 a Memorandum of Understanding for the joint construction of the pipeline. The first sod was symbolically turned in April 2009.

Six months later, on 19 October, Turkey, Italy and Russia signed an intergovernmental agreement, stipulating that the Russian companies Transneft and Rosneft will also be involved in the project. The length of the pipeline is 550 km and its capacity - 1.5 million barrels per day. Its costs are estimated to be \$ 2 billion. The pipeline is scheduled to become operational in 2012, but the closing date will most likely be prolonged by two or three years.

On 3 April 2007 Romania, Serbia, Croatia, Slovenia and Italy signed a Memorandum of Understanding on the construction of the Pan-European oil pipeline from Constanta to Trieste. (6) The document was signed also by the then EU Commissioner for Energy Andris Piebalgs. The idea about the pipeline dates back to 2002. Its route starts from the Black Sea port near the Romanian city of Constanta, crosses Serbia and reaches the Adriatic port of Rijeka in Croatia. From Rijeka it runs across Slovenia to Trieste where it will be connected with the Transalpine pipeline going to Austria and Germany. The pipeline is expected to be 1 856 km long and to have a capacity of 1.2 - 1.8 million barrels per day. The facility will be able to transport annually up to 100 million tons of oil from the Caspian region to Western Europe and the USA. The expected costs of the pipeline were initially around EUR 3.5 billion, but later the figure doubled to reach almost EUR 8 billion.

An agreement on setting up a Pan-European Oil Pipeline project development company was signed on 22 April 2008 by the Romanian companies Konpet Ploiesti

and Oil Terminal Constanta, the Serbian Transnafta and the Croatian company Yanaf. The construction of the pipeline was initially scheduled for the end of 2012 but the progress achieved in the implementation of the project was quite insufficient. The main reasons for the delay were the difficulties to find the necessary investment and to ensure the supply of oil that will make the pipeline financially profitable. That makes the future of the project seem rather uncertain.

3. The Southern gas corridor

Compared to the oil pipelines, the number of contemplated gas pipelines to cross the SEE is significantly higher. The reason is that in this field the interest of the EU member states and the SEE countries themselves is considerably higher. As a whole, the region is perceived to become a transit corridor for around ten gas pipelines on regional and some of them even on a European scale. Most of the proposed projects constitute a crucial element in an already elaborate energy strategy of the EU.

In its Second Strategic Energy Review published in November 2008 the EC proposed an EU Energy Security and Solidarity Plan which features the construction of a Southern Gas Corridor bringing gas from Caspian and Middle Eastern sources. The corridor will support the EU in achieving its goal of securing further gas supplies and meeting growing energy needs. (1) It will consist of four pipelines determined “to be of strategic importance for the EU”. They are Nabucco, ITGI, White Stream and Trans Adriatic pipeline. (2) The EU hopes that Nabucco alone will provide for around 5% of its domestic needs of natural gas. (3) In the EU Energy Priorities Strategy by 2020 released in 2010 it is stated that “the Southern Corridor would be – after the Northern Corridor from Norway, the Eastern Corridor from Russia, the Mediterranean Corridor from Africa and LNG – the fourth big axis for diversification of gas supplies in Europe.” (4). The strategic objective for this corridor is to achieve the supply route to the EU of roughly 10 – 20 of EU gas demand in 2020, equivalent roughly to 45 – 90 bcm of gas per year. (5) The aim of the Southern Corridor is to directly link the EU gas market to the largest deposit of gas in the world (the Caspian/Middle East basin). Another advantage is that these gas fields are geographically closer than the main Russian deposits.

The Nabucco pipeline is the main project in the Southern corridor and one of the biggest Pan-European energy projects. (6) According to the original idea the length of the pipeline had to be 4 042 km and starting from Ahiboz, Ankara Province in Turkey,

running across the territory of Bulgaria, Romania and Hungary and reaching Baumgarten an der March - a major energy hub in Austria. Around two thirds of its length (2 730 km) had to be on Turkish, 412 km on Bulgarian, 469 km on Romanian, 364 km on Hungarian and 47 km on Austrian territories. The pipeline was planned to carry 31 bcm of natural gas supplied from the Caspian region. The pipeline construction should have begun in 2009 and be completed by 2013 – 2014.

The proposal for the Nabucco project dates back to February 2002 when the first talks involving Austrian and Turkish companies took place. A few months later (June 2002) five energy companies - Transgaz (Romania), Bulgargaz (Bulgaria), Botas (Turkey), OMV (Austria) and MOL (Hungary) signed a protocol, followed by a cooperation agreement (October 2002). Later (2008) the German RWE became the sixth participant in the project. Another three years later (June 2005) the partners concluded a joint venture agreement. The share stake for each of the six companies constituting the Nabucco Gas Pipeline International GmbH (a Vienna registered company for the implementation of the project) equals 16.67%. The first ministerial conference on Nabucco was held in Vienna on 26 June 2006 when a common declaration was adopted.

An important step was the intergovernmental agreement for the implementation of the project signed on 13 July 2009 in Istanbul by the Prime Ministers of Turkey, Austria, Hungary, Romania and Bulgaria. The event was attended by the European Commission President José Manuel Barroso, the then European Commissioner for Energy A. Piebalgs, the US Special Envoy for Eurasian Energy Richard Morningstar and the influential member of the US Senate Committee on Foreign Relations Richard Lugar.

Despite the EU involvement, the progress achieved in the implementation of the Nabucco project by 2012 was modest. The main problems were how to secure the necessary quantities of natural gas for the pipeline and the constantly increasing project costs. Initially it was EUR 7.9 billion, but according to the some estimates at the end of 2011 rose to EUR 24 - 26 billion. (7) As to the gas volume needed for the proper functioning of the pipeline, the countries from the Caspian region were not able to guarantee long-term supply of gas and eventually the only real option turned to be the gas field Shach Deniz in Azerbaijan, that will be in use in 2018 at the earliest. As a result, the construction schedule was delayed several times and according to the latest timetable the project is due to get rolling in 2013 and be completed by the end of 2017.

The challenges faced by the Nabucco project multiplied when at the start of the current decade were introduced a bunch of competitive projects for pipelines transporting natural gas from the Caspian region to Europe.

One of them is the Trans Adriatic pipeline (TAP). (8) The project was proposed by the Swiss energy company EGL Group in 2003. The pipeline is designed to start from the port of the Greek city of Thessaloniki, to cross the territory of Albania and by a 115-km long underwater connection in the Adriatic Sea to reach the port near the city of Brindisi in Italy. In February 2008 EGL Group and the Norwegian energy company Statoil signed an agreement to set up a joint venture called Trans Adriatic Pipeline AG, which will develop, build and run the pipeline. In July 2010 the German energy company, E.ON Ruhrgas, joined the project. EGL Group and Statoil hold a 42.5 % stake each in the capital of the joint project company. The stake of E.ON Ruhrgas is 15%. The pipeline will be 520 km long and will have a capacity of up to 20 bcm of natural gas. It's expected to become operational in 2016–2017. It would get natural gas from the Shah Deniz gas field in Azerbaijan through the existing and newly planned gas networks in Turkey. This consequently renders its construction costs much lower than Nabucco – around \$ 2.3 billion (EUR 1.8 billion).

Another project that rivals Nabucco was proposed by the British Petroleum (BP) on 24 September 2011. It's called South East Europe Pipeline (SEEP) and will run from the eastern part of Turkey across Bulgaria, Romania and Hungary to Baumgarten an der March in Austria. The pipeline will also use the existing gas network in Turkey's territory and 800–1 000 kilometres of newly facilities in the other countries. The pipeline will be able to supply Europe with 10 bcm of gas mainly from the Shah Deniz gas field. Its proposed cost is several times lower than this of Nabucco. (9)

The Nabucco prospects seemed to be strongly affected by the Trans Anatolian gas pipeline project (TANAP). (10) In December 2011 Turkey and Azerbaijan signed a Memorandum of understanding on establishing a consortium to build and operate the pipeline with the participation of the state oil company of the Azerbaijan Republic (SOCAR) with a 80% stake and a couple of Turkish energy companies - BOTAŞ (10%) and TPAO (10%). TANAP will carry supplies from Shah Deniz-II field across Georgia and Turkey to Bulgaria. It will be 2 000 km long while its preliminary estimated cost amounts to \$ 5-7 billion. The initial capacity of the pipeline will be about 16 bcm of natural gas per year, with the option to be increased to 20 and even to 24 bcm. The timeline sets the 4th quarter of 2014 as the kick-off of the construction, the end of 2017

as the completion point and the beginning of 2018 as the roll-out of the pipeline when the supplies from Shah Deniz-II are actually expected to run.

At the start of the 2012 Turkey's government declared that it considered the TANAP project to be the priority task in its plans for building a gas connection with Europe since Azerbaijan had already committed itself to providing gas from Shah Deniz-II. (11) In the spring the same year it was revealed that MOL opted out of the Nabucco project due to the uncertain prospects for its implementation. RWE also announced it had been considering such a move. (12) The altered set of conditions brought about a change of plans for Nabucco's future. In May 2012 the Nabucco Consortium submitted a proposal to the Shah Deniz-II Consortium for the construction of a Nabucco West pipeline, which would transport Caspian gas from the Bulgarian-Turkish border to Baumgarten and beyond. (13)

Map 7. The route of Nabucco and Nabucco West pipelines



Source: <http://medya.todayszaman.com/todayszaman/2012/05/17/nabucco2.jpg>

The Nabucco West project is a modified version of the original Nabucco concept (**see Map 7**). It is significantly shorter, around 1 300 km, of which 412 km will be located in the territory of Bulgaria, 469 km in Romania, 384 km in Hungary and just 47 km in Austria. Compared to the original design, Nabucco West will only have a third of the transportation capacity, or 10 bcm of gas with the option to be extended to 14-16 bcm. The construction cost is calculated to be less than half of the initial version.

In the long run the fate of the modified Nabucco project depends on what the consortium in charge of Shah Deniz-II will finally decide. A total of four gas pipelines

relied on the supplies expected to be produced by this field. Apart from Nabucco, TAP, and SEEP it was also the gas pipeline connecting Turkey, Greece and Italy (ITGI) that joined the prospective users of Shah Deniz-II. In February 2012 the consortium favoured TAP over ITGI. On 28 June, when selecting between Nabucco and SEEP gas pipelines, it opted for Nabucco. The decision prompted BP (one of the participating companies in the consortium) to give up on its own project for the construction of SEEP. (14) The EC welcomed it as the Energy Commissioner Gunther Oettinger declared that it was “a success for Europe and our security of (natural gas) supply”. (15)

There is, however, another hurdle Nabucco needs to overcome before it may go ahead at full speed. The final decision of Shah Deniz-II operator will be announced in June 2013 when will be made the ultimate choice between the two pipelines - Nabucco and TAP - competing for the gas supplies delivered via TANAP.

In addition to Nabucco there are another three gas pipelines included into the Southern Corridor. At the start of the current decade the one at the most advanced stage of implementation was the Interconnection Turkey – Greece - Italy (ITGI) (16). The idea for the construction of this pipeline dates back to 2003. In April 2005 the Greek gas company DEPA and the Italian energy company Edison SpA signed a Memorandum of Understanding. In January 2007 Greece and Italy worked out an intergovernmental agreement about the EC-backed gas project. The ITGI is actually an extension of the 300-km-long gas pipeline connecting Turkey and Greece that was commissioned in November 2007. The pipeline route starts from Karacabey in Turkey, runs via Alexandroupoli to Komotini in Greece and crosses the Ionian Sea to reach Otranto in the Apulia region in Italy. Its total length is 1150 km: the Greece – Italy section is 807 km long, 590 km of which are located in Greece’s territory. The length of the offshore section (named Poseidon pipeline) is 217 km long and will run on the seabed of the Ionian Sea.

The gas pipeline will annually transport 11.5 bcm of natural gas from the Caspian region, primarily Azerbaijan to Greece, and 10 bcm from Greece to Italy. The costs of the gas link between Greece and Italy are evaluated to be around EUR 1.2 billion. In May 2010 Greece and Turkey signed a Memorandum aimed at speeding up the implementation of the project. After a meeting with his Greek counterpart G. Papandreou in October 2010, the Turkish Prime Minister Recep Tayyip Erdogan

announced that the term for completing the construction of the pipeline section to Italy was 2015. (17)

The construction of the Ionian Adriatic gas pipeline (IAP) (18) was decided in the intergovernmental declaration signed on 25 September 2007 between Albania, Montenegro and Croatia. The pipeline is designed to start from the Albanian city of Fier and run through Montenegro and Bosnia and Herzegovina to reach the seaport of Ploče in Croatia as its final destination. The length of the pipeline is 410 km altogether, of which 170 km are in Albanian territory, 100 km run through Montenegro and 140 km go across Croatia. It will have a capacity of up to 10 bcm of natural gas per year. Its construction costs are evaluated to be EUR 230 million and will be divided among the three participant countries. Albania will contribute EUR 90 million, Montenegro – EUR 60 million and Croatia – EUR 80 million. The construction itself will be carried out by EGL Group and the Croatian gas transmission operator Plinacro Ltd. The project should be completed approx. at the same time when the construction of TAP ends.

The fourth pipeline in the Southern corridor is the White Stream. (19) The project was put forward by then Prime Minister of Ukraine Yulia Tymoshenko in 2005. It has to deliver natural gas from Azerbaijan to the Georgian port of Supsa, from where it could follow two different routes - the first option is to cross the Black Sea and reach Constanta in Romania; the second option is to connect Supsa with Crimea in Ukraine and further by an underwater connection across the Black Sea to go to Constanta. In the first option the land connection between Supsa and Constanta will be 1 105 km long, whereas in the second option the land and underwater sections from Crimea to Constanta will be 620 km long. In the end, the total length of the pipeline could come out to be 1 238 km. The pipeline is planned to transport initially 8 and later on up to 32 bcm of natural gas per year. The project should be implemented by 2016.

A modified version of the White Stream gas pipeline came to the fore in September 2010 when state-owned energy companies from Azerbaijan, Georgia and Romania signed a memorandum on a project to transport LNG. Hungary also expressed interest in taking part in the project called the Azerbaijan - Georgia - Romania Interconnector (AGRI). Its route coincides with the first option of the White Stream project. The difference is that in the case of AGRI tankers will be used for the transportation of LNG. By 2012 the two versions of the White Stream project were in their preliminary phase without any chance to be carried out in the near future.

4. South Stream gas pipeline project

The South Stream pipeline (1) is the largest project ever planned for the transportation of natural gas to Europe across SEE. It was proposed as a Russian alternative to the EU-backed Southern Corridor. A total of nine SEE countries are officially committed to it or have expressed to do so: Turkey, Bulgaria, Romania, Greece, Serbia, Croatia, Slovenia, Republic of Macedonia, Bosnia and Herzegovina and Montenegro.

The project was launched with a Memorandum of Understanding signed by the Russian energy giant Gazprom and the Italian energy company Eni SpA on 23 June 2007 in Rome. The next step was the signing in Moscow on 22 November 2007 of an agreement about the setting up of a joint project company for commissioning the pipeline. Two months later (18 January 2008) was registered South Stream AG with Gazprom and Eni SpA having an equal stake in its capital. Later the French Electricité de France and the German Wintershal also expressed willingness to join the project. On 16 September 2011 the four companies signed an agreement for the setting up of the new project company South Stream Transport AG to deal with the Black Sea section of the pipeline. The biggest stake in the capital assigned for the underwater section is held by Gazprom (50%), followed by Eni (20%) and the other two companies with 15% each.

Map 8. The route of the South Stream gas pipeline



Source: http://www.south-stream.info/fileadmin/f/maps/eng/partnership_eng_prev.jpg

According to the initial blueprint the route of the South Stream pipeline should start from the Black Sea town of Dzhubga. From there the 900-km long underwater section will go to the Bulgarian coastal city of Varna and further to the northern city of Plevan from where it will split in two branches. The one will continue southwest towards Greece and across the Ionian Sea will reach southern Italy. The other branch will go northwest towards Serbia, Hungary and will finally get to the Baumgarten gas hub in Austria. There are options for deviations to Romania, Republic of Macedonia, Montenegro, Bosnia and Herzegovina and Slovenia. The total length of the longest pipeline section is planned to be 3 700 km, of which 1 000 km will run under the Black and Adriatic Sea. Apart from this particular route there have been discussed alternative versions. One of them is a single non-branchable line from Bulgaria across Serbia and Hungary to Slovenia. A modified version yet is a connection from Slovenia to northern Italy without a branch between Greece and Southern Italy. In this case the sole underwater section will be 900 km long connecting Russia and Bulgaria across the Black Sea (see Map 9). The initial construction costs of the project are estimated at \$ 8.6 billion.

Map 9. The 900-km offshore section of the South Stream pipeline from Russia to Bulgaria across the Black Sea



Source: http://www.south-stream.info/fileadmin/f/maps/eng/seaway_eng_prev.jpg

Russia signed separate agreements with the ten countries hosting the pipeline. Seven of them are situated in SEE - Bulgaria (18 January 2008), Serbia (25 January 2008), Greece (29 April 2008), Slovenia (14 November 2009), Croatia (2 March 2010) and

Turkey (6 August 2009). The latter signed a protocol with Russia on the passage of the pipeline across the Turkish territorial waters. Agreements are soon to be signed with Republic of Macedonia and Montenegro. The other countries that signed separate agreements with Russia are Hungary (28 February 2008) and Austria (24 April 2010).

On May 15, 2009 in Sochi the gas companies from Russia, Italy, Bulgaria, Serbia and Greece signed an agreement on the construction of the South Stream pipeline. Like Nabucco, the other major Pan-European project, the implementation of South Stream also faced difficulties. South Stream was designed as an alternative to Nabucco and reflected the of Russia's ambitions to maintain its dominant position on the European energy market. Although the EU does not oppose the South Stream project, Brussels leans in favour of the Nabucco pipeline. The main reason is that by constructing Nabucco the EU expects to reduce its high degree of dependence on the imports of natural gas from Russian. That dependence could become even greater without an alternative to both South Stream and the other major gas pipeline, Nord Stream, from Russia to Central Europe that became operational in 2011.

