Market and Network Studies

Provisional results

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Stakeholder workshop

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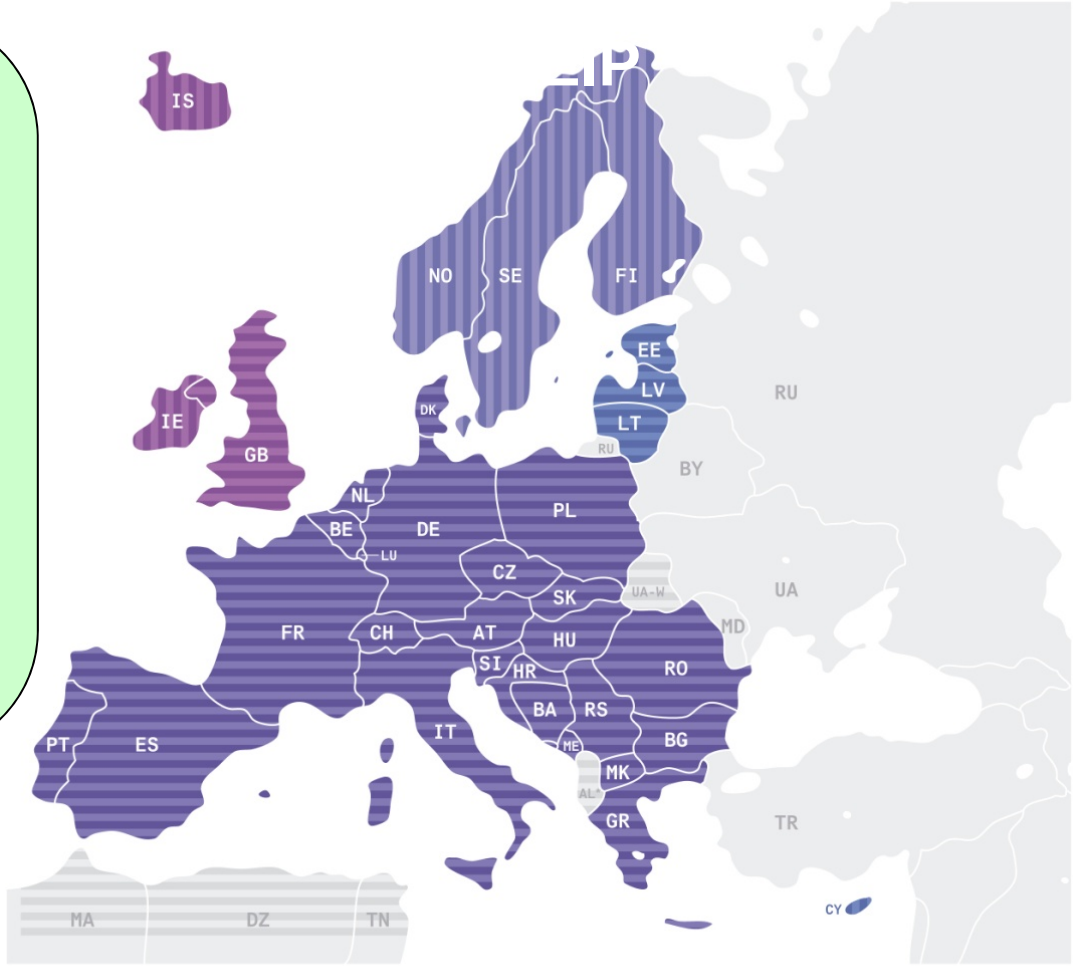
Reliable Sustainable Connected

Content of presentation

- Disclaimer
- Drivers for grid development
- Methodology and model issues
- Reference cases Vision 1 and Vision 4
- Project results

Disclaimer

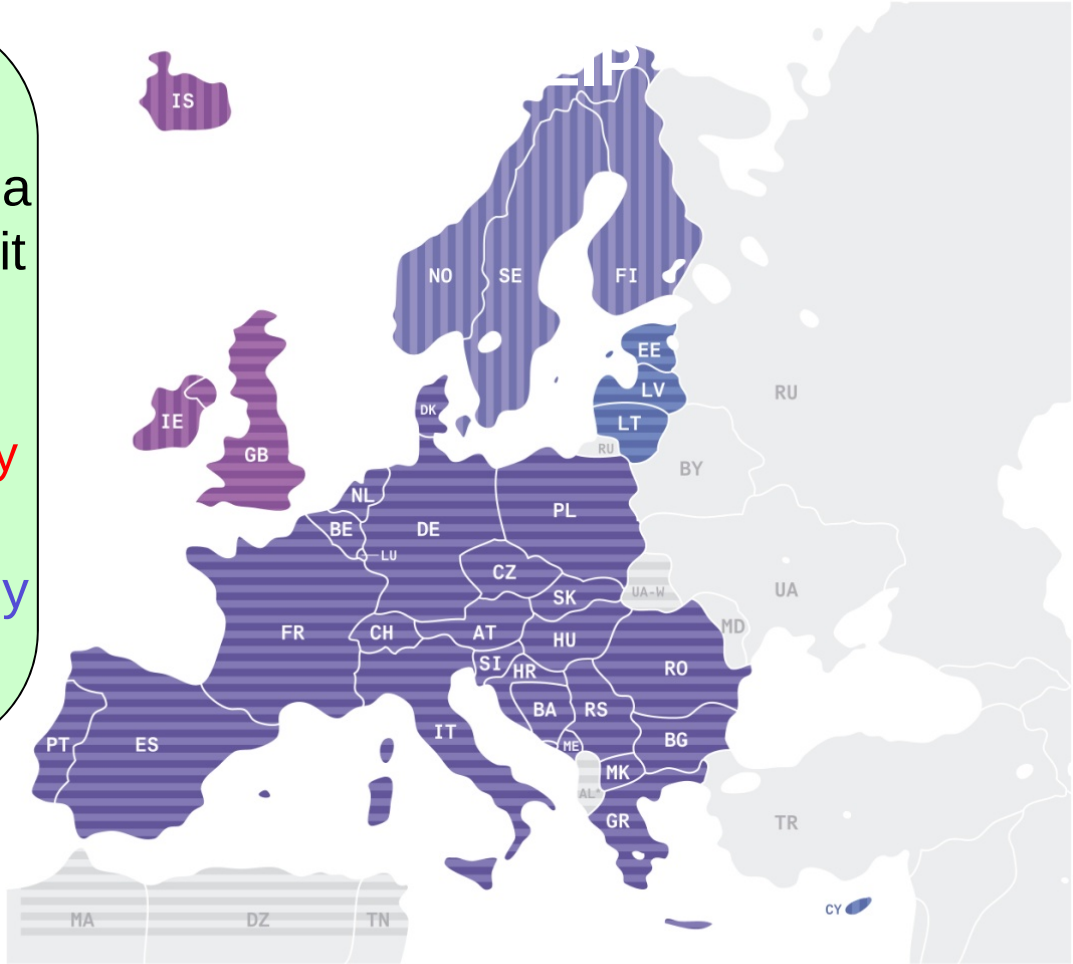
- All results shown in this presentation are preliminary and are subject to change in the ongoing work
- Final results will be presented in the TYNDP 2014 report



