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Ukraine is requiring for full membership in South-East Europe Energy Community

The report is written by Juris Ozolins from Ukrainian-European Policy and Legal Advice Centre as a response to the request of the State Department for Legal Approximation of the Ministry of Justice of Ukraine of 7 September 2007. The Document is devoted to issues arising from hypothetical Ukraine's application of a request for full membership in the South-East Energy Community. The State Department for Legal Approximation (Mr. Taras Kachka) already made a comparison and assessment of similarities and deviations between principles and requirements of the SEE EE Treaty and Ukrainian legislation related to energy sector. Thus, in order to avoid duplications, this paper mostly deals with technical, economical and commercial questions assuming that legal issues must be solved should Ukraine reach full membership in the Community. This document aimed at definition of rational from decision to become member of Community and barriers to be overcome in order to afford it. Due to complexity of full-scale assessment and to absence of other stakeholders of Ukraine¹ involved in impact assessment for time being, this part of the report is limited to electricity sector.

Main chapters of report related to the following issues:

1. Main principles of electricity trade

- 1.1. Electricity trade means selling-buying electricity as commodity between producing/trading and buying/consuming parties. Electricity trade doesn't include services related to electricity transportation and system services (balancing, reserves and regulation). Electricity trade might happen only in trading area, when trading regime is established and is regulated by market rules. In the market area, seller (who is in the same time producer) injects electricity in a common network and consumer (who is in the same time buyer) withdraws the same amount of electricity measured in megawatt hours per hour (MWh/h).
- 1.2. To keep the electricity system in stable conditions and all necessary parameters in limits, no electricity should be generated without agreement on consumption; the same requirement concerns position opposite to consumption. All deviations and system stability is secured by the Transmission System Operators (TSOs). However, they do not perform electricity trade, but provide only supporting functions, very much related to security of supply.
- 1.3. In Ukraine, the role of Transmission System Operator is prescribed to the National Energy Company "Ukrenergo". Transmission assets and all other interests are separated from distribution, generation and sales activities. **This is in a full compliance with the most radical models of power sector structure for liberal markets – similar to England, Spain and Nordic Countries.**
- 1.4. **Market liberalisation means freedom (rights) of consumer to choose himself a supplier in certain market area.** In the EU it means freedom of trade in internal electricity market. In reality, European Electricity market is fragmented on geographical areas due to difficulties of organisation of a long distance trade over the several national boundaries; in fact each area is controlled by

¹ Ministry of Energy, National Electricity Regulator, Transmission System Operator, Power Production and Trading companies, Competition Authority, Industrial and other Association, Customer Interests' representatives.

national Transmission System Operators. These difficulties are both technical (manage the power flows in a manner not-endangering stability of overall power system) and human related (capacity to cope with missives of information in limited time spans).

- 1.5. **Electricity trade is possible only if power grids are interconnected** or it is limited within national boundaries. Theoretically there might be sophisticated models without physical connections, but this will be more related to financial markets.

2. Ukraine's market position.

- 2.1. Ukraine does have export capability and potential for growth of electricity production. So in the day of maximum consumption² in 2006, Ukrainian power plants were able to cover national demand 28018 MW and had additionally 1847 MW for export. Similar proportion was observed in July 2007 – 22253 MW and 1327 MW respectively. If power plants will be properly maintained and renovated, Ukraine might secure export capacity in the future. Even if domestic demand will be growing, potential for efficiency improvement is enormous and generation will be able to allocate portion for export. Export of electricity definitely might mitigate social impact of electricity price growth on domestic market.
- 2.2. Ukraine's export partners/targets today are located in two divided and different system operation areas – UPS (Unified Power System – Russia, Belarus, and Moldova) and UCTE (Continental part of Europe - Slovakia, Hungary etc.). Both systems are working on different frequencies and according to different operational procedures and quality parameters. Only power exchange/trade goes through direct current (DC) lines on interfaces Russia-Finland and Estonia-Finland. Ukrainian Burshtyn Island is working with UCET parameters on Slovakian and Hungarian markets.
- 2.3. Russia does have only one market participant trading in international market. Those exclusive rights are allocated to Daughter Company of RAO Rossiya – InterRAO. Bilateral trade among Ukraine and Russia is having monopoly character in each country. No any customer can directly negotiate about his supply contract. The same concerns Belarus and Moldova.
- 2.4. Much more freedom might be in Slovak or Hungarian markets, but most likely these countries will appeal for reciprocity, if Ukrainian trader is approaching directly desirable customers.