On the other hand, the simultaneous implementation of these projects may as well lead to oversupply of natural gas on the European market and therefore to a real danger of the non-viability of the pipelines. Precisely such concerns underpinned the statement of Eni SpA's CEO Paolo Scaroni who proposed in March 2010 that the Nabucco and South Stream projects should be merged. He explained that such a move would reduce the huge investment costs and significantly increase the total financial revenues from the gas transportation. (2)

His statement provoked public allegations on the part of Stanislav Tzigankov, International Relations Director at Gazprom, who said that Eni SpA didn't fulfill its obligations under the project terms and caused disruption in the preparatory works on the pipeline maritime route. Meanwhile, in the Russian edition of the highly respected Newsweek magazine there appeared a forecast that South Stream could even be dropped off. (3) The truth is that despite the difficulties and the delay there has been achieved a significant progress by 2012 in the lead-up to the South Stream implementation.

In the spring of 2010 Gazprom and Eni SpA announced they had overcome the controversies and declared their "total commitment" to the project promising to speed it up. In September Gazprom Executive Board made it clear that the implementation of

the South Stream project was going according to schedule, the techno-economic appraisal would be ready by February 2011 and the pipeline would come into operation by December 2015. (4)

At the end of November 2010 Leonid Chugunov, the Head of Project Management Department at Gazprom revealed that the costs for the construction of the offshore section across the Black Sea would reach EUR 10 billion, while for the whole overland connection EUR 5.5 billion. This means that the overall costs for the project may amount to EUR 15.5 billion and will be almost twice as high as what was initially estimated. (5) Therefore South Stream is set to become the most expensive of all pan-European pipelines.

Still, a number of other issues ought to be settled before the project gets under way. The most critical one concerned the uneasy relations between Russia, Turkey and Bulgaria. Among the reasons for the delayed start of the project was the long-awaited permit by the part of the Turkish government for the construction of the section which passes through the economic zone of the Turkish waters in the Black Sea. It was issued at the end of December 2011. (6) A couple of days later the then Russian Prime Minister Vladimir Putin stated that the construction of underwater pipeline section would commence by the end of 2012 and would be brought into operation three years later. Initially the pipeline will carry nearly 16 bcm of natural gas per year, while the full pipeline capacity of 63 bcm will be reached in 2018. The overall construction costs will total EUR 16.5 billion, of which EUR 10 billion will be allotted for the passage across the Black Sea and EUR 6.5 billion for the overland section. (7)

Meanwhile, Russia made some changes to the original South Stream route. It will go from Bulgaria westwards across Serbia, Hungary and Slovenia to reach its final destination which is the Italian city of Treviso in northern Italy. The pipeline will branch out to Croatia, Republika Srpska in Bosnia and Herzegovina and possibly to Republic of Macedonia. The key change in the project is its final destination point. It was originally planned to be Baumgarten in Austria which could have turned into a Central Europe's distribution hub of gas supplies. The main reason for shifting the end point of the pipeline is believed to be the EC's opposition to the desire on the part of Gazprom to take a 50% stake in the Central European Gas Hub in Baumgarten. The Commission has referred that case to the antitrust regulations of the EU third energy package which will come into effect in 2013. (8) Yet, Austria is not entirely crossed out from the project because when the pipeline reaches Italy it will be hooked up to TAG

pipeline connecting Austria and Italy. The South Stream route was finalised after the adoption of the investment package in 15 November 2012 when Russia and Bulgaria signed the final investment agreement for the construction of the gas pipeline on Bulgarian territory. Bulgaria occupies a central place in the project. In order to get things settled more quickly Russia has proposed to entirely fund the construction works with Bulgaria's share amounting to around EUR 15 million, as well as to cut the price of gas exports for its project partner by some 20 %. (9) The construction of the South Stream gas pipeline officially started on December 7, 2012.

At the end of 2012 South Stream was one of a total of eight large-scale gas pipeline projects to provide gas to Europe traversing the territory of SEE (see the Map). South Stream will be only one carrying gas from Russia, while the rest (Nabucco, SEEP, TAP, White Stream, AGRI, ITGI and TANAP) will transport supplies from the Caspian basin. The advantage it has over the others is that it doesn't face the problem of securing the necessary gas quantities for its viable operation. That's why it has positioned itself as the most competitive one and stands the best chance to be completed before all other projects.

Map 10. Projects for natural gas transportation through SEE



Source: <http://www.europeanenergyreview.eu/data/docs/tanap-map.jpg>

Should the South Stream be partly operational in 2015 Russia will get a huge edge over its competitors by not only maintaining but also reinforcing its positions on the European energy market.

What remains to be seen is the effect such an event will have on the future implementation of the other projects, more specifically of those similarly designed to deliver gas to Italy. It's by no means clear whether Italy will continue to take any economic interest in participating in other projects, particularly TAP or ITGI once South Stream is ready and starts providing the planned supplies of gas. A similar dilemma might be faced by Eastern and South-Eastern European countries involved in the Russian project, in their case with respect to Nabucco. In May 2012 Hungary's MOL quit its participation in Nabucco and favoured South Stream. In December 2012 it was followed by the German RWE. (10) Later the same month a high ranking Turkish official hinted that his country was considering to leave the project, but it would not be the first country to make such a move. (11) The other countries, however, seem almost unlikely to drop the project because, apart from with greater supplies, they are seeking diversification of their gas imports. Therefore it's safe to conclude that Nabucco stands its fair chance too. If there are adequate sources of gas in place, the pipeline will be successfully completed but will only come into operation 2-3 years after South Stream has already done so.

Conclusion

The analysis of the development, policy and regional cooperation presents the following generalised picture of the current state and the prospects before the energy sector in SEE. With the exception of lignite, the region is poor in mineral energy resources which are mostly imported. SEE's energy import dependence has increased from 52% at the beginning of the century to 56% in 2010, despite the registered decrease at the end of the decade which was caused by the drop in energy resource consumption and import due to the economic recession. In this respect SEE is close to the average in the EU.

At the beginning of this decade, traditional energy sources played a central part in the energy balance. Between 2000 - 2010 the tendency was toward increasing the share of oil and natural gas in the energy mix with respectively 4 and 3 % at the expense of the coal. In 2011, oil and petroleum products satisfied 33% of energy consumption, coal 30%, natural gas 22%, water sources 6%, nuclear power 4%, and other sources (biofuel, geothermal, wind, solar, etc.) 5%. The share of RES has grown by almost a third and in 2010 reached 10% - near the average level in the EU. During the first decade of our century, electricity production and consumption had the fastest growth in SEE's energy sector. In 2010, thermal power plants accounted for almost two thirds of electricity production and hydropower plants – for less than a third. From the remaining sources, nuclear power plants accounted for the largest share in production.

During the first decade of this century, SEE's nuclear energy capacities were reduced, although in 2007 a 700-MW reactor began operating in the Romanian Cernavoda NPP. The reason lies in the fact that in pursuance of the agreements concerning Bulgaria's accession to the EU, four reactors were closed down in Kozloduy NPP at the end of 2004 and 2006 at a total of 1 760 MW. In 2012 only four countries in SEE have used nuclear power generating facilities, and from the rest, only Turkey intends to build its own nuclear power plant. At the beginning of this decade, the share of nuclear power generating capacities as part of all power generating capacities in the region was 3.4%, and its share in electricity production was 7.4%. The share in electricity production was significantly higher in the countries with nuclear power plants. In Slovenia it was 43%, in Bulgaria 32.6%, in Romania 19%, and in Croatia 15%.

During the first decade of this century, SEE's energy import dependency has increased from about 55% in 2000 to about 65% in 2008, after which due to the economic

recession and the decrease in energy consumption and import it dropped to about 60%. Its level is significantly higher than the average in the EU (52.7%).

The presented data refers to a region in which there have been great differences between the trends of the energy sector development in the individual countries. It is also heavily influenced by the SEE countries' inequality in terms of their economic and energy potential. In this respect, Turkey's large regional share stands out, followed by Greece and Romania. This is why the overall energy picture of SEE should be viewed with certain provisions in mind. The structure of the energy balance in the individual countries depends on the available energy resources, the production capacity for their utilisation and the financial means for energy import. In some countries, coal (Serbia, the Republic of Macedonia, Kosovo, Bosnia, and Herzegovina) or oil and petroleum products (Greece, Croatia, Albania) have accounted for more or approx. 50% in energy consumption. The share of RES in the energy consumption in Albania, Romania, Slovenia, Croatia and Bulgaria has been higher than the average in the EU. In most SEE countries, the share of thermal power plants in electricity production has varied between 55% (Bulgaria and Romania) and 98% (Kosovo). In the rest of the countries, the share of hydropower plants has been larger – between 50% (Croatia) and 86% (Albania).

The countries in the region have considerable differences with regard to their level of energy import dependency. It is the highest for Turkey and Greece (69%), which had the highest economic potential, and the lowest for Romania (22%), which in this respect is one of the leaders in the EU.

No significant advance was made in regional energy cooperation in SEE during the first decade, although it is one of the main objectives in the countries' energy policies. The most important achievement in this direction was the founding of the Energy Community but the initiative for this came from the EU which is the main driving force behind the advance made in accomplishing its objectives. The development of a new energy infrastructure in SEE led to disappointing results. From more than a dozen proposed projects for the development of gas and oil pipelines of regional importance, only one has been completed (the gas pipeline between Turkey and Greece). The chief reason for this is that the majority of countries have limited financial and technical capacities, and their economic development relies heavily on outside assistance and foreign investments. This has led to their failure (with the exception of Turkey and to a lesser extent of Greece) to diversify their imports and to reduce their dependency on

Russia in the energy sphere, especially regarding natural gas. The economic recession and the financial instability in Europe of the end of the last and the beginning of this decade had a distinctly negative effect on the energy sector of the SEE countries.

All SEE countries, with the exception of Bosnia and Herzegovina, implement their energy policies in accordance with long-term strategies, some of them up to 2030 and even 2035. Their specific objectives take into consideration specific conditions, the economic and financial resources of individual countries, but their long-term energy policy strategic priorities are the same:

- increasing and diversifying the production of the country's own energy resources;
- reducing energy import dependency;
- energy market restructuring according to the market principles;
- increasing energy sector efficiency in conformity with the environmental requirements;
- increasing the share of RES in the energy balance;
- broadening the energy sector cooperation with the countries from SEE and the EU, participation in regional and European energy infrastructure projects.

The energy strategies of the SEE countries state some ambitious objectives, which (should they be fulfilled) will change considerably the character of the energy sector in the region in this decade. This will require the implementation of an effective energy policy and favourable conditions for the development of the energy sector. The evolution of the economic and financial situation in SEE and the EU will be a decisive factor. The energy sector proved to be among the worst affected by the financial and economic crisis following 2008 which, though it eased a bit, still was not overcome at the beginning of this decade. Some negative consequences of the crisis manifested themselves in the drastic drop (more than two times in 2008-2011) in domestic and foreign investments, which led to the delay, temporary or permanent suspension of dozens of energy projects in SEE. In some instances, international companies stepped down from their contracted investment participation. This happened with the construction projects for Belene NPP in Bulgaria, the construction of new reactors in the Romanian Cernavoda NPP and the implementation of regional infrastructure energy projects.

To fulfil their energy policy objectives, SEE countries will require a considerable increase in foreign investments, without which no large regional energy project can be realised. The financial costs related to the national energy strategy objectives by 2020 have been estimated at approx. EUR 150-180 billion. The real amount of the necessary funds, however, exceeds this number. Experts' estimates show that for the energy sector development up to 2020, SEE will require financial resources in the range between EUR 240 and EUR 300 billion. (1) Regional energy projects will require large investments for their implementation, and so does the developing of potential new oil and natural gas deposits, mainly in the Adriatic, Mediterranean and Black Sea. If there is evidence that the exploitation of these deposits would be economically viable, it could begin toward the end of this or the beginning of the next decade at the earliest.

The development of the energy sector in SEE will depend on the resources of the individual countries and the evolution of the economic and financial situation in the EU and the region. Turkey had the greatest potential at the beginning of this decade – the country quickly got out of the economic recession and increased its PPP growth. It will play a central part in SEE's quicker recovery from the economic recession and in the broadening of regional energy cooperation. In contrast, the financial and economic crisis in Greece deepened and it would take years to overcome it. Until 2012, most of the other SEE countries including Romania, Bulgaria, Serbia, Slovenia, and Croatia had not shown any signs of stable recovery from the recession.

In light of this, the prospects for SEE's energy sector are unclear and to some degree uncertain. Depending on the changes in internal and external conditions and the efficiency in the energy policy of the countries in the region, three scenarios are possible to occur in the present decade (2010-2020) (**see Table 12**).

The optimistic scenario is that the economic recession in SEE will be overcome by the end of 2013 or the beginning of 2014. The energy sector could play a crucial part through:

- Increasing energy production by an average of 1.5% per year.
- Attracting foreign investments and external funding to the amount of EUR 120-150 billion.
- The completion of three or four infrastructure projects of regional importance, including the South Stream and Nabucco West gas pipelines.

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- The construction of nuclear power generating facilities in Turkey (Akkuyu NPP, consisting of four reactors with a total capacity of 4 800 MW), Romania (two new reactors in Cernavoda NPP with a total capacity of 1 500 MW) and probably in Bulgaria, in case the construction of Belene NPP is resumed.
 - The share of coal, oil, natural gas and RES in energy consumption reaching respectively 25, 28, 25 and 15%, and that of nuclear power in the electricity production 10-12%.
 - Decreasing as little as possible (56-58%) SEE's energy import dependence.

The realistic scenario is that the economic recession will be overcome around 2015. If this happens, the energy sector will accomplish the following:

- Increasing energy production by an average of 1% per year.
- Attracting foreign investments and external funding to the amount of EUR 70-80 billion.
- Completing one or two infrastructure projects of regional importance, one of which should be the South Stream or Nabucco West gas pipeline.
- Construction of planned nuclear power generating facilities in Turkey (Akkuyu NPP, consisting of four reactors at a total of 4 800 MW) or Romania (two new reactors in NPP Cernavoda at a total of 1 500 MW) or Bulgaria, if the construction of Belene NPP is resumed.
- The share of coal, oil, natural gas and RES in energy consumption reaching respectively 28, 30, 24 and 12%, and that of nuclear power in the electricity production 8-9%.
- Maintaining (around 60 %) of the existing SEE's energy import dependence.

The pessimistic scenario is that the economic and financial instability in SEE will continue for the larger part or until the end of the decade. If this happens, the energy sector will accomplish the following:

- Increasing energy production by an average of about or less 0.5% per year.
- Attracting foreign investments and external funding to the amount of less than EUR 50 billion.
- Not a single completed infrastructure project of regional importance.
- No opening of new nuclear power generating capacities.

- The share of coal, oil, natural gas and RES in the gross energy consumption reaching 32, 35, 22 and about 10% respectively, and that of nuclear power in the electricity production 5-6%
- Increasing the energy import dependence (about 65 %) **(see Table 12)**.

Table 12. Scenarios for the development of energy sector in SEE in 2010–2020

| Indicators | First (optimistic) scenario | Second (realistic) scenario | Third (pessimistic) scenario |
|---|---|---|---|
| Annual growth of energy production (%) | 1.5% | 1% | Around or less 0.5% |
| Foreign investments and financial aid (billion euro) | 120 – 150 | 70 – 80 | under 50 |
| Number of Regional projects completed | 3 – 4 (incl. South Stream and Nabucco West pipelines) | 1 -2 (incl. South Stream or Nabucco West pipelines) | none |
| New nuclear energy capacities | 4 reactors in Akkuyu NPP, 2 reactors in Cernavoda NPP and possibly 2 reactors in Kozloduy NPP | 4 reactors in Akkuyu NPP or 2 reactors in Cernavoda NPP | none |
| SEE countries having NPP up to 2020 | Bulgaria, Romania, Slovenia, Turkey and Slovenia - Croatia (jointly), | Bulgaria, Romania, Slovenia, Slovenia - Croatia (jointly), Turkey | Bulgaria, Romania, Slovenia, Slovenia - Croatia (jointly) |
| Nuclear energy share in gross electricity production (%) | 10 – 12 | 8 - 9 | 5 - 6 |
| Coal/Oil/Nat. gas/RES share in the total energy consumption (%) | 25/28/25/15 | 28/30/24/12 | 32/35/22/10 |
| Energy import dependence (%) | 55 - 58 | 60 | 65 |

The hardest time for SEE's energy sector will be the period before the end of the economic recession and the restoration of financial stability in the EU. It could last for another couple of years but it might well continue further in time. This means that the countries in the region will have to reassess some of the objectives and priorities in their policies. One possible option is to broaden the cooperation with countries in Asia, Africa and Latin America which have not been affected by the global economic stagnation and financial instability.

Provided the SEE countries take greater effort and succeed in attracting substantial energy sector investments from countries outside the crisis-ridden European economy (e.g. China, Russia, Japan, South Korea, India, Brazil, etc.), this will be of considerable help for reaching the objectives in their energy strategies.

Capitalising on the opportunities which international energy cooperation presents is of vital importance for all SEE countries. Without outside assistance none of them will be able to attain their energy policy objectives. The top priority in this respect is making headway in implementing the large energy infrastructure projects in SEE, especially South Stream and Nabucco West. This will be highly conducive in many ways – increasing the security and diversifying energy imports, attracting significant investments in the energy and transport infrastructure with a beneficial effect for the development of the entire economy, generating substantial returns from the exploitation of gas and oil pipelines. Last but not least, it will add further value to SEE as a transit energy corridor.

The countries in SEE ought to speed up and broaden the regional energy cooperation which holds great potential in itself. There is an urgent need to establish a regional project oriented institution in SEE, which will have at its disposal or will have the capacity to attract financial resources for the implementation of joint initiatives in the energy domain. The current realities in the region, however, do not provide grounds to believe that such an institution may come into existence any time soon.

