

KEY MESSAGES

The Western Balkans⁴ are on the road to rebuilding their energy systems. They have chosen a way forward within the framework of the 2005 Energy Community Treaty, which expresses a shared commitment to market reforms and the operation of an integrated regional market. The twin goals of reform and integration are the right ones, and offer the best opportunity to build sustainable, reliable and efficient energy sectors that can support development and recovery. What is needed now is to integrate these goals into broad, coherent and robust energy strategies for each market, and to ensure a sustained commitment to their practical implementation. To date, progress in these areas has been patchy and uneven.

This Survey highlights the need to strengthen public energy administrations and market institutions across the Western Balkans, including a clear separation of the functions of policy making, regulation and ownership. This means ensuring that administrations have the capacity, resources and statistical data to develop strategies and implement policies in a wide range of areas – not only in market regulation, but also in terms of energy efficiency, energy security, energy poverty and the impact of energy use on the environment. Such policies and strategies must be formulated in a transparent way that involves broad public consultation. The establishment of fully independent and empowered regulators must also be a priority.

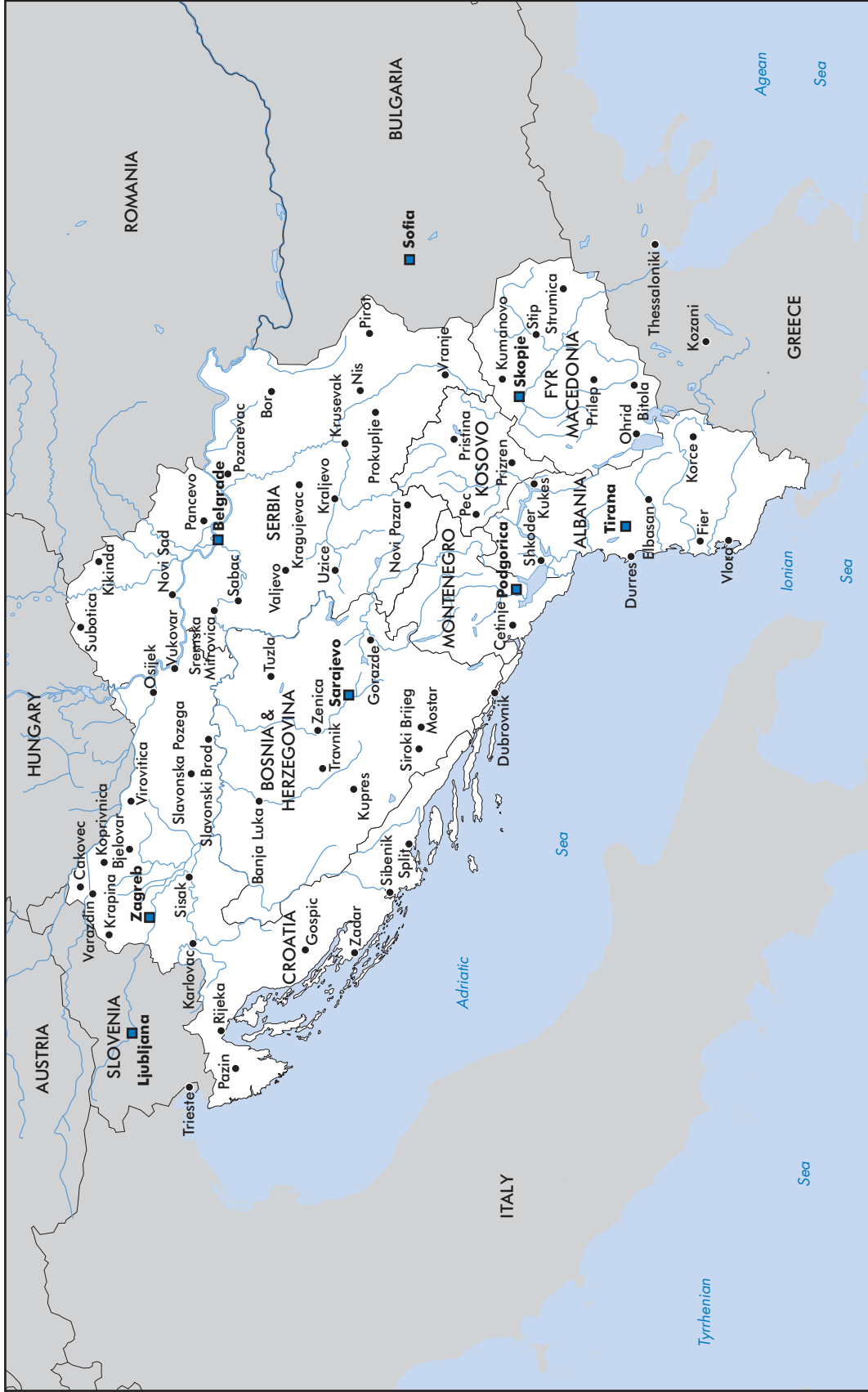
Leaving the reform process unfinished would perpetuate current vulnerabilities and leave fragmented markets open to the risk of being controlled by under-regulated monopolies and dominant suppliers. This Survey underlines the need to follow through with market-based reforms in order to attract and optimise the new investments needed to establish a firm foundation for more sustainable and reliable energy supply. It also suggests that the Western Balkans have much to gain from a regional approach to energy security and greater integration of markets. Enhanced regional co-operation is an effective way to achieve a diversified energy mix and to optimise use of regional supply and production capacities.

Southeast Europe (SEE) as a whole,⁵ including the Western Balkans, has a strategic position on trans-European oil and gas transportation routes. Markets in the region should offer transparent conditions for investment and trade so that potential projects can compete on a commercial basis to demonstrate their viability. In the case of natural gas, a well-functioning market – both in the Western Balkans and in Europe – depends on securing adequate supply and on promoting the enhanced reliability and market performance that can be offered by diversified sources of supply.

4. At the time of preparation of this Survey, Kosovo was under the administration of the United Nations Interim Administration in Kosovo (UNMIK), according to the terms of UN Security Resolution 1244 of June 1999. This territory is referred to as Kosovo in this Survey.

5. For the purposes of this Survey, Southeast Europe refers to the Western Balkans plus Bulgaria, Greece and Romania.

Map 1The Western Balkan region



The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

OVERVIEW

This Survey reviews the energy sectors and policies of the Western Balkan region, with a focus on key policy challenges that need to be addressed over the next five to ten years (a summary of these challenges is included in this Overview). Geographically, this Survey covers:

- Albania
- Bosnia and Herzegovina
- Croatia
- Former Yugoslav Republic of Macedonia⁶
- Montenegro
- Serbia
- Kosovo under UN administration⁷

Much of the energy infrastructure in the Western Balkans was damaged during the conflicts related to the break-up of the Socialist Federal Republic (SFR) of Yugoslavia in the 1990s. The rebuilding process has been long and difficult. Consequently, these countries have initiated energy reforms at a later stage than other European economies in transition. Electricity systems in some parts of the region remain fragile: low system reliability and low efficiency impede economic recovery. Reliable and affordable energy supply is crucial for economic development and social welfare across the Western Balkan region.

