

# SEERMAP: Long term outlook to the South East Europe electricity sector

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Budapest Energy Summit 2018



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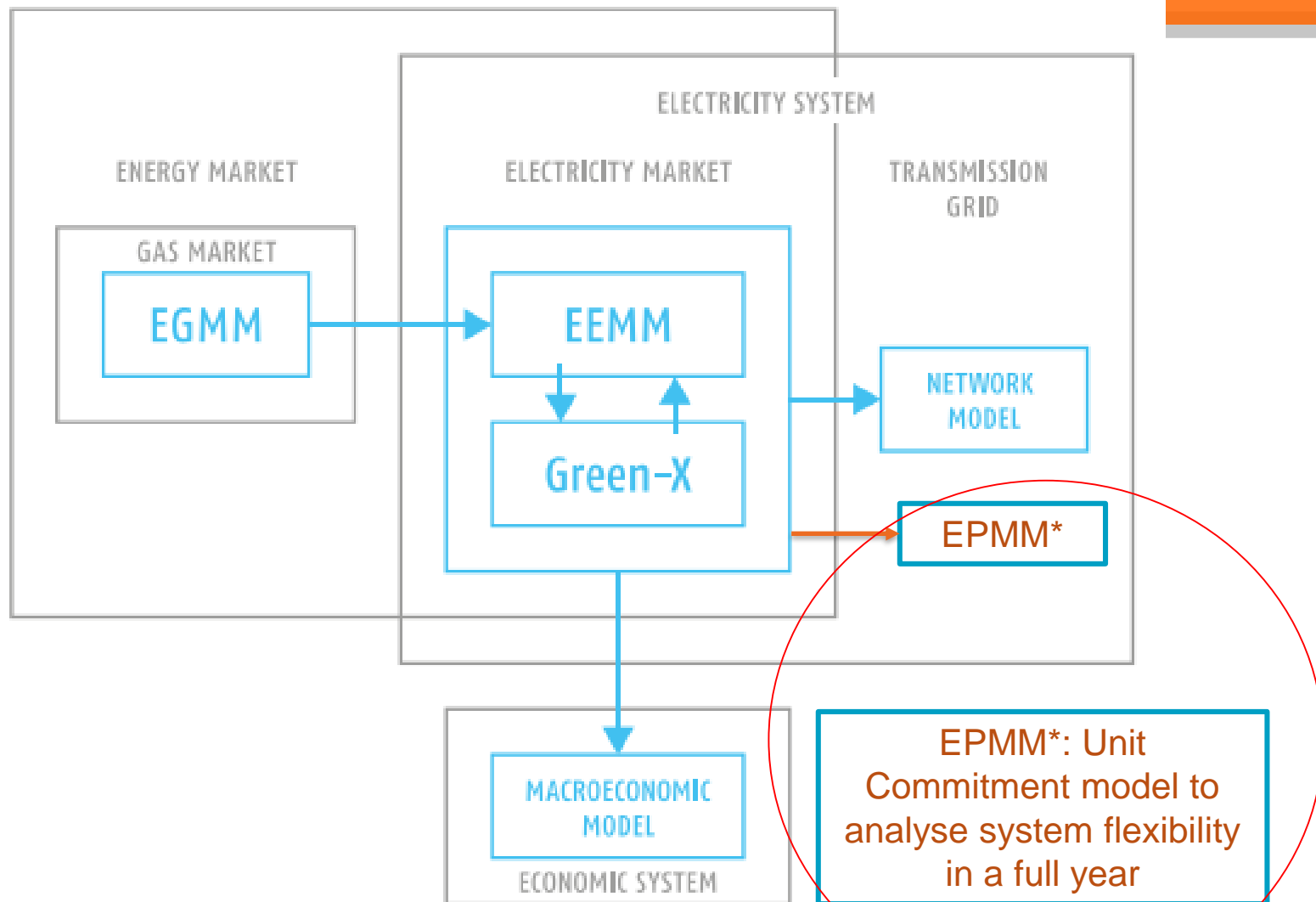
## Main issues to consider:

- Why the SEE region is important for us?
  - Strong connection to CEE, price dynamics is influenced by SEE
  - Investment opportunities
- Long term energy transition - What is the role of RES, natural gas and coal in the SEE markets?
  - Impacts and cooperation opportunities with CEE (e.g. in RES investments, reserve sharing etc.)
- Does the system provides enough flexibility in 2030?