3. Assessment of strategic interests of Ukraine in electricity market.

In our opinion, Ukraine might have several strategic interests in regional electricity markets:

- 3.1. Find the most predictable, transparent and competitive long-term markets for base-load, which will be more suitable for Ukrainian nuclear power plants and nuclear industry in general. Most likely, these are industries' segments, where Ukraine might find surplus both of capacity and energy.
- 3.2. Despite the fact, that market prices can't be calculated and they are unpredictable, some assessments can be used for comparison. Assessment is based on presumption concerning dominant factors in market area.
 - 3.2.1. Price for primary energy resources still will be the most sensitive cost driver in a power production. In regions, where Ukraine can sell or buy electricity, only few resources can be isolated from trends of the world market of oil, gas and coal. Only Russia is able to regulate price for natural gas in domestic market and manipulate export price being in strong monopoly position of gas importer for practically all countries of the region. Assuming, that Russia will remain a market with elements of subsidies and limited access for foreign competitors, it will be difficult to compete in regional electricity market with Russian generators - market will be unfair. Ukraine's opposition to common CIS market in energy and electricity is right, particularly with a view to those factors.

² 27 December 2006

3.2.2. Central Europe market looks more attractive for Ukraine's power generators. Market is governed by certain predictable rules of the EU internal electricity market. This spring auctions sent very good price signals from markets of Slovakia and Hungary – about 9 USc/kWh. The only problem that remains is limited incomes due to capacity of Burshtyn Island. Burshtyn Island includes three power plants (TPP Burstyn, TPP Kalush and HPP Tereblia-Kikskaya) with combined export capacity of up to 600 MW. Burstyn Island is fully integrated with the UCTE power grid and disconnected from the rest of the Ukrainian power system.

4. Options to join or couple electricity markets.

- 4.1. Ukraine is already technically integrated with Russia, Belarus and Baltic States in the framework of Unified Power System, but trading regime is based on bilateral contracts between national monopolies on cross-boarder trade. Ukraine at the moment is net exporter to Belarus, Russia and Moldova. Baltic market is technically accessible, but difficulties start where common trading area should be set up together by Ukraine, Belarus and Baltic states to arrange access to the grid³. It will require acceptance of the market rules by all national Transmission System Operators and market participants. This should be supported by adequate industry structure and national legislation.
- 4.2. Access from outside to the Russian Wholesale Electricity Market is closed; exception is made for one monopoly trading company. And this is despite very progressive power sector reform aimed at creation of competitive electricity market on national level and attraction of private investments into generation.
- 4.3. Expansion of Ukraine's share in electricity in the Central Europe (area of UCTE operational system) is possible in three ways:
 - 4.3.1. Connecting more power plants to Burshtyn Island. But as a consequence, there might be a threat to security of supply of Western Ukraine. Most likely security and cost of lost load⁴ will outweigh benefits from cross-boarder trade. ***Subject for impact assessment – technical and economical.***
 - 4.3.2. Establishing interconnection through DC⁵ connectors between Ukrainian and/or Slovak, Hungarian and Romanian Systems. Polish connection is not mentioned because of “weak” network in boarder region of Poland, and is not in other way discriminated. There are old routes of power lines used before splitting up former System “MIR” connecting USSR and satellite countries.

In this case Ukraine remains connected to UPS and no parameters and equipment should be changed in power plants of Ukraine.

DC connections are more expensive than lines on AC⁶, but allow more flexibility for cross-border electricity trade in both directions.

Subject for impact assessment – technical, environmental and economical.
 - 4.3.3. Connecting Ukrainian Power System to UCTE. It means changing of operational standards existing in UPS to those of UCTE. Certain amount of Ukrainian power plants, more exactly power generators, shall have capacity and obligations to respond on changing parameters of system with high sensitivity. Besides, interconnections with Belarus and Russia should be disconnected or in some places changed to DC connections.

³ Absolutely necessary precondition to enable electricity trading between parties selling and buying electricity in common market places.

⁴ Economic loses from total or partial interruption in electricity supply.

⁵ Also known as back to back substations connecting electricity systems with different parameters - in this case USTE and UPS.

⁶ Altering current with parameters on which all interconnected power systems work in the frame of operational system.