This Survey is structured in a way to help the reader understand the key energy challenges facing the region as a whole, and to assess the main energy features of each market. It includes analysis of energy policy challenges as well as recommendations on the development of sound and comprehensive energy strategies and policies.

Following this overview, the Survey offers insight and information on three cross-cutting regional issues:

- Energy co-operation and trade
- Oil and gas transportation in Southeast Europe⁸
- Energy and poverty

Subsequent chapters examine the current state of the energy sector in each individual market, focusing on six main areas:

- Domestic energy policy and institutional reform
- Market reform and regulations
- Energy security
- Energy efficiency

6. Admitted to membership of the United Nations under General Assembly Resolution 47/225 as the Former Yugoslav Republic of Macedonia. It is referred to as FYR Macedonia in this Survey.

7. At the time of preparation of this Survey, Kosovo was under the administration of the United Nations Interim Administration in Kosovo (UNMIK), according to the terms of UN Security Resolution 1244 of June 1999. This territory is referred to as Kosovo in this Survey.

8. The Western Balkans plus Bulgaria, Greece and Romania.

- Energy and the environment
- Developments within energy sub-sectors (coal/lignite, oil, gas, electricity, heat and renewable energy)

The entire Western Balkan region has subscribed to the Energy Community Treaty,⁹ which aims to create a regional energy market compatible with the internal energy market of the European Union. The Treaty provides an essential framework for regional co-operation and integration; however, much work still needs to be done to implement the commitments made under the Treaty.

The Western Balkans are strategically located between hydrocarbon-rich regions (including Russia, the Caspian basin and the Middle East) and key energy-consuming regions of Western and Central Europe. Thus, the Western Balkan region is well positioned to play an important role in the transit of hydrocarbon resources and in the diversification of oil and gas supply, both for the region itself and for Europe as a whole. At present, gas markets in the Western Balkans are small or non-existent but have potential for strong growth.

Many markets in the region depend heavily on lignite for electricity generation. Cost-effective expansion of generating capacity would produce a more diversified mixture, including more efficient lignite power plants, gas-fired combined cycle and CHP, and renewables including hydropower, with the balance being determined by the prevailing prices for fuel and for trading of CO₂. This would support a more sustainable energy future for the region and would lower its carbon intensity.

THE ECONOMIC LANDSCAPE

The Western Balkan region includes two EU candidate countries (Croatia and FYR Macedonia, which have started accession negotiations), four potential candidate countries (Albania, Bosnia and Herzegovina, Montenegro and Serbia), and a territory (Kosovo) whose status had yet to be determined at the time this Survey was conducted. The region is of key importance to the European Union because of its location; this makes it imperative for EU countries to support post-conflict reconciliation and development. The EU Stabilisation and Association Process is designed to encourage and support domestic reform. In the long run, this process offers the prospect of full integration into the European Union, provided that potential candidates meet certain political and economic conditions.

The region suffered heavily during the violent conflicts of the 1990s. All the energy markets require significant domestic and foreign investment to refurbish existing infrastructure and to build new energy facilities for production, generation, transmission and distribution. At the same time, these countries need to demonstrate their political

9. The Energy Community Treaty entered into force in July 2006 with the following parties: the European Community, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Montenegro, Romania, Serbia and Kosovo. Romania and Bulgaria joined the European Union in January 2007, and have since been classed as 'participants' in the Community, along with other EU member states. Moldova, Norway, Turkey and Ukraine were granted observer status in November 2006, as was Georgia in December 2007.

stability and economic reform to compete successfully within the world market for investment capital.

The markets of the Western Balkan region are diverse in terms of their size, wealth and development (Table 1). Serbia is the largest and most populated country (accounting for one-third of the region's population); Montenegro is the smallest (less than 3% of the regional total). Croatia is the second most populated (18%), with the largest GDP (45% of total) and highest GDP per capita. Overall, economies across the region have sustained rapid economic growth (averaging 4.5% in 2005 and 4.8% for the period 2000-2006). However, unemployment remains high.

Table 1Main economic data across the Western Balkan region, 2005

	Population million	GDP billion USD (2000)	GDP PPP billion USD (2000)	GDP (PPP) per Capita (USD)	Rate of GDP growth (%)	Unemployment
Albania	3.13	4.79	14.80	4 700	4.5%	13%
Bosnia and Herzegovina	3.91	6.44	25.80	6 600	5.0%	40%
Croatia	4.44	23.16	51.55	11 600	4.3%	13%
FYR Macedonia	2.03	3.84	13.03	6 400	3.6%	37%
Montenegro	0.63	2.10	3.80	6 000	8.0%	28%
Serbia	7.40	8.77	40.50	5 500	5.5%	20%
Kosovo	2.40	2.00	4.80	1 600	-1.0%	40%
Total	23.90	51.10	154.28	-	-	-

Note: Data on Serbia are based on the official submission of the Ministry of Mining and Energy of Serbia. For the purpose of this Survey, data directly from the administrations in Montenegro and Kosovo were used. Serbian GDP PPP data are based on the CHELEM¹⁰ database (as of February 2008).

Sources: IEA statistics; IMF; OECD; MONSTAT; CHELEM; Ministry of Mining and Energy of Serbia; UNMIK.

THE ENERGY LANDSCAPE

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

A second common feature is that all Western Balkan markets depend heavily on hydrocarbons imported from outside the region. Shared infrastructure also creates a high level of interdependence within the region itself (*e.g.* all countries participate in extensive daily and seasonal exchanges of electricity; Serbian oil refineries rely on deliveries through the Croatian pipeline network).

10. Information on the CHELEM database is available at www.cepii.fr/anglaisgraph/bdd/chelem.htm.

Table 2Main energy data across the Western Balkan region, 2005

Mtoe	TPES	Domestic production	Imports	Exports	Net imports	Import dependency	Total final consumption
Albania	2.4	1.2	1.2	0.0	1.2	51%	2.1
Bosnia and Herzegovina	5.0	3.3	1.9	0.3	1.6	32%	3.0
Croatia	8.9	3.8	7.8	2.6	5.2	58%	7.1
FYR Macedonia	2.7	1.5	1.6	0.3	1.2	45%	1.7
Montenegro	1.0	0.6	0.5	0.1	0.4	40%	0.8
Serbia	16.7	11.4	6.4	1.1	5.3	32%	9.7
Kosovo	2.0	1.2	0.9	0.1	0.8	40%	1.0
Total	38.7	23.0	*	*	*	*	25.4

* Not summed up to avoid double counting due to intra-regional trade.