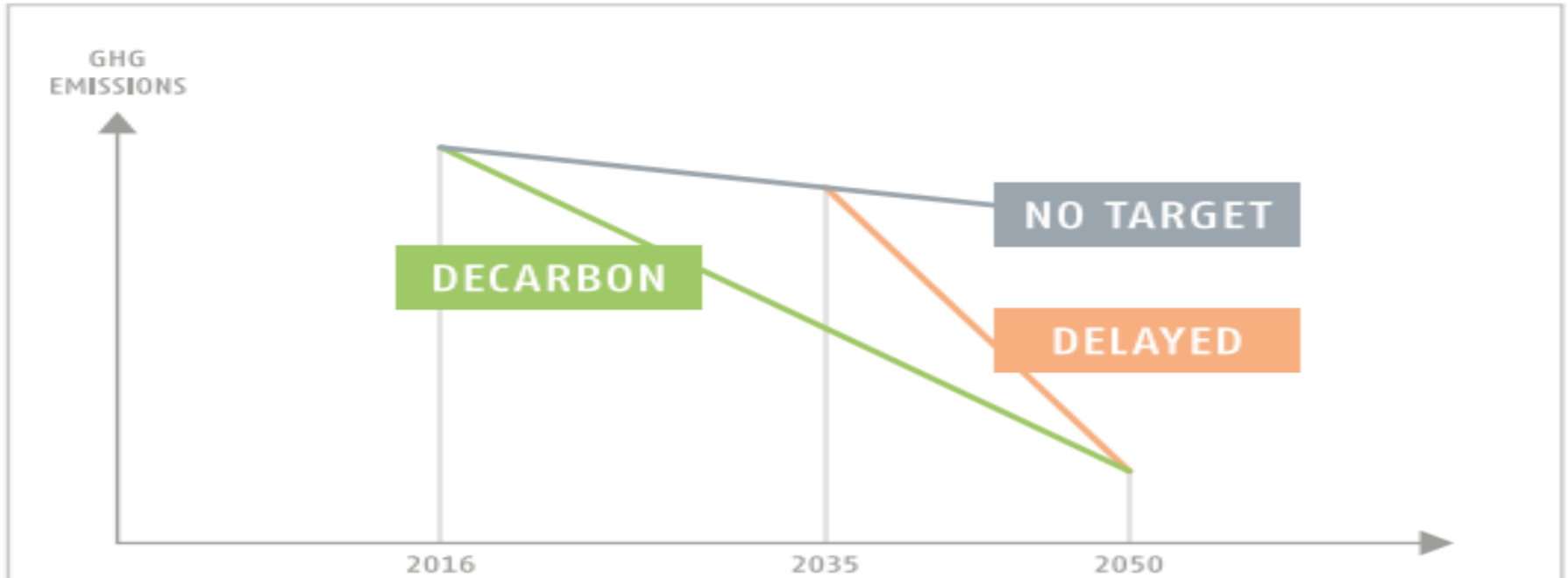
# The SEERMAP and Agora projects

Project title	South East European Electricity Roadmap (2017)
Region	Albania, Bosnia, Kosovo, Montenegro, Macedonia, Serbia, Romania, Bulgaria, Greece
Partners	REKK (lead), TU Wien, OG Research, EKC
Donors	<p>Austrian Federal Ministry of Agriculture, Forestry, Environment and Water</p>  <p>MINISTERIUM FÜR EIN LEBENSWEERTES ÖSTERREICH</p> <p>European Climate Foundation</p>  <p>European Climate Foundation</p>
Web	<a href="http://www.seermap.rekk.hu">www.seermap.rekk.hu</a>
Objectives	<ul style="list-style-type: none"> <li>➤ Analyse the impact of the transition to a low carbon and energy secure pathway the electricity sector until 2050</li> <li>➤ Develop of a Long Term Electricity Roadmap for SEE</li> </ul>
	AGORA project on system flexibility (2018)
Assessment on flexibility	<ul style="list-style-type: none"> <li>➤ AGORA project: analyse the system over a full year if sufficient flexibility is present</li> </ul>

