Lights Out?
The Outlook for Energy in Eastern Europe and Central Asia

Sustainable Development Department
Europe and Central Asia Region
The World Bank
MAJOR FINDINGS

- The countries of Eastern Europe and Central Asia region could face an energy crunch within the next five to six years.

- The financial crisis has created some breathing room and a window of opportunity to mitigate the impact of the anticipated crisis.

- Mitigating actions are required both in the demand and supply side. Significant investments will be required (3% of cumulative GDP over 2010-2030) and the public sector alone won’t be able to provide this level of investments.

- Countries need to take actions now to create a climate that is attractive for investments in the sector.
The Region’s Transition and The Current Economic Crisis

Changes in Real Output (Index: 1990 = 100)

Central and South-East Europe (CSE)

CSE/CIS Region

CIS

Annual average GDP Growth (%)

-5.5  +1.1  +6.0  -5.6
Amply Endowed with Energy Resources and Oversized Infrastructure, the CIS/CSE Region is a Key Primary Energy Exporter

Production reduced by 30% in 2000, but recovered by 2008

Consumption stood at 80% of 1990 levels
The Economic Crisis Eased Some of These Concerns, But Respite is Only Temporary

Average Annual GDP, Electricity Consumption, and Primary Fuel Consumption Growth Rate in the CIS/CSE Region, 2005–30 (%)

Source: World Bank staff calculations.
Where will These Additional Supplies Come From?
And the Outlook for Electricity Supply is of Even Greater Concern

![Projected Generating Capacity Additions, Rehabilitations and Retirements in CIS/CSE region 2005-20 (GW)](chart)

Source: World Bank staff calculations
The Region will Face Significant Investment Needs Over the Next Two Decades

Projected Energy Sector Investment Needed in the CIS/CSE region by 2030 (USD billion)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Amount Required</th>
</tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>1,500</td>
</tr>
<tr>
<td>Crude Oil</td>
<td>900</td>
</tr>
<tr>
<td>Heating</td>
<td>500</td>
</tr>
<tr>
<td>Gas</td>
<td>230</td>
</tr>
<tr>
<td>Coal</td>
<td>150</td>
</tr>
<tr>
<td>Refining</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,300</strong></td>
</tr>
</tbody>
</table>

Source: World Bank staff calculations.

Estimated investments in the Energy Sector amount 3% of cumulative GDP

Although the public sector will need to finance a portion of these investments, it will not be able to do it alone, the financial depth and technical know-how of the private sector and energy companies will be required.
ALBANIA has been a net exporter till 1997.
ALBANIA became a net importer since 1998.

Monthly supply trend was very high during 1991-1999 (8-10% increased yearly).
The consumption was not under control.
Lack of electricity and some Demand side management measures have reduced and putted under control the demand. (2-3% increased yearly).
High losses in distribution combined with low collections of billed electricity, had resulted in KESh being paid, over a number of years, on average for only about 50 percent of the electricity supplied through its network, or around 80 percent of the electricity actually billed after taking into account technical and commercial losses.
**Countries Will Need to Create a Competitive Investment Climate by Adhering to 10 Key Principles**

<table>
<thead>
<tr>
<th><strong>DO’s</strong></th>
<th><strong>Don’ts</strong></th>
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</thead>
<tbody>
<tr>
<td>1. Do introduce an acceptable legal framework. <em>Electricity</em></td>
<td>1. Don’t impose a punitive or regressive tax regime.</td>
</tr>
<tr>
<td>2. Do provide supporting regulations administered by an independent and impartial regulator.</td>
<td>2. Don’t interfere with the functioning of the market place.</td>
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<tr>
<td>3. Do create an environment that facilitates assured nondiscriminatory access to markets.</td>
<td>3. Don’t discriminate among investors.</td>
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<td>4. Do honor internationally accepted standards.</td>
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<td>5. Do abide by contractual undertakings and preclude the use of an administrative bureaucracy to constrain investor activities</td>
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<td>6. Do prevent monopoly abuses.</td>
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<td>7. Do ensure that the sector is kept free of corruption</td>
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</tbody>
</table>
One of the Most Critical Elements is Ensuring the Financial and Commercial Viability of the Sector

Weighted average electricity tariffs for residential consumers in 2008
US$ cents / KWh

Source: ERRA Tariff Database
Focused Efforts are Required if the Region is to Meet its Emissions Targets

**CO₂ emissions in 1990**

**EU Target**: 80% of 1990 levels by 2020

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**Actual and projected CO₂ emission in CIS/CSE region**

(million tons of CO₂)

Source: World Bank staff calculations.