Notes: Import dependency is calculated as net imports/TPES.

Data on Serbia are based on the official submission of the Ministry of Mining and Energy of Serbia. For the purpose of this Survey, data directly from the administrations in Montenegro and Kosovo were used.

Sources: IEA statistics; MONSTAT; Ministry of Mining and Energy of Serbia; UNMIK.

At the same time, there are significant differences across the region in terms of total primary energy supply (TPES), energy mix, volumes of domestic energy production, and energy import dependence (Table 2).

Oil and gas production is limited and located mostly in Albania, Croatia and Serbia. Natural gas production in Croatia is the region's most significant hydrocarbon resource, with production of 2 bcm per year, accounting for 80% of Croatia's natural gas consumption. Montenegro shows some small potential for offshore oil and gas development. To date, only Croatia and Serbia are significant consumers of natural gas; markets in Bosnia and Herzegovina and FYR Macedonia are small, whereas Albania, Montenegro and Kosovo are not gasified.

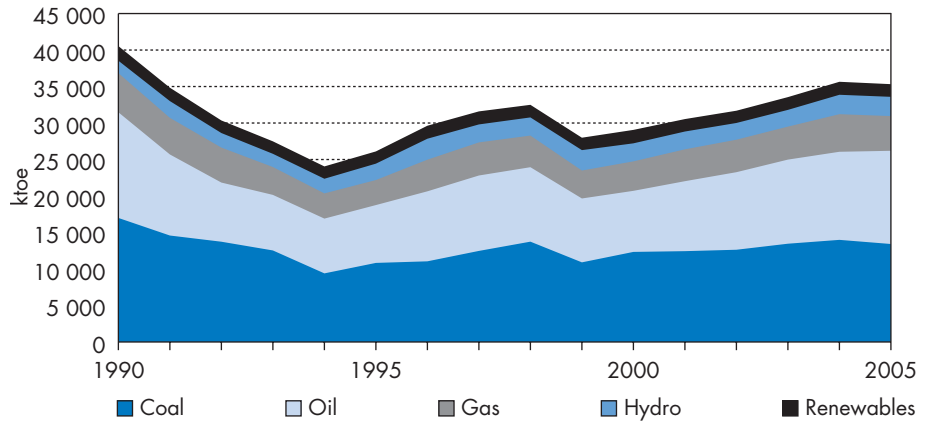
Coal (mostly lignite) dominates the primary energy supply in the Western Balkan region, accounting for 38% of TPES in 2005, followed by oil (37%, which has risen rapidly since 2001), natural gas (13%), hydropower (7%) and other renewables (5%) (Figure 1). By 2005, the TPES of the region had reached almost 90% of the 1990 level.

A snapshot, taken in the year 2005, of inputs to the electricity mix shows significant diversity across the region (Figure 2). Serbia, which has the largest total installed generation capacity (7.1 GW), depends mainly on lignite-fired thermal power plants (TPPs). Despite considerable overhauls and improvements (supported by donors), the overall fuel efficiency and utilisation rates of Serbia's TPPs remain low. This is common to lignite power plants across the region and an important priority for future assistance. Bosnia and Herzegovina and FYR Macedonia also rely heavily on lignite-powered generating capacity; Kosovo is almost entirely dependent on lignite for electricity generation.

By contrast, Albania derives almost all of its electricity generation from hydropower. In 2005, Albania's installed generation capacity was about 1.5 GW with three key

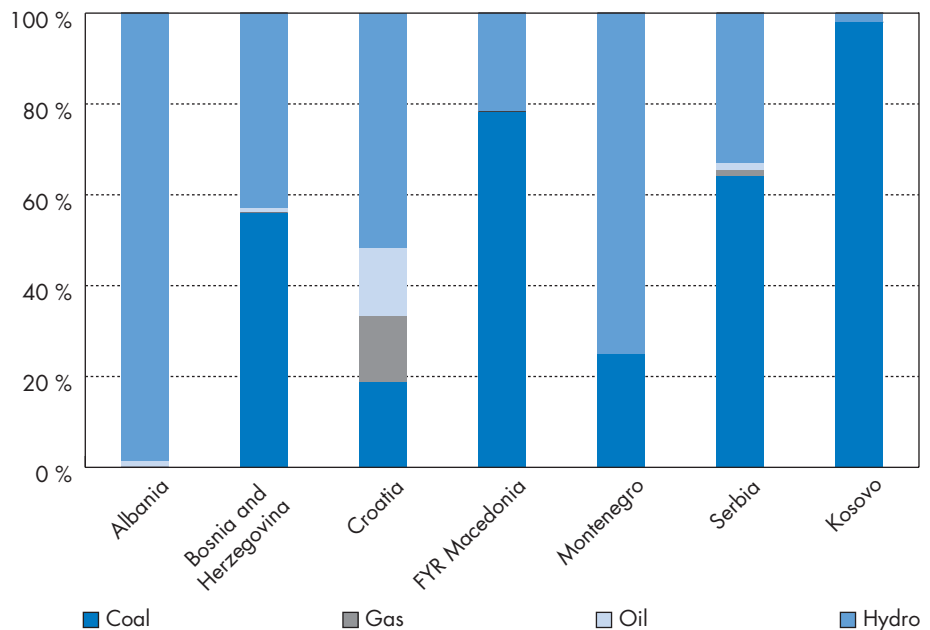
hydropower plants (HPPs) providing more than 85% of total generation. Albania's electricity plants were built between the 1960s and the early 1980s, using mostly Soviet or Chinese technology; their condition in 2008 reflects a severe lack of maintenance. Bosnia and Herzegovina, Croatia and Montenegro also have significant hydropower capacity.

Figure 1 Total primary energy supply for the Western Balkan region, 1990-2005 (ktoe)



Note: TPES excludes electricity trade.
Sources: IEA statistics; MONSTAT; Ministry of Mining and Energy of Serbia; UNMIK.

Figure 2 Share of electricity output by fuel across the Western Balkan region, 2005 (%)



Sources: IEA statistics; MONSTAT; Ministry of Mining and Energy of Serbia; UNMIK.

Until 1992, the electricity network of the former SFR Yugoslavia was interconnected with the Union for the Co-ordination of Transmission of Electricity (UCTE) – *i.e.* the Western European grid. Energy infrastructure in Serbia, Kosovo and Bosnia and Herzegovina, which had already suffered from a lack of maintenance, was severely damaged during the wars of the 1990s. In 1992, the grid was separated. In the west, Croatia and the Federation of Bosnia and Herzegovina (*i.e.* the southern/western part of Bosnia and Herzegovina) remained connected to UCTE Zone 1. The Republika Srpska (*i.e.* the northern/eastern part of Bosnia and Herzegovina), Serbia and FYR Macedonia, together with Bulgaria, Romania and Greece, made up the South-east European UCTE Zone 2.

