REKK Regional Centre for Energy Policy Research

SEE RES variability and system impacts in high RES scenarios in 2030

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November 2018

Introduction

Unit commitment model is applied to SEE

Main assumptions:

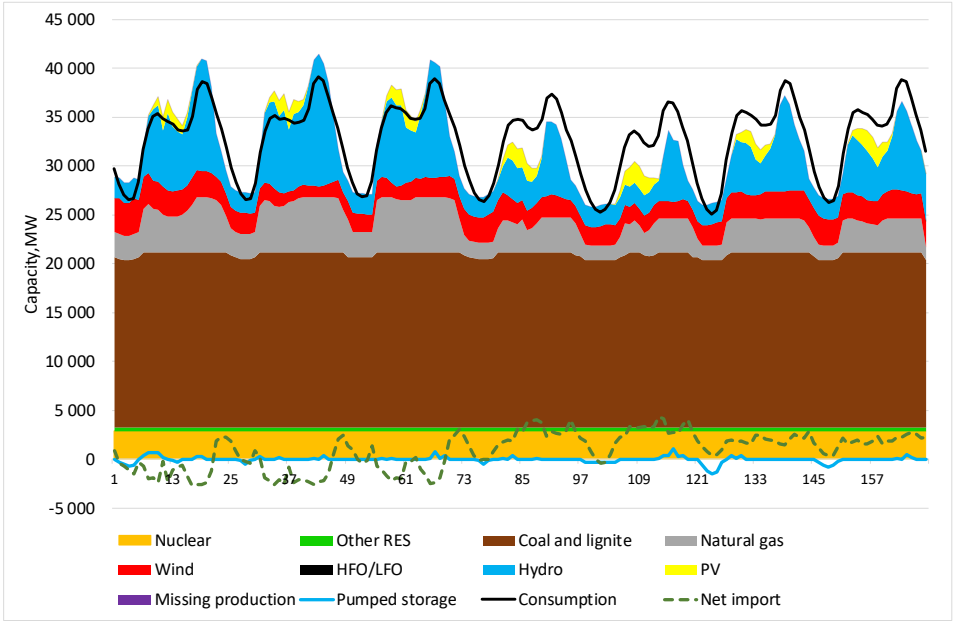
- Assessment of the year 2030
- Base: SEERMAP Decarbonisation scenario
- Various weather regimes applied
- Look at the variability caused by higher RES and the system impacts (SEE RES increase is from 35% to 50%)

Focus areas:

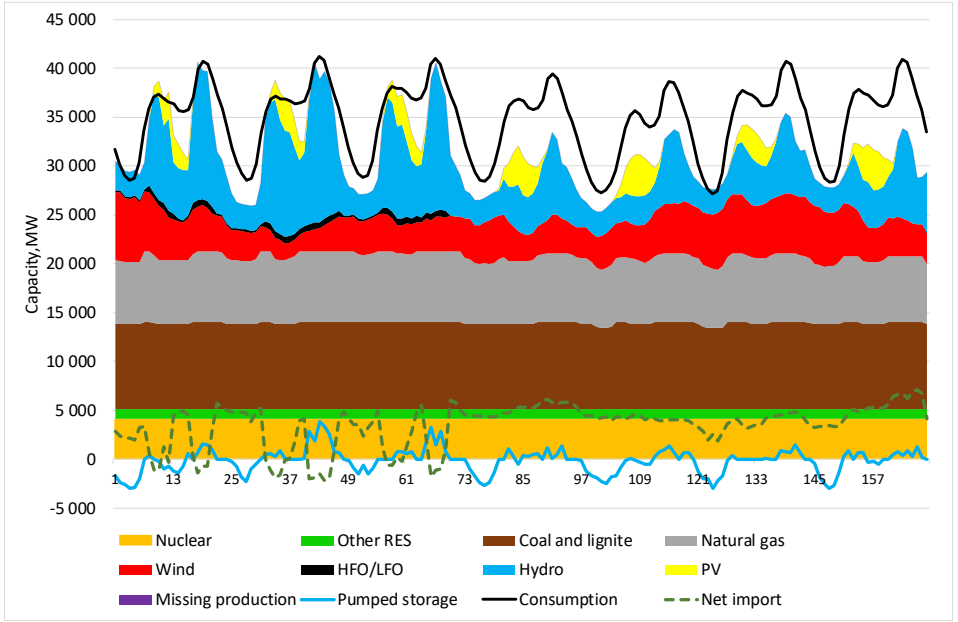
- Critical week assessment (weeks where remaining capacity is lowest in season)
- Level of reserve capacities
- Start-ups
- Sensitivity cases: missing capacity and impact of Integration