Drivers for grid development

Objectives of EU networks :

- ensuring the development of a single European grid to permit the 20-20-20 objectives
- guaranteeing security of supply
- completing the internal energy market



Methodology and model issues

Model issues

- Combination of market models and grid models
- Detailed enough to reveal the characteristics and limitations of systems
- Boundary conditions
- Mathematics must handle the interaction between production system, the grid and the consumption in a free market environment

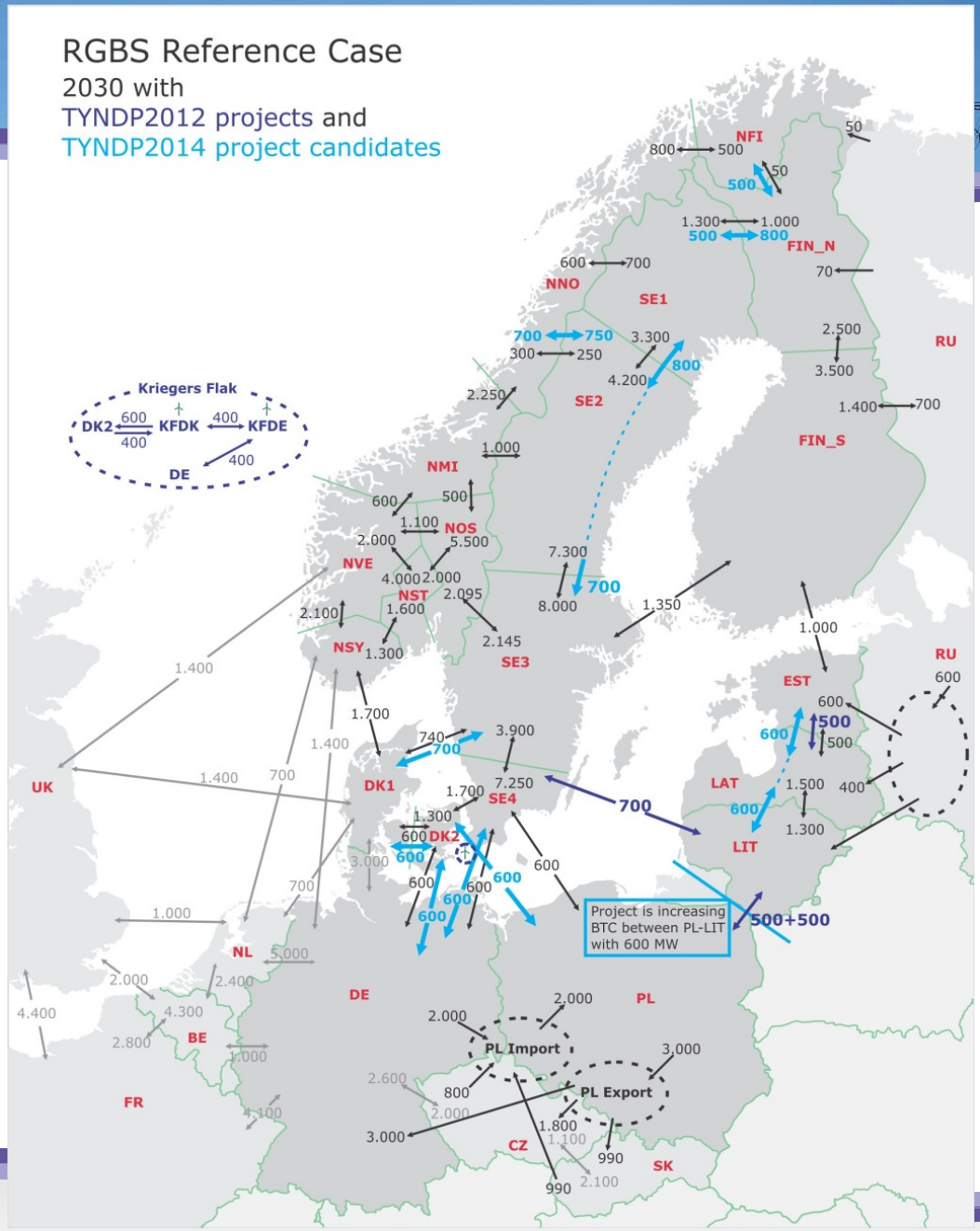
CBA methodology

Indicators

