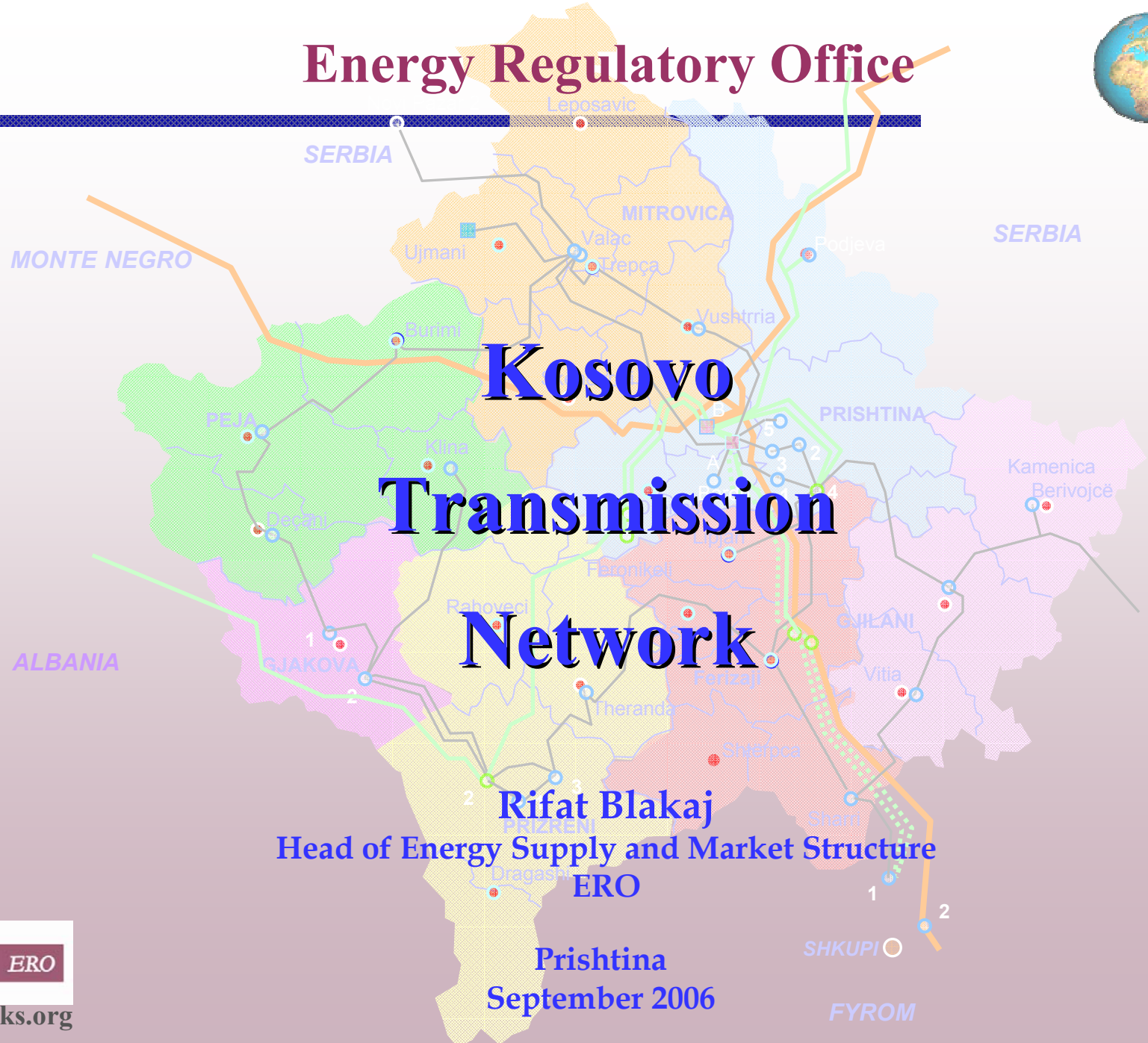


# Energy Regulatory Office



## Kosovo Transmission Network

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Prishtina  
September 2006



ERO

[www.ero-ks.org](http://www.ero-ks.org)