# Models applied and interlinkages



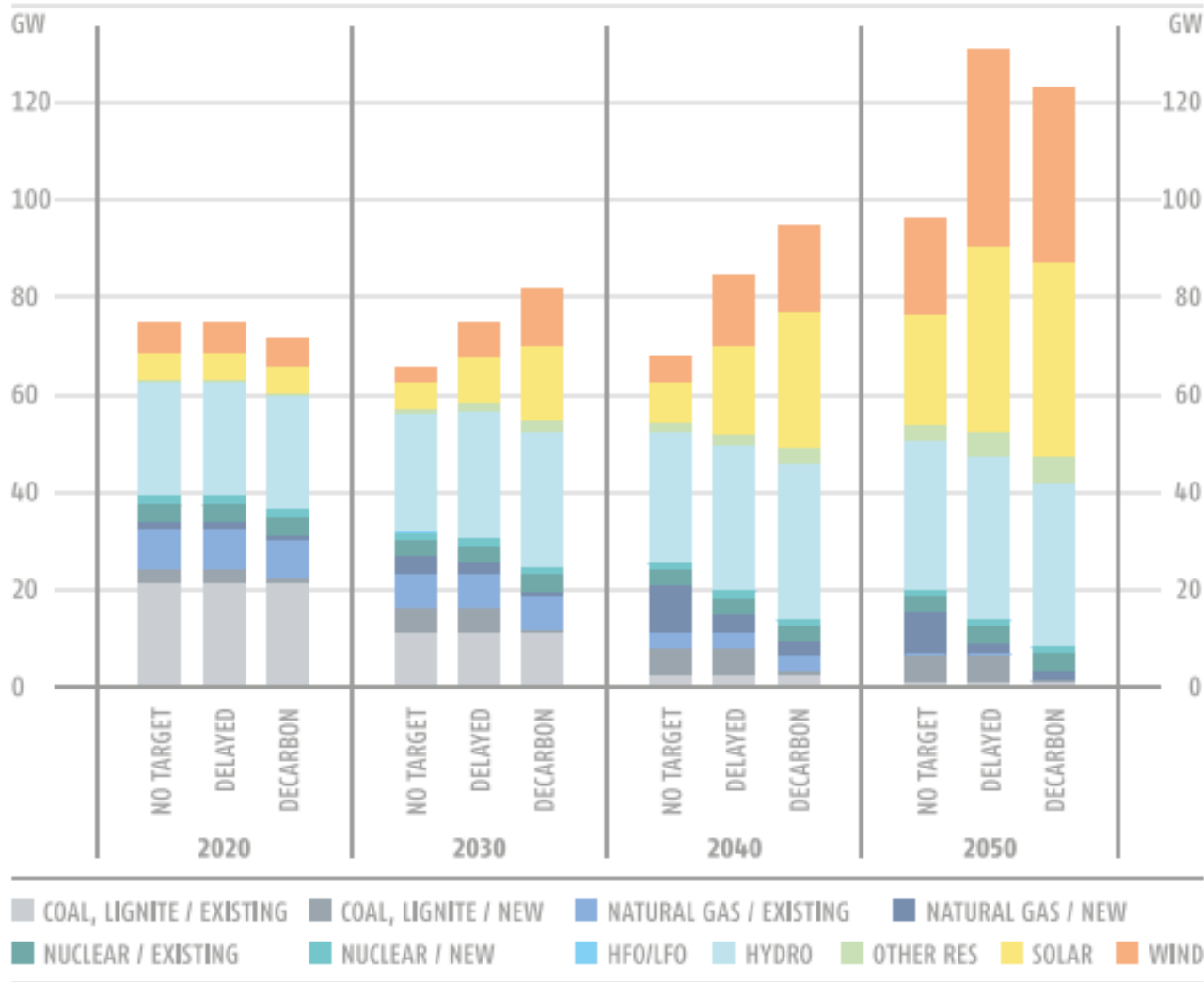
# Three scenarios



	<b>No Target</b>	<b>Delayed</b>	<b>Decarbonization</b>
CO <sub>2</sub> target	No target	Delayed implementation	Ambitious decarbonisation policy
Fossil plants	Many new coal plants	Many new coal plants	Only few coal plants
SEERMAP RES target	NO new RES Support	Continuation of current policies	Ambitious RES support