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Conclusion

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Appendices
APPENDIX 1**Table 13. Countries with territories fully or partly belonging to the Balkan Peninsula**

| Country | Territorial belonging to the Balkan peninsula (%) |
|------------------------|--|
| Albania | 100 |
| Bosnia and Herzegovina | 100 |
| Bulgaria | 100 |
| Kosovo | 100 |
| Republic of Macedonia | 100 |
| Montenegro | 100 |
| Greece | 84 |
| Serbia | 74 |
| Croatia | 49 |
| Slovenia | 27 |
| Romania | 9 |
| Turkey | 3 |
| Italy | 0.2 |

APPENDIX 2**Table 14. Basic data for the SEE countries (2010)**

| Country | Territory (1000 square km) | Population (million inhabitants) | GDP in PPP/ Nominal value (billion US dollars) | GDP per capita in PPP/Nominal value (US dollars) |
|-------------------------------|---|---|---|---|
| Albania | 28.7 | 3.2 | 26.3 / 11.6 | 7 400 / 3 700 |
| Bosnia and Herzegovina | 51.1 | 3.8 | 30.2 / 16.2 | 7 800 / 4 300 |
| Bulgaria | 110.9 | 7.3 | 90.8 / 44.8 | 12 800 / 6 300 |
| Croatia | 56.6 | 4.4 | 78.0 / 59.9 | 17 700 / 13 700 |
| Greece | 131.5 | 11.3 | 322.5 / 305.4 | 28 400 / 27 300 |
| Kosovo | 10.9 | 2.2 | 4.4 / 3.2 | 6 600 / 3 100 |
| Montenegro | 13,8 | 0.6 | 6.5 / 3.9 | 10 700 / 6 000 |
| Republic of Macedonia | 25.7 | 2.1 | 19.3 / 9.6 | 9 700 / 4 400 |
| Romania | 238.4 | 21.5 | 252.2 / 161.6 | 11 900 / 7 500 |
| Serbia | 77.5 | 7.3 | 79.9 / 38.9 | 10 800 / 5 200 |
| Slovenia | 20.3 | 2.1 | 56.3 / 46.4 | 28 000 / 23 700 |
| Turkey | 783.6 | 72.5 | 960.5 / 741.8 | 13 500 / 10 400 |
| SEE | 1549.0 | 138.3 | 1926.9 / 1443.2 | 13 800 / 9 630* |
| SEE share in Europe (%) | 7.7 | 11.0 | 5.7 / 3.7 | 49.0 / 35.0** |

* Average level

** In percentage of the average level in Europe

Source: National Statistics of the SEE countries; IMF, 2012.

APPENDIX 3**Table 15. Democracy index**

| Country | Rank in Europe* | Category** |
|-------------------------------|------------------------|-------------------|
| Slovenia | 19 | Flawed Democracy |
| Greece | 21 | Flawed Democracy |
| Bulgaria | 29 | Flawed Democracy |
| Croatia | 30 | Flawed Democracy |
| Romania | 31 | Flawed Democracy |
| Serbia | 32 | Flawed Democracy |
| Republic of Macedonia | 34 | Flawed Democracy |
| Montenegro | 35 | Flawed Democracy |
| Albania | 37 | Hybrid Regime |
| Turkey | 38 | Hybrid Regime |
| Bosnia and Herzegovina | 39 | Hybrid Regime |

* Among 41 countries in Europe

** The countries are divided in four categories – Full Democracy, Flawed Democracy, Hybrid Democracy and Authoritarian Regime. The ranking is based on the assessment of five indicators – Electoral process and pluralism, Functioning of government, Political participation, Political culture and Civil liberties.

Source: Democracy Index 2011. Democracy under Stress. A Report from the Economist Intelligence Unit, December 2011.

APPENDIX 4**Table 16. Political rights and civil liberties in the SEE countries**

| Country | Political rights (Score)* | Civil liberties (Score)* | Category** |
|------------------------|----------------------------------|---------------------------------|-------------------|
| Albania | 3 | 3 | Partly Free |
| Bosnia and Herzegovina | 4 | 3 | Partly Free |
| Bulgaria | 2 | 2 | Free |
| Croatia | 1 | 2 | Free |
| Greece | 2 | 2 | Free |
| Kosovo (1) | 5 | 4 | Partly Free |
| Republic of Macedonia | 3 | 3 | Partly Free |
| Montenegro | 3 | 2 | Free |
| Romania | 2 | 2 | Free |
| Slovenia | 1 | 1 | Free |
| Serbia | 2 | 2 | Free |
| Turkey | 3 | 3 | Partly Free |

* The score represents the level of the political rights and civil liberties in each country on a scale from 1 (most free) to 7 (least free).

** Depending on the ratings the countries are classified as Free, Partly Free or Not Free.

(1) Kosovo is the only SSE country which according to the ranking is not an electoral democracy

Source: Freedom in the World 2012. The Arab Uprisings and Their Global Implications, Freedom House, January, 2012.

APPENDIX 5**Table 17. Human development index (HDI) of the SEE countries (2011)**

| Country | HDI/Category* | Rank in Europe** |
|------------------------|-----------------------------------|-------------------------|
| Slovenia | 0.884/Very High Human Development | 13 |
| Greece | 0.861/Very High Human Development | 20 |
| Croatia | 0.796/Very High Human Development | 31 |
| Romania | 0.781/High Development | 32 |
| Montenegro | 0.771/High Development | 33 - 34 |
| Bulgaria | 0.771/High Development | 33 - 34 |
| Serbia | 0.766/High Development | 35 |
| Albania | 0.739/High Development | 38 |
| Bosnia and Herzegovina | 0.733/High Development | 39 |
| Republic of Macedonia | 0.728/High Development | 41 |
| Turkey | 0.699High Development | 42 |

* The Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education, standards of living, and quality of life in each country. The states are divided into four categories – Very High Human Development, High Human Development, Medium Human Development and Low Human Development.

** Among 43 countries in Europe

Source: *Human Development Report 2011, Sustainability and Equity: A Better Future for All*, UNDP, November 2011.

APPENDIX 6**Table 18. Corruption perception index for the SEE countries**

| Country | Index | Rank in Europe* |
|-------------------------------|--------------|------------------------|
| Slovenia | 5.9 | 19 |
| Turkey | 4.2 | 26 |
| Croatia | 4.0 | 27 |
| Montenegro | 4.0 | 27 |
| Republic of Macedonia | 3.9 | 31 |
| Romania | 3.6 | 32 |
| Greece | 3.4 | 33 |
| Bulgaria | 3.3 | 34 |
| Serbia | 3.3 | 34 |
| Bosnia and Herzegovina | 3.2 | 36 |
| Albania | 3.1 | 37 |
| Kosovo | 2.9 | 38 |

* Among 42 countries

Source: *Corruption Perception Index 2011, Transparency International, Berlin, December 2011.*

APPENDIX 7**Table 19. GDP growth of the SEE countries (2000–2011)**

| Country | 2000 | 2001 | 2002 | 2004 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2000-2011/ Rank in SEE |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------------------------|
| Albania | 8.0 | 7.5 | 5.0 | 5.0 | 7.0 | 5.6 | 5.5 | 5.0 | 6.0 | 6.1 | 3.1 | 3.0 | 5.7/2 |
| Bosnia and Herzegovina | 5.5 | 4.4 | 5.3 | 4.0 | 6.1 | 5.0 | 6.2 | 6.8 | 5.4 | -3.2 | 0.8 | 2.2 | 4.0/5 |
| Bulgaria | 3.7 | 4.2 | 4.7 | 5.5 | 6.7 | 6.4 | 6.5 | 6.4 | 6.2 | -5.5 | 0.4 | 1.7 | 3.9/6 |
| Croatia | 3.8 | 3.7 | 4.9 | 5.4 | 4.1 | 4.3 | 4.9 | 5.1 | 2.1 | -6.9 | -1.4 | 0.0 | 2.5/11 |
| Greece | 4.5 | 4.2 | 3.4 | 5.9 | 4.4 | 2.3 | 5.5 | 3.0 | -0.2 | -3.3 | -3.5 | -6.9 | 1.8/12 |
| Kosovo | 18.0 | 27.1 | -0.7 | 5.4 | 2.6 | 3.8 | 3.8 | 4.0 | 5.4 | 4.0 | 4.6 | 5.5 | 6.9/1 |
| Montenegro | 4.1 | 1.1 | 1.9 | 2.5 | 4.4 | 4.2 | 8.6 | 10.6 | 6.9 | -5.7 | 2.5 | 2.8 | 3.7/7 |
| Republic of Macedonia | 4.5 | -4.8 | 0.9 | 2.8 | 4.6 | 4.4 | 5.0 | 6.1 | 5.0 | -0.9 | 2.9 | 3.0 | 2.8/9 |
| Romania | 2.4 | 5.7 | 5.1 | 5.2 | 8.5 | 4.2 | 7.9 | 6.3 | 7.3 | -6.6 | -1.6 | 2.6 | 3.3/8 |
| Serbia | 5.3 | 5.6 | 3.9 | 2.4 | 8.5 | 5.4 | 5.2 | 8.9 | 5.5 | -3.0 | 1.5 | 1.9 | 4.4/3 |
| Slovenia | 4.3 | 2.9 | 3.8 | 2.9 | 4.4 | 4.0 | 5.8 | 6.9 | 3.6 | -8.0 | 1.4 | -0.2 | 2.6/10 |
| Turkey | 6.8 | -5.7 | 6.2 | 5.3 | 9.4 | 8.4 | 6.9 | 4.7 | 0.4 | -4.8 | 9.0 | 8.5 | 4.3/4 |
| SEE | 5.9 | 4.7 | 3.8 | 4.4 | 5.9 | 4.8 | 6.0 | 6.1 | 4.5 | -3.4 | 1.6 | 2.0 | 3.9 |

Source: The table is compiled by the author from data of the National Statistics of SEE countries and Eurostat, 2012.

APPENDIX 8**Table 20. Foreign direct investments in SEE countries (billion Euro)**

| Country | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Bulgaria | 100 | 1 500 | 5 500 | 14 600 | 31 200 | 33 600 | 34 800 | 36 100 |
| Romania | 200 | 2 000 | 7 000 | 20 500 | 51 800 | 55 300 | 57 500 | 59 400 |
| Croatia | - | 100 | 3 500 | 13 500 | 21 500 | 23 900 | 24 200 | 25 200 |
| Republic of Macedonia | - | 100 | 500 | 1 700 | 2 800 | 3 000 | 3 150 | 3 450 |
| Serbia | 100 | 500 | 1 000 | 5 000 | 11 800 | 13 200 | 14 200 | 16 100 |
| Montenegro | - | - | 50 | 450 | 2 700 | 3 800 | 4 350 | 4 750 |
| Albania | - | 50 | 200 | 900 | 2 100 | 2 350 | 3 150 | 3 900 |
| Bosnia and Herzegovina | - | 50 | 500 | 2 000 | 4 700 | 5 050 | 5 400 | 6 050 |
| Slovenia | - | 1 300 | 2 100 | 5 600 | 11 700 | 11 250 | 12 520 | 13 320 |
| Turkey | 12 000 | 16 000 | 25 000 | 38 000 | 72 500 | 78 600 | 85 400 | 94 900 |
| Greece | 15 000 | 20 000 | 28 000 | 40 000 | 58 000 | 62 500 | 61 500 | 59 500 |
| Kosovo | - | - | 100 | 500 | 1 600 | 1 930 | 2 200 | 2 450 |
| SEE | 37 400 | 41 600 | 73 450 | 142 750 | 272 400 | 294 480 | 308 370 | 325 120 |

Source: National Statistics of the Balkan countries; The Vienna Institute for International Economic Studies, 2000 – 2012.

APPENDIX 9**Table 21. Global competitiveness index of the SEE countries**

| Country | Index | Rank in Europe |
|-------------------------------|--------------|-----------------------|
| Slovenia | 4.30 | 25 |
| Turkey | 4.28 | 26 |
| Montenegro | 4.27 | 27 |
| Bulgaria | 4.16 | 31 |
| Croatia | 4.08 | 32 |
| Romania | 4.08 | 33 |
| Albania | 4.06 | 34 |
| Republic of Macedonia | 4.05 | 35 |
| Greece | 3.92 | 37 |
| Serbia | 3.88 | 39 |
| Bosnia and Herzegovina | 3.83 | 40 |

Source: The Global Competitiveness Report, Klaus Schwab, World Economic Forum, Geneva, September 2011.

APPENDIX 10**Table 22. The most competitive SEE countries (2012)**

| Country | Score* | Rank in Europe** |
|-----------------|---------------|-------------------------|
| Turkey | 62.244 | 19 |
| Slovenia | 52.957 | 26 |
| Romania | 48.929 | 27 |
| Bulgaria | 48.450 | 28 |
| Croatia | 45.301 | 30 |
| Greece | 43.054 | 31 |

* The highest score is 100

** Among 31 countries in Europe

Source: *The World Competitiveness Yearbook 2012, International Institute for Management Development, May 2012.*

APPENDIX 11**Table 23. SEE countries in the European ranking* of doing business 2012**

| Country | Ease of doing business | Starting a business | Registering property | Getting credit | Protecting investors | Paying taxes | Enforcing contracts |
|-------------------------------|-------------------------------|----------------------------|-----------------------------|-----------------------|-----------------------------|---------------------|----------------------------|
| Republic of Macedonia | 10 | 1 | 21 | 10 | 4 | 6 | 28 |
| Slovenia | 19 | 7 | 28 | 36 | 7 | 27 | 27 |
| Montenegro | 25 | 17 | 34 | 4 | 11 | 30 | 39 |
| Bulgaria | 26 | 18 | 23 | 5 | 14 | 20 | 34 |
| Turkey | 30 | 20 | 18 | 34 | 21 | 23 | 23 |
| Romania | 31 | 22 | 25 | 7 | 16 | 39 | 26 |
| Croatia | 32 | 23 | 33 | 31 | 38 | 9 | 22 |
| Albania | 34 | 21 | 35 | 14 | 3 | 38 | 33 |
| Serbia | 36 | 30 | 16 | 15 | 25 | 37 | 36 |
| Greece | 37 | 38 | 39 | 35 | 39 | 26 | 35 |
| Kosovo | 38 | 41 | 26 | 16 | 40 | 13 | 40 |
| Bosnia and Herzegovina | 40 | 40 | 32 | 32 | 29 | 13 | 38 |

* Among 41 countries in Europe.
The index of Doing Business is an average evaluation of the ranking of each country on ten indicators. In addition to those listed in the table the others are: Dealing with construction permits, Getting electricity, Trading across borders and Resolving insolvency.

Source: Doing Business 2012. Doing Business in a More Transparent World, the World Bank and the International Finance Corporation, October 2011.

APPENDIX 12**Table 24. Index of economic freedom of SEE countries**

| Country | Rank in Europe in 2012 Economic Freedom* | Rank in Europe in Economic Freedom of the World** |
|-------------------------------|---|--|
| Republic of Macedonia | 20 | 29 |
| Albania | 25 | 15 |
| Bulgaria | 26 | 14 |
| Romania | 27 | 24 |
| Slovenia | 31 | 32 |
| Montenegro | 32 | 19 |
| Turkey | 33 | 33 |
| Croatia | 34 | 36 |
| Serbia | 36 | 37 |
| Bosnia and Herzegovina | 37 | 39 |
| Greece | 38 | 34 |

* 2012 Economic Freedom, The Heritage Foundation and The Wall Street Journal, N.Y., 2012;

** James Gwartney, Robert Lawson, and Joshua Hall. 2011 Economic Freedom of the World 2011,

Source: Annual Report, Fraser Institute, September 2011.

APPENDIX 13**Table 25. Coal energy profile of SEE reserves, production, consumption, imports and exports (2010)**

| COUNTRY | Proven reserves (Million tons) | Production (1000 tons) | Consumption (1000 tons) | Imports (1000 tons) | Exports (1000 tons) |
|-------------------------------|---|-----------------------------------|------------------------------------|--------------------------------|--------------------------------|
| Albania | 875 | 24 | 46 | 33 | 11 |
| Bosnia and Herzegovina | 3145 | 12146 | 11789 | 205 | 562 |
| Bulgaria | 2608 | 32335 | 35611 | 3318 | 42 |
| Croatia | 3 | 0 | 2218 | 2218 | 0 |
| Greece | 3329 | 62303 | 61136 | 719 | 0 |
| Kosovo | 12440 | 7958 | 8462 | 500 | 0 |
| Republic of Macedonia | 366 | 7484 | 7711 | 234 | 7 |
| Montenegro | 203 | 1631 | 1631 | 0 | 0 |
| Romania | 2245 | 33985 | 35913 | 1929 | 1 |
| Serbia | 2900 | 41169 | 42085 | 946 | 30 |
| Slovenia | 246 | 4883 | 5641 | 665 | 0 |
| Turkey | 3900 | 79090 | 109120 | 30030 | 0 |
| SEE | 32260 | 282982 | 321363 | 40797 | 653 |
| SEE share in Europe (%) | 15.0 | 28.0 | 27.0 | 15.0 | 0.2 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, U.S. Energy Information Administration, 2012

APPENDIX 14**Table 26. Oil energy profile of SEE reserves, production, consumption, imports and exports (2010)**

| Country | Proven reserves (bill. barrels) | Production (thousand barrels per day) | Production capacity (thousand barrels per day) | Consumption (thousand barrels per day) | Imports (thousand barrels per day) | Exports (thousand barrels per day) |
|-------------------------------|--|--|---|---|---|---|
| Albania | 0.227 | 15.6 | 26 | 44 | 22.9 * | 1.0 * |
| Bosnia and Herzegovina | 0 | 0 | 0 | 35 | 23.9 | 0.1 |
| Bulgaria | 0.015 | 2.9 | 115 | 134 | 201.4 | 75.8 |
| Croatia | 0.071 | 21.3 | 250 | 113 | 103.1 | 45.1 |
| Greece | 0.010 | 7.4 | 423 | 336.8 | 496.6 | 161.6 |
| Republic of Macedonia | 0 | 0 | 50 | 19 | 21.5 | 8.6 |
| Montenegro | 0 | 0 | 0 | 4 | 3.1 | 0 |
| Romania | 0.600 | 117.1 | 517 | 217 | 193.1 | 95.5 |
| Serbia | 0.078 | 14.5 | 215 | 81 | 76.1 | 4.8 |
| Slovenia | 0 | 0 | 14 | 63 | 60.3 | 8.9 |
| Turkey | 0.283 | 52.5 | 714 | 679.9 | 581.0 | 68.5 |
| SEE | 1.284 | 220.3 | 2324 | 1726.7 | 1783.0 | 469.0 |
| SEE share in Europe (%) | 3.5 | 2.5 | 10.7 | 9.5 | 2.5 | 0.2 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, CIA World Factbook, 2012