Critical week electricity mix –winter, SEE region

2017



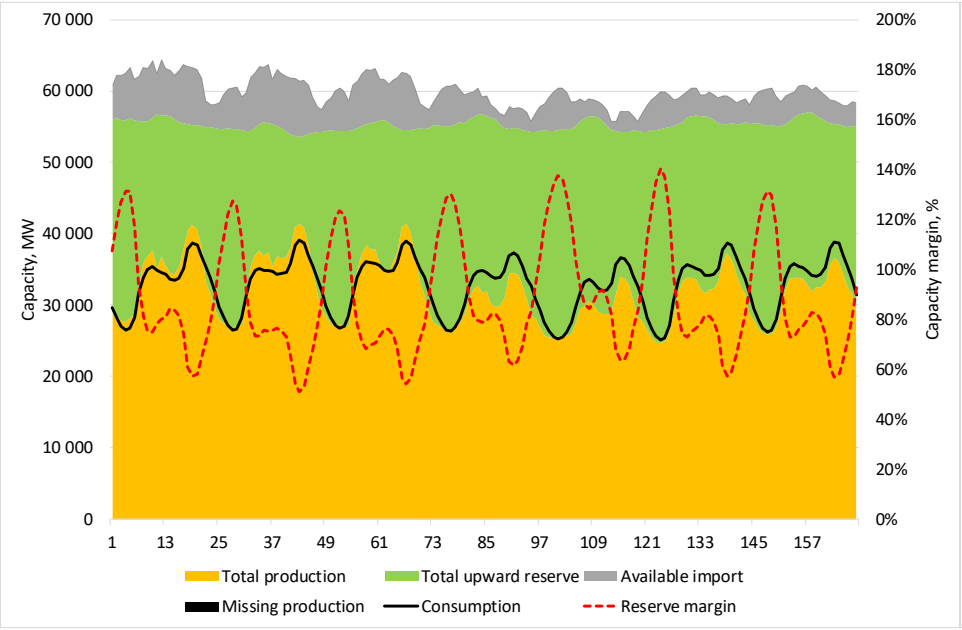
2030



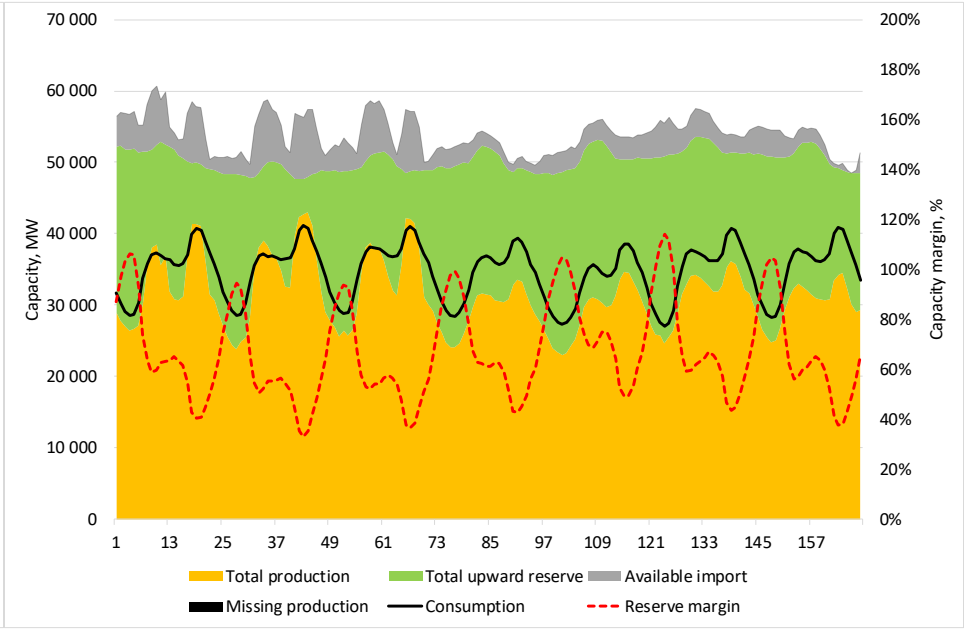
- More variability in production, export and pump storage by 2030 due to higher RES but the SEE system balances!