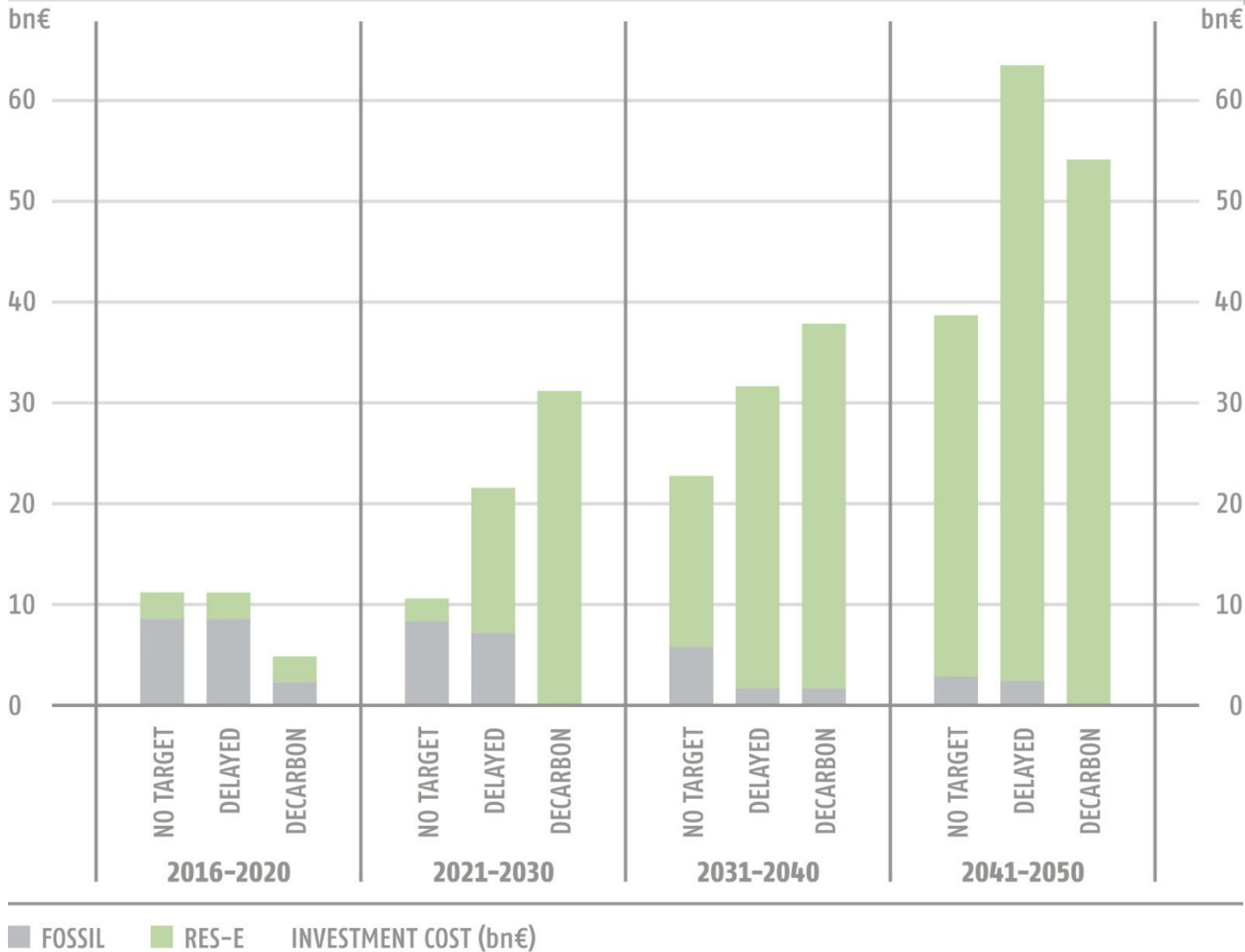
# MODELLING RESULTS FOR THE SEERMAP REGION

# Installed capacity



- Gradual phase out of fossil capacities
- Role of natural gas is uncertain: bridging role in 'decarbonisation' and 'delayed' scenario, where gas is crowded out from the market, and more permanent role in the 'no target'
- Dynamic uptake of RES technologies, especially wind and solar

