

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### CONTENTS

- Background
- Purpose
- Legal Background from the Treaty
- General Characteristics of the Albanian Power System
- Hydropower Potential of the Albanian Power System
- Albanian Power System Balance and Transmission Capability
- Electricity Imports and Tendering
- Electricity Crisis in the 4th Quarter of 2005
- Solidarity in the Crisis – Mutual Assistance
- Solution: Infrastructure Reinforcement and New Construction
- Conclusion

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### BACKGROUND

- Article 3c of the Treaty establishing the Energy Community

'...the activities of the Energy Community shall, among others, include the creation for the Parties of a market in Network Energy without internal frontiers, including the coordination of **mutual assistance** in case of serious disturbance to the energy networks or external disruptions, and which may include the achievement of a common external energy trade policy...'

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### PURPOSE

- To explain legal background from the Treaty establishing the Energy Community which relates to the mutual assistance in case of serious disturbance
- To point out to the requirement for a Procedural Act for the operation of the mutual assistance obligation
- The presentation reflects to a well known case of electricity crisis in Albania
- The illustrative example occurred in the 4th quarter of 2005
- It points out to the solidarity exhibited and mutual assistance offered by neighbouring the Former Yugoslav Republic of Macedonia

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### LEGAL BACKGROUND FROM THE TREATY

- The Treaty establishing the Energy Community: Title IV – The Creation of a Single Energy Market, Chapter IV – Mutual Assistance in the Event of Disruption, Articles 44-46
- Parties to seek an expeditious resolution in the event of disruption of Network Energy supply affecting a Party and involving another Party or a third country
- The Ministerial Council shall meet upon request of the Party directly affected by the disruption
- The Ministerial Council may take the necessary measures in response to the disruption
- Within one year of the date of entry into force of the Treaty (by July 2007), the Ministerial Council shall adopt a Procedural Act for the operation of the mutual assistance obligation
- Procedural Act may include the conferral of powers to take interim measures to the Permanent High Level Group

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### GENERAL CHARACTERISTICS OF THE ALBANIAN POWER SYSTEM

- No new generation power plant since 1986
- Major electricity crisis since the summer of 2000
- Huge demand for electricity
- 98% generated domestically in the HPPs
- Almost exclusive reliance on the fluctuating electricity generation from the HPPs
- Internal generation/load balance difficult due to a low percentage of the TPPs
- Limited capacity of the HPPs and the lack of adequate transmission interconnection lines

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### GENERAL CHARACTERISTICS OF THE ALBANIAN POWER SYSTEM



## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### GENERAL CHARACTERISTICS OF THE ALBANIAN POWER SYSTEM

- In 2005, residential consumption of electricity rose by 8% from the previous year
- Since 1991, household consumption levels have risen by 500%, while Albanian capacity to generate energy decreased by 14%
- Two major problems:
  1. up to 40% of electricity is lost in the distribution
  2. consumers are defaulters when it comes to electricity bills

- Case study: Albania's electricity crisis in the 4th quarter of 2005 -

## HYDROPOWER POTENTIAL OF THE ALBANIAN POWER SYSTEM

- Gross theoretical hydropower potential 40 TWh/year
- Technically feasible potential 15 TWh/year
- Economically feasible potential 6.380 TWh/year
- 35% (2.2 TWh/year) has been developed so far on the Drin River
- The Energy Strategy calls for the development of new hydro capacity

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### ALBANIAN POWER SYSTEM BALANCE AND TRANSMISSION CAPABILITY

- Total installed generation capacity 1684 MW
- Production around 5.5TWh/year in hydrologically favourable conditions
- One 400 kV line to Greece (500 MW capacity), one 220 kV line to Montenegro (200 MW of capacity) and one 220 kV line to UNMIK (200 MW of capacity)
- Indicative value of the net transfer capacity for the summer 2006 season from the JIEL+Greece block to Albania equals only 200-250 MW (from Greece to Albania it is 0 MW)
- Inadequate transmission interconnection and a lack of modern dispatch centre makes electricity import a very difficult task
- Recently established and properly unbundled Albanian transmission system operator (OST) is still not a member of the UCTE

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### ELECTRICITY IMPORT AND TENDERING

- Domestic production satisfied 97% of demand in 1990, but only 47% today
- The rest of energy has to be imported from neighbouring countries, if they do not experience difficulties in electricity supply of their own
- Electricity imports is too expensive a solution for economically weak country
- Invitations to bid for electricity import tend to fail in unsuccessful auction at the average price for electricity delivered 34.5 €/MWh
- Average residential electricity price equals approximately 50€/MWh
- If 40% of it is generation, price of domestic production is around 20€/MWh
- Electricity is imported at significantly higher price, of course if there is any at all and at the price range given
- The equalising fund compensates for price difference

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### **ELECTRICITY CRISIS IN THE 4<sup>th</sup> QUARTER OF 2005**

