

## Modelling Results - Albania

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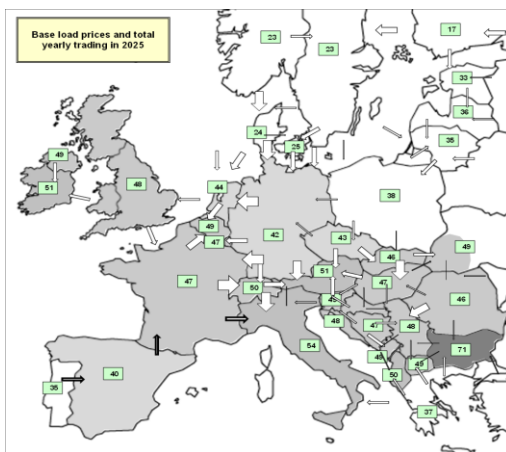
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### Content – Albania

- Scenario description
- Wholesale price impacts
- Generation mix, CO<sub>2</sub> impacts
- Impacts on system costs:
  - Investment costs,
  - RES support costs
- Network impacts
  - Contingencies
  - NTC valuations
  - Network loss impacts

## EEMM model functionality



The figure is just an illustration

### Comments:

- ▶ The map shows the geographical coverage of the model. Its results cover:
  - ▶ Competitive market equilibrium prices by countries
  - ▶ Electricity flows and congestions on cross-border capacities
- ▶ 36 countries are handled in the model.
- ▶ Morocco, Tunisia, Turkey, Moldova, Russia and Belarus are considered as exogenous markets
- ▶ In these markets the net export position are equal with the fact in 2013 (assumed a baseload flow)
- ▶ The model is calculating the marginal cost of around 5000 power plant blocks and sets up the merit order country by country.
- ▶ Taking into consideration the merit order and exports/import, the model calculates equilibrium prices.
- ▶ Power flow is ensured by 85 interconnectors between countries.

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## Scenario definition - summary

- The scenarios modelled by the EEMM models are the following:
  - ▶ REF scenario: Demand growth according to NREAP till 2020, an than 3.1% growth. RES-E penetration according to NREAP till 2020, than 25 % of the growth of the AMB scenario.
  - ▶ CCP scenario: harmonised to the Energy Efficiency Natural Gas Scenario of LESCED (EE-NG). RES-E penetration according to NREAP till 2020, than 50 % of the growth of the AMB scenario
  - ▶ AMB Scenario: harmonised to the Renewable Natural Gas Scenario of LESCED (RES-NG). RES penetration according to NREAP till 2020, than LSCED (RES-NG)
  - ▶ New gas plants are assumed to be commissioned in 2020 (200 MW) and 2025 (160 MW),

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## Wholesale price evolution

- Both baseload and peakload electricity wholesale prices have a significant drop between 2015-2020, followed by a slight increase in the later period.
- The main factors influencing the wholesale price developments in Albania are the following:
  - Generation expansion in the fossil based generation in the region is high. Over 4000 MW capacity (mainly lignite and coal) is built in the countries: AL; BA; BG; GR; HR; HU; ME; MK; RS; RO according to the national plans
  - New RES capacities above 12000 MW are also contributing to the price drop till 2020.
  - Higher interconnectedness in the region also allows trade of electricity (higher NTC)

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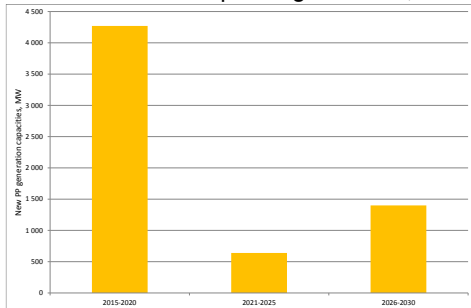
## Investment in new power plants, Albania

	Investment cost, €/kW	New capacity, MW			Investment cost, m€		
		REF	CPP	AMB	REF	CPP	AMB
Natural gas	1 000	360	360	360	360	360	360
Coal	2 000	0	0	0	0	0	0
Hydro	2 500	909	1 296	2 068	2 273	3 239	5 170
Geothermal	4 000	0	0	0	0	0	0
Solar	1 100	77	124	218	85	137	240
Wind	1 000	100	170	310	100	170	310
Biomass	3 000	19	38	75	56	113	226
Total	-	1 465	1 988	3 032	2 875	4 018	6 306

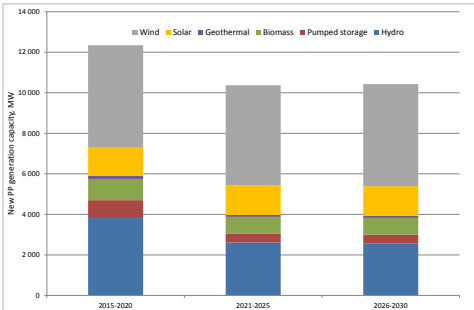
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## New PPs in the wider region\*

New coal-based power generation, MW



New RES-E generation capacity, MW



- Region includes the following countries: AL; BA; BG; GR; HR;HU; ME; MK; RS; RO;

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## Electricity mix



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- The new gas-fired power plants are assumed to be commissioned in 2020 (200 MW) and 2025 (160 MW), but they will produce only in 2030. In 2030 the utilization rate of them is around 0.5 % in REF, which dropped to 0.2 % in AMB.
- The results show that in economic terms it is cheaper to import and rely on hydro, explaining the low utilisation rate
- The CO<sub>2</sub> emission is quite low, the highest value is 7 kt in 2030 in REF, which decrease to 2.5 kt in AMB scenario