# Background

- **Territory 10 877 km<sup>2</sup>**
- **Approx. 2 million inhabitants**
- **Installed capacity 1513 MW**
  - ◆ In 2005
- **Net Production 4000 GWh**
- **Consumption 4264 GWh**
- **Import (Intake) 490 GWh**
- **Export (Off take) 226 GWh**

# Lines and Transformers

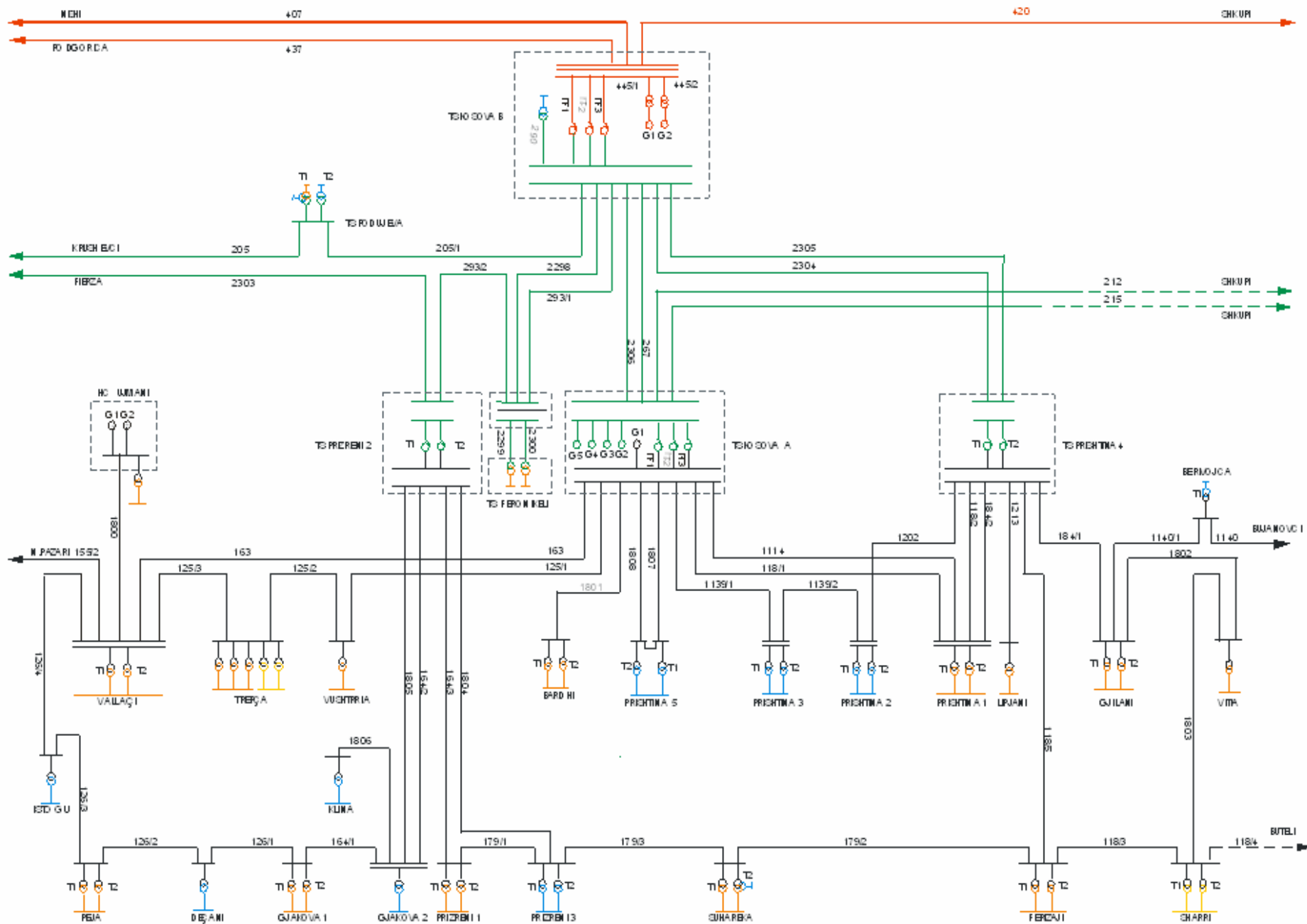
## Lines

- HVL 400 kV - 181 km in HN - 179 km
- HVL 220 kV - 361 km in HN - 182 km
- HVL 110 kV - 643 km -

## Transformers

- Tr 400/220 kV - 1200 MVA in HN - 1200 MVA
- Tr 220/110 kV - 1000 MVA -
- Tr 220/35/10(20) kV - 400 MVA -
- Tr 110/35/10 kV - 1162 MVA -
- Transit (2005) - 3129 GWh
- Transit Key (2005) - 43.02

# Kosovo Transmission Scheme



# Calculation of NTC

## *Important Influence Factors*

### *Network data:*

- Summer/Winter ratings
- Maintenance

### *Load/Generation*

- Summer/Winter
- Week/Weekend
- Day/Night

### *Scenario's*

- Generation Concentration

### *Transfer Reliability Margin (TRM)*

Value for import/export



# Calculation of NTC, TRM, ATC, AAC

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*Currently this calculation is not applied in Kosovo*

- *For capacity calculation are missing:*
  - approach in the general and daily regional data
  - training for use of PSS/E software for capacity allocation

# Capacity Allocation

Direction	Allocation ID	TTC	TRM	NTC	ATC (KOSTT)
from Albania to Kosovo	ALKO	260	50	210	105
from Montenegro to Kosovo	MNKO	400	100	300	150
from Serbia to Kosovo	SRKO	660	150	510	255