Critical week remaining margin – winter, SEE Region

2017



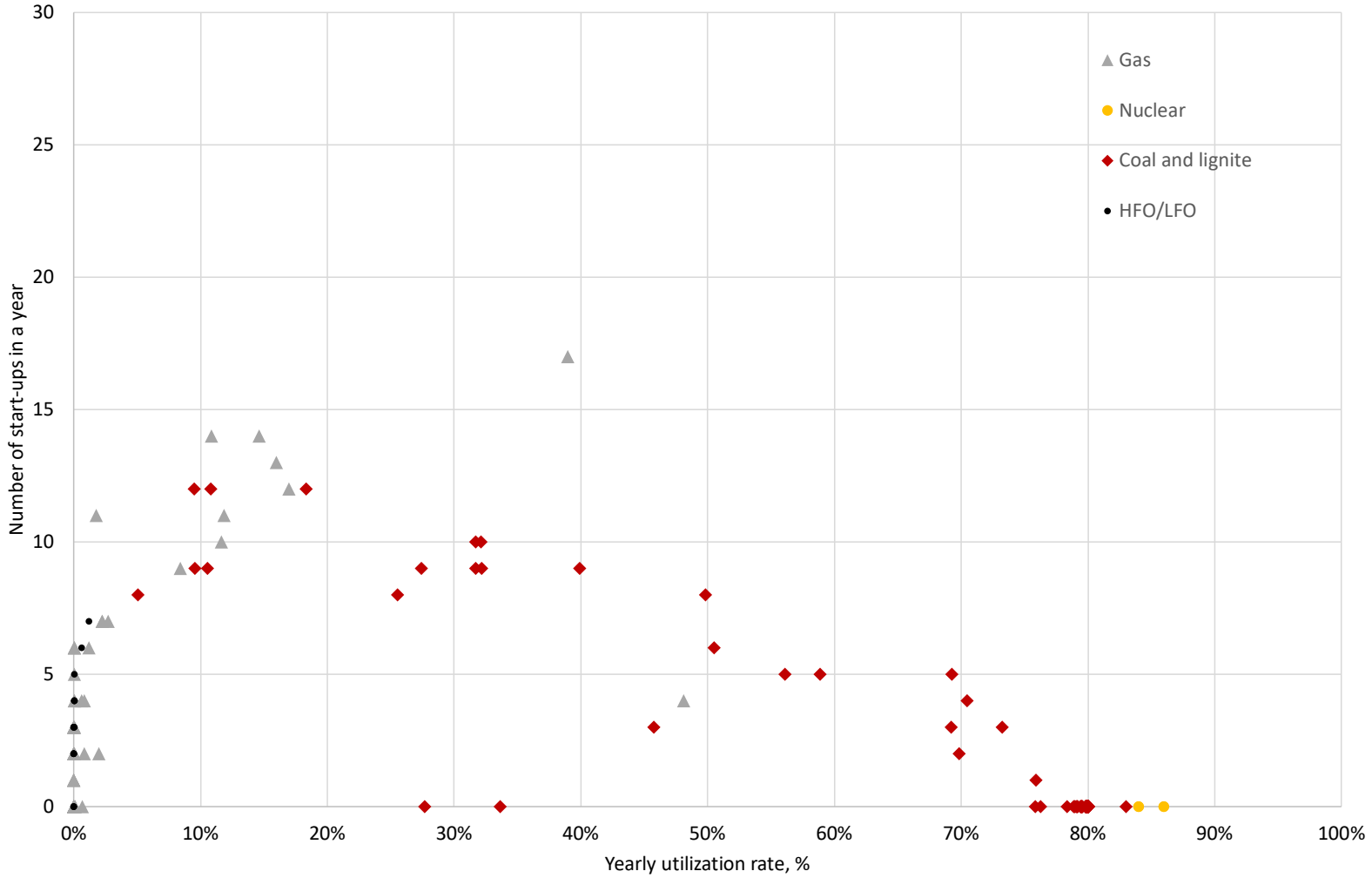