Theoretically Ukraine's Power System might be divided geographically on two parts – one connected to UCTE and other one connected to UPS. But again a serious question on security of supply for domestic consumers arises.

Subject for impact assessment – technical, environmental, economical and social; political is not excluded.

5. Technical problems to be solved

- 5.1. For any trading option, including more liberal domestic market, technical “ammunition” for national Transmission System Operator⁷ should be adequate; standards must be improved in combination with higher security and enhanced operational skills. **Transmission System Operator will do supportive functions for electricity trade – metering, controlling stability, balancing system and providing information to market participants.** All this depends on chosen market model, Market Rules and trading arrangements. Systems for Transmission System Operator must be established based on system control and adequacy assessment information (SCADA).
- 5.2. If joining UCTE, part of **generators must have governing (regulating) systems** adequate to UCTE operational standards⁸.
- 5.3. **DC connection requires finding appropriate geographical location** which is not necessarily will be in Ukraine – it might be also in Slovakia, Hungary, Romania or Moldova.

6. Structural challenges

- 6.1. To be more liberal than today, Ukraine's wholesale electricity market requires structural changes. Central pooling (Single Buyer) power purchase model with “Energorinok” in a core was good for overcoming power and payment crises, but now customers prefer more freedom to negotiate about supply contracts with suppliers/generators directly and gain something from competition and more information on security of supply. **This means substantial change in role and responsibilities of “Energorinok”** – it has to become a power exchange, supporting other market participants with balancing functions or play a role of guaranteed supplier for those who don't like to take risk of liberalised market. All this might come out of project financed by WB that is currently going on in NERA. Project must give suggestions to the Cabinet of Ministers of Ukraine how to move away from Single Buyer model in electricity wholesale market.
- 6.2. Demanding on impact assessment grouping of power plants might be required to make them more financial viable and technically secure in competitive market.

7. Economical and financial consequences.

- 7.1. The bigger market area is, **the more opportunities exist for power generators to find customers** or niches for sale their products - capacity (MW) and/or energy (MWh). Only absolutely non-reliable and non-economical producers will suffer. This means that financial performance of competitive generators in expanded market area can be improved.
- 7.2. **Reliability of generators directly depends on sales' financial stability and profitability.** Selling electricity outside domestic markets principally must help relieve a burden from domestic customers if regulation is proper and social safeguards for vulnerable customers are in place.
- 7.3. Ukraine has an **advantage in regional market** – possibility to sell surplus of electricity from nuclear plants, but coal based plants is an option. This might reduce subsidies given to coal industry and lower social consequences in coal mining areas.
- 7.4. Typical for liberalisation process question on **social consequences** from the outcome will arise – is it possible that all cheapest electricity would be sold abroad to gain profit and Ukrainian customers,

⁷ NEK “Ukrenergo”

⁸ Higher than those in UPS

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particularly households, remain with more expensive portion? Look, how much are paying those in liberalised markets of the EU!

7.5. Social consequences must be deeply analysed when selecting market models and establishing regulatory regime for them.

8. Remaining legal issues

8.1. Approximation of the Law of Ukraine “On Electricity” to the EU Directive 2003/54/EC. Three principles of the Directive are crucial for approximation in spirit of common principles for internal and competitive electricity market:

8.1.1. Role and Responsibilities of Ukrainian Transmission System Operator. Unbundling in Ukraine is already quite advanced – Transmission System Operator is separated from production, trade and distribution in ownership terms. For that reason approximation will be not complicated.

8.1.2. Functions of Regulator. Regulator is legally functioning as a body, independent from industry and the Cabinet of Ministers with all possibilities to fulfill requirements of the Directive.

8.1.3. Customers rights in markets, gradual opening of markets. This is more challenging part for approximation due to existence of a Single Buyer - “Energorinok”, which isolates customers of wholesale market from suppliers and eliminate their choice to select supplier.

8.2. Possible market model and market rules will be necessary to introduce certain freedom for customers in supply decisions. A simple transposition of the Directive 2003/54/EC is not possible without structural reform of power sector as concerns trade.