Criteria	Grid Transfer Capability Increase	Socio-economic Welfare	RES integration	Improved Security of Supply	Losses variation	CO2 mitigation	Technical resilience	Flexibility	Social and environmental Impact	Project costs
	MW	M€/year	MWh/year	MWh/year	M€	Mt				M€
Project A	1000	90-150	500-550			0,5-0,6	+++	++		650-700
Project B	500	30-50		3000	20-30		++			25
Project C	800	225-30	3000-3500		10-20	1-1,5	++	+++		150

Reference cases
Vision 1 and Vision 4

Map 2030



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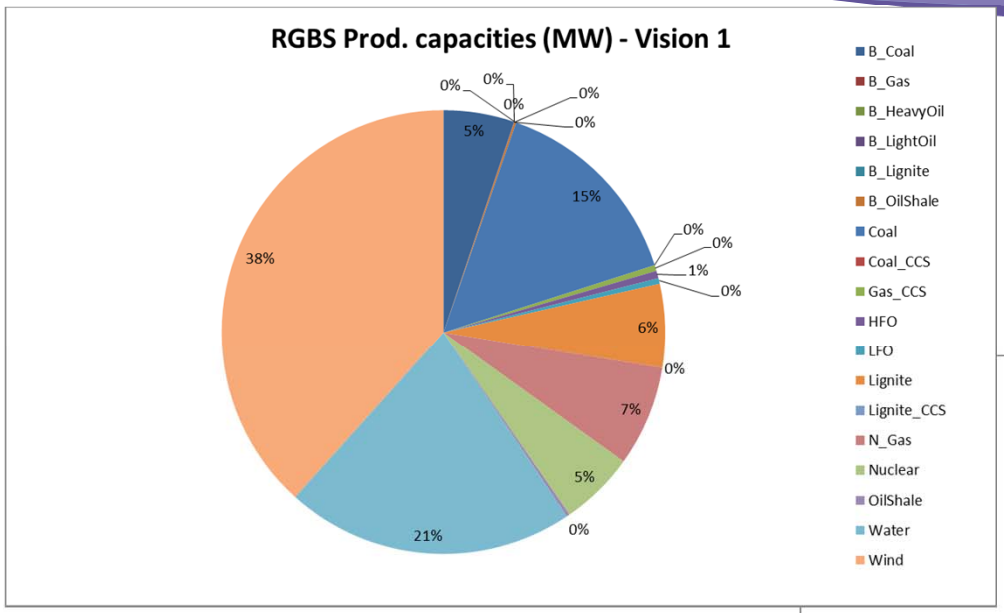
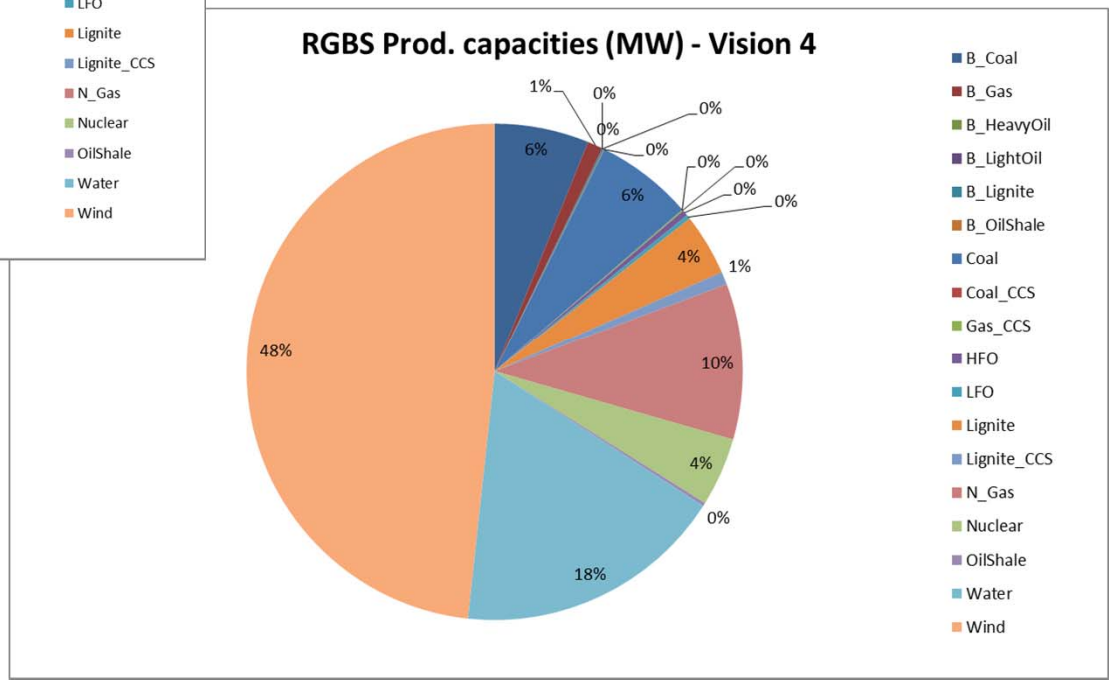
RGBS production capacities Vision 1 and 4 - Reference case