APPENDIX 15**Table 27. Natural gas energy profile of SEE reserves, production, consumption, imports and exports (2010)**

| Country | Proven reserves (bcm) | Production (mcm) | Consumption (mcm) | Imports (mcm) | Exports (mcm) |
|-------------------------|----------------------------------|-----------------------------|------------------------------|--------------------------|--------------------------|
| Albania | 0.9 | 30 | 30 | 0 | 0 |
| Bosnia and Herzegovina | 0 | 0 | 390 | 390 | 0 |
| Bulgaria | 5.7 | 54 | 2600 | 2480 | 0 |
| Croatia | 31.6 | 2850 | 3205 | 1225 | 600 |
| Greece | 1.0 | 9 | 3500 | 3815 | 0 |
| Republic of Macedonia | 0 | 0 | 120 | 115 | 0 |
| Montenegro | 0 | 0 | 0 | 0 | 0 |
| Romania | 185.0 | 11420 | 18000 | 2000 | 0 |
| Serbia | 48.1 | 356 | 2400 | 2000 | 0 |
| Slovenia | 0 | 0 | 1100 | 1050 | 0 |
| Turkey | 6.2 | 1000 | 35000 | 34000 | 650 |
| SEE | 278.5 | 15700 | 66345 | 47075 | 1250 |
| SEE share in Europe (%) | 7.0 | 3.0 | 6.0 | 8.5 | 0.1 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, U.S. Energy Information Administration, 2012

APPENDIX 16**Table 28. Electricity production capacities in SEE countries (2010)**

| Country | Capacity (million KW) | TPP share (%) | HPP share (%) | NPP share (%) | Share of other sources (%) |
|---------------------------|----------------------------------|--------------------------|--------------------------|--------------------------|---|
| Albania | 1.7 | 14.0 | 86.0 | 0 | 0 |
| Bosnia and Herzegovina | 3.4 | 44.0 | 56.0 | 0 | 0 |
| Croatia | 4.5 | 36.0 | 51.0 | 8.5 | 3.3 |
| Greece | 14.4 | 75.0 | 20.0 | 0 | 5.0 |
| Serbia | 8.4 | 66.0 | 32.0 | 0 | 2.0 |
| Bulgaria | 11.2 | 55.0 | 8.5 | 35.0 | 1.5 |
| Romania | 20.6 | 55.0 | 25.0 | 18.5 | 1.5 |
| Slovenia | 3.2 | 48.0 | 23.0 | 39.0 | 1.0 |
| Turkey | 50.4 | 65.0 | 30.0 | 0 | 5.0 |
| Republic of Macedonia | 1.5 | 70.0 | 30.0 | 0 | 0 |
| Montenegro | 0.9 | 27.0 | 63.0 | 0 | 0 |
| Kosovo | 1.5 | 98.0 | 2.0 | 0 | 0 |

Source: Compiled by the author from data of the National Energy Statistics of SEE countries, 2012; International Energy Statistics, U.S. Energy Information Administration, 2012

APPENDIX 17**Table 29. Installed wind power and solar power capacities in SEE countries (2010)**

| Country | Installed windpower capacity (MW in 2011) | Installed solar power capacity (MWp in 2010) |
|--------------------------------|--|---|
| Turkey | 1799 | 140 |
| Greece | 1629 | 550 |
| Bulgaria | 612 | 20 |
| Romania | 982 | 2 |
| Serbia | 20* | - |
| Croatia | 70** | 52 |
| Slovenia | 106** | 36 |
| SEE | 5218 | 800 |
| SEE share in Europe (%) | 4.0 | 0.5 |

* Renewable Energy Sources (RES) cover solar thermal and photovoltaic energy, hydro (including tide, wave and ocean energy), wind geothermal energy and biomass (including biological waste and liquid biofuels)

** Author's assessment from data of the Energy National Statistics.

Source: *Wind Energy International 2011/2012, Country Reports, World Wind Energy Association 2012; BP Statistical Review of World Energy, June 2011*

APPENDIX 18**Table 30. Share of renewable energy* (in gross final energy consumption)**

| Country | 2005 | 2009 | 2010 |
|--------------------------|-------------|-------------|-------------|
| Albania** | 38.0 | 39.5 | 39.5 |
| Bosnia and Herzegovina** | 11.0 | 11.5 | 11.5 |
| Bulgaria | 9.5 | 11.9 | 13.9 |
| Croatia | 14.5 | 13.2 | 14.6 |
| Greece | 7.0 | 8.1 | 9.2 |
| Republic of Macedonia** | 11.5 | 12.0 | 12.0 |
| Romania | 17.6 | 22.4 | 23.4 |
| Slovenia | 16.0 | 18.9 | 19.8 |
| Serbia** | 7.5 | 8.0 | 8.5 |
| Turkey** | 9.0 | 10.0 | 10.5 |
| SEE** | 11 | 12 | 12.5 |
| EU | 9.0 | 11.7 | 12.5 |

* Renewable Energy Sources (RES) cover solar thermal and photovoltaic energy, hydro (including tide, wave and ocean energy), wind geothermal energy and biomass (including biological waste and liquid biofuels)

** Author's assessment from data of the Energy National Statistics.

Source: Eurostat, June 2012.

APPENDIX 19**Table 31. Energy balances in SEE countries***

| Country | Production | Total power energy supply (TPES) | Balance TPES/PRODUCTION (KTOE/%) |
|------------------------|-------------------|---|---|
| Albania | 1254 | 1717 | 463/136.9 |
| Bosnia and Herzegovina | 4474 | 5953 | 1479/133.1 |
| Bulgaria | 9826 | 17480 | 7654/177.9 |
| Croatia | 4066 | 8702 | 4636/214.1 |
| Greece | 10080 | 29456 | 19376/292.2 |
| Republic of Macedonia | 1608 | 2781 | 1173/172.9 |
| Romania | 28296 | 34406 | 6110/121.6 |
| Slovenia | 3541 | 6969 | 3428/196.8 |
| Serbia | 9440 | 14450 | 5010/153.1 |
| Turkey | 30280 | 97661 | 67381/322.5 |
| SEE | 102865 | 219575 | 116710/213.5 |

* 2009, In thousand tons of oil equivalent (KTOE) on a net calorific value basis

Source: Compiled by the author from data of the Energy Balances for the countries in the World, International Energy Agency, 2012.

APPENDIX 20**Table 32. Energy supply in Albania**

| SUPPLY and CONSUMPTION | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 5 | 576 | 0 | 7 | 0 | 450 | 3 | 213 | 0 | 0 | 1254 |
| Imports | 69 | 60 | 602 | 0 | 0 | 0 | 0 | 1 | 169 | 0 | 901 |
| Exports | -2 | -343 | -25 | 0 | 0 | 0 | 0 | -1 | -46 | 0 | -417 |
| International Marine Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| International Aviation Bunkers | 0 | 0 | -18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -18 |
| Stock Changes | 0 | 26 | -28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 |
| TOTAL ENERGY SUPPLY | 71 | 320 | 531 | 7 | 0 | 450 | 3 | 213 | 123 | 0 | 1717 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 21**Table 33. The biggest energy companies in Albania**

| Company | Field | Revenue * (in millions euro) | Rank among the Albanian Top companies |
|----------------|-----------------------|---|--|
| 1. KESH | Electricity | 253.0 | 1 |
| 2. ARMO | Petroleum/Natural Gas | 100.0 | 6 |
| 3. Shpëndarie | Electricity | 70.0 | 7 |
| 4. Taci Oil | Petroleum/Natural Gas | 65.0 | 9 |
| 5. Albpetrol | Petroleum/Natural Gas | 3.0 | 15 |

Source: Compiled by the author from data of the Albanian Energy Statistics, 2012.

APPENDIX 22**Table 34. Energy supply in Bosnia and Herzegovina***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geo-thermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|---------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 3706 | 48 | 0 | 0 | 0 | 537 | 0 | 183 | 0 | 0 | 4474 |
| Imports | 598 | 999 | 424 | 186 | 0 | 0 | 0 | 0 | 248 | 0 | 2455 |
| Exports | -318 | 0 | -46 | 0 | 0 | 0 | 0 | 0 | -505 | 0 | -869 |
| International Marine Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| International Aviation Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stock Changes | -107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -107 |
| TOTAL ENERGY SUPPLY | 3880 | 1046 | 379 | 186 | 0 | 537 | 0 | 183 | -257 | 0 | 5953 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 23**Table 35. The biggest energy companies in Bosnia and Herzegovina**

| Company | Field | Revenue (million euro) | Rank among the Bosnian top companies |
|--|--|-----------------------------------|---|
| 1. JP Elektroprivreda BiH | Electricity | 441.0 | 1 |
| 2. Elektroprivreda Republika Srpske | Electricity | 264.3 | 4 |
| 3. Energoinvest d.d. Sarajevo | Energy investment and research activity | 150.0 | 5 |
| 4. Energopetrol | Petroleum/Natural Gas | 120.0 | 6 |
| 5. Elektroprivreda HZ NB | Electricity | 80.0 | 7 |

Source: Compiled by the author from data of The National Energy Statistics of Bosnia and Herzegovina, 2012 and Deloitte, Adria Top 100, Company Ranking, 2011.

APPENDIX 24**Table 36. Energy supply in Bulgaria***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geo-thermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|---------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 4598 | 24 | 0 | 13 | 3999 | 298 | 53 | 798 | 0 | 42 | 9826 |
| Imports | 1750 | 6318 | 1513 | 2130 | 0 | 0 | 0 | 0 | 229 | 0 | 11940 |
| Exports | -6 | 0 | -3174 | 0 | 0 | 0 | 0 | -37 | -665 | 0 | -3882 |
| International Marine Bunkers | 0 | 0 | -207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -207 |
| International Aviation Bunkers | 0 | 0 | -152 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -152 |
| Stock Changes | 64 | 66 | -181 | 17 | 0 | 0 | 0 | -11 | 0 | 0 | -45 |
| TOTAL ENERGY SUPPLY | 6407 | 6408 | -2202 | 2160 | 3999 | 298 | 53 | 750 | -436 | 42 | 17480 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 25**Table 37. The biggest energy companies in Bulgaria**

| Company | Field | Revenue (million euro) | Rank among the Bulgarian top companies |
|-------------------------------|-----------------------|-----------------------------------|---|
| 1. Lukoil Neftochim Burgas AD | Petroleum/Natural Gas | 2794 | 1 |
| 2. Lukoil-Bulgaria EOOD | Petroleum/Natural Gas | 1714 | 3 |
| 3. NEK | Electricity | 1601 | 4 |
| 4. OMV Bulgaria OOD | Petroleum/Natural Gas | 829 | 5 |
| 5. Bulgargaz EAD | Petroleum/Natural Gas | 656 | 6 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011.

APPENDIX 26**Table 38. Energy indicators in Bulgaria for the period 2005–2030 (basic scenario)**

| Indicator | 2005 | 2010 | 2020 | 2030 |
|--------------------------------------|-------------|-------------|-------------|-------------|
| GDP (Bill. Euro) | 21.9 | 25.8 | 34.7 | 42.2 |
| ENERGY PRODUCTION (MTOE) | 10.6 | 9.7 | 11.8 | 12.6 |
| ENERGY CONSUMPTION (MTOE), Incl.: | 20.0 | 19.1 | 21.6 | 22.1 |
| Oil | 4.9 | 4.6 | 5.0 | 4.8 |
| Natural gas | 2.8 | 2.8 | 3.0 | 3.3 |
| Atomic Energy | 4.8 | 3.8 | 5.6 | 7.4 |
| RES | 1.2 | 1.2 | 1.5 | 1.9 |
| Electricity | -0.7 | -0.4 | -0.9 | -1.1 |
| Import Dependency (%) | 47.4 | 49.5 | 45.8 | 43.3 |

Source: Energy Strategy of the Republic of Bulgaria up to 2020: Towards Reliable, Efficient and Cleaner Energy. June 2011, Bulgaria's Ministry of the Economy, Energy and Tourism, pages 36-37

APPENDIX 27**Table 39. Energy supply in Croatia***

| SUPPL | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geo-thermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|---------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 0 | 831 | 0 | 2196 | 0 | 579 | 13 | 447 | 0 | 0 | 4066 |
| Imports | 457 | 4158 | 1173 | 848 | 0 | 0 | 0 | 14 | 652 | 0 | 7302 |
| Exports | 0 | 0 | -1906 | -653 | 0 | 0 | 0 | -91 | -163 | 0 | -2814 |
| International Marine Bunkers** | 0 | 0 | -7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -7 |
| International Aviation Bunkers | 0 | 0 | -44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -44 |
| Stock Changes | 52 | 57 | 84 | 12 | 0 | 0 | 0 | -5 | 0 | 0 | 200 |
| TOTAL ENERGY SUPPLY | 509 | 5046 | -700 | 2403 | 0 | 579 | 13 | 365 | 489 | 0 | 8702 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 28**Table 40. The biggest energy companies in Croatia**

| Company | Field | Revenue (million euro) | Rank among the Croatian top companies |
|---|-----------------------|-----------------------------------|--|
| 1. INA d.d. | Petroleum/Natural Gas | 3291 | 1 |
| 2. Hrvatska Elektroprivreda d.d. | Electricity | 1708 | 3 |
| 3. Prirodni Plin d.o.o. | Petroleum/Natural Gas | 794.6 | 5 |
| 4. HEP – Proizvodnja d.o.o. | Electricity | 535.6 | 6 |
| 5. HEP - Operator Distribucijskog Sustava d.o.o. | Electricity | 511.3 | 8 |

Source: *SEE TOP 100 Companies, SeeNews, Edition 2011.*

APPENDIX 29**Table 41. Energy supply in Greece***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 8176 | 73 | 0 | 12 | 0 | 462 | 428 | 929 | 0 | 0 | 10080 |
| Imports | 173 | 20467 | 6991 | 2962 | 0 | 0 | 0 | 57 | 654 | 0 | 31303 |
| Exports | -1 | -998 | -7843 | 0 | 0 | 0 | 0 | 0 | -278 | 0 | -9120 |
| International Marine Bunkers | 0 | 0 | -2598 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2598 |
| International Aviation Bunkers | 0 | 0 | -852 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -852 |
| Stock Changes | 81 | 127 | 423 | -4 | 0 | 0 | 0 | 0 | 0 | 0 | 627 |
| TOTAL ENERGY SUPPLY | 8428 | 19669 | -3880 | 2970 | 0 | 462 | 428 | 986 | 376 | 0 | 29430 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 30**Table 42. The biggest energy companies in Greece**

| Company | Field | Revenue (billion euro) | Rank among the Greek top companies |
|------------------------------------|-----------------------|-----------------------------------|---|
| 1. Hellenic Petroleum | Petroleum/Natural Gas | 8.5 | 1 |
| 2. Aegean Marine Petroleum Network | Petroleum/Natural Gas | 7.5 | 3 |
| 3. Motor Oil Hellas | Petroleum/Natural Gas | 6.2 | 4 |
| 4. Public Power Corporation | Electricity | 5.8 | 5 |
| 5. DEPA | Petroleum/Natural Gas | 2.0 | 9 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011 and the National Energy Statistics of Greece.

APPENDIX 31**Table 43. Energy supply in Republic of Macedonia***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 1294 | 0 | 0 | 0 | 0 | 109 | 10 | 195 | 0 | 0 | 1608 |
| Imports | 49 | 1019 | 351 | 64 | 0 | 0 | 0 | 8 | 124 | 0 | 1616 |
| Exports | -5 | 0 | -361 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -366 |
| International Marine Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| International Aviation Bunkers | 0 | 0 | -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 |
| Stock Changes | -2 | -27 | -37 | 0 | 0 | 0 | 0 | -8 | 0 | 0 | -74 |
| TOTAL ENERGY SUPPLY | 1335 | 992 | -50 | 64 | 0 | 109 | 10 | 195 | 124 | 0 | 2781 |

* 2009, In thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 32**Table 44. The biggest energy companies in Republic of Macedonia**

| Company | Field | Revenue (million euro) | Rank among the Macedonian top companies |
|------------------|-----------------------|-----------------------------------|--|
| 1. OKTA AD | Petroleum/Natural Gas | 511.6 | 1 |
| 2. Makpetrol | Petroleum/Natural Gas | 290.5 | 3 |
| 3. ELEM | Electricity | 220.0 | 4 |
| 4. EVN Macedonia | Electricity | 150.0 | 5 |
| 5. ECM | Electricity | 80.0 | 7 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011; Deloitte, Adria Top 100, Company Ranking, 2011

APPENDIX 33**Table 45. The biggest energy companies in Montenegro**

| Company | Field | Revenue (million euro) | Rank among the Montenegrin top companies |
|----------------------|-----------------------|-----------------------------------|---|
| 1. EPCG | Electricity | 301.5 | 1 |
| 2. Yugopetrol | Petroleum/Natural Gas | 200.0* | 3 |
| 3. Lukoil Montenegro | Petroleum/Natural Gas | 180.0* | 4 |
| 4. CGES | Electricity | 150.0* | 5 |
| 5. Roksped | Petroleum/Natural Gas | 50.0* | 8 |

* Author's estimate

Source: Compiled by the author from data of the Macedonian Energy Statistics and Deloitte, Adria Top 100, Company Ranking, 2011.

APPENDIX 34**Table 46. Energy supply in Romania***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 6564 | 4439 | 0 | 8936 | 3063 | 1336 | 24 | 3934 | 0 | 0 | 28296 |
| Imports | 915 | 6875 | 1603 | 1598 | 0 | 0 | 0 | 74 | 56 | 0 | 11121 |
| Exports | -16 | 0 | -4180 | 0 | 0 | 0 | 0 | -50 | -253 | 0 | -4499 |
| International Marine Bunkers | 0 | 0 | -16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -16 |
| International Aviation Bunkers | 0 | 0 | -129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -129 |
| Stock Changes | -43 | -99 | -259 | 63 | 0 | 0 | 0 | -29 | 0 | 0 | -368 |
| TOTAL ENERGY SUPPLY | 7421 | 11215 | -2981 | 10596 | 3063 | 1336 | 24 | 3930 | -197 | 0 | 34406 |

* 2009, in thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 35**Table 47. The biggest energy companies in Republic of Romania**

| Company | Field | Revenue (million euro) | Rank among the Romanian top companies |
|-----------------------------|-----------------------|---------------------------------------|--|
| 1. OMV Petrom SA | Petroleum/Natural Gas | 3627 | 1 |
| 2. Rompetrom Rafinare SA | Petroleum/Natural Gas | 1959 | 3 |
| 3. Rompetrom Downstream SRL | Petroleum/Natural Gas | 1446 | 5 |
| 4. OMV Petrom Marketing SRL | Petroleum/Natural Gas | 1108 | 8 |
| 5. Lukoil Romania SRE | Petroleum/Natural Gas | 1067 | 9 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011.