Objective: Restructuring of the energy sector based on market economy principles and developing a modern energy policy.

• Increasing the security and reliability of the energy supply on regional and national levels.
• Establishing an energy sector that is financially and technically efficient.
• Establishing an institutional and regulatory framework and restructuring energy companies.
• Increasing energy efficiency in generation and final use of energy sources with minimal environmental impact.
• Optimizing the energy supply system based on the least cost planning principle with environmental concerns in mind.
• Increasing investments in energy sector through capital enhancements provided by International Financial Institution and private lenders.
• Establishing a competitive electricity market according to EU requirements for the electricity sector reforms. Also, supporting obligations under the Athens Memorandum to support the regional energy sector integration.
# Restructured Electricity Sector

## Main Objectives of Electricity Sector Reform

- Development of a competitive electricity market in order to provide a sustainable supply to the consumers based on a reasonable price and high quality, with a lowest environmental impact, with acceptable commercial market principles through regulations and laws.
- Encouragement of the private investors taking part through investments in electric sector which needs high financial capitals.
- Participation on the Regional and European market.

## Ways to Achieve Objectives

- Law and Regulation Base establishment in the effective and transparent way
- Enhancement and Functioning of the Electricity Regulatory Entity
- Restructuring of the electricity sector through functions unbundling of generation, transmission, distribution and supply, commercialization and corporatization.
- Private capital attracting for investments and privatization
- Clear regulations and processes for technical settlements and financial settlements and payments
- Participation on the Regional and European market through laws, regulations and tariffs, access grid concordance.

## Important Documents on the Sector Reform

- Thessalonica Declaration Sept 1999
- Memorandum of Understanding of Athens (I) June 2000
- Memorandum of Understanding of Athens (II) Nov 2002
- National Strategy of Energy June 2003
- Albanian Power Sector Law Aug 2003
- Treaty of ECSEE Oct 2005
- Albanian Market Model 2004-2008
- Distribution Privatization (Share Purchase Agreement) March 2009
Reliability and quality of the electricity supply – Still an issue

- In 2008, 80 percent of businesses reported owning or sharing a generator, which generated 30 percent of power used. Albania experienced power outages on average 32 times a month. Despite relatively low nominal tariffs for electricity supplied by public suppliers the actual cost to firms using diesel generators is usually at least three times higher. The ERE estimates captive generation (diesel) costs at 45 Lek/kWh.

- In addition to power outages, voltage fluctuations require maintaining equipment to protect electronic equipment and many firms express reluctance to invest in sophisticated equipment due to the risks of damage associated with electricity supply problems.

Financial Performance of the Sector – More work to be done

The electricity distribution system’s poor performance left KESh with insufficient money to invest in proper maintenance, operation, and expansion of its system. More seriously, the lack of funds prevented it from being able to pay for all of the imported electricity needed to make up for shortfalls in domestic hydropower production. The company required considerable direct transfers from the state in 2000-2004 & 2007-2008. Even with such subsidies it was unable to supply electricity 24 hours a day to all customers.

Without reliability and quality in power provision, achieving cost recovery and reducing losses would not improve productivity or raise investment
Demand for energy is increasing more slowly given that the growth of GDP may be slower for a few years, and that the market (especially households) is now close to saturation, and that additional supplies will become available as distribution losses are reduced. It is expected in the next few years that the demand for electricity will be in the range of 7000-7500 GWh. Out of this KESh can cover 4,000-5000 GWh on average through domestic generation, with the remaining demand being covered by imports.
The hydrology is uncertain and international electricity prices may continue to be highly volatile.

It remains unclear how much capacity should be secured for stable electricity distribution and how much capacity could be developed on a commercial basis.