Since the early 2000s, electricity transmission system operators (TSOs) in the region have prioritised the rehabilitation of national grids and interconnections, an effort that received support from governments, donors, the UCTE and the European Transmission System Operators (ETSOs). These joint efforts led to the reconnection (in 2004) of the two sub-regional networks (UCTE Zones 1 and 2) and their re-synchronisation with UCTE. This has improved security of supply, diversified supply and exports options, and enabled further trade within the region and beyond its borders.

Oil refineries in the Western Balkan region lacked adequate maintenance and investment to modernise equipment and processing during the 1990s, and oil infrastructure was damaged in the conflicts (*e.g.* in 1999, Serbia's two oil refineries, in Pancevo and Novi Sad, and oil tank capacities were demolished). At present, only 40% of regional refinery capacity is in use. Refineries operate with low energy performance and high environmental impact, yet their output is also of low quality. The refineries often fail to comply with EU standards for fuel quality and emissions. Recent decisions to invest in modernising and expanding refineries in Bosnia and Herzegovina and Croatia should increase production (currently 10 Mt/y) and advance progress toward meeting EU specifications.

KEY REGIONAL ENERGY CHALLENGE 1: CAPACITY BUILDING AND POLICY FORMULATION

The energy policy objectives now being pursued in the Western Balkans are largely compatible with the goals and principles of the IEA, and include a medium-term vision to build sustainable, reliable and efficient energy sectors, as well as patterns of energy use, that support development and recovery. This stronger alignment of goals and principles has facilitated the launch of energy reforms, including the re-structuring of state energy companies, the adoption of new regulatory frameworks, and the implementation of policies to enhance energy efficiency.

Reforms in another key area – creating more open, liberalised and competitive energy markets – are still at an intermediate stage of development and progress. These reforms are particularly challenging because of the need to link them with goals for high energy efficiency and low environmental impacts. Public energy administrations and policies are yet to be fully established in several countries; countries that have such

policies in place are not always able to ensure they are effectively enforced. Croatia is the most advanced in many respects but still has progress to make, notably on the implementation side.

Energy administrations need to be reinforced to ensure that they have the capacity and means to develop strategies and implement policies in a wide range of areas, including not only market regulation but also energy efficiency, energy security, energy poverty and the impact of energy use on the environment. Understaffing of energy administrations (including regulators) is a serious problem across the region: employment conditions need to be adequate to attract and retain staff with the required skills and knowledge. Institutions also need to build capacity and enhance mechanisms to increase transparency and public consultation on strategy and policy development, particularly in seeking input from academia, energy and environmental associations, and consumer organisations.

Reliable and detailed data are critical for informed policy decision making, a well functioning market and effective regulation. This implies a high level of expertise in the collection, analysis and dissemination of energy statistics on both supply and demand sides. Overall, energy data systems in the Western Balkans are weak and fragmented. As a result, reliable and comprehensive national energy balances or data sets are not available on a regular basis. This lack of data has prevented the development of national and regional economic tools (energy demand forecasts, least-cost plans, etc.) to assist policy, regulatory and investment decision making. Relevant public authorities, supported by international donors, are making efforts to upgrade energy data systems to international standards by 2009.

Recommendations.....Building institutional capacity and improving policy formulation

For energy reforms to be effective and successful, they should be part of a coherent overall energy strategy. Formulation, analysis and enforcement of both strategy and policy depend, in turn, on adequate staff and financial resources, as well as reliable and regular statistical data.

- *Authorities across the Western Balkans should establish comprehensive and coherent energy strategies, balancing the policy objectives of energy security and of economic and environmental performance in convergence with EU policy and legislation. The elaboration of an energy strategy should be based on effective consultation in line with the Aarhus Convention,¹¹ along with monitoring of its implementation.*
- *Energy policy should be co-ordinated with other policy areas such as the environment, housing, transport, social and regional development, and with research and development in science and technology.*

11. The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters; adopted in June 1998 in Aarhus (Denmark) at the Fourth Ministerial Conference in the 'Environment for Europe' process (www.unece.org/env/pp).

- *The reform process must seek to complete the separation of various government roles in the energy sector (i.e. as policy maker, regulator and owner of state companies).*
- *In order to fulfil an increasingly complex range of tasks at national and regional levels, it is necessary to provide adequate funding and training for the staff of ministries, regulators and other government agencies with responsibilities in the energy sector.*
- *Despite some progress in recent years, more needs to be done to provide statistical bodies of the region with the capacity to collect, process and publish comprehensive sets of energy statistics in accordance with Eurostat/IEA/UNECE methodology.*

KEY REGIONAL ENERGY CHALLENGE 2: ENERGY MARKET REFORM AND REGULATION

Energy reforms are still at early or intermediate phases in the Western Balkans. The two EU candidate countries, Croatia (in particular) and FYR Macedonia are the most advanced in many respects but still have progress to make, notably with regards to implementation. Across the region, reform of the electricity sector has advanced most quickly: all the markets now have primary legislation for this sector, as well as a regulatory authority. By contrast, Croatia and Serbia (to a lesser extent) are the only countries with well-developed legislation for the gas sector.¹²

In 2002, the European Commission put forward proposals to establish a regional electricity market in Southeast Europe (SEE), which would be compatible with the internal energy market of the European Union. The same year, a memorandum of understanding (the Athens Memorandum) was signed,¹³ with the European Commission and the Stability Pact¹⁴ acting as sponsors. The approach was extended to natural gas in 2003. The “Athens Process”, as it became known, led to the negotiation and signature (in 2005) of the Energy Community Treaty, which provides a legal framework for regional integration and trade on the basis of a competitive energy market that is compatible with EU rules. Since 2002, the process of energy market and regulatory reform in the Western Balkans has been driven by the Athens Process and the Energy Community Treaty.

12. For details on the situation as of November 2007, see the *Report on the Implementation of the Acquis under the Treaty Establishing the Energy Community*, presented to the Ministerial Council Meeting of the Energy Community on 18 December 2007. The report is available online at: www.energy-community.org.

13. The signatories of the Athens Memorandum were: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Federal Republic of Yugoslavia, Greece, Italy, FYR Macedonia, Romania, Turkey and Kosovo (signatory pursuant to UN Resolution 1244).

14. The Stability Pact was launched in 1999 as an international conflict-prevention effort. It promotes regional co-operation and integration in Southeast Europe (www.stabilitypact.org).

Recommendations.....Implementing energy market reform and regulation

A co-ordinated process of energy market reform and effective regulation is essential to sustainable economic development and reconstruction in the Western Balkans. Failure to follow through and implement market reforms carries the risk of perpetuating current weaknesses in energy infrastructure and supply. Robust, market-based regulatory frameworks are essential to attract new investment (in generation, transmission and storage), to ensure system reliability, and to guard against the abuse of market power by incumbents and/or dominant external suppliers.