9. What should RIA cover?

9.1. Reasons to join new markets:

9.1.1. security improvements;

9.1.2. economical security, integration with other European markets

9.1.3. financial gains

9.1.4. environmental improvements

9.1.5. more competitive economy

9.1.6. social gains

9.1.7. legal improvements

9.1.8. others if any

9.2. Technical barriers to be overcome:

9.2.1. power system parameters

9.2.2. controlling and metering means in trading

9.2.3. technical improvements

9.3. Economical gains and losses:

9.3.1. economical risk factors

9.3.2. sensitivity analyses

9.3.3. impact on macroeconomic level

9.3.4. customer groups facing economic risks

9.4. Financial risks and gains

9.5. Environmental consequences:

9.5.1. environmental risks

9.5.2. environmental improvements

9.6. Restructuring costs and gains in medium and long term

9.7. How much will it cost for state budget or regional/municipal budgets?

9.8. To which extent it will influence energy prices for industry, commercial and household customers?

9.9. What might be public attitude? What should be done for public informing?

9.10. What NGOs and professional associations shall be informed and from which of them approval and support should be obtained?

9.11. Are political freedoms of citizens are limited somehow?

10. Who must participate and contribute to impact assessment:

10.3. Ministry of Fuel and Energy

10.4. NERA

10.5. Transmission System Operator – NEK Ukrenergo

10.6. Ministry of Economy

10.7. Ministry of Finance

10.8. Generating and regional Companies

10.9. Professional associations

10.10. NGOs

11. In which way participation in SEE EE contributes to achievement of the abovementioned objectives and to overcoming of the problems:

10.1. Principles and targets of South - East Europe Energy Community:

Improving the balance between energy supply and demand is crucial to boost and sustain economic development in South Eastern Europe. This requires a strong commitment by countries of the region towards market oriented reforms in order to: improve overall energy conservation and efficiency, reduce an excessively high energy intensity of production compared to international standards; strengthen national institutional capacities; approximate Ukrainian legislation and regulations to the EU norms and practices. It also means that countries should be prepared to draw fully on substantial gains, resulted from energy trading between themselves and with their neighbours. This implies that current fragmentation of energy supply has to be overcome through cooperation among various entities concerned and through physical connection/reconnection of the network. A regional approach to energy supply, therefore, offers significant advantages both in terms of improved utilisation of existing supply and production capacities, as well as optimisation of future investments. Major steps have already been taken over the last couple of years towards achievement of these objectives in both electricity and natural gas sectors.

Tasks and activities:

The task of the Energy Community shall be to set up relations between the Parties and to create legal and economic frameworks for Network Energy⁹ in order to:

(a) create a stable regulatory and market framework capable to attract investments into gas networks, power generation, transmission and distribution networks, so that all Parties have access to stable and continuous energy supply that is essential for economic development and social stability,

(b) create single regulatory space for trade in Network Energy that is necessary to match the geographic extent of the concerned product markets,

(c) enhance the security of supply of the single regulatory space by providing a stable investment climate, so that connections to Caspian, North African and Middle East gas reserves can be

⁹ “Network Energy” shall include the electricity and gas sectors falling within the scope of the European Community Directives 2003/54/EC and 2003/55/EC1.

developed, and indigenous sources of energy such as natural gas, coal and hydropower can be exploited;

(d) improve environmental situation in relation to Network Energy and related energy efficiency, foster use of renewable energy, and set up conditions for energy trade in the single regulatory space,

(e) promote competition in the Network Energy market on a broader geographic scale and exploit economies of scale.

10.2. Joining SEE EE in full membership scale, Ukraine complies with all Treaty requirements and implement all organisational principles;

10.3. However, Ukrainian energy market participants can't physically get access to markets falling under Treaty on SEE EE. Both Network Energies electricity and gas are totally isolated between these two geographical areas – Ukraine and Western Balkans.

10.4. Whether participation in SEE EC can motivate Ukraine to be active in strategic areas and to become substantial player in stable regional electricity markets?

10.4.1. Approximation of the Ukrainian legislation to the legislation of the EU (what is different from CPA framework and approach?)

10.4.2. Institutional building

10.4.3. Specific skills in electricity market?

1) Specific interests of Ukraine in energy network:

- a) to buy (import) necessary amount of natural gas and electricity for domestic consumption
- b) resell (transit) traded volumes
- c) sell surplus (export) of electricity and gas for consumption outside the national boundaries

2) Necessary preconditions for energy trade:

- a) trading area with certain regulatory regime
- b) access to networks (market model and trading arrangements)
- c) adequate institutional building (network operators)
- d) freedom for customers to choose supplier, supported by market model.