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A BRIEF BACKGROUND NOTE ON THE POWER SECTOR REFORMS IN MONTENEGRO

1. The main power sector issues in Montenegro

The existing situation in Montenegrin energy sector is characterized by the following issues:

a) An extremely high dependence (about 60%) on power import (total needs for liquid and gaseous fuels and around 1/3 of the electricity), resulting from the fact that no new energy sources has been constructed for many years now. Namely, basic of the Montenegrin energy sector, which are mostly in the function of the electricity generation, are the activated hydro-energy potentials of the rivers Piva and Zeta (around 1860 GWh annually) and coal potential in basin Pljevlja (around 1,300,000 tons per year). Total need for the oil derivatives (around 270,000 tons per year) and 1/3 of electricity supply (about 1,300 GWh), are purchased trough import.

Figure 1 shows the share of the energy types in total energy consumption in Montenegro (1990, 1997-2004)

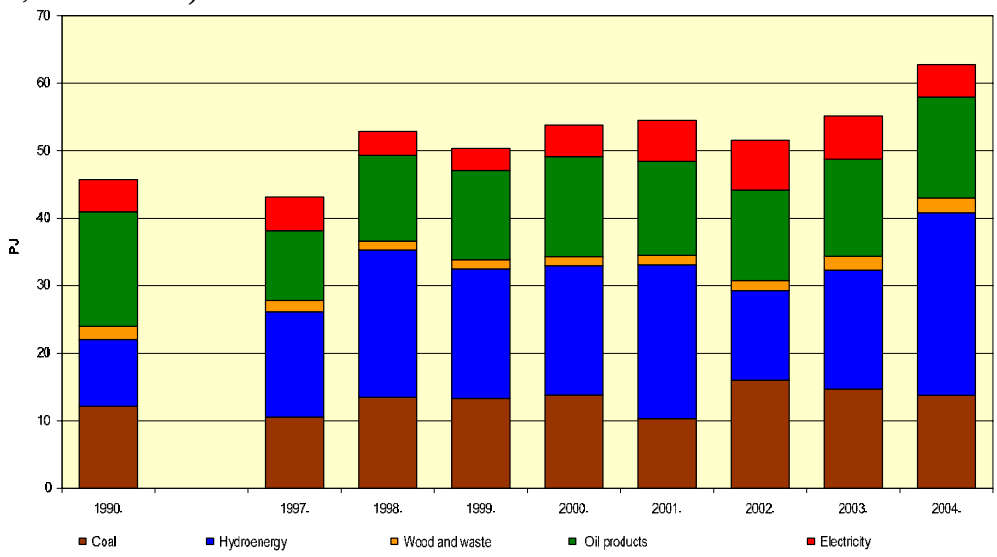

Figure 1 Share of the energy types in total energy consumption in Montenegro (1990, 1997-2004)

b) In opposite to high energy deficit, Montenegro possesses huge good quality potentials, but unfortunately unused (especially hydro potentials). First of all, that is very high quality unused hydro-energy potentials about 6000 GWh annually, suitable for construction of the peak load electro-plants with high capacities. Hydro-potential has been used for only about 27% in natural water flow, actually for about 17% in integrated water flow. Except this, potential of small water currents is about 680 GWh per year.

c) Total coal reserves in Montenegro are on the level of 255.000.000 tons, which, on today's level exploitation, enables production in the period of the following 120 years. Coal in Montenegro has a very low sulphide percentage and small ash quantity, which is very significant for the environment protection. So far conducted geological research on oil and gas in the ground and under the sea in Montenegro, are indicating significant findings of those energy resources. Geological reserves are estimated in total of 2.587 and exploited in 676 million tons of oil.

d) Energy of direct solar radiation, wind energy and biomass energy are more expressly present in the area of Montenegro. However, except traditional usage of firewood and initial results in application of solar collectors installed on tourist facilities at the costal area, these types of energy are not significantly in use in Montenegro. While renewable energy sources are not currently used to a great extent in Montenegro there is great potential to develop this type of energy. Excluding hydro-potential for high capacity power plants, it is economically viable that Montenegro could more than double the present use of renewable energy sources (small HEs, wind and solar energy, biomass etc.). Great possibilities for usage of renewables, which would create a good position for the Republic to participate in trade for carbon-dioxide emission.

e) Predominant share in Energy Balance has electricity (Figure 2), especially for electrical heating. In Table 1 energy consumption in Montenegro in 1997 and 2005 (in natural units) is presented.