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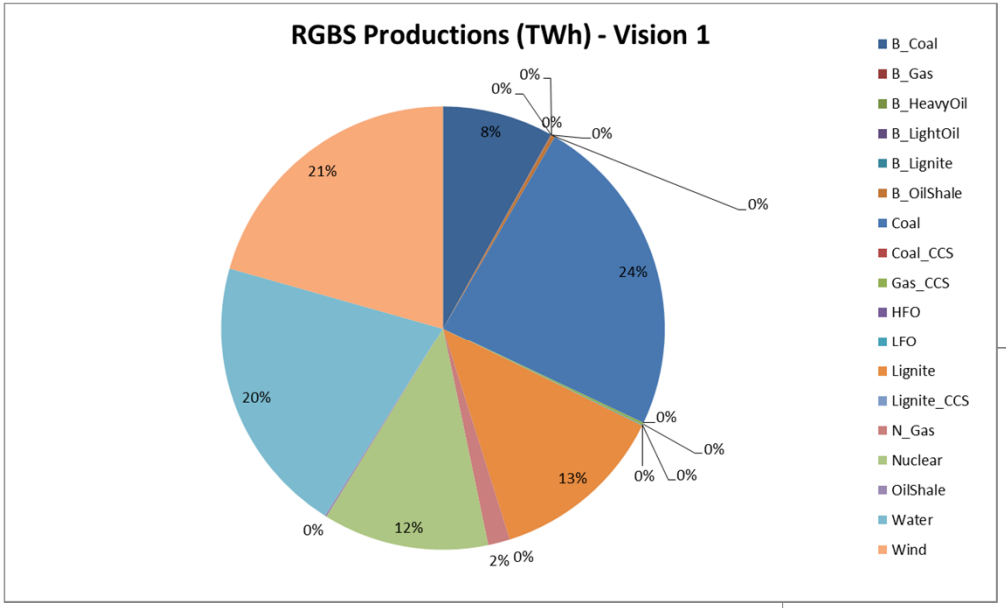
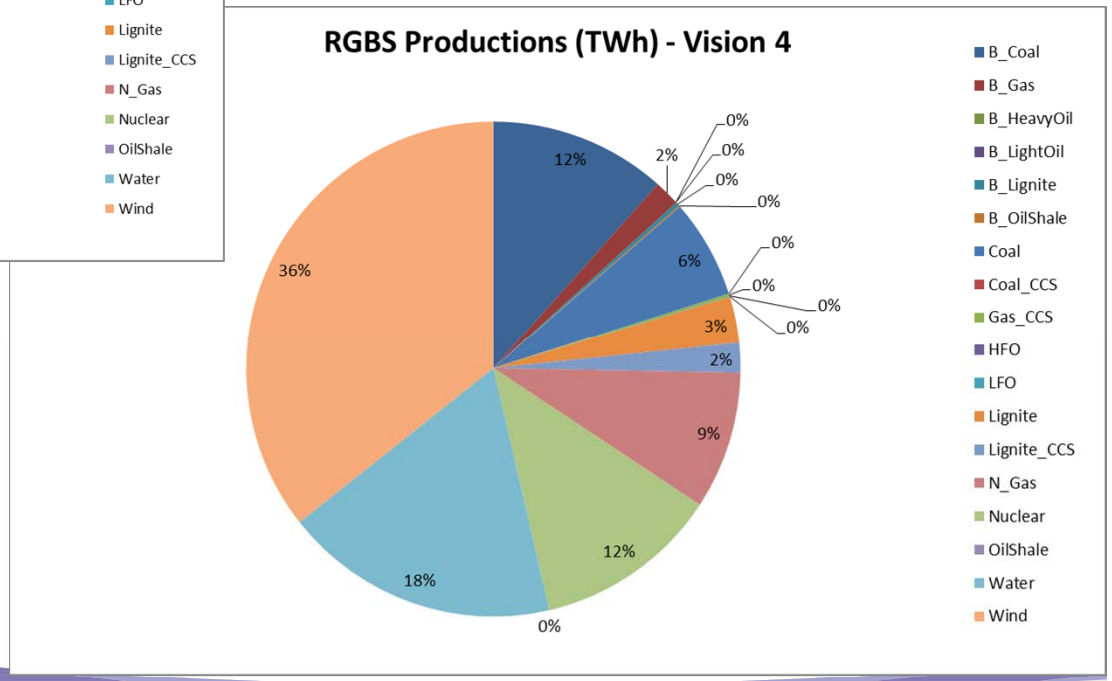
RGBS productions Vision 1 and 4 – Reference case