APPENDIX 36**Table 48. Energy supply in Serbia***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 7331 | 695 | 0 | 209 | 0 | 881 | 46 | 278 | 0 | 0 | 9440 |
| Imports | 618 | 2352 | 1163 | 1261 | 0 | 0 | 0 | 1 | 446 | 0 | 5841 |
| Exports | -34 | -3 | -343 | 0 | 0 | 0 | 0 | -4 | -568 | 0 | -953 |
| International Marine Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| International Aviation Bunkers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stock Changes | 103 | -58 | 138 | -75 | 0 | 0 | 0 | 13 | 0 | 0 | 120 |
| TOTAL ENERGY SUPPLY | 8019 | 2985 | 959 | 1395 | 0 | 881 | 46 | 287 | -123 | 0 | 14450 |

* 2009, in thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 37**Table 49. The biggest energy companies in Serbia**

| Company | Field | Revenue (million euro) | Rank among the Serbian top companies |
|------------------------------------|-----------------------|-----------------------------------|---|
| 1. Naftna Industrija Srbije AD | Petroleum/Natural Gas | 1716 | 1 |
| 2. JP Elektroprivreda Srbije | Electricity | 1202 | 2 |
| 3. JP Srbijagas | Petroleum/Natural Gas | 807 | 4 |
| 4. Termoelectrana Nikola Tesla DOO | Electricity | 586.9 | 6 |
| 5. YugoRosGaz AD | Petroleum/Natural Gas | 489.7 | 7 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011.

APPENDIX 38**Table 50. Energy supply in Slovenia***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 1160 | 0 | 0 | 3 | 1496 | 405 | 0 | 477 | 0 | 0 | 3541 |
| Imports | 258 | 0 | 3076 | 829 | 0 | 0 | 0 | 24 | 529 | 0 | 4716 |
| Exports | -3 | 0 | -489 | 0 | 0 | 0 | 0 | 0 | -793 | 0 | -1285 |
| International Marine Bunkers | 0 | 0 | -32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -32 |
| International Aviation Bunkers | 0 | 0 | -27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -27 |
| Stock Changes | 9 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 |
| TOTAL ENERGY SUPPLY | 1424 | 0 | 2574 | 831 | 1496 | 405 | 0 | 501 | -264 | 0 | 6969 |

* 2009, in thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 39**Table 51. The biggest energy companies in Slovenia**

| Company | Field | Revenue (million euro) | Rank among the Slovenian top companies |
|---|-----------------------|-----------------------------------|---|
| 1. Petrol d.d. | Petroleum/Natural Gas | 2483 | 1 |
| 2. Holding Slovenske Elektrarne d.o.o. | Electricity | 916.3 | 5 |
| 3. GEN –I d.o.o. | Electricity | 580.4 | 8 |
| 4. OMV Slovenije d.o.o. | Petroleum/Natural Gas | 556.5 | 10 |
| 5. Elektro – Slovenije d.o.o | Electricity | 130.0 | 18 |

Source: Compiled by the author from data of SEE TOP 100 Companies, SeeNews, Edition 2011 and the Energy statistics of Slovenia, 2012;

APPENDIX 40**Table 52. Energy supply in Turkey***

| SUPPLY | Coal and Peat | Crude Oil | Oil Products | Natural Gas | Nuclear | Hydro | Geothermal, Solar, etc. | Biofuels and Waste | Electricity | Heat | Total |
|--------------------------------|----------------------|------------------|---------------------|--------------------|----------------|--------------|--------------------------------|---------------------------|--------------------|-------------|--------------|
| Production | 17403 | 2373 | 0 | 564 | 0 | 3092 | 2181 | 4667 | 0 | 0 | 30280 |
| Imports | 13336 | 14118 | 18730 | 29515 | 0 | 0 | 0 | 0 | 70 | 0 | 75769 |
| Exports | 0 | 0 | -4805 | -583 | 0 | 0 | 0 | 0 | -133 | 0 | -5521 |
| International Marine Bunkers | 0 | 0 | -271 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -271 |
| International Aviation Bunkers | 0 | 0 | -1422 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1422 |
| Stock Changes | -981 | -66 | 460 | -588 | 0 | 0 | 0 | 0 | 0 | 0 | -1174 |
| TOTAL ENERGY SUPPLY | 29758 | 16425 | 12692 | 28908 | 0 | 3092 | 2181 | 4667 | -63 | 0 | 9766 |

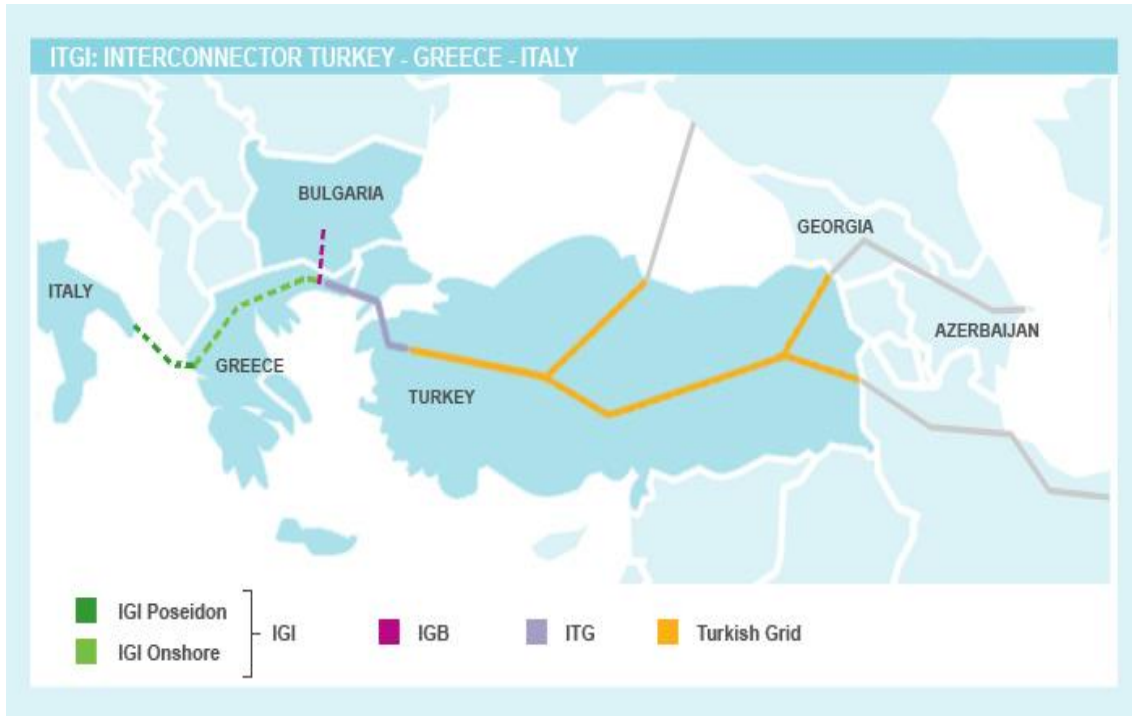
* 2009, in thousand tonnes of oil equivalent (KTOE) on a net calorific value basis

Source: International Energy Agency, 2012.

APPENDIX 41**Table 53. The biggest energy companies in Turkey**

| Company | Field | Revenue (billion euro) | Rank among the Turkish top companies |
|-------------------------------------|-----------------------|---------------------------------------|---|
| 1. Tüpraş | Petroleum/Natural Gas | 10.8 | 1 |
| 2. Eüaş Elektrik Üretim A.S. | Electricity | 4.5 | 2 |
| 3. Aygaz | Petroleum/Natural Gas | 1.8 | 7 |
| 4. Petkim Petrokimya Holding A.S. | Petroleum/Natural Gas | 1.3 | 12 |
| 5. Türkije Kömür İşletmeleri Kurumu | Mining | 0.8 | 17 |

Source: Compiled by the author from data of Turkey's Top 500 Industrial Enterprises – 2010, Istanbul Sanayi Odasy (Istanbul Chamber of Commerce, August 2011)

APPENDIX 42**Map 11. Route of Turkey – Greece – Italy gas interconnection**

Source: <http://www.edison.it/media/infrastrutture-gas-itgi.jpg>

Basic information:

Participant countries: Turkey, Greece, Italy

Route: From Karacabey in Turkey via Komotini in Greece across Ionian Sea to Otranto in Italy

Length: 1 150 km

Capacity: 11.5 billion cubic meters natural gas per year

Cost: EUR 1.2 billion

Phase of implementation at the end of 2012 The Turkey – Greece section entered in operation in November 2007. The Greece – Italy section is under preparation

Date of completion: 2015

APPENDIX 43**Map 12. Route of Blue Stream gas pipeline**

Source: <http://upload.wikimedia.org/wikipedia/commons/0/0a/Bluestream.png>

Basic information:

Participant countries: Russia, Turkey, Italy

Route: From Beregovaya compressor station in Russia across the Black Sea to Durusu terminal near Samsun in Turkey

Length: 1 213 km

Capacity: 16 billion cubic meters of natural gas per year

Cost: \$ 3.2 billion

In operation since November 2005

APPENDIX 44**Map 13. Route of Baku – Tbilisi – Ceyhan oil pipeline**

Source: http://upload.wikimedia.org/wikipedia/commons/a/a1/Baku_pipelines.svg

Basic information:

Participant countries: Azerbaijan, Georgia, Turkey

Route: From Sangachai Caspian sea terminal in Azerbaijan across Georgia to the Ceyhan oil terminal on the Mediterranean coast of Turkey

Length: 1 768 km

Capacity: 50 million tons of oil per year

Cost: \$ 4 billion

In operation since July 2006

APPENDIX 45**Map 14. Route of AMBO oil pipeline**

Source: <http://i281.photobucket.com/albums/kk213/pskl01/Capture46fd.jpg>

Basic information:

Participant countries: Bulgaria, Republic of Macedonia, Albania

Route: From Burgas across the territory of Bulgaria, Republic of Macedonia and Albania to Vlore

Length: 912 km

Capacity: 35 – 40 million tons of oil per year

Phase of implementation at the end of 2012: Frozen

Date of completion: Unspecified

APPENDIX 46**Map 15. Route of Burgas – Alexandroupoli – Trans-Balkan oil pipeline**

Source: <http://neftegaz.ru/images/Neft%20Perey/Bulgarian%20pipeline.jpg>

Basic information:

Participant countries: Russia, Bulgaria, Greece

Route: From Burgas across the territory of Bulgaria and Greece to Alexandroupolis

Length: 279 km

Capacity: up to 30 million tons of oil per year

Cost: EUR 1.5 billion

In March 2012 the Government of Bulgaria decided to cancel the country's participation in the project

APPENDIX 47**Map 16. Route of Samsun – Ceyhan oil pipeline**

Source: http://upload.wikimedia.org/wikipedia/commons/6/6c/Samsun_Ceyhan_pipeline.png

Basic information:

Participant countries: Turkey, Russia, Italy

Route: From Samsun across the territory of Turkey to Ceyhan

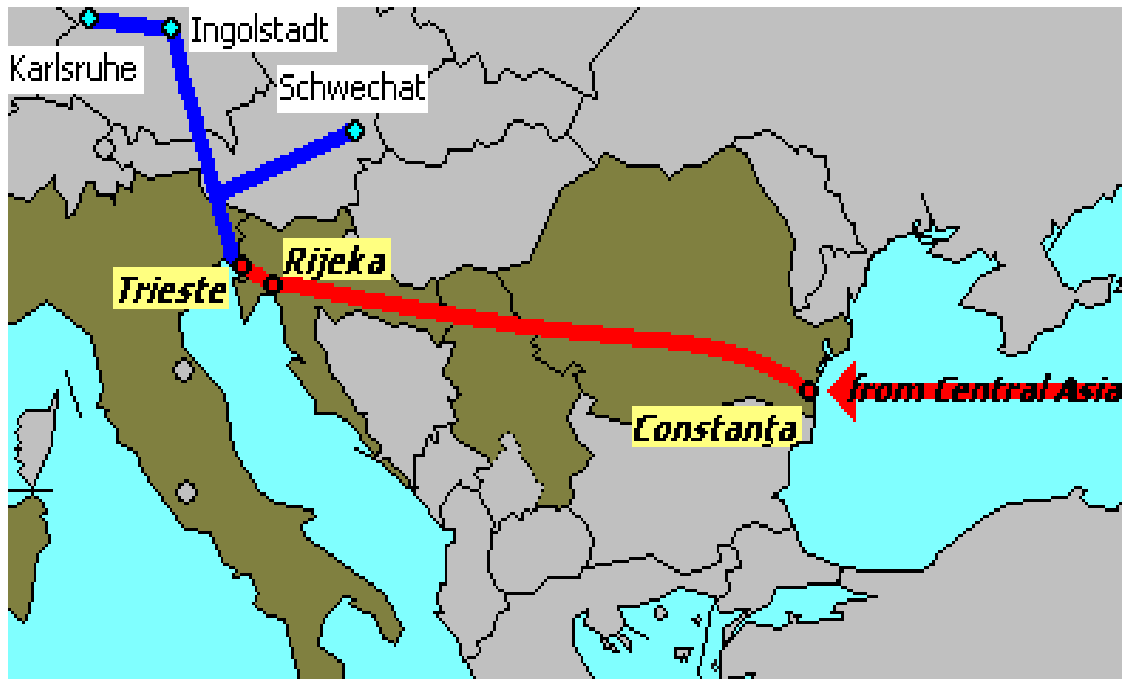
Length: 550 km

Capacity: 40 – 50 million tons of oil per year

Cost: \$ 2 billion

Phase of implementation at the end of 2012: In preparation

Date of completion: 2015 – 2016

APPENDIX 48**Map 17. Route of Konstanta – Trieste TPAN – European oil pipeline**

Source: http://upload.wikimedia.org/wikipedia/commons/6/6d/Pan-European_Pipeline.PNG

Basic information:

Participant countries: Romania, Serbia, Croatia (left in 2010), Slovenia, Italy

Route: 1 856 km

Capacity: 1.2 - 1.8 million barrels of oil per day

Cost: EUR 8 billion

Phase of implementation at the end of 2012: In preparation

Date of completion: unspecified

APPENDIX 49**Map 18. Route of Nabucco pipeline (the original project)**

Source:

<http://upload.wikimedia.org/wikipedia/commons/thumb/8/87/2010Nabuccopipelinemap.jpg/800px-2010Nabuccopipelinemap.jpg>

Basic information:

Participant countries: Turkey, Bulgaria, Romania, Hungary, Austria, Germany

Route: From Erzurum in Eastern Turkey across Bulgaria, Romania and Hungary to Austria

Length: 4 042 km

Capacity: 31 billion cubic meters of natural gas per year

Cost: EUR 9 billion

Phase of implementation: In May 2012 the project was revised and replaced by the shorter version Nabucco West

APPENDIX 50**Map 19. Route of Trans-Adriatic pipeline from Greece to Italy**

Source: http://www.trans-adriatic-pipeline.com/uploads/pics/missing_link_01.jpg

Basic information:

Participant countries: Greece, Albania, Italy, Swiss, Norway, Germany

Route: From Thessaloniki in Greece via the Albanian territory across the Adriatic Sea to Brindisi in Italy

Length: 520 km

Capacity: Up to 20 billion cubic meters of natural gas per year

Cost: \$ 2.3 billion

Phase of implementation at the end of 2012: In preparation

Date of completion: 2017

APPENDIX 51**Map 20. Route of Trans Anatolian gas pipeline (TANAP)**

Source: <http://ann.az/en/wp-content/uploads/2013/01/tanap+-460x258-300x168.jpg>

Basic information:

Participant countries: Azerbaijan, Georgia, Turkey,

Route: From the Shah Deniz 2 gas field in Azerbaijan across Bulgaria to the Turkish – Bulgarian border.