2030



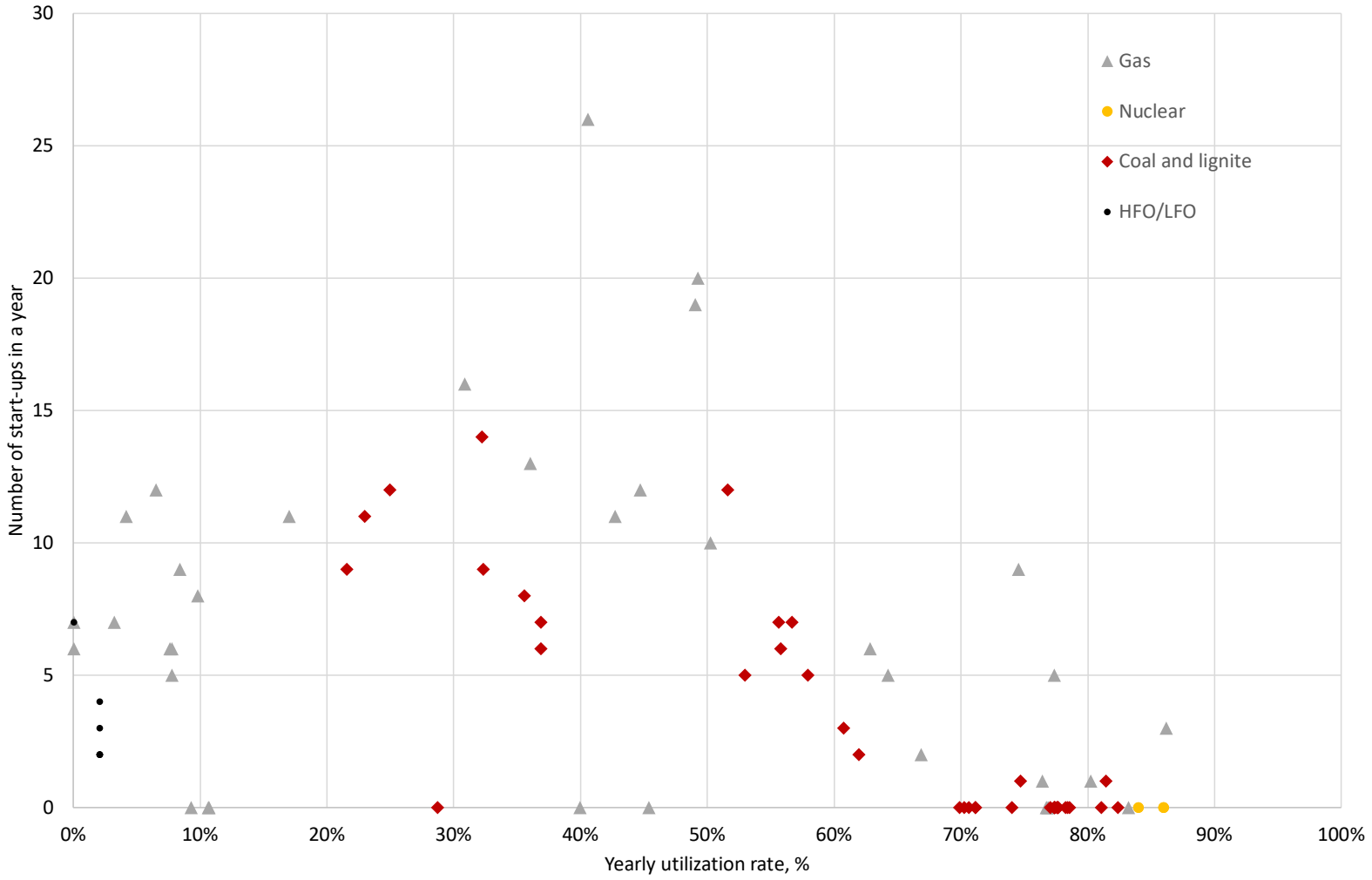
- **Reserve margin does not fall below 35% in 2030**