- *Public authorities must establish a clear and effective market-based regulatory framework for the energy sector, as well as independent and empowered regulatory bodies. Primary (where this is outstanding) and secondary legislation should be adopted in order to meet commitments made under the Energy Community Treaty. Such legislation must be implemented effectively. Provisions on unbundling of monopoly activities (e.g. electricity and gas transmission and distribution) and regulated third-party access are of key importance for a well-functioning competitive market.*
- *The re-structuring process for state-owned energy companies should be continued in order to ensure transparency and accountability, and to improve economic, social and environmental performance.*
- *Credible and predictable frameworks for private investment are needed, along with mechanisms for timely, judicial remedy in case of disputes. These are critical elements to build investor confidence.*
- *Energy prices should be adjusted to adequately cover costs; cross-subsidies amongst consumers should be progressively eliminated and measures put in place to enforce payment discipline. Separate programmes should be established to provide targeted and effective support to vulnerable segments of the population (see chapter on Energy and Poverty).*

KEY REGIONAL ENERGY CHALLENGE 3: ENERGY SECURITY

Lack of reliable electricity supply is a serious obstacle to economic development and investment in the Western Balkan region. A contributing factor is the erratic electricity consumption pattern of the poorer parts of the population,¹⁵ which exacerbate seasonal and weather-related peaks in electricity demand (particularly for space and water heating). Extreme peaks can lead to black-outs and/or electricity rationing. To ensure continued service, vertically integrated utilities are forced to maintain considerable reserve capacity, which reduces their potential for exports and revenues. Lack of reliable electricity supply has a deleterious effect on industry and the livelihood of

15. Poorer parts of the population depend mostly on fuelwood for their heating needs. However, during the winter heating season, electric heaters are often used when fuelwood demand spikes or fuelwood supply becomes limited.

individuals. Also, low tariffs and payment discipline limit revenues across the electricity sector, having a negative impact on maintenance and investment.

Dependence on imported energy is certain to remain high in the case of oil, and to increase with the projected growth of demand for natural gas. Thus, authorities across the region are monitoring their security of supply,¹⁶ and, where possible, taking steps to diversify sources of supply and create links to new bulk gas transmission lines. Market actors need to assess supply options on a commercial basis. At the same time, public authorities should be attentive to the benefits of having multiple sources of supply, and prioritise those projects that can enhance energy security by improving the operation of a competitive energy market.

Building an open and competitive regional energy market, based on the principle of non-discrimination, is an overall objective for the region. Foreign investment and foreign ownership of energy assets will likely play an important role in regional reconstruction and development. However, authorities need to be aware of the risks that arise when a significant share of national oil and gas assets is sold to a single foreign company. A case in point is the anticipated sale of a controlling stake in the Serbian oil-refining monopoly, Naftna Industrija Srbije (NIS), to Russia's Gazpromneft.¹⁷

In the absence of robust regulatory structures, the possibility that a single company – of any nationality – might control the major part of oil, gas or electricity assets in a market reduces the likelihood of developing market-based approaches to energy policy. Regulatory and anti-monopoly frameworks need to be reinforced across the Western Balkan region to ensure a sustained commitment to market openness and transparency – including the possibility for competing suppliers to enter the market and to have access to networks and storage facilities.

IEA experience has shown that a comprehensive and coherent national energy policy is critical to defining and realising the objectives, priorities, means, institutional organisation and responsibilities for energy security. Precise functions will depend on the circumstances of each market, but an energy security policy should clearly define advisory and co-ordination roles for emergency situations, establish the mechanisms for demand constraint measures, and give one agency a clear mandate to monitor the establishment and management of strategic oil stocks.

Renewable energy sources can make an important contribution to regional energy supply and security. In the Western Balkan region, hydropower and biomass already account for significant shares of the electricity mix and household heating needs, respectively. Illegal logging and inefficient use of fuelwood need to be addressed in order to ensure that this resource is used without endangering the environment. To enhance energy security, countries in the Western Balkan regions should explore the significant untapped potential of hydropower (particularly small- to medium-sized

16. Article 29 of the Energy Community Treaty required contracting parties to submit statements on monitoring security of supply one year after the entry into force of the Treaty, *i.e.* July 2007. These statements cover diversity of supply, technological security and geographical origin of imported fuels. They are to be updated every two years and are available online at: www.energy-community.org.

17. See the sections on *Energy Security* and on *Crude Oil and Oil Products* in the Energy Policy Survey of Serbia.

HPPs) and other renewable energy sources (notably biomass and solar). Many of these can be developed on a commercial basis and used in de-centralised ways.

Recommendations.....Enhancing energy security

Integration and reform, the main themes underpinning the Energy Community Treaty, are also the keys to enhanced energy security in the Western Balkans at both national and regional levels. In this context, public authorities should:

- *Strengthen tools for energy security, including policies and programmes to support the diversification of energy sources and imports, and enhance energy efficiency; pursue commercial development of renewable energy sources, particularly biomass (agriculture and wood waste), solar water heaters and small hydropower.*
- *Develop institutions and systems for emergency and crisis management in line with EU standards, including the development of emergency oil stocks.*
- *Ensure that policy is in place for a ‘supplier of last resort’ once electricity and gas markets are liberalised.*

KEY REGIONAL ENERGY CHALLENGE 4: ENERGY EFFICIENCY

The Western Balkan region is characterised by relatively high energy intensities (Table 3): levels range up to 2.5 times higher than the average for OECD Europe (which is 0.15 toe per thousand USD of GDP). This can be attributed to three main factors: the degraded state of the energy infrastructure; high energy losses in transformation, transmission and distribution; and inefficiency in the end-use sector. Based on the ratio of total final energy consumption to total primary energy supply (TFC/TPES), overall efficiency of the energy systems range from lows of 50% (Kosovo) and 58% (Serbia and Montenegro) to a regional high of 80% (Croatia).

Croatia has one of the more energy-efficient economies in the Western Balkan region, with an energy intensity of 0.17 toe per thousand USD of GDP (PPP year 2000), which is just over 10% higher than the average for OECD Europe. Nevertheless, Croatia’s estimated energy saving potential is significant – in the range of 25% of TPES.¹⁸ Extrapolating such levels across the region would produce savings of around 5 Mtoe, which is equivalent to Serbia’s annual imports of crude oil and natural gas combined. Reducing the high network losses (22% of TFC in the region) in the electricity sector is another important source of energy saving. The region could save an additional 5 TWh per year by bringing these losses down to the level of Croatia (the best regional performer), which has losses of 14% of TFC.

18. These figures are based on studies, audits and estimates of the Croatian National Energy Programmes and are also found in the *In-depth Review of Energy Efficiency Policies and Programmes of Croatia* (Energy Charter Secretariat, 2005).