Length: 2 000 km

Capacity: 16 - 24 billion cubic meters of natural gas per year

Cost: EUR 5 - 7 billion

Phase of implementation at the end of 2012: In preparation

Term of construction: Fourth Quarter of 2013 – End of 2017

APPENDIX 52**Map 21. Route of Nabucco West pipeline**

Source: http://www.nabucco-pipeline.com/userfiles/image/Pipeline_route/Route%20Map%20Nabucco%20West%202_Resize.jpg

Basic information:

Participant countries: Turkey, Bulgaria, Romania, Hungary, Austria, Germany

Route: From the Turkish – Bulgarian border across Bulgaria, Romania and Hungary to Austria

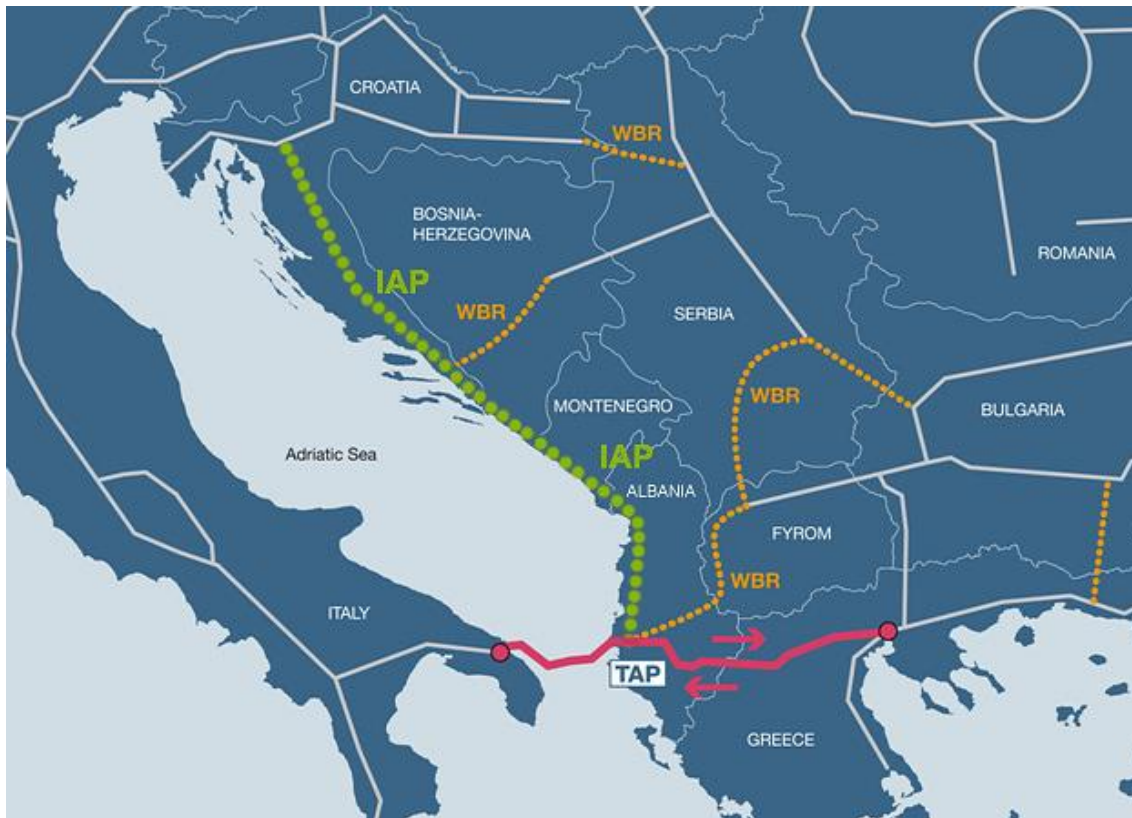
Length: 1300 km

Capacity: 10 - 16 billion cubic meters of natural gas per year

Cost: EUR 5 billion

Phase of implementation at the end of 2012: In preparation

Term of construction: Second half of 2013 - End of 2017

APPENDIX 53**Map 22. Route of Ionian – Adriatic gas pipeline**

Source: <http://www.trans-adriatic-pipeline.com/fileadmin/images/news/iap.jpg>

Basic information:

Participant countries: Albania, Montenegro, Croatia, Swiss

Route: From Fier in Albania across Montenegro to Ploce in Croatia

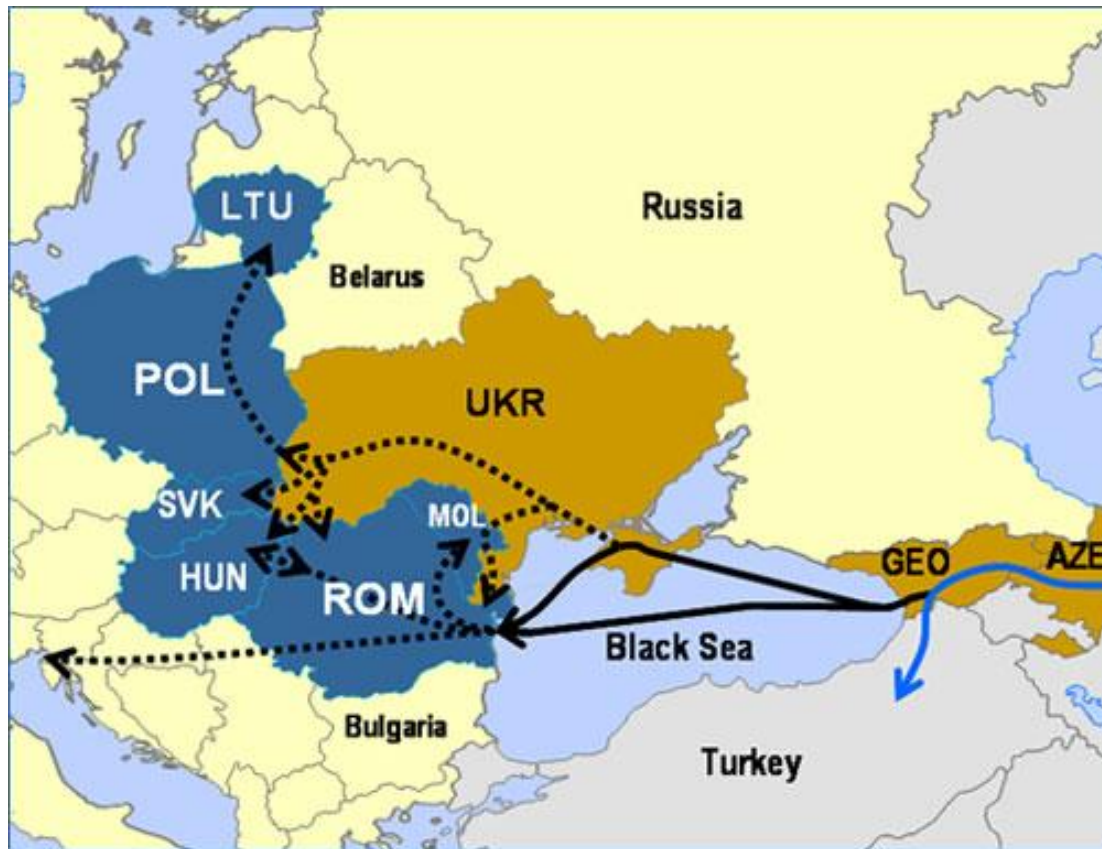
Length: 410 km

Capacity: 10 billion cubic meters of natural gas per year

Cost: EUR 230 million

Phase of implementation at the end of 2012: In preparation

Date of completion: 2015 - 2016

APPENDIX 54**Map 23. Route of White Stream gas pipeline**

Source: <http://www.edison.it/media/infrastrutture-gas-itgi.jpg>

Basic information:

Participant countries: Azerbaijan, Georgia, Romania and eventually Ukraine

Route: From Azerbaijan across the Black Sea and eventually Crimea in Ukraine to Konstanta in Romania

Length: 1 105 – 1 238 km

Capacity: 32 billion cubic meters of natural gas per year

Cost: \$ 1 – 1.5 billion

Phase of implementation at the end of 2012: In preparation

Date of completion: 2015 - 2016

APPENDIX 55**Map 24. Route of South Stream gas pipeline**

Source: http://www.south-stream.info/fileadmin/f/maps/eng/partnership_eng_prev.jpg

Basic information:

Participant countries: Russia, Italy, Turkey, Bulgaria, Serbia, Hungary, Slovenia, Austria, Croatia, Bosnia and Herzegovina

Project Route: From Russia across the Black Sea to the Bulgarian cities of Varna and Pleven. From Pleven across Serbia, Hungary, Slovenia to Tarvisio in Italy. Deviation from Serbia to Croatia and Bosnia and Herzegovina.

Length: 3 500 km

Capacity: 16 - 63 billion cubic meters of natural gas per year

Cost: EUR 16 billion

Phase of implementation at the end of 2012: The has officially started on December 7, 2012

Term of construction: 2015 - 2017

Summary

South East Europe (SEE) covers a total of 12 countries which are situated entirely or partly on the Balkan Peninsula – Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Republic of Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey. Turkey's inclusion in SEE is the most controversial since only 3% of its territory is situated in the region, the rest being in Asia. The number of the SEE countries is a quarter of the number of countries in Europe, their territory is 7.7% and their population comprises 11% of that of Europe. At the beginning of the decade, the Gross Product (GP) of the SEE countries was approx. 5.7%, their export 2.5% and their import 3% of the European ones. The amount of the foreign direct investments (FDI) invested in SEE was approx. \$ 380-400 billion or about 2.5% of the FDI in Europe.

SEE is not a homogeneous region. There are significant differences between the countries in terms of economic potential, level of development and standard of living. The biggest GDP is that of Turkey, Greece and Romania, the highest standard of living is that of Slovenia, Greece and Croatia. Four countries (Greece, Slovenia, Bulgaria and Romania) are EU members, and seven (Greece, Turkey, Slovenia, Bulgaria, Romania, Albania and Croatia) are NATO members.

Five of the ten Pan-European transport corridors pass through SEE. SEE is one of the transit corridors for oil and natural gas imports from Russia and the Caspian Sea region. Two of the future Pan-European natural gas pipelines – South Stream and Nabucco – will pass through it.

SEE energy profile

SEE is relatively poor in natural energy resources. Only coal reserves are larger, whereas discovered oil and natural gas reserves are small and constantly diminishing as a result of their exploitation. If no new deposits are found in the region, current oil and natural gas resources will be practically depleted in a couple of decades. The hydropower sources are also relatively limited. Natural energy resources are not evenly distributed among the SEE countries. About two-thirds of lignite coal deposits are in Kosovo and Serbia. Almost the same is the share of the oil and natural gas fields in Romania, Croatia and Albania. Some of the countries in the Western Balkans have larger hydropower resources (chiefly Albania and Bosnia and Herzegovina). The

countries with the highest economic potential – Turkey and Greece, are among the Balkan countries with relatively small energy resources.

At the beginning of this decade, traditional energy sources played a central part in the energy balance. Between 2000-2010, the tendency was toward increasing the share of oil (with 4%) and natural gas (with about 3%) in the energy balance (with 3%). The coal share dropped by 7-8%. In 2011, oil and petroleum satisfied 33% of energy consumption, coal 30 %, natural gas 22%, hydro power 6%, nuclear power 4%, and other sources (biofuel, geothermal, wind, solar, etc.) 5%. The share of RES has grown by almost a third and in 2010 reached 12.5%, about the average in the EU.

Between 2000-2010, the increase in electricity production and consumption was the highest. It amounted to about 30%, but it was strongly influenced by the almost 60% increase in electricity production and consumption in Turkey, while in other Balkan countries it was significantly lower (between 10 and 20%). Unlike coal, oil and natural gas whose import into SEE has been significantly higher than regional export, the balance between electricity export and import in SEE has been positive.

At the beginning of the second decade of our century, there were nuclear power generating capacities in three countries, with four countries as consumers (Bulgaria, Slovenia, Romania and Croatia). The new reactor which began operating at Cernavodă NPP in Romania in 2007 compensated only partly the four nuclear reactors shut down in 2004 and 2006 at Kozloduy NPP in Bulgaria, leading to a decrease in the overall production potential of the nuclear power plants in SEE. Nuclear power plants used to produce 7.4% of the electricity in SEE. In the countries with nuclear power plants, this number was significantly higher. In Slovenia it was 43%, in Bulgaria - 32.6%, in Romania - 19%, and in Croatia - about 15%.

The reasons for the slow rates of increase in domestic production and the slow changes in the structure of the energy balance in SEE during the first decade of our century are the small and depleting mineral energy resource deposits of each country and the poor capital and technological resources of most of these countries. The economic recession and financial instability in Europe after 2008 also had a negative effect. In SEE it manifested itself in a significant decrease in energy consumption and imports, as well as in a severe drop in domestic and foreign investments in the energy sector.

In the first decade of our century, SEE's dependence on imported energy had increased from about 55% in 2000 to about 65% in 2008 after which, as a result of the economic recession and a decrease in energy consumption and imports, it dropped to about 60%. Its level is significantly higher than the average in the EU (52.7%). For individual countries it has varied widely – from 22% (Romania) to 69% (Turkey and Greece).

The energy sector is one of the main branches in SEE economics. The author estimates that at the beginning of the century it generated 7% of SEE GDP. In the individual countries this number has varied between 5-6% (Republic of Macedonia, Montenegro, Croatia, Slovenia, Bulgaria, Albania, Bosnia and Herzegovina, and Kosovo) and 7-8% (Greece, Turkey, Romania, and Serbia). In all countries in the region, the top places in the national company ratings were held by the largest energy companies. In 2010, six of the ten largest companies in SEE operated in the energy sector.

The energy sector in the SEE countries is characterised by a high concentration of production plants and financial resources from the biggest energy companies. Its share in the total annual investments in the SEE economy amounts to 15-16 %. In 2010, the annual turnover of the energy companies in SEE amounted to EUR 100-120 billion (\$ 130-140 billion), which accounted for approx. 10% of SEE GP. Some 200-250 thousand people, or approx. 5% of the active workforce in SEE, were employed in the energy sector, including in energy projects realisation. Foreign energy companies hold large production and market shares in this sector - Gazprom, Lukoil, OMV, RWE, Shell, Chevron, MOL, etc.

Energy sector and energy policy of the SEE countries

At the end of the first decade, Albania's dependence on imported energy was 27%, which was over two times less than the average in SEE. This was mainly based on the fact that the country was using its own resources. From hydro power sources, which formed the largest share, some 86% of the electricity was produced. Half of the oil used for production came from the country's own reserves, and natural gas was practically neither used nor imported. Since the beginning of the century, this structure of the energy balance has not changed significantly.

In 2010, the share of RES in Albania's energy consumption was the highest in SEE (39.5%). This was due to the major importance of hydroelectric power plants and to the energy produced from biofuel and waste products – an area in which the country was the regional leader. The aim of the Albanian energy policy was for the country to become a small superpower of renewable energy in the region. The energy sector generates about 6% of Albania's GDP. The largest company was the Albanian Power Corporation (KESH) which held monopoly positions in the production, import and export of electricity. After 2008, the oil sector came under privatisation, as a result of which the largest companies ARMO, Shpëndarie and Albpetrol passed under the control of foreign companies.

Albania's energy policy is implemented on the basis of the National Energy Strategy up to 2020, adopted in 2003 and updated in 2009. Its priorities are: ensuring the security of energy supply; increasing the efficiency and diversification of the production, consumption and import of energy resources; increasing the investments, especially for RES; restructuring and liberating the energy market. Special attention is given to increasing and modernising energy production, chiefly through the construction of several large hydro power plants and big installations (approx. 2000 MW) for the production of wind power. There are also hopes for the discovery of new oil fields and eventually a significant increase in the extraction of oil and natural gas.

Albania is part of the Energy Community of SEE project for the development of a Gas Ring in the Western Balkans which will aim to secure the necessary volumes of natural gas and to diversify its import in the region. Forecasts predict that by 2025 the consumption of natural gas in Albania will have grown rapidly – with an average of 15.5% per year. It will increase from 100 million cubic metres in 2010 to almost 1 billion in 2025, or nearly ten times.

There are no nuclear power generating capacities in Albania. In 2007, the government declared its intentions to have a nuclear power plant built by 2020, which would contribute to dealing with the current energy deficit in the country. Subsequently, this intention was substantiated with a project for the construction of a power plant together with Croatia. At the beginning of 2012 Albania abandoned the project, due to lack of commitment from the Croatian government and opposition from Montenegro which saw the construction of such a power plant near its border as a danger to the environment. The decision was also influenced by the disaster in the Japanese nuclear power plant in Fukushima in March 2011.

At the end of the first decade, coal held the largest share in Bosnia and Herzegovina's energy balance (83% in production and 63% in consumption). Most of it was produced in the country. Although Bosnia and Herzegovina has no oil deposits and imported all the oil and natural gas it used, their small share – especially that of natural gas (about 3% in energy production and consumption), meant that it had a relatively low energy import dependence (about 33% in 2010). This was almost twice below the average in SEE. Electricity production increased rapidly, thus at the end of the first decade making the country an electricity exporter.

In 2011, the energy sector generated approx. 5% of Bosnia and Herzegovina's GDP. The five leading energy companies were the largest in the country. The state company Elektroprivreda Bosne i Hercegovine was among the top 100 largest companies in SEE (excluding Turkey). Bosnia and Herzegovina is the only country in SEE which has not developed a national energy strategy. Such documents have been adopted in the two constituent entities – the Serb Republic and the Federation of Bosnia and Herzegovina. The main aims of the two energy strategies are similar – increasing production and diversifying energy resources, decreasing energy import dependence, increasing the share of RES in the energy balance. The largest energy projects planned are in the Serb Republic – construction of four hydropower plants along the Drina River and of two thermal power plants. The investments necessary for the implementation of these projects are estimated at approx. EUR 1.5 billion.

The Serb Republic has reached an agreement with Russia for the construction of a pipeline into its territory branching out from the planned Pan-European South Stream gas pipeline which will pass through several SEE countries, including neighbouring Serbia. When this project is completed, the regularity of natural gas import to the Serb Republic will increase significantly; natural gas will play a bigger role in the energy balance, which is one of the objectives of the country's energy strategy. The government of the Serb Republic has given the South Stream gas pipeline a national project status and has declared its realisation a strategic objective for the country. Bosnia and Herzegovina has joined the project of the Energy Community of SEE for the development of a Gas Ring in the Western Balkans, whose aim is to secure the necessary volumes of natural gas and to diversify its import in the region. The Ionian Adriatic Pipeline (IAP), which is a joint project by Albania, Croatia and Montenegro, will pass through its territory.

As at 2012, no nuclear power generating capacities have been built in Bosnia and Herzegovina. The energy policy of the country's two constituent entities – the Serb Republic and the Federation of Bosnia and Herzegovina, does not provide for the construction of such facilities as it is deemed that in the future it would be possible to satisfy any energy demands through increased production, imports and a better utilisation of the country's resources, including RES.

In the first decade of this century, Bulgaria's energy import dependence underwent an inconsistent evolution. Initially and until 2008, the tendency was toward increasing – after which, due to the economic recession, there followed a severe drop in energy consumption and import down to 40.5% in 2010. This level was significantly lower than the SEE average. Coal takes the largest share in energy production (about 47%) and consumption (about a third), of which Bulgaria has significant lignite deposits. The country produces small volumes of oil and natural gas and in practice the entire consumption of these resources has been satisfied through imports. Kozloduy NPP, constructed last century, played an important role in the energy balance with a 22.4% share which was significantly larger in the electricity sector – 38% of the capacities and 32.6% of the production. Traditionally, Bulgaria was an electricity exporter and during the first decade made up for about one fifth of any electricity shortages in SEE.

In 2011, the energy sector generated about 6% of Bulgaria's GDP. Eight of the ten largest companies are operating in the energy sphere. Most of them are subsidiaries under the control or with the participation of foreign companies – Lukoil, Gazprom, OMV, CEZ, etc. Bulgaria's energy policy is implemented on the basis of the Energy Strategy for the period until 2020 adopted in 2011. Its priorities are: increasing production and improving security in resource supply, achieving better efficiency in the energy sector, reducing Greenhouse gas emissions and increasing the share of RES in energy consumption.