from Macedonia to Kosovo	MKKO	400	100	300	150
from Kosovo to Albania	KOAL	260	50	210	105
from Kosovo to Montenegro	KOMN	400	100	300	150
from Kosovo to Serbia	KOSR	660	150	510	255
from Kosovo to Macedonia	KOMK	400	100	300	150

- Data in the table are regional
  - Allocation Capacity right of Kosovo lines is arrogated by Serbia
  - Also there are many problems in capacity allocation for import and export

# Current situation

## ❖ Network 400 kV is stabile

- mainly used for transit
- n-1 criteria is not fulfilled for transformers

## ❖ Network 220 kV lines mainly stabile, congestion in transformers. n-1 criteria is not fulfilled

- line to Albania in many cases insufficient
- line to Serbia under utilized

## ❖ Network 110 kV with problems in some areas

- used for internal consume
- n-1 criteria is not fulfilled in most of HV lines and TR
- three interconnection lines are used sometimes in island form and very rare in parallel

# Electricity flow in HV lines

## *Some features:*

- Electricity flow is usually from north to south direction
- Kosovo has no/or very slight/impact in electricity flow
- In 400 and 220 kV side voltage level lower than the nominal one
- High level of electricity flow in proportion with consumption

## Electricity flow in HV lines

GWh	HVL 420 Macedonia	HVL 407 Serbia	HVL 437 Montenegro	HVL 2303 Albania	HVL 205 Serbia
Offtake	-2	-3,066	-15	-460	-31
Injection	1,998	0	1,170	45	133
Total Flow	2,000	3,066	1,185	505	164
Average (MWh)	228	350	135	58	19