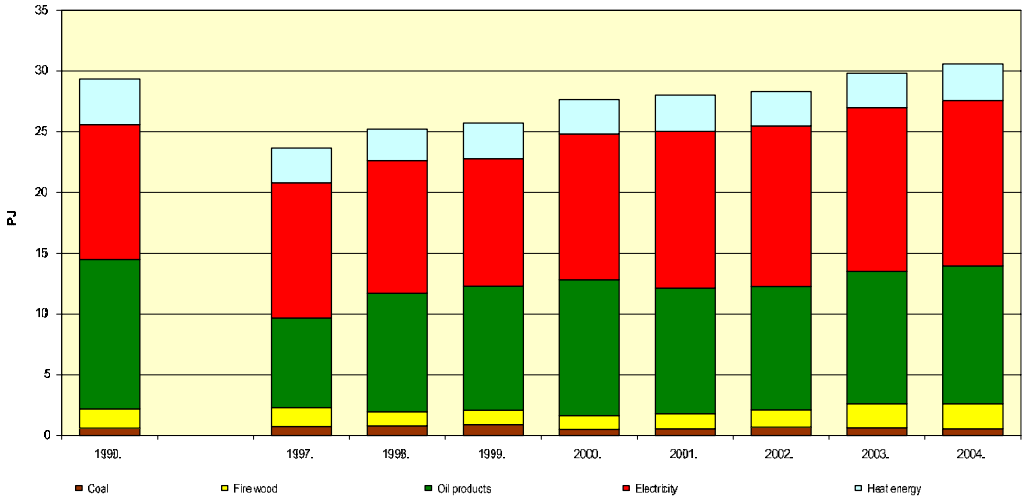

Figure 2 Share of the energy types in final energy consumption in Montenegro (1990, 1997-2004)

On Figure 3 participation of the main categories (industry, transport and the other consumption) is presented.

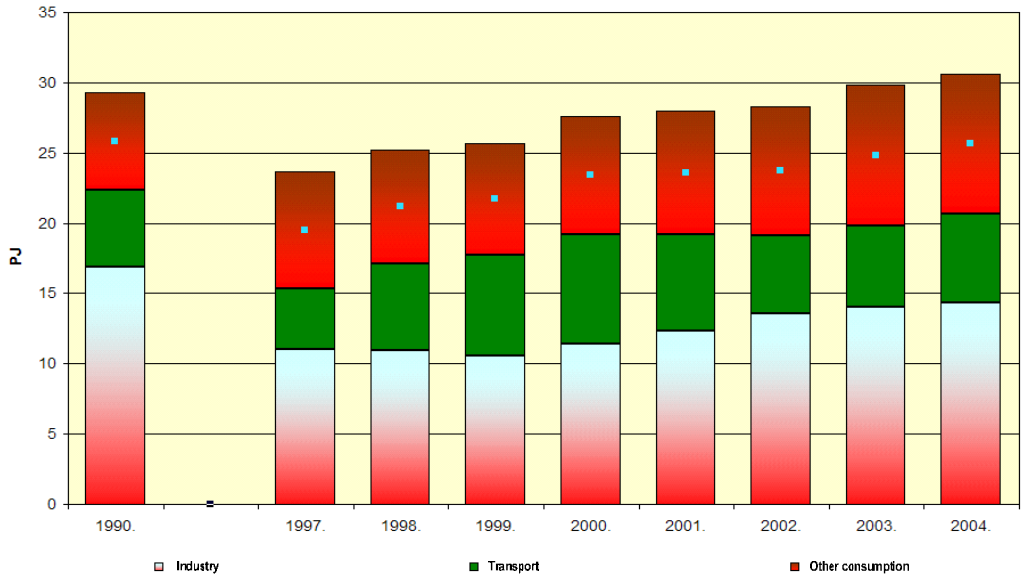

Figure 3 Participation of the main categories in final energy consumption (1990, 1997-2004)