# Fossil and RES investment cost

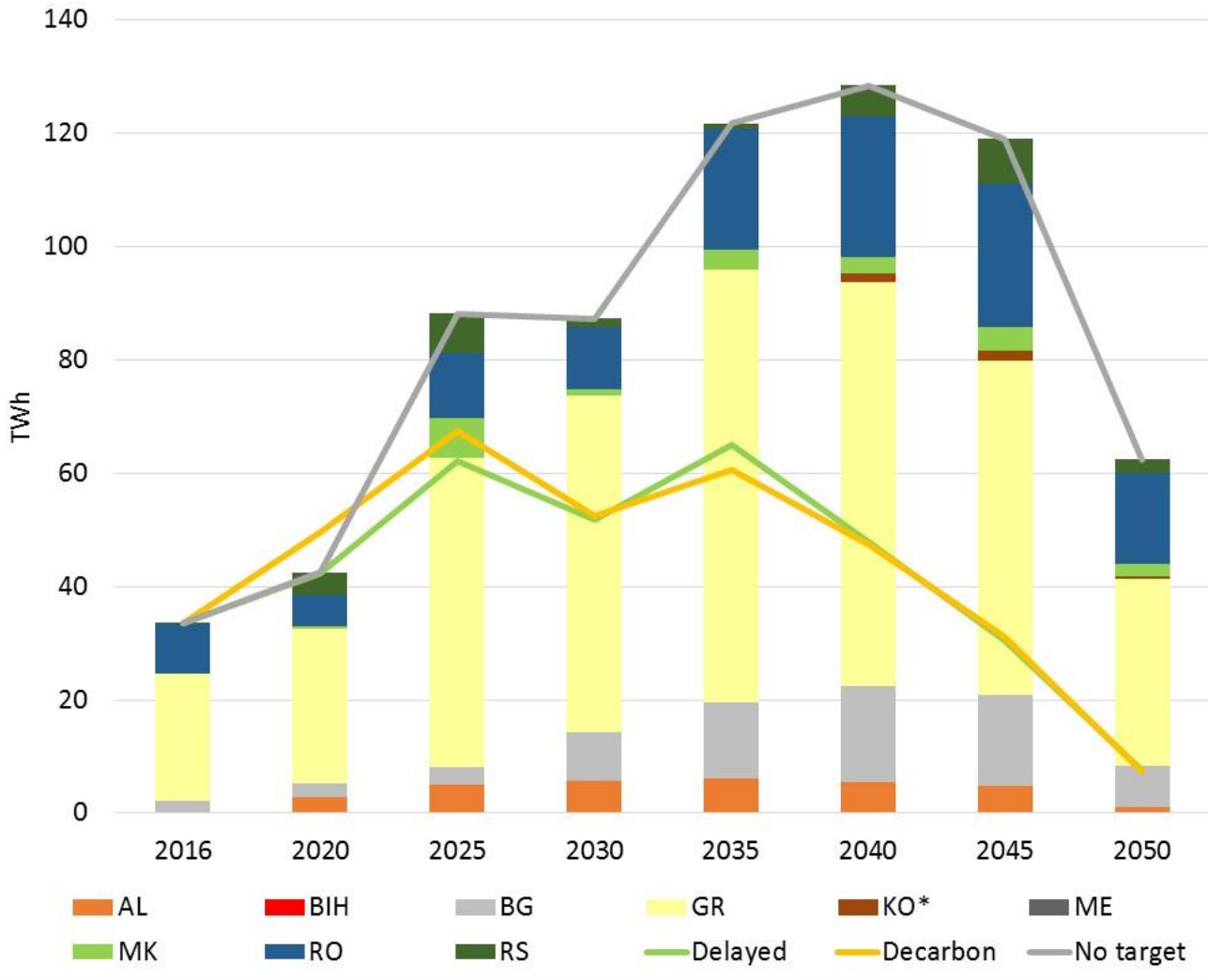


- All scenarios require dynamic investment uptake in the region.
- RES investment costs dominate the post 2020 period
- EnC countries will have to follow competitive procurement of RES investments
- Source of financing: EU and IFIs



# WHAT IS THE ROLE OF NATURAL GAS IN SEE OVER THE LONG TERM?

# Natural gas consumption in electricity generation



- Bridging role of natural gas in all scenarios
- In ,delayed' and 'decarbonisation' scenario gas based generation is crowded out from the market by 2050
- GR, RO and BG are the large gas consumers. In WB6 AL, MK and RS show the highest increase

# Gas infrastructure plans in CEE and SEE

- Eastring, BRUA, South Stream would deliver the same volumes to the same markets
- Competing infrastructures, risk of non-realisation
- Do we need all these infrastructure developments for the long term supply?