# Electricity flow in HVL

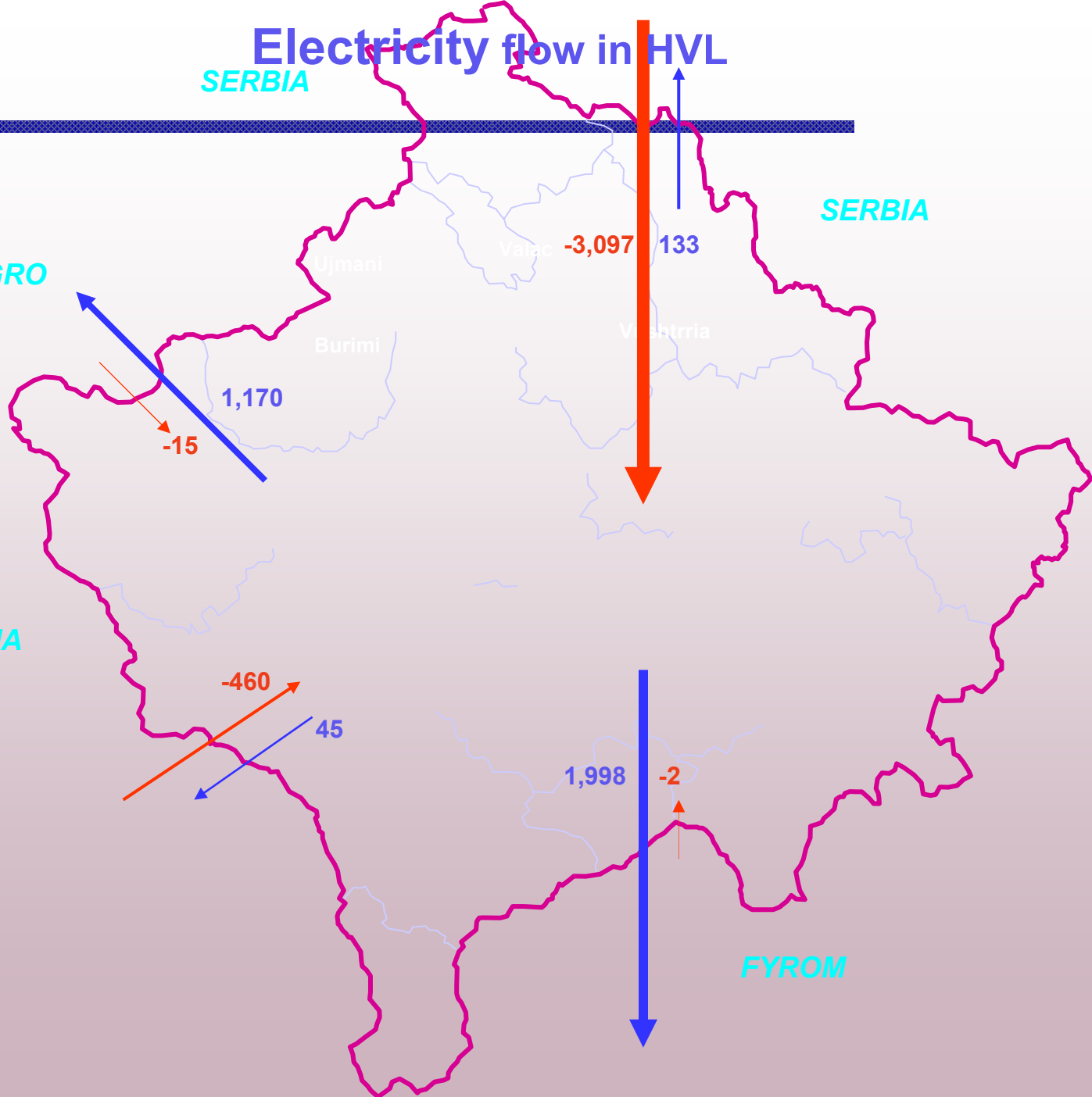
SERBIA

SERBIA

MONTE NEGRO

ALBANIA

FYROM



ERO

# Kosovo Transmission Network



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*Thank  
You*

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