Figure 4 illustrates participation of the existing own power stations and electricity import for covering electricity demands for the period 2002-2004. Figure 5 shows the Power System in Montenegro in 2006. (power stations, 110, 220 and 400 kV transmission lines, with transformer substations).

Table 1 Energy consumption in Montenegro in 1997 and 2005 (in natural units)

Fuel		Year	
		1997	2005
Coal (1000t)	TE	981	1200
	Other	126.5	120
Heavy fuel oil (1000t)		96.4	100
Heating oil (1000t)		9	16
Driving fuels (1000t)		102.5	160
Liquid gas (1000t)		3.4	4
El. energy * (GWh)		3646.9	4802
Fire-wood (1000m3)		146.7	200
Alternative sources (%)		-	2.5

* Losses in distribution included

f) Inherited industrial structure is substantially relying on high energy consumption; extremely high consumption by two biggest consumers in the field of ferrous and non-ferrous metallurgy, as well as high demand and consumption by the households. Montenegro reacted inadequately to „oil crises“ because in the 70s it was developing the steel industry as well as the energy intensive aluminum industry. With the increase in living standards and development of economy overall, in the mid-80s problems of energy supplies deficit became pronounced and there was a slowdown in developing new energy sources. However, in the

context of the economy and spreading of consequences of inappropriate usage throughout the society as a whole, there was little sense of necessity of optimizing energy usage. Rare cases of energy usage optimization in the industry were motivated by the need to substitute imported oil derivatives with some other energy sources, cheaper and more accessible at the time

Final energy consumption per capita in Montenegro (estimated at 1.08 ten/per capita. for 2003) is relatively low and it is keeping with the world average, but 5 times less than in developed countries. However, it is expected further energy consumption growth alongside an expected growth in GDP and improvement in living standard. On the other hand, Montenegrin energy sector is characterized by a high level of energy intensity in comparison with the EU and some developed countries, what is mainly due to the high level of energy demand from heavy industry. The factor of energy intensity in 2003 was 0.527 kgen/US$, or 3.3 times greater than in EU which indicates significant area for optimizing energy usage.

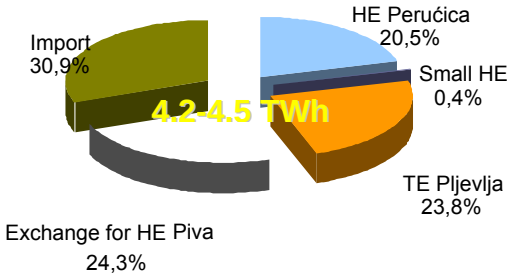

Figure 4 Participation of the existing own power stations and electricity import for covering electricity demands for the period 2002-2004

g) It is considered that increase of the energy efficiency can be the cheapest and most productive energy alternative, with practically unlimited opportunities. Energy saving have also significant contribution to the stimulation of the innovations, employment and economical growth. With relatively small investments, better selection of the energy efficient technologies, better organization, improved quality, significant energy and financial savings can be achieved.

More resolute improvements in energy efficiency and the development of renewable energy sources are closely related to the general economic and social policy. They have a real potential to contribute to sustainable development and economic growth and can affect all areas of economic activity. To achieve its energy targets Montenegro must also take into consideration international commitments towards to institutional, legislative and behavioral changes. Implementation EU energy efficiency norms and standards will have influence on the Montenegrin integration into EU.