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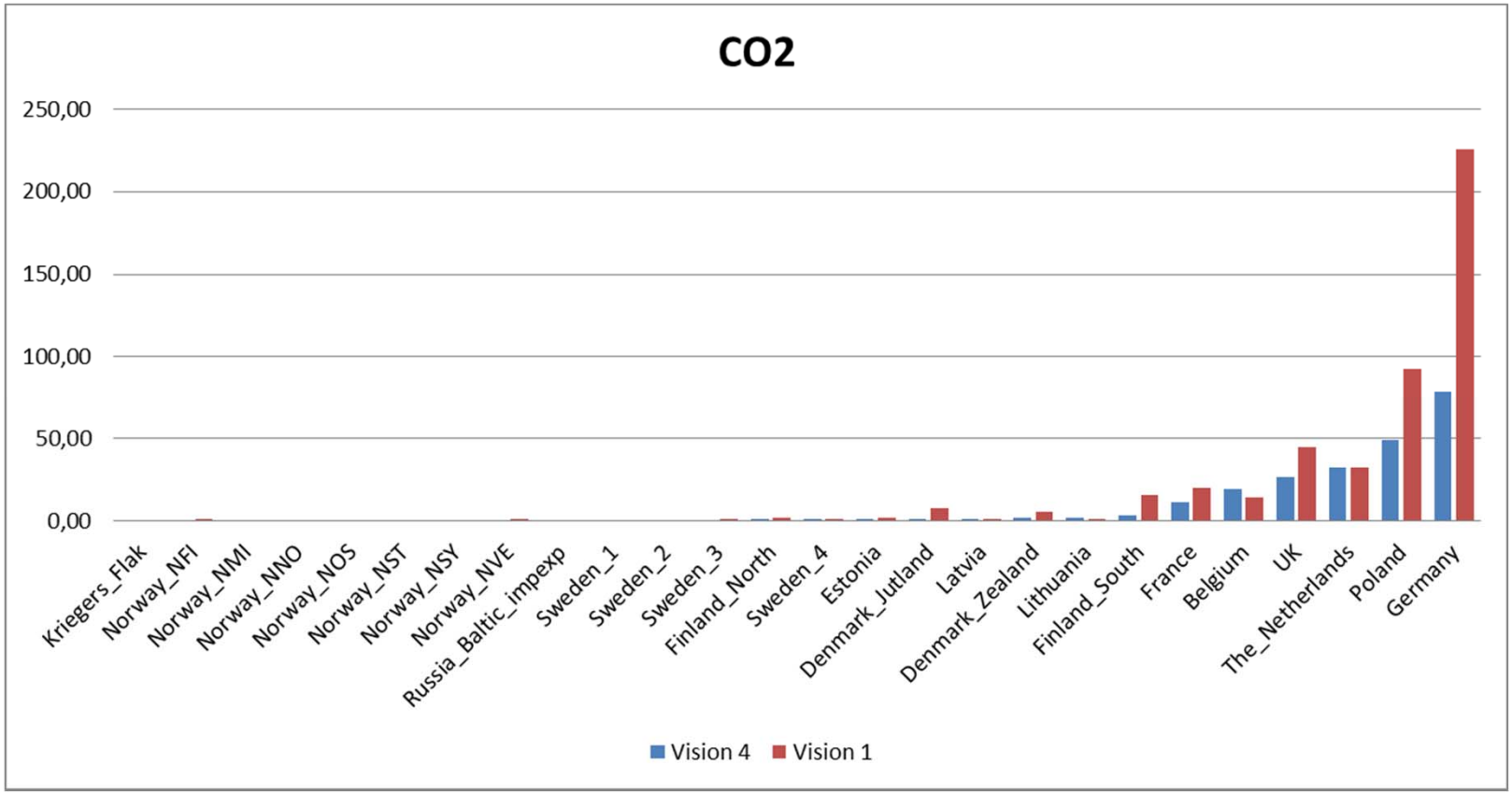
RGBS CO2 emissions Vision 1 and 4 – Reference case