A rough calculation indicates that if Albania’s economy grows 3-5 percent per annum, the amount of installed capacity required in the next 5 years might be around 470 MW additionally. Without successful attraction of new investments, Albania’s power sector would not be able to sustain quality electricity services and provide attractive services to customers in the longer run.
However it needs to be mentioned that the generation plan proposed will be considered very extensive and unusual especially related to the capacities proposed for Wind Farms and development of small power plants, which are considered intermittent sources that need to be balanced. System Operators will need to get available balancing capacity to cover these intermittent sources of electricity, but wind and hydro are considered very complimentary because hydro can come on stream almost instantaneously. Based on overall experience and best practice the development of wind farms will be compatible with other generation installation and load of the country, and generally the installed power of wind farms will not exceed 20 - 25 % of the total actual installed power.

Despite awarding 110 concessions totaling several hundreds of Megawatts only one of these is actually operating and a further five are under development. Many of these concessions are likely to have breached their terms and could be revoked by the Government as non-performing. The risk with the concessions is that many are poorly prepared, and may sometimes be purchased as speculative investments rather than serious business propositions. The Government could take the lead in detailed preparation of detailed technical specifications for such projects, and then auctioning them transparently.
**GENERATION**

KESh is the most valuable company in Albania in terms of market-based asset value. After shedding its loss-making electricity distribution system, KESh owns about 1.5 GW of hydroelectric capacity. At current investment costs, the value of KESh’s hydroelectric facilities would be well high. However, KESh’s actual value remains suppressed. It is because of regulated prices that KESh realizes today only a fifth of its potential market revenues when it serves the Albanian market. So, the proper market design and tariff reform will need to take place first. Capital and knowledge constraints need to be surpassed for KESh’s potential to be realized. Lack of funds for investments in modernizing facilities and exploring new opportunities has kept KESh operating well below its potential. The sector has seen substantial gains in the last year. Due to improved hydro conditions, the recent completion of the Vlora CCGT Albania’s energy sector has come a long way in taking steps to improve reliability and quality of the power supply.

**TRANSMISSION**

Through the market restructuring the Transmission role needs to be enhanced. It would be argued that in the medium-term, it needs to we have a stronger case to find a strategic partner for the transmission company (OST), which has limited capacity to carry out its functions as a System Operator. As we have seen in other countries, it is the Transmission business properly operated the one that facilitates or hampers new generation investments, be it public or private. Albania is not an exception. This why it is requirement to have a clear strategy on how one could maximize over time the value of the Albania electricity market, including market liberalization for large customers, strengthening of the transmission backbone to act as a system operator, as in other small systems.

In the short-term implementation issues still remain. The coming 3 years in particular will be critical to make effective the new Market Structure, particularly: (a) strengthening the financial, managerial and technical viability of the energy companies in the supply chain and reducing their associated inter-company arrears; (b) reducing the contingent liabilities to the Government; (c) making the recent privatization of the distribution sector effective and operational, including carrying out associated new investments to reduce energy losses; and (d) have the Government start seriously looking for ways to increase generation capacity.

Moving towards a Regional Energy Market in the medium term. As the economy continues to grow, some new domestic generation and, crucially, participation in Regional Power Exchanges will be needed. There is consequently a need to provide an adequate institutional, pricing and investment environment. This would attract and facilitate investments in generation to guarantee reliable energy supply while, in parallel, taking advantage of Albania's geographic position to maximize Regional Energy Trade.
The Bank remains heavily involved in the integration of the SEE Energy Market. The Bank 1) is participating in regional efforts to promote cooperation and integration in South East Europe and inter alia supports the Stability Pact, 2) is active participant in the Athens Process and 3) has supported individual countries of South East Europe in their efforts to rehabilitate and restructure their power sectors through policy dialog, technical assistance and financing since early 1990s.

Climate Change
The WBG is very well positioned to play a major role in climate finance and hopes to have discussion on a strategy to assist in the design and implementation of the fast-track initiative and the new Climate Fund. The project most probably will be focused on proper strategy for renewable energy and energy efficiency.

South East Europe Energy Market
The scope is to work toward achieving the following major objectives:
1. Converging energy markets on the basis of the principles of the EU internal energy market taking into account the particularities of the involved countries
2. Establishing the SEE Wholesale Market Opening and the Coordinated Auction Office (CAO) for cross-border transmission capacity.
3. Enhancing energy security by addressing the issues of energy exports/imports, supply diversification, energy transit and energy demand.
4. Supporting sustainable energy development, including the development of energy efficiency, renewable energy and demand side management.
5. Attracting investment towards energy projects of common and regional interest.
Thank-you

www.worldbank.org/eca/energyreport