- Situation changed dramatically through 2005
- Electricity target for 2005:
  - total demand 6.64TWh/year,
  - total domestic generation 5TWh/year,
  - total import 2.25TWh/year and
  - load shedding 0.34TWh
- In 2005, max. peak demand 1254 MW, total gen. capacity 1364 MW
- Percentage of reserve: 13% in January, 57% in July
- In the first 6 months the export-import balances around zero
- Due to serious droughts its imports constantly increasing from July
- Serious load shedding in the last quarter of 2005 (20% in Oct/Nov)
- Reasons:
  - insufficient transmission network capacities and
  - insufficient amount of offered energy in the region in these months

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### **ELECTRICITY CRISIS IN THE 4<sup>th</sup> QUARTER OF 2005**

- KESH extended mandatory blackouts for both urban and rural areas
- In urban areas, the cut off from 7:30 AM to 4:00 PM
- In rural areas, the cut-off started an hour earlier, at 6:30 AM
- Electricity outages were alternated every two hours after 4:00 PM
- In some places, as many as 18 hours daily without electricity
- In the capital city of Tiranë, neighbourhoods experienced 10-12 hours
- In rural areas, cuts lasted even longer
- Business owners operated back-up generators at a high level
- This was a major expense in a low margin business

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### ELECTRICITY CRISIS IN THE 4<sup>th</sup> QUARTER OF 2005

- The crisis decreased Albania's annual economic growth rate from 6% to 5.5% in two months alone
- The only helpful thing in the short-term was rain
- In the last five months prior to the crisis, the water level in the largest reservoir dropped 40 meters, being at the time of crisis only eight meters above the minimum level needed to generate any electricity
- In normal seasonal conditions,
  - the power plants can generate on average 12 GWh per day,
  - the maximum transmission capacity to import is 10 GWh per day,
  - the demand is between 15-27 GWh per day
- With very low water levels in the reservoirs, the increasing demands can not be met in the winter months even if importing at full capacity

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### **ELECTRICITY CRISIS IN THE 4<sup>th</sup> QUARTER OF 2005**

- "We are continuing the negotiations, as our requests were unplanned and surprising for the Ukrainian authorities. They are considering offering us electricity for the period November-December. The electricity from Ukraine would pass through Romania and Serbia, so we are also negotiating with these countries to transmit the electricity," said Economy Minister Genc Ruli, appealing to the public to conserve.

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### **SOLIDARITY IN THE CRISIS – MUTUAL ASSISTANCE**

- Solidarity in the crisis was expressed by neighbouring the Former Yugoslav Republic of Macedonia
- Counter-measures relating to mutual assistance included
  1. transferring to Albania some of the electricity the Former Yugoslav Republic of Macedonia imports from Greece, and
  2. releasing more water from Lake Ohrid into the Black Drin River in Albania to boost production at hydro plants in Albania
- The Yugoslav Republic of Macedonia helped Albania to resolve its electricity crisis by allowing water from Lake Ohrid to be used to create hydroelectric power
- This prompted significant criticism from Macedonian environmental activists, who said that larger water release could damage the delicate balance of the ecosystem in the lake

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### **SOLIDARITY IN THE CRISIS – MUTUAL ASSISTANCE**

- The Drin River system is the largest river of Albania
- Two large reservoirs constructed on the Former Yugoslav Republic of Macedonia side, another 4 dams and 3 reservoirs in Albania
- All are with the main purpose of hydroelectric power (providing over 90% of Albanian electricity)
- 35% of Albania's hydrological resources come from neighbouring countries
- 50% of its territory is within international river basins
- Trans-boundary water issues are of particular concern to Albania
- The Former Yugoslav Republic of Macedonia assigns a high priority to enhance cooperation in the management and use of trans-boundary rivers and lakes shared with its neighbouring countries
- Cooperation with Albania is well advanced in relation to the management and protection of Lake Ohrid

- Case study: Albania's electricity crisis in the 4th quarter of 2005 -

## **SOLUTION: INFRASTRUCTURE REINFORCEMENT AND NEW CONSTRUCTION**

- Only a few operational/planning measures could be envisaged:
  - conservation of water levels in reservoirs, and
  - careful planning to secure imports to help alleviate consequences of serious droughts

- Case study: Albania's electricity crisis in the 4th quarter of 2005 -

## **SOLUTION: INFRASTRUCTURE REINFORCEMENT AND NEW CONSTRUCTION**

- Among infrastructural projects, the most important ones are:
  - TPP Vlora with a generation capacity of 1TWh/year
  - New 400 kV Tirana substation
  - 400 kV OHL Elbasan – Tirana – Podgorica (connection to Montenegro)
  - 400 kV OHL Vau i Dejes – Prishtine (connection of Albanian hydro generation portfolio with the UNMIK's thermal one and thereby opposite power exchanges in winter/summer seasons)
  - New National Dispatching Centre in Tirana
  - Promotion of more feasible energy sources (i.e. gas) for heating purposes

## - Case study: Albania's electricity crisis in the 4th quarter of 2005 -

### CONCLUSION

- The Ministerial Council shall adopt a Procedural Act for the operation of the mutual assistance obligation within one year of the date of entry into force of the Treaty (by July 2007)
- This may include the conferral of powers to take interim measures to the Permanent High Level Group
- Procedural Act may be very useful tool when it comes to solving the crisis such as the one relating to electricity supply in Albania at the end of 2005