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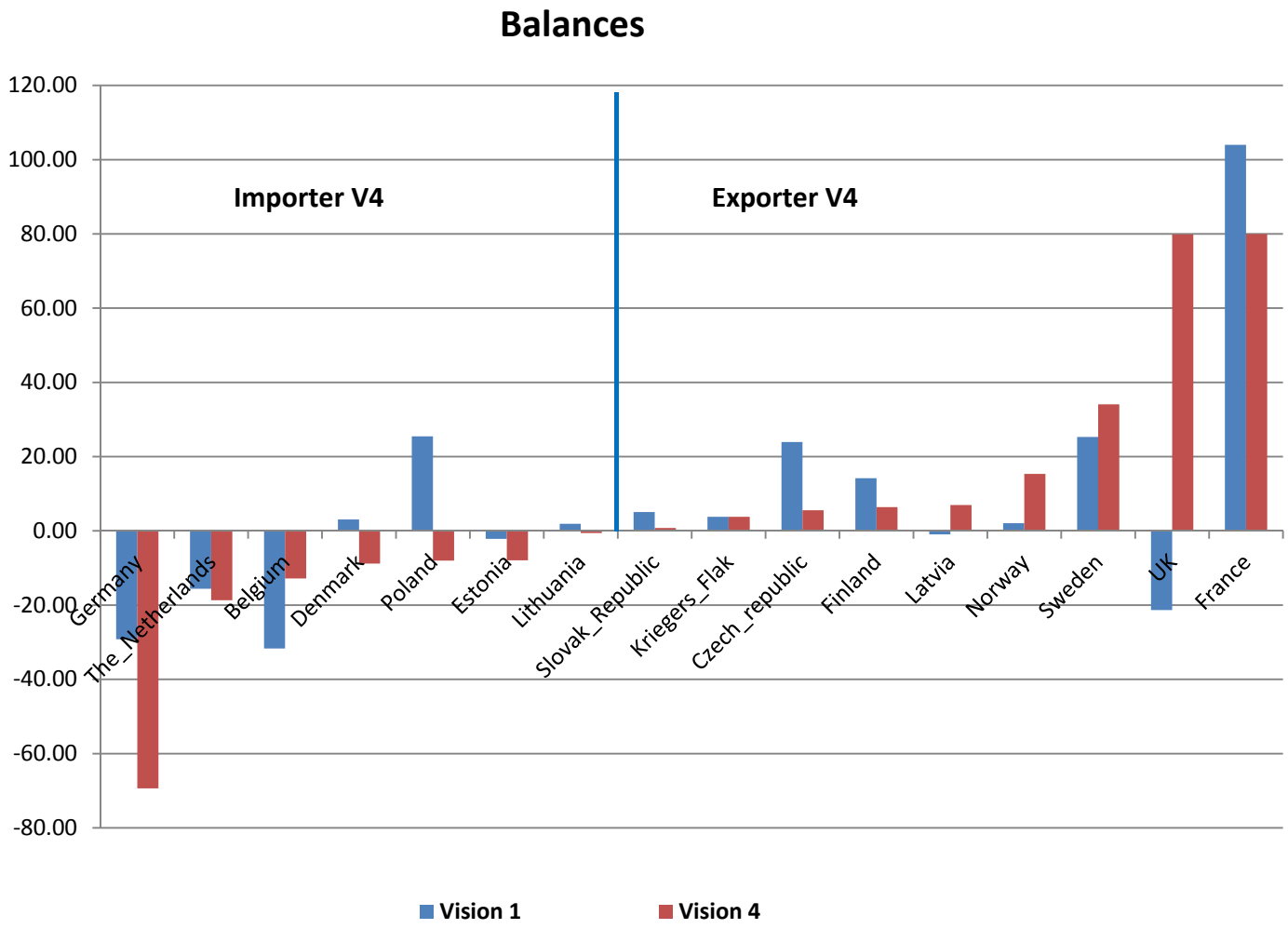