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

Number of start-ups vs. utilization rates per unit in SEE Region, 2017



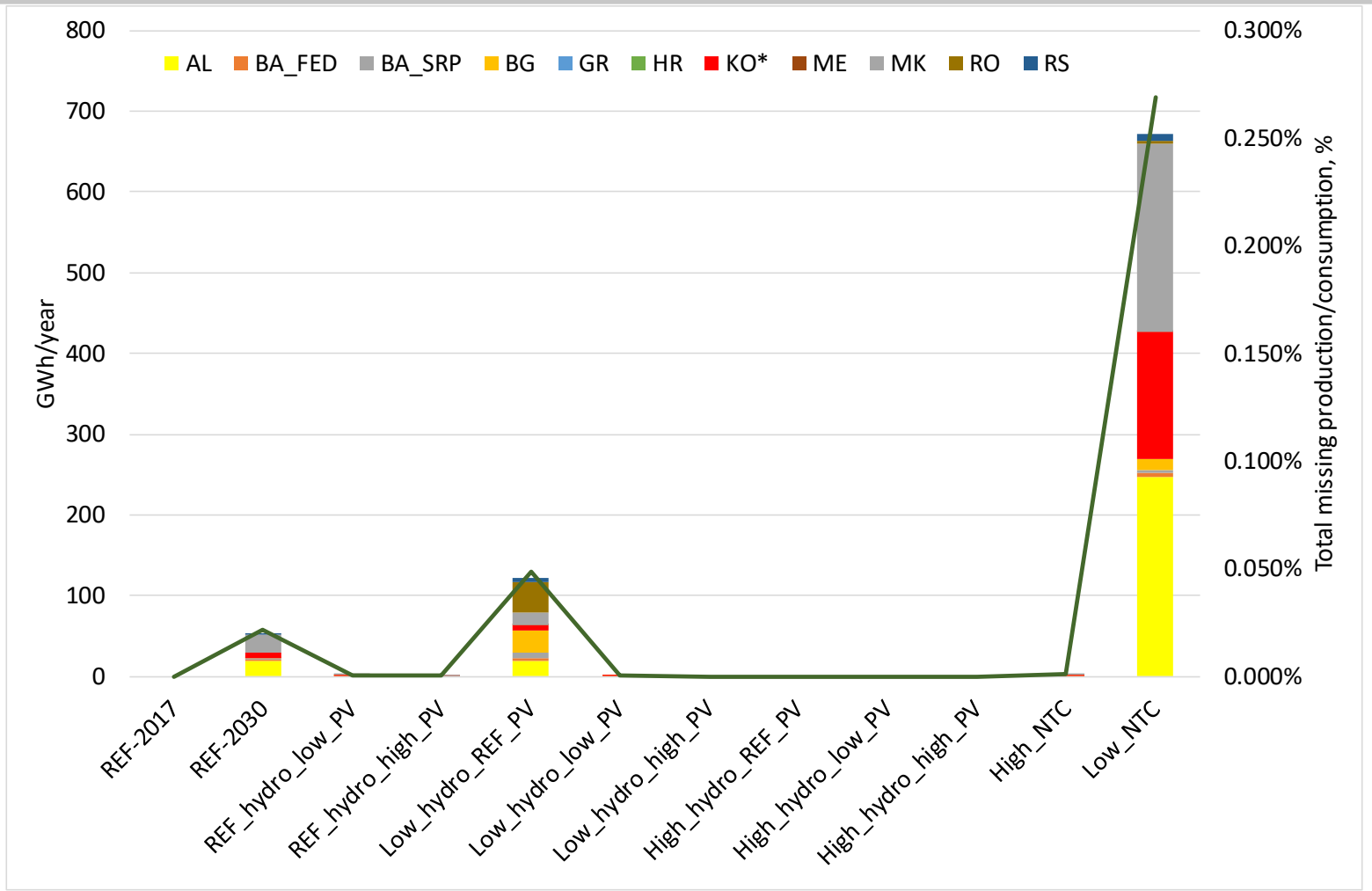
Number of start-ups vs. utilization rates per unit in SEE Region, 2030



- Number of start-ups and utilization increases for gas plants. Number of hard-coal and lignite plants decreases.