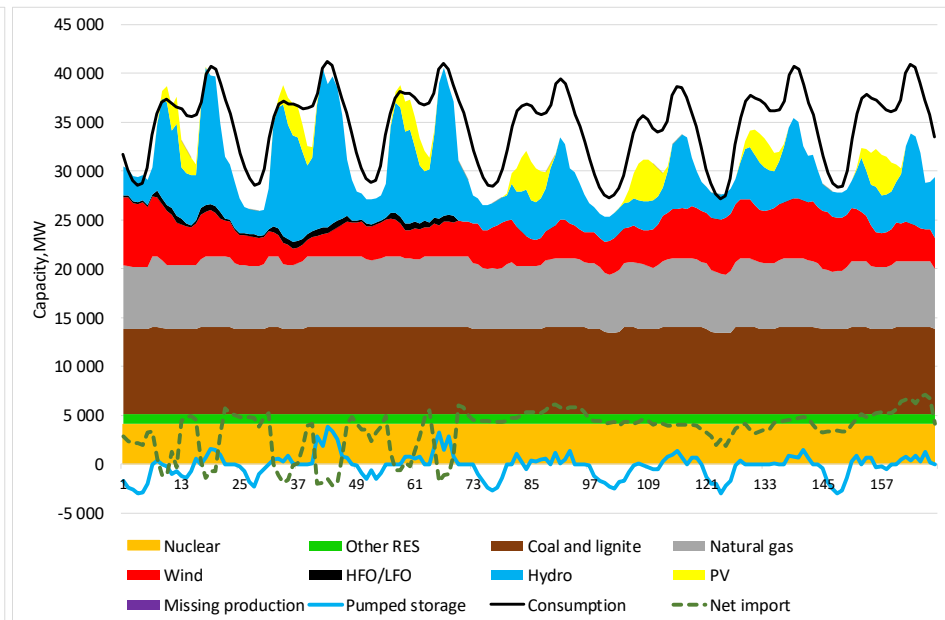
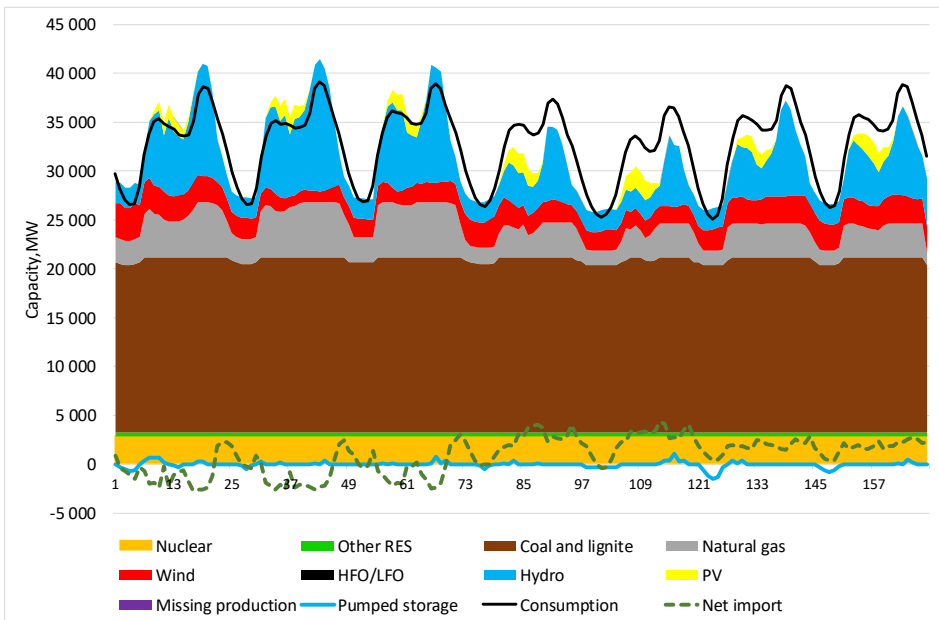