Table 3Main energy and environment indicators across the Western Balkan region, 2005

	TPES/GDP in toe per USD thousand (PPP)	Electricity* consumption in TWh	Electricity intensity in kWh/GDP (PPP)	CO ₂ in Mt	Carbon intensity in CO ₂ /GDP (PPP)
Albania	0.16	3.7	0.25	4.6	0.31
Bosnia and Herzegovina	0.19	9.1	0.35	15.9	0.62
Croatia	0.17	15.4	0.30	20.8	0.40
FYR Macedonia	0.21	6.9	0.53	8.3	0.64
Montenegro	0.26	3.8	1.00	2.5	0.66
Serbia	0.41	29.1	0.72	50.4	1.24
Kosovo	0.42	3.2	0.67	3.9	0.81

* Production + imports – exports – transmission/distribution losses.

Note: Data on Serbia are based on the official submission of the Ministry of Mining and Energy of Serbia. For the purpose of this Survey, data directly from the administrations in Montenegro and Kosovo were used. Serbian GDP PPP data are based on the CHELEM database (as of February 2008).

Sources: IEA statistics; IMF; OECD; MONSTAT; CHELEM; Ministry of Mining and Energy of Serbia; UNMIK.

All markets in the region would benefit from enhanced efforts on the demand side, particularly in terms of developing synergies with other sectoral policies (e.g. security and environment) and integrating energy efficiency into transport and building policies. These policies should be backed up by robust action plans for policy implementation with ambitious quantitative and sectoral objectives. The effort should be supported by a national energy agency and a network of local agencies.

Recommendations.....Improving energy efficiency

The Western Balkan region has significant potential to improve energy efficiency. Effective policies and programmes are needed to realise this potential, and should be integrated into the overall strategy for economic development. In particular, this Survey urges attention to:

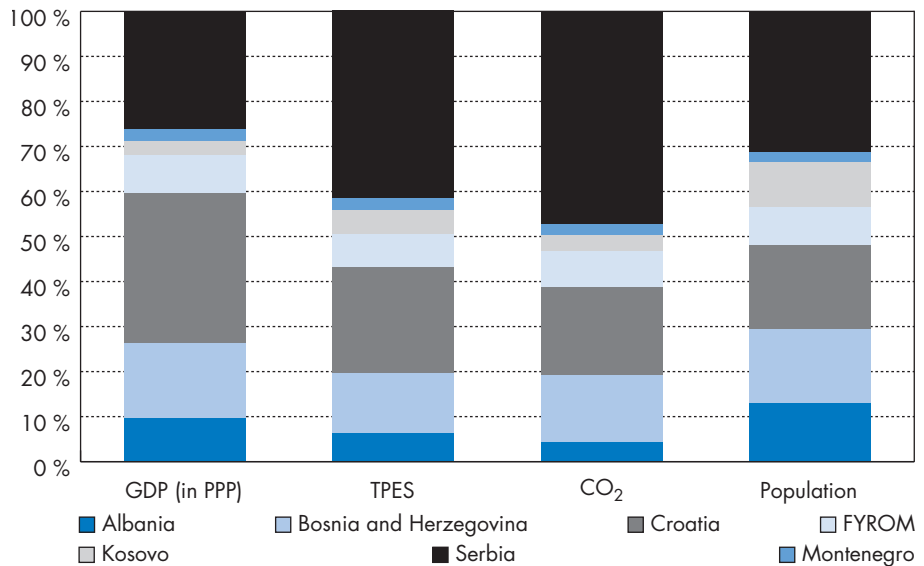
- *Adopting robust action plans for energy efficiency with clear timelines and responsibilities; ensuring these action plans are backed by national and local energy agencies with adequate human and financial resources.*
- *Developing a system to monitor implementation of efficiency programmes and to assess their cost effectiveness.*
- *Accelerating the harmonisation of regulation with the EU *acquis communautaire* and ensuring the effective implementation of regulations, notably in relation to buildings and space heating, and to labelling schemes. Public authorities should take the lead in procuring energy-efficient products and technologies, and adopting the most energy efficient standards for public buildings.*
- *Setting up or reinforcing financing schemes to support energy efficiency, with sufficient direct funding (e.g. a levy on pollutant emissions).*

KEY REGIONAL ENERGY CHALLENGE 5: ENVIRONMENTAL POLICY AND CLIMATE CHANGE

Current patterns of energy use in the Western Balkans lead to significant impacts on the environment. The region as a whole has high carbon intensity due to its heavy dependence on lignite. Other environmental concerns include pollution from energy combustion (*e.g.* indoor and local air pollution from inefficient and improperly used stoves), deforestation and land degradation (from excessive use of wood for fuel). These patterns of energy use also have harmful consequences for human health – often with a disproportionate effect on poorer parts of the population.

In 2005, CO₂ emissions in the Western Balkan region ranged from a low of 3.9 Mt in Kosovo to a high of 50.4 Mt in Serbia, which accounts for almost half the region’s emissions (Figure 3). Serbia also has the highest CO₂ intensity, reflecting the fact that it produces a smaller volume of GDP in PPP terms. Croatia, by contrast, emits a much smaller volume of CO₂ compared to its larger share of regional GDP. Albania emits the lowest amount of CO₂ and its GDP is less CO₂ intensive, reflecting the fact that its electricity is almost entirely based on hydropower.

Figure 3..... Cross-regional comparison of GDP in PPP, TPES, CO₂ emissions and population, 2005



Sources: IEA statistics; IMF; OECD; MONSTAT; CHELEM; Ministry of Mining and Energy of Serbia; UNMIK.

Governments in the region are aware of how energy production and use affect the environment. Many countries have developed and implemented national action plans to tackle tough environmental challenges. Many have also become signatories to various international environmental agreements and are working hard to meet their commitments. Unlocking the region’s huge energy efficiency potential and diversifying the energy mix – including the commercial development of renewable energy sources – will help to mitigate environmental impacts.

Recommendations.....Prioritising environmental and climate change policies

Public authorities in the Western Balkan region should give a high political priority to environmental and climate change issues associated with energy production and use. Specifically, they should make efforts in the following areas:

- *Ensure the adoption and implementation of national environmental action plans and multi-sector air quality protection plans; establish quantitative targets and ensure adequate monitoring.*
- *Apply relevant regional and international agreements, notably EU standards (including the EU Directive on large combustion plants) and limits on urban pollutant emissions, as well as the Convention on Long-Range Trans-boundary Air Pollution (CLRTAP).*
- *Monitor the development of modern environmental control technologies and governance practices relating to lignite power stations; consider introducing more advanced generation technology wherever it is economically feasible.*
- *Adopt a climate change strategy and/or action plan, including cost-effective measures to reduce CO₂ emissions; provide adequate financial resources; prepare for effective participation in the EU Emission Trading Scheme and in projects using the flexibility mechanisms of the Kyoto Protocol.*

KEY REGIONAL ENERGY CHALLENGE 6: ENERGY POVERTY

Energy and poverty in the Western Balkans are interrelated in complex ways. Various studies, including those of the UNDP (2004), estimate more than 16% of people in the Western Balkan region are exposed to energy poverty, meaning they do not have access to sufficient energy services to ensure a healthy lifestyle for themselves and their families.¹⁹ The cumulative effect of high energy prices and high energy consumption (which is exacerbated by inadequate building insulation and low-efficiency appliances, particularly stoves and boilers) puts heavy pressure on the household budget of poorer segments of the population, often leaving insufficient funds for adequate food, clothing and education.