According to the base scenario in the Energy Strategy, the GDP increase in 2005-2020 will be about 60%, and in 2030 nearly 100%. Energy production will grow respectively with about 10 and 16%, and energy consumption with about 7.5 and 9.5%. The consumption of fossil energy resources and oil will drop, while that of natural gas will increase with 6.7 and 15.2% respectively. The biggest increase in the natural gas consumption will be in 2020 with 14.3% and in 2030 with almost 25%. The share of RES in the energy consumption will increase from 10.3% in 2005 to 12.7% in 2020 and

to 13% in 2030. Electricity consumption will increase with 9 and 23% respectively, but domestic production growth will anticipate this and will ensure an increase in exports.

Bulgaria's dependence on imported energy is expected to drop to 45.8% in 2020 and to 43.3% in 2030. One of the main objects of the energy policy is the country's active participation in regional and European infrastructure projects. Bulgaria holds a key position in the implementation of the projects for the South Stream and Nabucco natural gas pipelines. Bulgaria and Turkey are the only countries in SEE through whose territories will pass both gas pipelines. Moreover, Bulgaria will play a central role in the diversification of natural gas imports to SEE through the construction of new gas pipelines between itself and four neighbouring countries (Turkey, Greece, Serbia and Romania) for importing natural gas from the Caspian Sea region. The fulfilment of this objective however will happen after the planned Nabucco and ITGI gas pipelines become fully operational toward the end of the decade.

Bulgaria is one of the three countries in SEE which have nuclear power generating capacities. In the early 1980s the country began construction of a second nuclear power plant (Belene NPP) which was the country's largest energy project. Following two suspensions and subsequent resummptions of its implementation, due to its high cost (over EUR 10 billion) the project was officially terminated in March 2012. Instead, the government announced that a new reactor with 1000 MW capacity will be built in the currently operating Kozloduy NPP. The realisation of this project will be possible in the middle of the next decade at the earliest.

It is possible that in the future the decision to terminate the Belene NPP project may be reconsidered. In view of the unclear future of nuclear energetics, it is questionable whether it would be possible to achieve the Energy Strategy objective to increase the share of nuclear energy in consumption with 14.3% between 2005-2020 and with 35.2% by 2030, as well as to have the NPP produce 22.3% of the electricity in 2020 and 30% in 2030. These figures can be reached only if a new nuclear power plant is constructed.

In 2010, Croatia's energy import dependence was 52% or below SEE average. It has not increased in comparison with the beginning of the century but this is due to the financial and economic crisis from the end of the first decade which led to a significant drop in domestic consumption and main energy resource imports. At the end of the first decade, the largest share in Croatia's energy balance was held by natural gas – nearly

two-thirds in energy production and over a quarter in energy consumption. Croatia is among the five SEE countries which have deposits, albeit small, from which they can produce natural gas. Because of this, it imported less than a third of the natural gas it required. In the energy balance, oil and petroleum products held about 45%, while hydropower sources played an important role (over 50%) in electricity production.

Croatia is one of the four SEE countries which use nuclear power generating capacities for electricity production. This is the Krsko nuclear power plant in Slovenia, which was built and is exploited jointly with an equal share (50% each or 338 MW from the output of the single reactor) by both countries. In 2011, the share of Krsko NPP in Croatia's electricity generating capacity was about 8.5%, and in electricity consumption – about 15%.

At the beginning of this century, the energy sector generated about 5% of Croatia's GDP. Its energy policy is implemented on the basis of the Strategy for Energy Development of the Republic of Croatia adopted in October 2009 and subsequently developed energy programmes in different areas. The Strategy's priorities are: increasing and modernising the energy generating capacities and the infrastructure, especially for oil and natural gas, for which approx. EUR 15 billion will be allocated. The share of RES in energy consumption is expected to reach 20%.

One important aim is to increase Croatia's participation in regional and European energy cooperation. There are two main projects. One is the development of the Ionian Adriatic Pipeline (IAP), which will pass through the territories of Croatia, Albania, Bosnia and Herzegovina and Montenegro. It will have to connect with the planned Trans Adriatic Pipeline (TAP) which will bring natural gas from the Caspian Sea region. Croatia's other priority project is the construction of a pipeline leading into its territory and branching out from the Pan-European South Stream pipeline which will pass through Serbia and is intended to bring natural gas from Russia. When the two projects are completed, Croatia will fully meet its demand which according to estimates by the Energy Community of SEE will grow from 3.6 billion cubic metres in 2010 to 4.2 billion in 2025, and will diversify natural gas imports.

The Strategy for Energy Development of the Republic of Croatia states that in 2012 the Croatian government will make the decision whether to develop a nuclear power generating capacity in the country. Even earlier than this date, government representatives announced that Croatia had no intentions of constructing a nuclear

power plant as this would be beyond the country's capacity and its exploitation carried an environmental risk. It is possible however for Croatia to consider participating in the future in a joint project with one of its neighbouring countries. Slovenia seems a preferable partner as it has competent experience from the joint construction and exploitation of Krcko NPP, which the Slovenian government intends to expand by constructing a new nuclear reactor.

Apart from coal, Greece has no other significant deposits of energy resources. At the beginning of the decade, the country imported almost all its necessary oil and natural gas. This was the main reason for Greece's high energy import dependence which in pre-crisis 2008 had reached 72.5%. As a result of the subsequent decrease in energy resource consumption and import, it slightly fell but its level remained high – 69%, which is significantly above the average in SEE. Greece, along with Turkey, is one of the most energy import dependent countries in the region.

In 2011, the energy sector generated about 7% of Greece's GDP. It is characterised by a large concentration of capital in several large companies led by Hellenic Petroleum. Unlike most SEE countries, state and domestic investors play a leading role in these companies. Greece's energy policy is implemented on the basis of the Energy Roadmap to 2050 adopted in 2012. It outlines several scenarios all of which provide for decreasing energy import dependence through increasing production, improving efficiency and diversifying the energy sector. According to the base scenario, by 2050 the share of RES in energy consumption should have reached 60-70%, and in electricity production – 85-100%.

One of the priorities in Greece's energy policy is the country's participation in regional and European energy infrastructure projects. Of these, most important for Greece are the projects for the construction of the Pan-European South Stream gas pipeline, through which the country will import natural gas from Russia, and the gas pipeline which will connect Turkey and Greece with Italy (ITGI) and will carry natural gas from the Caspian Sea region. The gas pipeline between Greece and Turkey, which began operation in 2007, contributed to the diversification of natural gas supply sources, considerably decreasing Greece's energy import dependence on Russian natural gas whose share in 2005 was 85%, while in 2009-2010 it reached 55%.

The severe financial and economic crisis which struck Greece at the end of the last decade was one unfavourable factor for the implementation of the country's objectives

in the energy sphere. This crisis is unlikely to be overcome by 2015 and its negative effects will be felt for at least another decade. Greece will require significant foreign investment, including in the energy sector.

There are no nuclear power generating capacities in Greece. Since the beginning of the 1980s, Greece's position on this issue has been that the country will not build a nuclear power plant due to its location in a seismically active area. In light of the Fukushima disaster in March 2011, there is no reason to expect any changes in this policy.

Since the beginning of the century, the energy import dependence of the Republic of Macedonia has increased from 40.5% at the beginning of the century to 46% in 2008. A relative drop followed in the next two years, the reasons for which were decreased energy resource consumption and imports due to the economic recession. In 2010, it was 44% which is significantly lower than the average in SEE. At the beginning of this decade, coal played a main role in the Republic of Macedonia's energy balance, accounting for almost four-fifths in production and nearly half in the consumption of primary energy. For lack of oil and natural gas deposits, the necessary quantities of these energy resources were imported. Their share in the energy balance was about a third, with the share of natural gas barely 2.5%. The Republic of Macedonia is one of the Balkan countries which have experienced electricity shortage and had to maintain its electrical power balance through import.

In 2011, the energy sector generated about 5% of the country's GDP. The largest energy company is OKTA which owns the only oil refinery and is under the control of the Greek company Hellenic Petroleum. The energy policy is implemented in accordance with the Strategy for Energy Development in the Republic of Macedonia until 2030 adopted in 2010. Its priorities are: increasing and modernising its energy generating capacities, increasing the efficiency and diversification of energy resources, increasing the share of natural gas in energy consumption and especially that of RES whose share in total energy consumption must reach 20-24%, and in electricity production – 30.3%.

The integration of the Republic of Macedonia in the regional and European system of electricity, oil and natural gas is an important objective in its energy policy. The country's participation in the project for the development of the Pan-European South Stream gas pipeline is of paramount importance. In the summer of 2012, it was

announced that an agreement between the Republic of Macedonia and Russia has been drafted for the construction of a pipeline branching from the planned Pan-European South Stream into Macedonia. Another priority energy infrastructure project is the construction of the AMBO oil pipeline which will connect Bulgaria, the Republic of Macedonia and Albania. According to the country's energy strategy, AMBO is expected to be completed by 2015 which is an unfeasible aim due to the lack of necessary investments and negotiated sources for the supply of oil.

There are no nuclear power generating capacities in the Republic of Macedonia. The government has not announced any plans for the construction of a nuclear power plant but the Strategy for Energy Development until 2030 includes such an option. The construction of the power plant with 1000 MW capacity must start in 2026 at the latest and when it becomes operational after 2030 it will produce about 40% of the electricity and will diversify the energy balance. The country's resources for implementing such a large-scale project independently are limited. If the government of the Republic of Macedonia should decide to build a nuclear power plant it would probably prefer to seek the cooperation of one or more of its neighbouring countries. Such an opportunity was opened in 2010 when the Bulgarian government extended an official invitation to the Republic of Macedonia to join the construction of Belene NPP. At that time, the Macedonian authorities did not answer the Bulgarian offer.

Between 2000-2010, Kosovo's energy import dependence increased from 40 to 45%. Nonetheless, it is significantly lower than the average in SEE. Kosovo was one of the two countries in this region (along with Albania) whose economy did not go into recession. Lignite coal plays a key role in Kosovo's energy balance, the country holding one of the top positions in lignite coal deposits in Europe. At the end of the first decade, coal accounted for approx. 80% in primary energy consumption and for over 98% in electricity production. In 2011, electricity production in Kosovo was sufficient to meet the country's entire demand but due to huge technical and other losses amounting to nearly 50% there was a shortage in the country and restrictions on electricity usage in the winter months.

The energy sector generates about 5% of Kosovo's GDP. The largest energy companies are Kosovo Energy Corporation (KEK), which is responsible for the production and the distribution of the produced energy, and Kosovo Electricity Transmission System and Market Operator (KOSTT), which is responsible for the exploitation of Kosovo's electrical power system as well as that of the facilities

connecting it with the energy systems of neighbouring countries – Montenegro, the Republic of Macedonia, Albania and Serbia.

Kosovo's energy policy is implemented in conformity with the Energy Strategy of the Republic of Kosovo by 2018 adopted in the beginning of this decade. According to it, coal will remain a major energy resource but its share in energy consumption will decrease to allow for the increased consumption of natural gas and energy generating facilities using RES whose share in the energy balance should reach 7% in 2016. The country's major energy project is the construction of a new TPP Kosovo e Re which in 2018 will produce almost 60% of the electricity. Considerable importance is also given to decreasing any technical and other losses in the production, transport and consumption of electrical power.

One of the priorities in Kosovo's energy policy is broadening the cooperation with neighbouring countries, especially with Albania, which will take part in the realisation of the largest energy project – the construction of a high-voltage distribution line which is expected to guarantee greater security in electrical power supply. Kosovo will also join the future Natural gas ring in the Western Balkans which is among the priority projects of the Energy Community in SEE.

There are no nuclear power generating capacities in Kosovo; the government has no plans for the construction of nuclear power plants.

At the beginning of the century, Montenegro's energy import dependence was about 35%. Before the economic recession of 2009, the tendency was toward its increase, reaching 52%, after which a relative drop followed to 51.3% in 2010. This is significantly below the average in SEE. Montenegro has limited natural energy resources. In energy production, the main role goes to coal and especially hydropower sources; however the country has used less than a fifth of their potential since the beginning of this decade. Until the beginning of this decade Montenegro did not import and practically did not use natural gas. The most significant change in the energy balance was the increase in the share of oil and petroleum products by some 5%.

The energy sector generates about 5% of Montenegro's GDP. The largest energy companies are dominated by or run jointly with energy companies from Italy, Greece, Russia and Serbia. The country's energy policy is implemented in accordance with the Energy Development Strategy by 2025 (White Book) adopted at the end of 2007. Its priority objectives are: ensuring a regular, quality and balanced energy supply,

decreasing energy import dependence through increasing domestic production, diversifying the energy resources used, increasing investments, improving efficiency and environmental requirements in the development of the energy sector. The share of RES in the country's energy consumption is expected to reach 20% by 2025.

One energy policy priority is the country's participation in international energy cooperation. Two projects are of the highest importance. The first is the construction of the Ionian Adriatic pipeline (IAP) which will pass through the territories of three more countries in the region (Albania, Croatia and Bosnia and Herzegovina). Montenegro's investment participation in this project is EUR 60 million. IAP will be a part of the future Gas Ring in the Western Balkans. The other project is for the development of the Pan-European South Stream gas pipeline. In February 2012, Montenegro and Russia reached an agreement that the Russian energy company Gazprom will build a pipeline branch leading into Montenegro.

There are no nuclear power generating capacities in Montenegro. The country's government maintains the moratorium imposed in 1986 by former Yugoslavia on the construction of such facilities. It has voiced its concerns about the construction of such projects near the country's territory. Montenegro's opposition was one of the reasons why in early 2012 the Albanian government abandoned its plans to build a nuclear power plant.

At the beginning of this decade, Romania had the lowest energy import dependence (22%) in comparison with the other SEE countries. This is almost three times less than the average in SEE. The reason behind this is that Romania was able to satisfy most of its energy demands through its own production. Coal deposits amount to about 2.2 billion tons of which two-thirds are lignite. Yields were sufficient for about 90% of their consumption. Romania is a leader in SEE in natural gas deposits. They constitute over two-thirds of the natural gas deposits in the region. Romania imports about 20% of the natural gas it needs and uses domestic production for the rest.

At the beginning of 2012, it was announced that the companies Exxon Mobil and OMV Petrom had discovered new natural gas deposits on Romania's Black Sea coast. They were estimated at 42-84 billion cubic metres which could satisfy the country's demand for about ten years. Romania is most dependent on imported oil whose share in energy production at the end of the first decade was 15.7%. The country imported about 60%

of the oil it used. Romania fully satisfied its electricity demand and was one of the countries with the largest electricity export.

Between 2010-2011, the energy sector generated about 8% of Romania's GDP. Several companies which are subsidiaries of large foreign energy companies – OMV, KazMunayGas and Lukoil, played a leading role in it. Romania's energy policy is implemented in accordance with the National Energy Strategy until 2020. In 2011, it was updated with the country's Energy Strategy until 2035 put forward by the Ministry of Economy, Trade and Business Environment. Its priority objectives are: sustainable development in the energy sector, diversification and increasing the efficiency in energy production and consumption. By 2020, the share of RES in the energy balance is expected to reach 24%. Another key objective is reducing import dependency. After the reports about the newly discovered natural gas deposits President Traian Basescu announced that Romania could achieve complete energy independence by 2016. However, the exploitation of the new natural gas deposits will require big investments and will most likely begin toward the end of the decade, while the deposits will last for about ten years.

Regarding Romania's energy cooperation with other countries, projects of high importance for the country are: the Pan-European Nabucco gas pipeline, through which it will reduce its full import dependency from Russia; the development of a gas link between Romania, Azerbaijan and Georgia for importing liquefied natural gas; the construction of a oil pipeline from Constanta through Serbia, Croatia and Slovenia to Trieste in Italy. In 2009, Romania also expressed its interest in participating in the project for the Pan-European South Stream gas pipeline, but in 2012 it still had not signed an agreement to join this project.

Romania is one of the three SEE countries which have nuclear power generating capacities. At the beginning of the century, their share in electricity production was about 19%. When the third and fourth block of Cernavoda NPP become operational, which is expected to happen in 2016-2017, the power plant's share in electricity production will reach approx. 40%. Next decade, the Romanian government intends to build a new nuclear power plant which would double the country's nuclear power generating capacities. This prospect will depend on whether the country receives the necessary investments.

Since the beginning of the century, Serbia's energy import dependence has increased slightly and in 2010 it reached 37%. This level is significantly below the average in SEE. Serbia's main energy resource is lignite coal. At the end of the first decade, the share of coal in domestic energy production was 77.7% and in the energy balance, including import, it was 54.5%. Oil and natural gas deposits are small and their yield is insufficient to satisfy consumption. In 2010, oil accounted for 7% in energy production and 20.7% in energy consumption. The import of raw petroleum was over three times more than domestic production and the share of petroleum products, for which the ratio between import and export was about three to one, was about 28%. The share of hydropower was 9.3% in primary energy production and 61.1% in consumption. And the necessary volumes of these energy resources are provided mainly through import.

The energy sector generates about 8% of Serbia's GDP. The country's energy policy is implemented in accordance with the Energy Sector Development Strategy of the Republic of Serbia by 2015 adopted in the middle of the last decade. Its main priorities are: increasing production and using the country's own energy resources, increasing the efficiency and diversification in production and consumption in the energy sector. The share of coal in the energy balance has to drop to 50% and that of oil from 28% in 2002 to 25% in 2015. The tendency for natural gas will be in the opposite direction – its share in the energy balance will increase from 14 to 18%. According to the Energy Strategy, by 2015 Serbia's energy import dependence will increase slightly and will reach 38.5%.

The main problem for the development of Serbia's energy sector is that of securing the considerable necessary investments for expanding, modernising and diversifying the power generating capacities. In the Energy Strategy by 2015, they have been estimated at nearly \$ 7.5 billion (about EUR 6 billion). Due to the financial instability and the economic recession in Europe, there are no favourable conditions for foreign financing of Serbia by the EU. Serbia could attract additional investment from Russia, China and other countries.

With regard to international cooperation, Serbia's participation in the project for the Pan-European South Stream gas pipeline takes priority. When it is finished and becomes operational, the South Stream gas pipeline will guarantee the necessary additional volumes and a greater security in natural gas imports in Serbia. On the other hand, Serbia's energy dependency from Russia will become even greater.