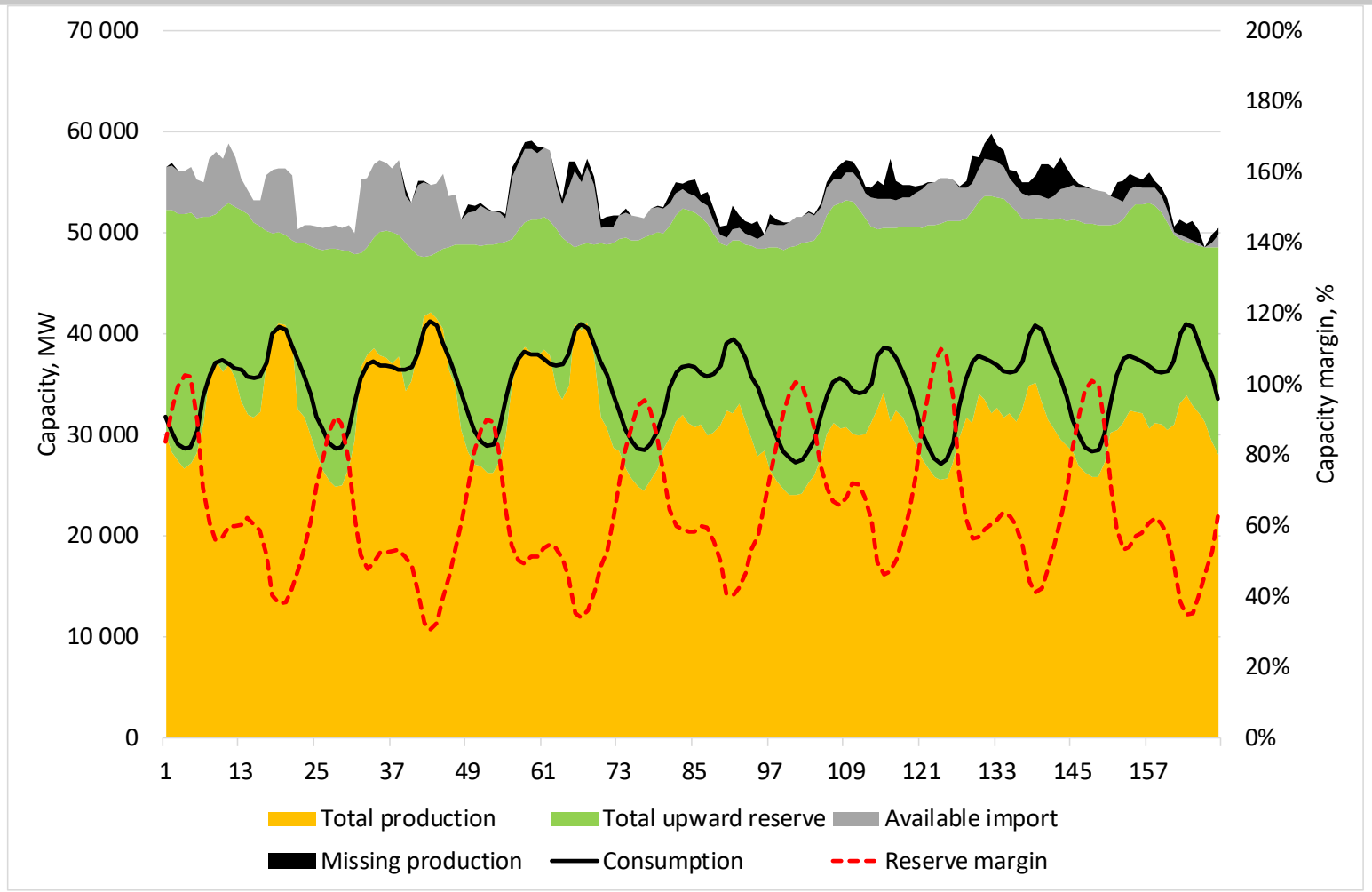
Sensitivity assessment

Missing production -> demand, which cannot be satisfied



- National demand exceeds available generation in Albania, Kosovo and Macedonia - but only in case of low interconnection

Low NTC scenario – 2030, winter



- Missing production is not the results of spare capacities in the SEE Region, but due to the insufficient level of interconnectivity

Conclusions

- Variable generation from wind and PV can be managed and integrated well in the 2030 SEE power system
- In some periods the present cross-border capacity is insufficient to satisfy the consumption in some countries (Albania, Kosovo* Macedonia)
- Interconnection developments and market integration are key factors in the SEE region!

Further steps:

- Country-specific assessments to be carried out
- More sensitivity analyses on hydro utilization rates (especially, when the hydro production is low in the Region)
- The effect of CO_2 price and the introduction of ETS in WB6