More efficient use of energy would go a long way to reducing the heavy share of energy products in the basket of basic household needs. In addition, providing poor families with more energy-efficient devices, along with appropriate information and advice, could support other types of social assistance programmes.

19. See the *Poverty Reduction Strategy Papers* (PRSPs) for various countries, as well as country reports prepared by the International Monetary Fund.

Governments in the region have used various tools to address the issue of energy poverty. Electricity prices in Bosnia and Herzegovina are uniformly low, facilitating access to energy services but distorting the operation of the energy market. Albania, Serbia and Kosovo have applied block electricity tariffs with a lower first-tier level of pricing. These are designed to provide households with a minimum of electricity supply at affordable prices while avoiding a subsidy on all consumption. In FYR Macedonia, the government intends to replace general energy subsidies (which result from relatively low electricity prices for all consumers) with a more targeted social assistance scheme. In Montenegro, electricity tariffs reflect a cross-subsidy between industry and households; the government plans to eliminate the cross-subsidies over the next five years and replace them with targeted subsidies for the poor. Household surveys in Croatia indicate that electricity prices do not have a significant impact on household budgets, reflecting the relatively low use of electricity for space and water heating.

The impacts of energy poverty extend beyond the energy prices and household budgets. They also include negative health impacts – and health care costs – associated with burning fuelwood in inefficient wood stoves. In addition, poorer households often live closer to industrial areas of cities and are, therefore, subjected to the health risks and costs associated with lignite-fired power plants. Unsustainable (and often illegal) wood cutting leads to deforestation, which disproportionately affects poorer segments of the population in rural areas by degrading the productivity of agricultural land.

This Survey assumes that persons living below the national poverty line are also exposed to energy poverty and acknowledges analyses indicating that people living above the national poverty line can also be exposed to energy poverty. Studies show that, in several parts of the region, up to 40% of households are not able to ensure sufficient space heating and also suffer from indoor air pollution caused by inefficient cooking stoves.

Countries with a high incidence of energy poverty face difficult policy constraints and challenges. The lack of reliable energy statistics makes it even more difficult to establish effective policies to alleviate the situation and to set the framework for sustainable energy development. Public authorities should support regular national energy poverty surveys in order to facilitate appropriate analyses and regional comparisons.

Recommendations.....Reducing energy poverty

Energy poverty is a significant problem in parts of the Western Balkans. It is exacerbated by – and also contributes to – the unreliability of the energy system. Programmes to reduce energy poverty should be integrated into energy and energy efficiency strategies, and also linked to investments in generation and infrastructure. Public authorities should:

- *Co-ordinate energy policies and programmes with national poverty reduction strategies.*

- *Tackle energy poverty within the overall context of cost-reflective energy prices, using targeted support or subsidies for vulnerable segments of the population. Block tariffs can be an appropriate policy response in some markets.*
- *Introduce programmes to increase energy efficiency (e.g. through better building insulation, more efficient wood/ LPG stoves) as part of a coherent approach to reducing energy poverty.*
- *Take steps to address energy poverty issues associated with the affordability of fuelwood and its impact on electricity demand and household expenses. Also consider related problems such as indoor and outdoor air pollution, deforestation and land degradation. Introduce measures to limit illegal logging and fuelwood trade, along with programmes to increase energy efficiency of wood stoves and the use of wood waste.*

KEY REGIONAL ENERGY CHALLENGE 7: ENERGY CO-OPERATION AND TRADE

Due to historic political tensions and unresolved commercial issues, energy co-operation within the Western Balkan region was limited in scope and intensity in the second half of the 1990s. Countries were focused on national problems, in particular how best to re-establish full energy services after the devastation of internal and regional conflicts. In an effort to catch up with reform processes that were well advanced in the neighbouring countries of Central Europe, they also sought to re-establish (or, indeed, establish for the first time) institutions focused on energy reform and regulation.

Starting in 1996 and particularly after 2001, regional co-operation became more active. This was largely due to the support of international donors, bilateral and regional relations, and the influence of the Athens Process. Initially focused on electricity interconnections, relations extended to a broad range of areas, most notably the establishment of a common regulatory framework and the construction of new supply and transmission infrastructure. This co-operation highlighted the strong synergies and complementarities of the region's energy systems – and of public energy policies.

Energy exchange and trade at the regional level can play a key role in supplying secure, diversified and, often, least-cost energy, thereby contributing to the stability and economic development of the Western Balkans and of Southeast Europe. A solid regional energy market will also have greater capacity to attract the investments needed to develop the oil and gas infrastructure. This will help to diversify the region's energy mix and facilitate the development of alternative transportation routes for energy supplies to Central and Western Europe.

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

provides a regulatory framework for the energy sector of the Western Balkan region that is compatible with the internal market of the European Union. It also established a mechanism for co-operation and dialogue among governments, regulatory authorities, industry and international donors. The entry into force of the Energy Community Treaty and the creation of functioning institutions – in particular the Energy Community Secretariat – has strengthened the reform process by providing a focal point and a central co-ordinator.

Given a legacy of mistrust and conflict in the Western Balkan region, individual countries might be tempted (politically) to aim for self-sufficiency in power generation and to limit reliance on regional electricity trade. Such temptation comes with a significant price tag attached – a price that the region can ill afford. In reality, relatively few investors are attracted to the small, individual markets of the Western Balkans. Regional scope and scale are necessary to create a large enough market for commercial interest. A 2005 Power Generation Investment Study conducted for the World Bank²⁰ estimated that operating the SEE power system as a single, fully interconnected network would reduce investment requirements and save approximately EUR 3 billion – or around 10% of total electricity expenses during the period 2005-20. The savings would derive mainly from reducing the need for new power generating capacity. The Energy Community, supported by the European Union and by international donors, can help to realise these gains in efficiency.

There has been major progress in refurbishing and strengthening the electricity infrastructure in the region, particularly the re-interconnection of the various grids with the UCTE. Nonetheless, multiple physical and market barriers limit the opportunity for new market entrants and competitive electricity supply. Some of these barriers include relatively low levels of regulated end-use tariffs and low collection rates, the continued dominance of vertically integrated companies, and weak market rules. Obstacles to increased regional trade include congestion of cross-border capacities (which are difficult to access for new entrants), a lack of reliable and accessible market data, a lack of regional/cross-border market regulation and enforcement, and an overall lack of transparency. Many of these issues are being tackled through the development of EU-based regulatory frameworks as envisaged in the Energy Community Treaty.