After the Chernobyl disaster in 1986, Serbia adopted a moratorium on the construction of nuclear power plants in the country and it is highly unlikely that it would lift it by the end of this decade. At the same time, the government has expressed its interest to join similar projects in other countries, as was the case with the construction of a second nuclear power plant in Bulgaria, which was abandoned in March 2012. It is possible for Serbia to join in the future joint projects for the development of such facilities in neighbouring countries – Slovenia, Romania, etc.

During the first decade of this century, Slovenia's energy import dependence followed an evolution similar to that of most SEE countries: it increased until 2008, after which due to the economic recession and the drop in domestic consumption and import it fell again below the level from the beginning of the century. In 2010, it was 49% or considerably below than the average in SEE. Slovenia has little energy resource deposits. Coal deposits are 246 million tons, yield in 2010 was 4.9 million tons. That was insufficient for satisfying demand, so the country had to import coal. The share of coal in the total consumption of energy resources was 20.4%.

No oil and natural gas deposits have been discovered in Slovenia. Up to the beginning of this decade, Slovenia imported mainly petroleum products, whose share in energy consumption was 40%. Natural gas was also imported and its share in the energy balance was about 12%. In 2010, Slovenia was one of the SEE countries with a large share of RES in energy consumption (19.9%). Nuclear power generating capacities (Krško NPP) played an important part in electricity production (42%) and in the country's energy balance (21.5%). In this respect, Slovenia was first among the SEE countries.

The energy sector generates about 6% of Slovenia's GDP. The country's energy policy is implemented in accordance with the National Energy Program adopted in 2004. In 2010, the Slovenian government proposed a draft for a national energy programme until 2030, which focused on increasing the efficiency and diversification of the power generating capacities and consumption. The share of RES in energy consumption has to increase to 25% in 2020 and to 30% in 2030. The solar and wind power generating capacities are expected to increase considerably and their share in RES to reach 69%.

The largest international energy infrastructure project in which Slovenia participates is the Pan-European South Stream gas pipeline. Slovenia joined this project in November 2009, after signing an agreement with Russia according to which the pipeline will pass

through the country. When the pipeline becomes operational, in early 2018 according to plans, Slovenia will have secured not only bigger but also safer natural gas imports. Another large infrastructure project is the construction of an oil pipeline from Constanta in Romania to Trieste in Italy which will pass through Slovenia. The future of this project is unclear due to lack of investments for its realisation and the problem of providing enough oil for the pipeline's operation.

Slovenia is one of the few SEE countries (the others are Bulgaria, Romania and Turkey) which have announced their plans to build new nuclear power generating facilities. Slovenia intends to enlarge its working Brcko NPP with another reactor. It will either replace or operate for a while along the existing reactor whose design lifespan expires in 2023 but it is likely to be extended. The new reactor is expected to generate 1 100-1 600 MW of power, which will make the share of the NPP in electricity production 50%. The implementation of this project will depend on whether the country manages to secure the necessary funding amounting to EUR 5 billion. In all probability, the second reactor at Brcko NPP will not be built earlier than 2025.

Turkey is relatively poor in mineral energy resources, which means that the country's own production is not sufficient to satisfy the demands of its rapidly growing economy. At the beginning of the second decade, Turkey's energy import dependence (69%) was the highest from the countries and significantly above the average in SEE. Coal has the largest share in energy consumption – 57.5%, but there has been a tendency from the beginning of the century for it to decrease to allow for the increased share of natural gas and to a lesser extent to that of oil and petroleum products. Oil and petroleum products account for 30% and natural gas, whose consumption between 2000-2010 has nearly doubled, for almost a third. The other resources have a smaller share in the energy balance.

Among Turkey's achievements in the energy policy during the first decade of this century are increased security and diversification of oil and natural gas imports. Two large energy infrastructure projects were developed – the Blue Stream gas pipeline in 2005, which supplies natural gas from Russia, and the Baku–Ceyhan oil pipeline in 2006, which supplies oil from the Caspian Sea region. Thanks to this oil pipeline Turkey managed to decrease its high level of import dependency on Russian natural gas – from 69.4% in 2000 to 52% in 2009.

During the period from the beginning of the century, electricity production has been one of the most dynamic fields in Turkey's energy sector. In 2000-2011, it increased with about 80% and fully satisfies the country's grown demands. At the beginning of the century, Turkey imported electrical power, now ten years later it has reached a balance between import and export. The energy sector generated about 7-8% of Turkey's GDP. The country's energy policy is implemented in accordance with a strategic plan for the period 2010-2014. It focuses on increasing energy sector efficiency and improving the diversification in production and giving priority to using the country's own energy resources as well as increasing the share of RES. The fulfilment of the objectives in Turkey's energy policy by 2020 will require huge investments, which are estimated at approx. \$ 120 billion.

The plans for the development of nuclear power generating capacities have an important position in Turkey's energy strategy. If the project for the construction of a nuclear power plant in Akkuyu is realised, by the end of this decade Turkey will join the European countries with working nuclear facilities and in the next decade it could become a leader in this area in SEE. The share of NPP in electricity production in Turkey however will be smaller than that of the other four countries in the region which use this energy source. According to expert estimates, around the middle of the next decade it will be about 5%.

One strategic objective in Turkey's energy policy is turning the country into an energy hub and terminal by using its geo-strategic position within the framework of the expansion of the regional cooperation in the energy field and Turkey's active participation in the major energy multinational infrastructure projects. Turkey places the highest importance on the Pan-European gas pipelines South Stream and Nabucco and the gas pipeline between Turkey and Greece and into Italy. Under favourable conditions, they could be fulfilled by the end of this decade.

Regional cooperation in the energy sphere

Until the beginning of this decade, regional cooperation in the energy sphere in SEE was relatively poorly developed. It was based mainly on the implementation of bilateral projects. The majority of SEE countries were not active in multilateral cooperation because they believed that their capacities in this area were limited. They relied mostly on EU grants, and regional cooperation was seen as something additional or as part of the region's EU integration.

The EU is actively involved in supporting the energy sector development and the broadening of SEE regional cooperation in the energy sphere. For the greater part of the first decade of our century, the Stability Pact for SEE played a pivotal role. After that, the role of other multilateral structures increased – the Energy Community, the Regional Cooperation Council (RCC), the Western Balkans Investment Framework (WBIF), the Organisation of the Black Sea Economic Cooperation (BSEC).

The Energy Community, which was established in 2006, holds a central position among them. Priority spheres in the organisation's activity are: developing a unified market for electricity, natural gas and, in the future, for oil on the basis of common energy policy principles and rules, using more RES, increasing efficiency and environmental requirements in the energy sector, attracting more investments for the realisation of energy infrastructure projects in SEE, improving security and energy supply diversification, giving closer attention to the social aspects of energy policy.

During the time since the establishment of the Energy Community, the development of a unified energy market in SEE and its integration with that of the EU has been relatively successful. However, there is still great disparity in the implementation of the *acquis communautaire* and the results from the implemented energy policy both between the SEE countries and between them and the EU. One notable weakness of the Energy Community is the organisation's lack of a mechanism for financing regional energy projects.

The process of increasing the role of the Energy Community in regional cooperation will be a gradual one. It has announced its objective to have implemented fully all measures in the application of the *acquis communautaire* in the energy sphere by 2015. Other objectives include the adoption of a common energy strategy and the realisation of the project for the development of a Gas Ring in the Western Balkans, which will depend on the construction and the opening of the planned gas pipelines, chiefly South Stream, Nabucco, the Trans Adriatic Pipeline (TAP) and Interconnector Turkey–Greece–Italy (ITGI). The Energy Community's resources for assisting the energy sector and improving regional cooperation in SEE will increase significantly if the organisation manages to raise its own financial capital or to secure more international investment.

Regional energy infrastructure projects

The SEE countries are strongly interested in transforming the region into a transit corridor for the transportation of oil and natural gas to Central and Eastern Europe. They were among the promoters of most energy infrastructure projects proposed to run in and through the area. Their main objectives are ensuring more secure imports and diversifying the supply sources for the energy resources, including reducing their huge energy dependency from Russia, especially for natural gas.

The realisation of large infrastructure energy projects in SEE has proved to be a slow process. From the beginning of the century until 2012, not a single large project of regional importance in the oil infrastructure has been completed. Most of the large projects for the construction of oil pipelines through SEE have been frozen and will hardly be realised by the end of this decade. Toward the beginning of this decade, some ten large projects for the construction of gas pipelines had been launched; of these, only ITGI was partly implemented in the section between Turkey and Greece. Toward mid-2012, most of these projects were still in their preparatory stage. It was completed in reality only for the South Stream gas pipeline whose construction is set to begin at the end of the year. The main reason for this delay in the implementation of the other project was the difficulty in providing the necessary natural gas sources, as well as providing the financial means for the construction of the planned gas pipelines. This is also valid for the South Corridor, which includes the Pan-European Nabucco oil pipeline which takes priority in EU energy policy for increasing, improving security and diversifying natural gas import.

By 2017-2018, only the South Stream gas pipeline will be completed and will become operational. Provided that reliable natural gas sources are guaranteed and the interest of the participating countries is maintained, other gas infrastructure projects will also be realised toward the end of this or during the next decade. The best prospects are those for Nabucco West, TAP and ITGI, followed by White Stream. They will be influenced by Europe's energy demand, if and when the necessary natural gas sources will be provided, the financial resources for the projects. The setbacks in the construction of the majority of the gas pipelines have had a negative impact on the fulfilment of the energy policy objectives of the countries in SEE. One exception was Turkey and to a lesser extent Greece, thanks to the several oil and gas pipelines built during the first decade in these countries (the Blue Stream gas pipeline, the Baku-Ceyhan oil pipeline, the gas pipeline between Turkey and Greece).

In 2012, SEE level of import dependency and Russia's dominating role in import, particularly that of natural gas, in the countries in the region had not changed significantly in comparison with the beginning of the century. The expected opening of the South Stream gas pipeline in the middle of the decade will contribute to increasing energy import security, but will increase SEE energy dependency on Russia. The latter could be reduced after the opening of at least part of the planned South Corridor large gas pipelines.

Prospects

In our decade all SEE countries, with the exception of Bosnia and Herzegovina, implement their energy policies in accordance with long-term strategies, some of them up to 2030 and even 2035. Their specific objectives take into consideration specific conditions, the economic and financial resources of individual countries, but their long-term energy policy strategic priorities are the same:

- Increasing and diversifying the production of the country's own energy resources;
- Reducing energy import dependency;
- Energy market restructuring according to the market principles;
- Increasing energy sector efficiency in conformity with the environmental requirements;
- Increasing the share of RES in the energy balance;
- Broadening the energy sector cooperation with the countries from SEE and the EU, participation in regional and European energy infrastructure projects.

The energy strategies of the SEE countries state some ambitious objectives, which (should they be fulfilled) will change considerably the character of the energy sector in the region in this decade. This will require the implementation of an effective energy policy and favourable conditions for the development of the energy sector. The evolution of the economic and financial situation in SEE and the EU will be a decisive factor. The energy sector proved to be among the worst affected by the financial and economic crisis following 2008 which, though it eased a bit, still was not overcome at the beginning of this decade. Some negative consequences of the crisis manifested themselves in the drastic drop (more than two times in 2008-2010) in domestic and foreign investments, which led to the delay, temporary or permanent suspension of dozens of energy projects in SEE. In some instances, international companies stepped

down from their contracted investment participation. This happened with the construction projects for Belene NPP in Bulgaria, the construction of new reactors in the Romanian Cernavoda NPP and the implementation of regional infrastructure energy projects.

To fulfil their energy policy objectives, SEE countries will require a considerable increase in foreign investments, without which no large regional energy project can be realised. The financial costs related to the national energy strategy objectives by 2020 have been estimated at approx. EUR 150 - 180 billion. The real amount of the necessary funds, however, exceeds this number. Experts' estimates show that for the energy sector development up to 2020, SEE will require financial resources in the range between EUR 240 and EUR 300 billion. Regional energy projects will require large investments for their implementation, and so does the developing of potential new oil and natural gas deposits, mainly in the Adriatic, Mediterranean and Black Sea. If there is evidence that the exploitation of these deposits would be economically viable, it could begin toward the end of this or the beginning of the next decade at the earliest.

The development of the energy sector in SEE will depend on the resources of the individual countries and the evolution of the economic and financial situation in the EU and the region. Turkey had the greatest potential at the beginning of this decade – the country quickly got out of the economic recession and increased its GDP growth. It will play a central part in SEE quicker recovery from the economic recession and in the broadening of regional energy cooperation. In contrast, the financial and economic crisis in Greece deepened and it would take years to overcome it. Until 2012, most of the other SEE countries including Romania, Bulgaria, Serbia, Slovenia, and Croatia had not shown any signs of stable recovery from the recession.

In light of this, the prospects for SEE energy sector are unclear and to some degree uncertain. Depending on the changes in internal and external conditions and the efficiency in the energy policy of the countries in the region, three scenarios are possible to occur in the present decade (2010-2020).

The **optimistic scenario** is that the economic recession in SEE will be overcome by the end of 2013 or the beginning of 2014. The energy sector could play a crucial part through:

- Increasing energy production by an average of around 1.5% per year.

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- Attracting foreign investments and external funding to the amount of EUR 120-150 billion.
 - The completion of three or four infrastructure projects of regional importance, including the South Stream and Nabucco West gas pipelines.
 - The construction of nuclear power generating facilities in Turkey (Akkuyu NPP, consisting of four reactors with a total capacity of 4 800 MW), Romania (two new reactors in Cernavoda NPP with a total capacity of 1 500 MW) and probably in Bulgaria, in case the construction of Belene NPP is resumed.
 - The share of coal, oil, natural gas and RES in energy consumption reaching respectively 25, 28, 25 and 18 %, and that of nuclear power in the electricity production 10-12%.
 - Decreasing as little as possible (56-58%) SEE energy import dependence.

The **realistic scenario** is that the economic recession will be overcome around 2015. If this happens, the energy sector will accomplish the following:

- Increasing energy production by an average of 1% per year.
- Attracting foreign investments and external funding to the amount of EUR 70-80 billion.
- Completing one or two infrastructure projects of regional importance, one of which should be the South Stream or Nabucco West gas pipeline.
- Construction of planned nuclear power generating facilities in Turkey (Akkuyu NPP, consisting of four reactors at a total of 4 800 MW) or Romania (two new reactors in NPP Cernavoda at a total of 1 500 MW) or Bulgaria, if the construction of Belene NPP is resumed.
- The share of coal, oil, natural gas and RES in energy consumption reaching respectively 28, 30, 24 and 15 %, and that of nuclear power in the electricity production 8-9%.
- Maintaining at the existing level (around 60%) of SEE energy import dependence.

The **pessimistic scenario** is that the economic and financial instability in SEE will continue for the larger part or until the end of the decade. If this happens, the energy sector will accomplish the following:

- Increasing energy production by no more of 0.5% per year on average.
- Attracting foreign investments and external funding to the amount of less than EUR 50 billion.

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- Not a single completed infrastructure project of regional importance.
 - No opening of new nuclear power generating capacities.
 - The share of coal, oil, natural gas and RES in the gross energy consumption reaching 32, 35, 22 and about 12% respectively, and that of nuclear power in the electricity production 5-6%
 - Considerably increase of the energy import dependence (around 65 %)

The hardest time for SEE energy sector will be the period before the end of the economic recession and the restoration of financial stability in the EU. It could last for another couple of years but it might well continue further in time. This means that the countries in the region will have to reassess some of the objectives and priorities in their policies. One possible option is to broaden the cooperation with countries in Asia, Africa and Latin America which have not been affected by the global economic stagnation and financial instability. This will be of considerable help for reaching the objectives in their energy strategies.

Capitalising on the opportunities which international energy cooperation presents is of vital importance for all SEE countries. Without outside assistance none of them will be able to attain their energy policy objectives. The top priority in this respect is making headway in implementing the large energy infrastructure projects in SEE, especially South Stream and Nabucco West. This will be highly conducive in many ways – increasing the security and diversifying energy imports, attracting significant investments in the energy and transport infrastructure with a beneficial effect for the development of the entire economy, generating substantial returns from the exploitation of gas and oil pipelines. Last but not least, it will add further value to SEE as a transit energy corridor.

The countries in SEE ought to speed up and broaden the regional energy cooperation which holds great potential in itself. There is an urgent need to establish a regional project oriented institution in SEE, which will have at its disposal or will have the capacity to attract financial resources for the implementation of joint initiatives in the energy domain. The current realities in the region, however, do not provide grounds to believe that such an institution may come into existence any time soon.

About the author

Venelin Tsachevsky was born in 1948 in Sofia. He holds a Master's degree in international relations from the University of National and World Economy in Sofia. He worked as expert at the Foreign Policy Research Institute "Ivan Bashev" and later at the Institute of International Relations. In 1975 he got a PhD in international economic relations. At the age of 31 he became a senior research fellow and in 1989 he earned a second PhD in international relations.

He worked as counsellor at the Ministry of Foreign Affairs of Bulgaria, Directorate „European Integration”. As professor of Political Studies he presented lectures on the theory of foreign relations and on Bulgarian foreign policy at the Slavic University, Veliko Turnovo University and New Bulgarian University. As a guest professor at Helsinki University in 2007 - 2009 he conducted a series of lectures on South East Europe and Bulgaria's development and foreign policy.

Venelin Tsachevsky is the author of circa 350 scientific studies (books, monographs, articles) on the Bulgarian history, development and foreign policy, as well as on the security, regional relations and integration of South East Europe into the European Union and NATO. In 1993 he published a fundamental study on the Bulgarian Communism. Venelin Tsachevsky is the author of the books „The Balkans: The New South Eastern Europe”, „The Balkans: The European Choice”, „The Balkans: End of the Conflicts”, „The Balkans: The Tough Road to the United Europe”, „Bulgaria and the Balkans: The Europeanization is not over”, „The Balkans at the Beginning of the XXIst Century”.

He completed scientific studies in Belgium, Hungary, Germany, Russia, Finland, Japan and Switzerland. From 2003 to 2006 Venelin Tsachevsky was Ambassador of Bulgaria to Finland and between 2004 and 2006 he was in charge of the same function in Estonia. After the end of his diplomatic assignment in Helsinki he was awarded the Finnish medal "Guard Cross" for his contribution to the development of the Bulgarian-Finnish relations.

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