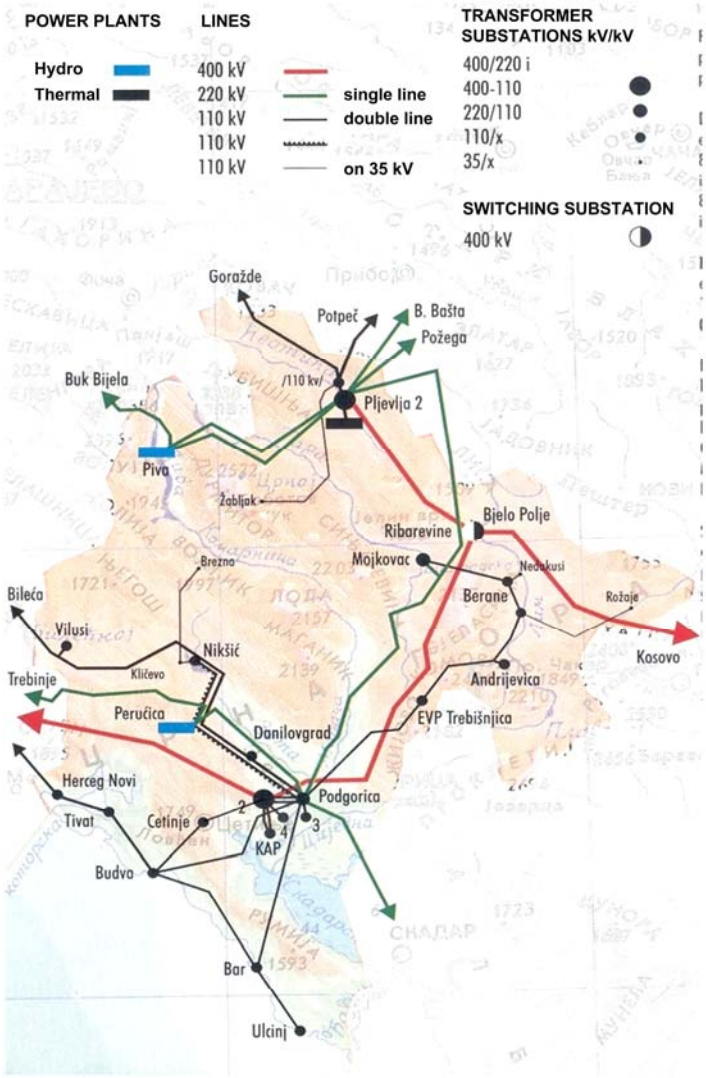

Figure 5 Power plants, transmission lines (110-400 kV) with transformer substations in Power System of Montenegro

2. The Government's energy sector reforms

It is therefore clear that a strong energy policy and reform of the energy sector are needed to counterbalance or to mitigate the expected increase in energy consumption in all sectors, with emphasis on measures in building sector (both residential and tertiary), in the industry and in the transport sector. From energy efficiency standpoint especially big problem is very high participation of electrical space heating (over 50%) which is primacy consequence of underestimated electricity prices in the long period.

Such energy policy have to identify the goals and objectives, as well as the instruments to be used by the Government of the Republic of Montenegro, aimed to develop the energy sector with respect to: secure and reliable power supply, environmental protection, ownership, market operation,

investments, energy efficiency, new renewable resources, regional and broader integrations, social protection measures etc. In line with the economic development of the Republic of Montenegro, and also with the energy practices and relevant standards for candidate countries to EU association, appropriate energy policy particularly must outline the need to establish adequate legal, institutional, financial and regulatory frameworks required for sustainable development of the energy sector. Together with the national energy strategy document (Energy Development Strategy of the Republic of Montenegro), energy policy defines the role of energy undertakings in the reform process of the energy sector and encourages both domestic and international investors to invest in new energy facilities.