Persistent load shedding and electricity rationing have stalled economic development in some parts of the region. These problems could be alleviated through investment in new generating capacity, effective policies on the demand side, and integrated operation of the Western Balkan power system with sufficient interconnection to power markets outside the region. Such initiatives would also allow the region as a whole to benefit from the respective endowments of its constituent parts, *e.g.* large reserves of relatively cheap coal in some areas, hydropower potential and/or storage capacity in others.

Over time, investment choices are likely to produce a more diversified electricity mix. The legislative framework for environmental issues, greenhouse gas emissions and renewable energy will influence the development of the electricity mix. However, a

20. *Electricity Generation Investment Study for South East Europe* includes the countries covered by this Survey plus Bulgaria and Romania. Published in June 2005, it is available online at: www.worldbank.org.

lack of clarity over the legal and policy framework that will apply in these areas creates uncertainty in the medium term, which could delay investment decisions and hinder development of the region's potential for renewable energy.

Much work remains to be done in the implementation phase of the Energy Community Treaty; this is an essential task to which public authorities in the region and international donors need to remain fully committed. If effectively implemented, the stabilisation and reforms of the energy sector will assist in the long-term, macro-economic revival of the Western Balkan region, contributing to economic growth, enhanced efficiency, lower environmental impacts of energy use and reduced energy poverty.

Recommendations.....*Developing regional co-operation and trade*

A key message of this Survey, and an insight that is at the heart of the Energy Community process, is that the Western Balkans have much to gain from a regional, co-operative approach to energy trade. In this context, public authorities should:

- *Promote the creation of an integrated regional energy market, anchored within the broader European internal market, to achieve a diversified energy mix, improve utilisation of supply and production capacities, and optimise future investments. This objective requires thorough and sustained domestic policy and regulatory reforms, as well as enhanced market transparency.*
- *Ensure a sustained political commitment to the institutions and mechanisms for regional co-operation now in place, primarily through the Energy Community Treaty and with the Energy Community Secretariat acting as focal point and co-ordinator.*
- *Dedicate sufficient resources to ensure that regional and international commitments are implemented in a timely manner.*

KEY REGIONAL ENERGY CHALLENGE 8: OIL AND GAS TRANSPORTATION IN SOUTHEAST EUROPE²¹

The Western Balkan region is strategically located between the resource-rich regions of the Caspian basin and the Middle East, and key energy consumers in Western and Central Europe. Thus, it has potential to play an important role in the transportation of oil and gas to international markets. At present, Russia is a major supplier of oil to Southeast Europe and the dominant supplier of natural gas to these markets.

If all the planned oil and gas transportation projects in Southeast Europe were built, existing transit capacity in the region would more than double over the coming decade.

21. The chapter on Oil and Gas Transportation in Southeast Europe covers the Western Balkans plus Greece, Bulgaria and Romania.

However, many of the proposed oil and gas transit projects are competing for the same sources of oil and gas and the same markets. Thus, it is clear that not all projects currently under discussion or development will go ahead.

With regard to crude oil, there are several pipeline projects that cross at least a part of Southeast Europe. A common characteristic is that they are designed to carry crude oil from Russia and/or the Caspian basin, and are all at least partially justified as means of relieving transport congestion in the Turkish Straits.

With regard to natural gas, the small size of the markets in the Western Balkans makes it difficult (at least at this stage) to envisage building new bulk transmission lines for these markets alone. However, a number of pipeline proposals currently being considered would cross Southeast Europe to supply the main European markets. This opens the possibility for spur lines to supply small but growing gas markets along the route. Diversification of sources of supply is critical to market opening in downstream markets and to establishing a regional gas market as envisaged by the Athens Process.

The development of new natural gas routes (even with modest initial capacities) from the Caspian basin and the Middle East would diversify sources, suppliers and routes for consumers in Europe, including those in the Western Balkans. These projects must prove their reliability and economic viability compared to existing and potential competing routes, as well as against competing supply sources (*e.g.* LNG). They must meet the triple challenge of securing sufficient resources from the Caspian basin and the Middle East, mitigating transit risk, and countering the influence of the incumbent supplier, Gazprom. Based on its very strong resource base in Russia, Gazprom has a variety of commercial tools to slow alternative gas supply development: its influence in the resource-rich Caspian basin; its control over existing transportation routes; its sponsorship of major new projects (*e.g.* South Stream); and its growing presence in downstream transportation and distribution markets. This underlines the need for effective regulation across the region to ensure the operation of an open, transparent and competitive energy market that is accessible to new market entrants.

Public authorities in the Western Balkan region should provide an effective and transparent regulatory framework for investment in and operation of cross-border energy projects. This framework should be consistent with the principles of the Energy Community Treaty and the Energy Charter Treaty.²² Progress in these areas varies across the Western Balkan countries. Some are lagging behind in terms of developing a legal framework for investment and transit (*e.g.* Serbia and Montenegro have not yet acceded to the Energy Charter Treaty). The most advanced countries have established attractive conditions for investment, often through co-ordinated and sustained market reform undertaken in preparation for EU membership.

22. The Energy Charter Treaty is a broad multilateral agreement for the energy sector, which has provisions on investment protection, transit and energy efficiency (www.encharter.org). Albania, Bosnia and Herzegovina, Croatia and FYR Macedonia are parties to the Treaty, as are all other countries along the potential energy supply chain from the Caspian region to Southeast Europe.

Recommendations.....Facilitating trans-European transportation of oil and gas

Southeast Europe is set to play an important role in new oil and gas transportation routes that link existing and new suppliers to the main European markets. Public authorities should carefully assess long-term costs and benefits in relation to proposed projects and potential partners. They should also act to strengthen regulatory institutions and frameworks in line with commitments arising from membership in the European Union, the Energy Community Treaty and the Energy Charter Treaty.

- *Clear and transparent rules for investment and trade will facilitate assessment of various projects on a comparable and commercial basis. Countries in the region that have not done so should accede to the Energy Charter Treaty as a means of reducing the risks associated with cross-border investment and trade.*
- *Strong regulatory frameworks are needed to ensure that control of existing or new infrastructure in the regional market is not left open to abuse by a dominant supplier. Public authorities should reinforce and harmonise regulatory institutions and frameworks to ensure a sustained commitment to open and transparent market operation.*
- *In the case of natural gas, diversification of sources of supply will be critical to establishing a competitive regional gas market. Where commercial opportunities exist, public authorities should promote the enhanced market performance that can be offered by diversified suppliers of natural gas competing for market share.*