



# **Slovenske Elektrarne position on Energy Roadmap 2050 and SK Energy Policy**

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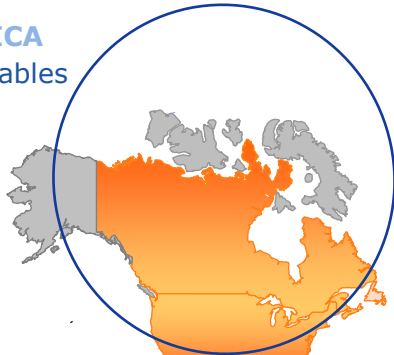
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# Slovenské elektrárne, member of Enel Group

## Enel world presence

**NORTH AMERICA**  
Focus on renewables



**LATIN AMERICA**  
Strengthening leading position



Presence in:  
40 countries

Installed capacity:  
96.500 MW

Customers:  
61 million

Annual output:  
290 TWh

Employees:  
78.300

EBITDA:  
17,5 bln €

CAPEX 2011-2015:  
€31 billion

**SLOVAKIA**

Leading position in generation,  
primary role of Nuclear

**FRANCE**

Focus on renewables  
and nuclear

**RUSSIA**

Capturing growth and  
value of our integrated  
position

**IBERIA**

Strengthening leading  
position

**ROMANIA**

Leading position in  
Romanian distribution

**GREECE**

Focus on renewables

**ITALY**

Strengthening leading position



# Energy is the cornerstone of our society

## Supporting regional growth and investments

ENERGY SECURITY REMAIN THE EQUATION TO SOLVE.....

*"To guarantee the uninterrupted physical availability of energy at a price which is affordable, while respecting environment concerns" (\*)*

- These requirements go on shaping the future energy mkt
- The sustainable value of all energy Companies depends on how assets and business will be kept compliant to this target during the time

(\*) IEA definition

# Energy Security Requirements

Same target, new path

Long Term

Implement investments to supply energy in line with demand developments and environmental needs

Short Term

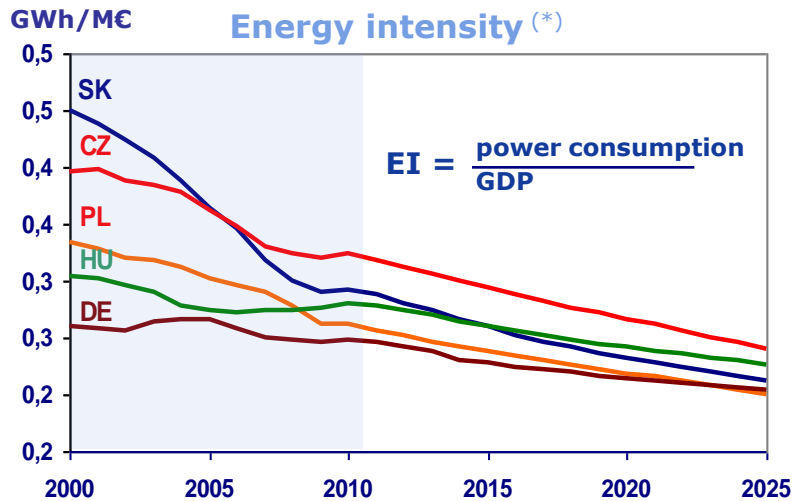
Keep the ability of the energy system to react promptly to sudden changes in supply and demand

Economic developments, environmental goals, market opening and integration are deeply changing the algorithm of Energy Security both LT and ST perspective

# EU Energy System Development

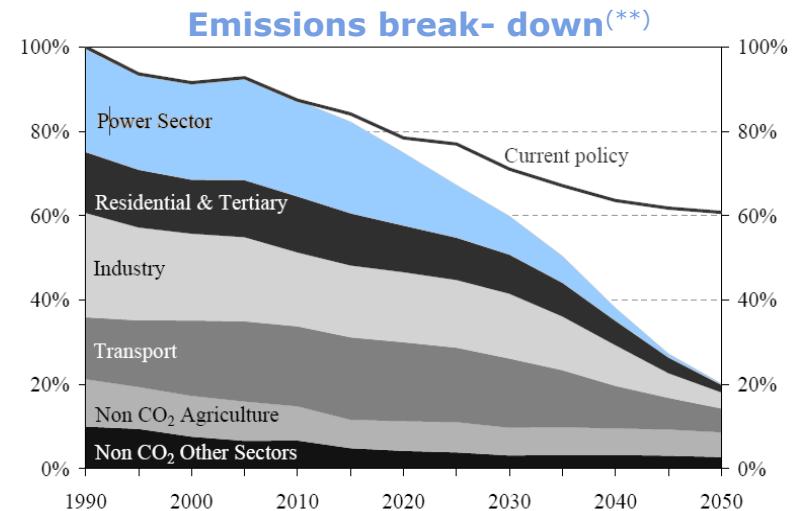
## New characteristics of reference framework (1/2)

### 1 Electricity demand



- Progressive drop of Energy Intensity
- Energy Efficiency will play big role
- Central countries aligned with EU benchmark
- Economic crisis further reducing demand growth

### 2 Decarbonization



- Power target in 2050 is < 7% of total emissions
- Optimal combination of different clean sources needed: renewables, nuclear, clean coal.....
- Strong (economic) push to innovation