# DOES THE ELECTRICITY SYSTEM OF SEE HAS ENOUGH FLEXIBILITY?

# EPMM: Critical week assessment: electricity mix –winter, SEE region

2017

2030

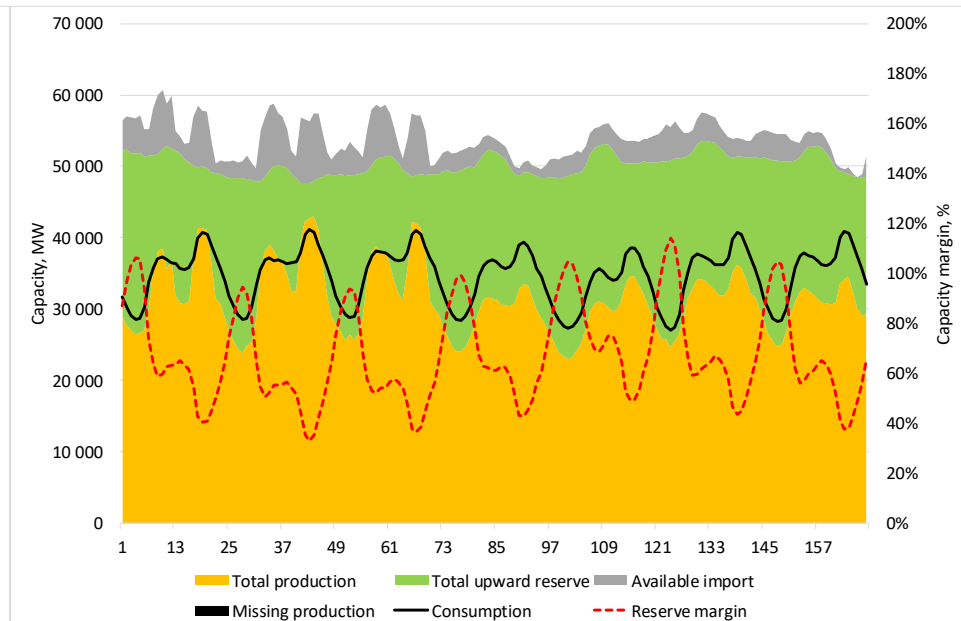
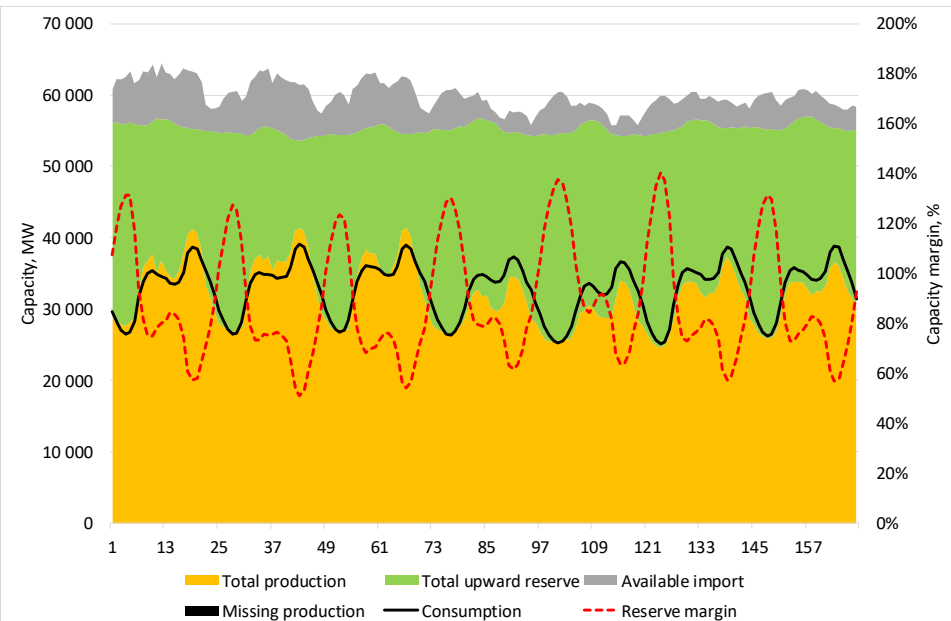


- More variability in production, export and pump storage by 2030 due to higher RES but the SEE system balances!

# EPMM: Critical week remaining margin – winter, SEE Region

2017

2030



➤ **Reserve margin does not fall below 35% in 2030 on regional level, except if new interconnectors are not built (NTCs)**

\*Available import: Additional import possibilities taken into account above the utilised ones

## RES

- RES deployment increases in all scenarios, even without support significant growth after 2040
- To secure financing is a key - role of IFIs and EU!
- Opportunity to CEE investors as well

## Natural gas

- Role of gas is transitional in electricity generation:
  - in the 'no target' scenario it peaks at 2040
  - in the 'delayed' and 'decarbonisation' scenarios it is fully replaced by RES by 2050

## Coal

- Gradual elimination of coal capacity and production in all scenarios
- Very low utilization from 2040 onwards (below 20% - closure)
- Stranded cost in these assets ranges between 2-8 €/MWh

**Thank you very much for your attention!**

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