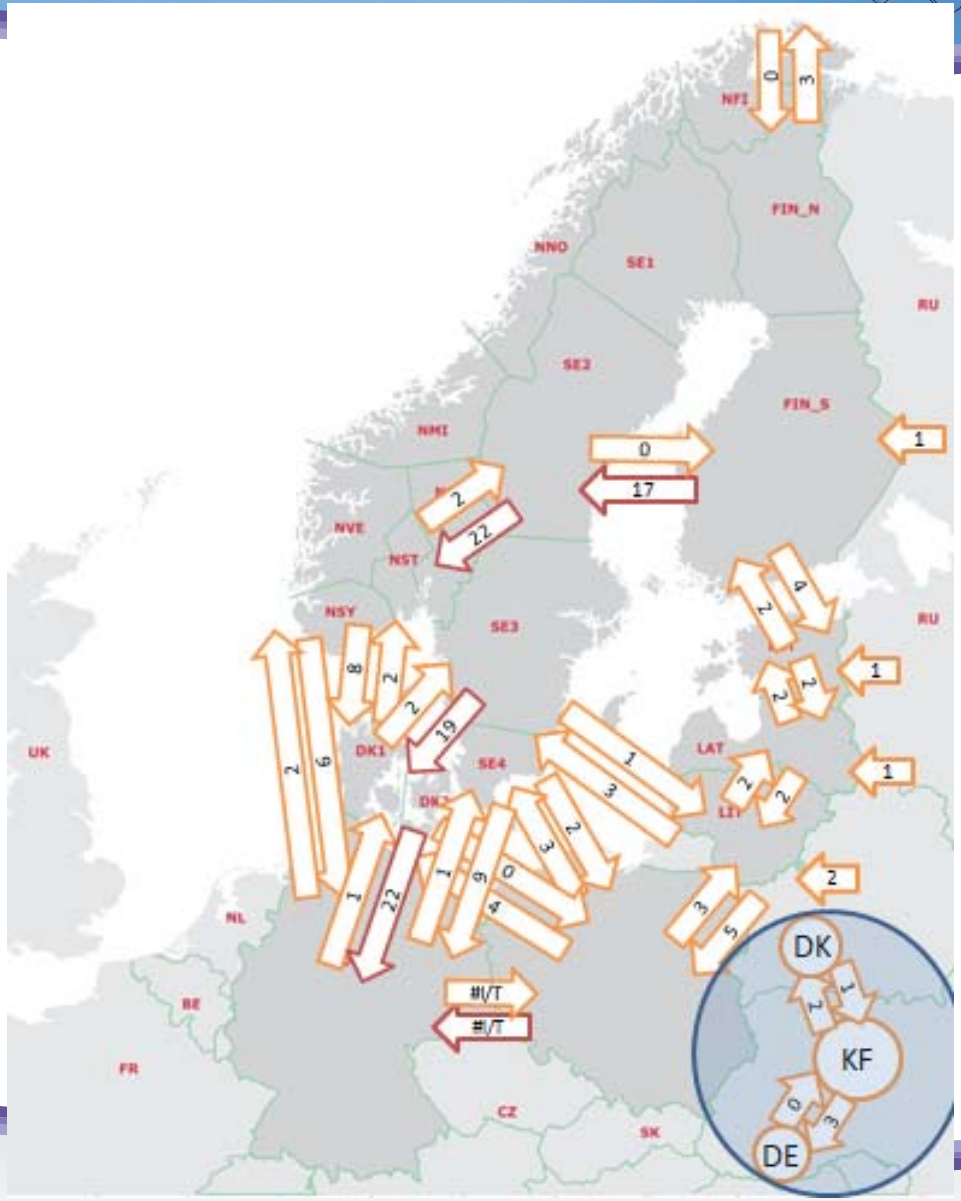
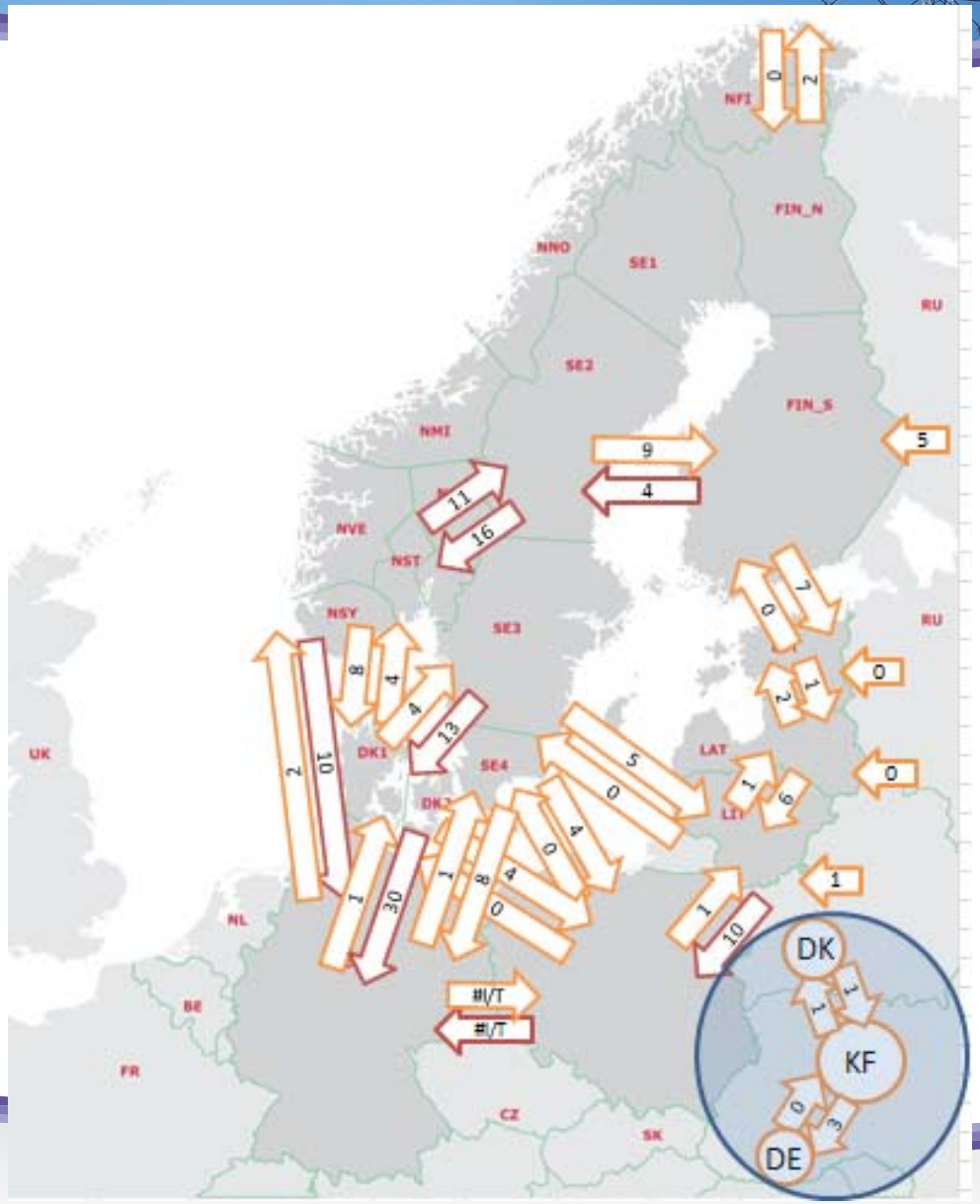
Country balances V1 and V4 – Reference case