LOW DEMAND GROWTH

CO<sub>2</sub> AS A KEY FACTOR

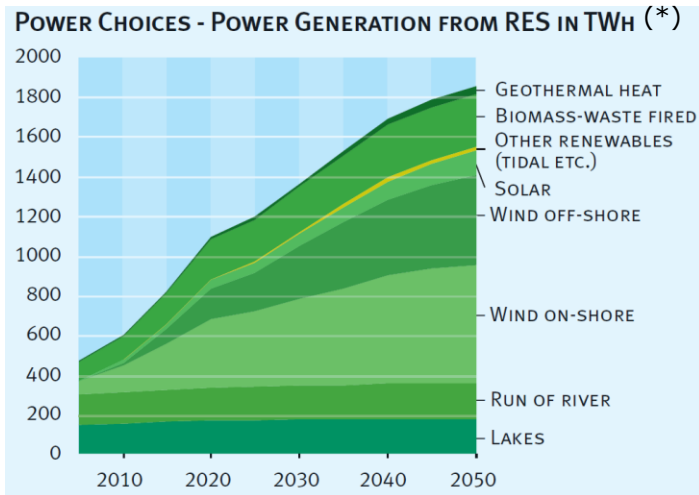
Source: (\*) SE analysis; (\*\*) EU Commission

# EU Energy System Development

## New characteristics of reference framework (2/2)

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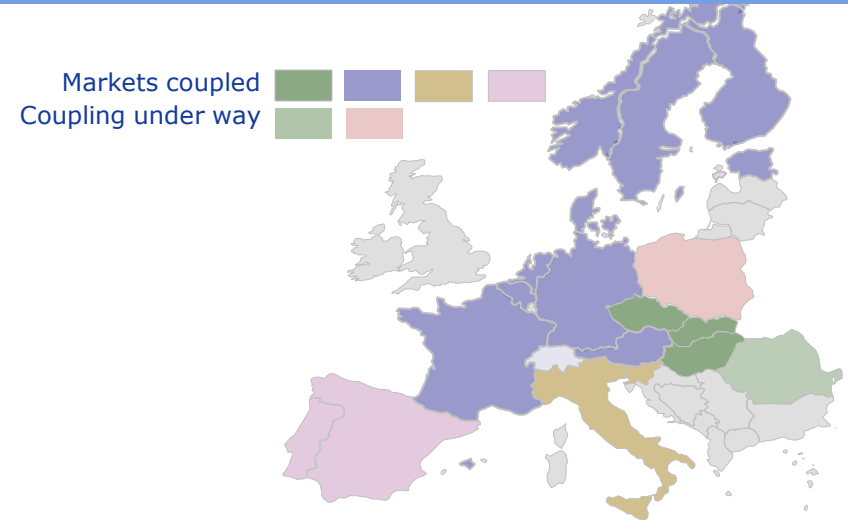
### Renewables



- By 2050 +400 % renewable production
- Average annual growth in DE during last 10 years: PV 70%, Wind 16%
- Plan feasibility challenged by cost concerns

4

### Market Integration



- European market fully integrated by 2015
- Successful integration depends not only from physical interconnections but also from allocation methodology

## SUSTAINABILITY CHALLENGE

## COMPETITION GROWTH

Source: (\*) EURELECTRIC "Power Choice Study"

# Focusing on Central situation

## Slovakia advantage towards future scenario

### Scenario characteristics

- Low demand growth despite good expectation for GDP
- Limited competitive domestic energy sources (little wind/hydro potential)
- Cross-border infrastructures under RES challenge (loop flows)
- Higher competition due to progressive mkt integration (SK ready)
- High CO2 generation exposure in all countries (not in SK)
- Huge volume of obsolete and expensive coal capacity to be shut down by 2015 (not in SK)
- No relevant capacity investment under way (not in SK)

# Investments to match future developments

## Difficult choice in turbulent period

### Investments' key success factors

- Very competitive production cost (direct and indirect cost)
- Low CO<sub>2</sub> emissions
- Little exposure to primary sources mkt volatility
- Leveraging only on real potential of domestic energy sources



# Slovenské elektrárne

## Portfolio characteristics and developments

### Current situation

- Domestic energy balance kept thanks to SE nuclear power up-rates
- Regulation capabilities improved in thermal and hydro sources
- About 85% of production CO<sub>2</sub> free
- Generation fleet competitive in regional market
- 2,5 b€ already invested from 2006

### Developments under way

- EMO3,4 restores export capabilities / energy balance kept until 2030
- Improved environmental performance of thermal sources
- More than 90% of production CO<sub>2</sub> free
- Space to further improve regulation capabilities
- Other 2,5 b€ to be invested in the next 5 years

# SE Investment Plan

## Complex and integrated solution



### CPP Novaky

- Environmental retrofitting of units 1 and 2
- Construction of new heating source
- Increase use of biomass



### CPP Vojany

- Unit 5 back to operation
- Increase of biomass use to 20%



### HPPs

- Increase HPPs efficiency
- Additional small hydro
- Regulating capabilities improvement



### NPP Bohunice

- Long Term Operation project
- Modernisation already concluded (0,5 b€)



### NPP Mohovce

- Units 3,4 under construction
- Uprate of units 1,2

# EMO3,4

## The larger investment in Slovakia

**>3 bln €  
Budget /  
each year  
1% impact on  
SK GDP**

**150>  
contractors  
at site /  
55% SK  
companies**

**800>  
SE / Enel  
experts**

**25 mil.  
manhours  
to be worked**

**3.500  
workers  
(peak) /  
10.000  
people  
involved**



# Beyond capacity perspective

## Introducing innovation on consumers side

- Public / industrial light with LED technology (up to -50% consumption)



- Energy audits to customers
- Promoting smart metering implementation
- Supporting development of electric car infrastructures