Initial activities are undertaken to reform the energy sector in the past five years:

- Energy Law is passed 2003.,
- Integration into the Athens Memorandum process has been started,
- Energy Regulatory Agency is established,
- Electric Power Company of Montenegro (EPCG) is functionally unbundled,
- Decision to establish the Energy Efficiency Unit is made,
- Energy Efficiency Strategy is designed, together with the Action Plan for 2006-2007,
- Energy policy of Montenegro is adopted 2005,
- Partially non-regulated energy sector and privatized in the field of procurement and trade of oil products.
- Energy Development Strategy until 2025. is finished and it is now on public evaluation,
- Laws and documents regulating the area of environmental protection, urban planning and other relevant legislation, etc.

The Energy Law establishes the responsibility of the Government for promoting a competitive energy market, and it regulates the following energy sector activities:

1. Generation, Transmission, Distribution and Supply of electricity in the market and/or as a Public Service;
2. Organization and functioning of the electricity market;
3. Production and the market of coal for the needs of electricity generation;
4. Transportation, Distribution, storage, wholesale and retail trade and supply of
5. Petroleum Products and Gas.

Energy Sector activities are activities of public interest. This Law does not apply to coal exploitation, gas or oil exploration, the development and production of crude oil or gas refining. The objectives of this Law are to ensure a safe, secure, reliable quantity and quality supply of energy at fair prices, taking into account:

- efficient and economic use of natural resources that meets the needs of the country;

- environmental protection;
- the efficient use of energy;
- promotion of market competition;
- tariff and contract customer protection;
- the need for energy undertakings to realize a reasonable profit in the market;
- the need to promote private sector participation;
- the enforcement of legally binding obligations; and
- integration of the energy sector activities of Montenegro with those of the rest of Europe.

Therefore, Energy Law prepares for a competitive market, defines the status and the role of the Energy Regulatory Agency (ERA). Energy tariffs will be monitored by the ERA, but not fixed by it, or by the Government. However, the Government still can play a role by introducing taxes on energy, or on carbon content for instance. Any increase of the energy price will increase the attractiveness of energy efficiency solutions. Different level of taxes may also be used for promoting an energy fuel against other ones. Also, the Energy Law establishes the responsibility of the Government for promoting energy efficiency and renewable energy resources in Montenegro.

Montenegrin Energy Policy is Government's document for strong supporting the sustainable development of the energy sector, with the following goals and objectives:

1. Secure, high quality, reliable, and diversified power supply aimed to comply the supply with the demands in all forms of energy,
2. Maintenance, rehabilitation and modernization of the existing infrastructure and the construction of reliable new infrastructure required for generation and utilization of energy,
3. Reduction of import dependence, primarily through creation of stable conditions for investments in research /exploration and construction of new power facilities (especially on the basis of already explored resources related to unused hydro potential), as well as investments in other energy infrastructure,
4. Design of relevant legislative, institutional, financial and regulatory framework to encourage private sector involvement and investments in all aspects of energy infrastructure,
5. Creation of conditions for higher utilization of renewable energy resources, combined power and heat generation (CHP) and for the usage of fossil fuels based on clean technologies,
6. Establishment of competitive market in order to provide energy in the fields where there is a possibility to do so (generation and supply) in accordance with the concept of regional energy market, with regulated monopoly network activities,
7. Provision of institutional and financial incentives with the purpose to improve energy efficiency and reduce energy intensity in all sectors, from generation to consumption of energy,

8. Sustainable production and utilization of energy in relation with environmental protection , and international cooperation in this field, especially with respect to reduction of GHG emission,
9. Supporting research, development and promotion of new, clean and efficient energy technologies, as well as implementation of energy policy based on expert and scientific grounds.

Energy Development Strategy for the period until 2025 (with sector studies) would define medium-term and long-term objectives, priorities and conditions for development of Montenegrin energy sector, according to goals and objectives of the above mentioned Energy Policy.

Considering the lack of energy efficiency policy in the longer period, Energy Efficiency Strategy emphasizes that a large economical energy efficiency potential (at least 20%) exists in Montenegro without any direct subsidy to the final user. Significant energy efficiency potential exists in the domain of energy production and transmission (especially to the distribution) as well as in industry, tourism, public and residential sector. According to the resent studies, possible total energy savings in Montenegro, without significant investments, are estimated at 13%, or about 4 400 TJ, which is equivalent 1,200 GWh, or about 100, 000 tons of liquid fuel.

3. Economic, social and political challenges to implementing power sector reforms

In order to realize the above mentioned objectives one of prerequisite is identification of barriers and providing assistance to stakeholders in removing identified barriers for implementation energy policy and power sector reforms. A review of the main barriers leads to the conclusion that while significant changes are needed in the institutional and regulatory framework, the lack of access to finance and general lack of awareness about existing technologies. An analysis of past support programs for energy efficiency and for new renewable energy resources indicates that the funds were very limited, as well as international funding opportunities have not yet been accessible.

The basic addresses and instruments for the achievement of the above mentioned goals and objectives of the Energy Policy in **legislative** way are**:**

a) develop relevant secondary legislation required for proper implementation of Energy Law and Energy Development Strategy of the Republic of Montenegro, as well as harmonize domestic and international legislation in this filed, including UN Declarations, EU Directives, Kyoto Protocol, Athens Memorandum of Understanding, etc.,
b) review the existing and develop/adopt new legal documents, technical standards and regulations in the filed of construction of power and other facilities, particularly with the aim to increase energy efficiency,
c) set out rules and regulations defining simplified procedures for obtaining concessions

and authorizations for construction of small hydro power plants and other renewable energy facilities, and for issuance of permits for network access and licenses for power generation and sale, as well;

Addresses and instruments in **institutional** and **organizational** way are:

a) build the capacities of Government administration to be capable to monitor implementation of Energy Development Strategy of the Republic of Montenegro and also to design Energy Balance,
b) Establish the ERA as functionally independent, competent body and non-profit organization that shall carry out its public authorizations in accordance with Energy Law.
c) strengthen Energy Efficiency Unit in order to enable it to promote and implement the Government's Energy Efficiency Program in a good manner, including its capability to make the proposals for the design of the appropriate regulation framework aimed to encourage proper implementation of this Program,
d) restructure EPCG and other energy undertakings into financially sustainable companies (Production, Transmission, Distribution and Supply) being capable for operation/participation in a competitive market, and to finance the development as well,
e) establish and implement data monitoring system, in line with the EUROSTAT system for the presentation of national energy data,
f) adopt encouraging measures for scientific-technological development in energy sector and cooperation in international programs in the field of energy,
g) establish and implement transparent and clear procedures regarding proper operation of all segments of the energy sector, aimed to prevent corruption,
h) provide fostering measures for the implementation of Energy Efficiency Program, new renewable resources and clean technologies, including the utilization of energy efficient devices acceptable for environment,
i) create preconditions required for construction of a new generation capacity in order to provide permanent energy supply,
j) diversify energy sources and fuels, taking into account specific regional characteristics,
k) promote technological achievements and develop infrastructure in order to reduce the GHG impacts.

Finally, according to Energy Policy **economic** and **social** measures and instruments about energy sector reforms have to be**:**

a) establish tariff and pricing policy for fuels and electricity, taking into account market based costs (including environmental protection costs) and profit, which would encourage efficient energy utilization and protect the interests of consumers / customers with respect to security and quality of energy services, and which would also respect the component of affordability for the energy bills payment, as well,

b) in order to reduce poverty, develop Government's subsidy program for vulnerable groups of citizens in order to enable them to satisfy their minimum needs for electricity and heating.

In conclusion, Government of the Republic of Montenegro and energy companies, in accordance with its obligations arising from the Energy Law, the Energy Policy and various adopted strategies, endeavor to provide available, accessible and affordable energy, as well as to secure the preconditions for establishment of an open energy market and fast integration into regional energy markets.

4. Acknowledgment

This brief review of power sector development and reforms in Montenegro is supported by World Bank as background paper for the Fourth PRSP Forum for the Balkan countries in Athens, June 2007.

5. References:

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