Market exchange Vision 1 – Reference case



Market exchange Vision 4 – Reference case



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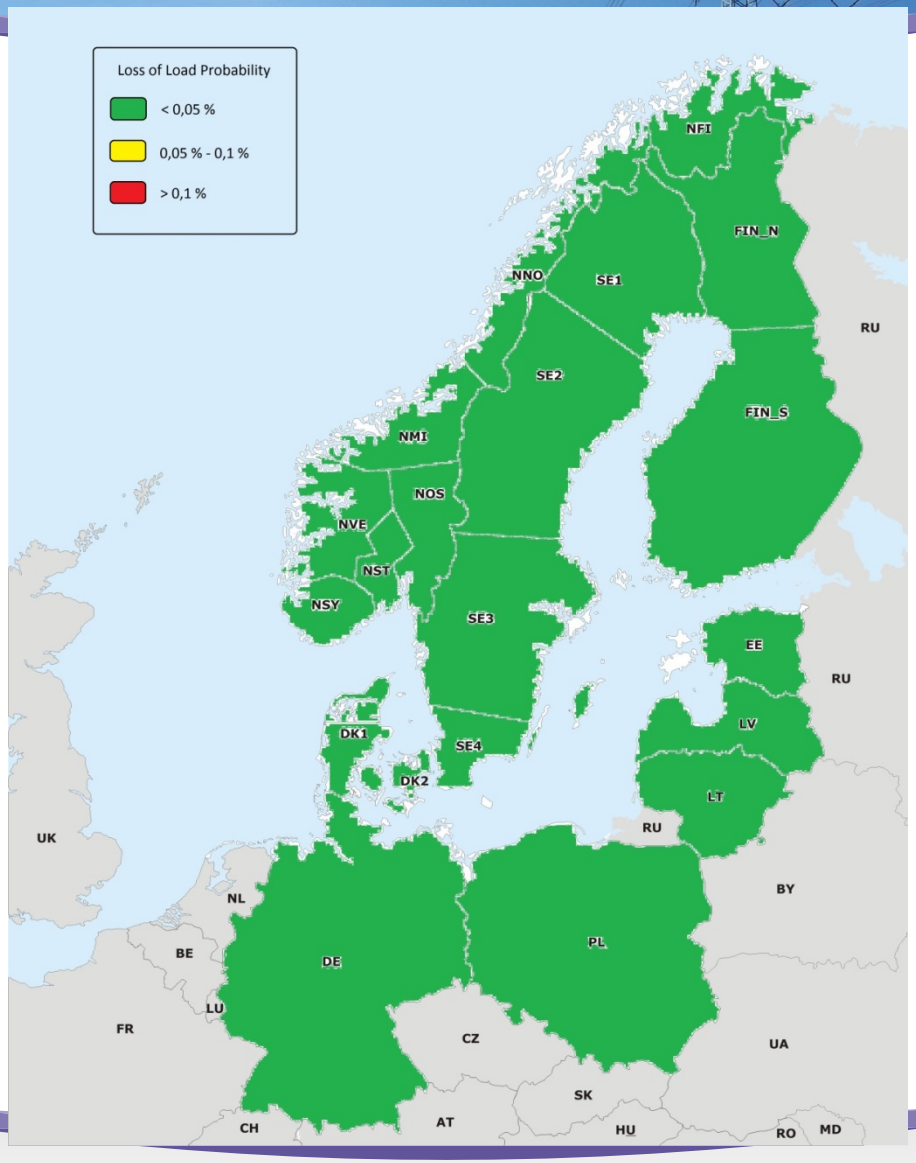
Project results

Vision 1

Loss of Load Probability

Before TYNDP 2014 projects



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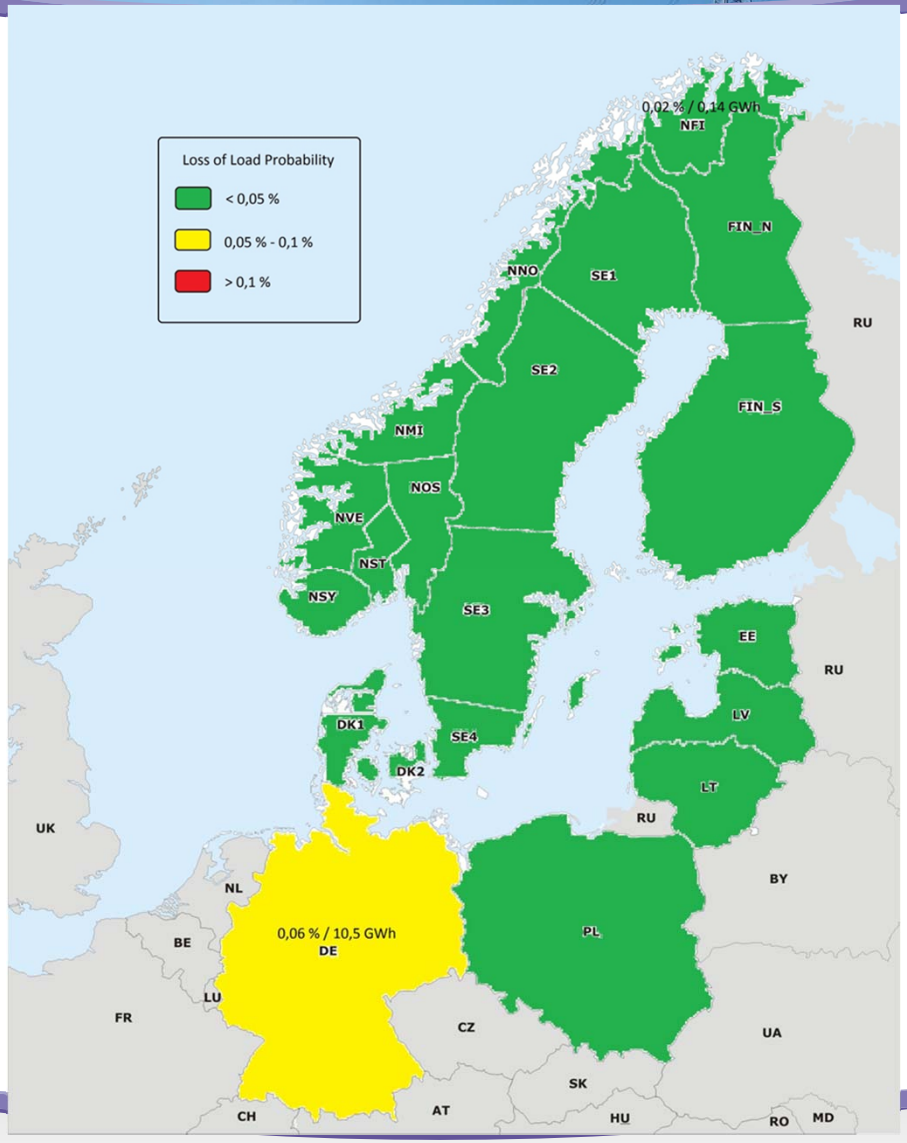
MAPS results

Vision 4

Loss of Load Probability

Before TYNDP 2014 projects



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MAPS results

Vision 4

Loss of Load Probability

Reference case

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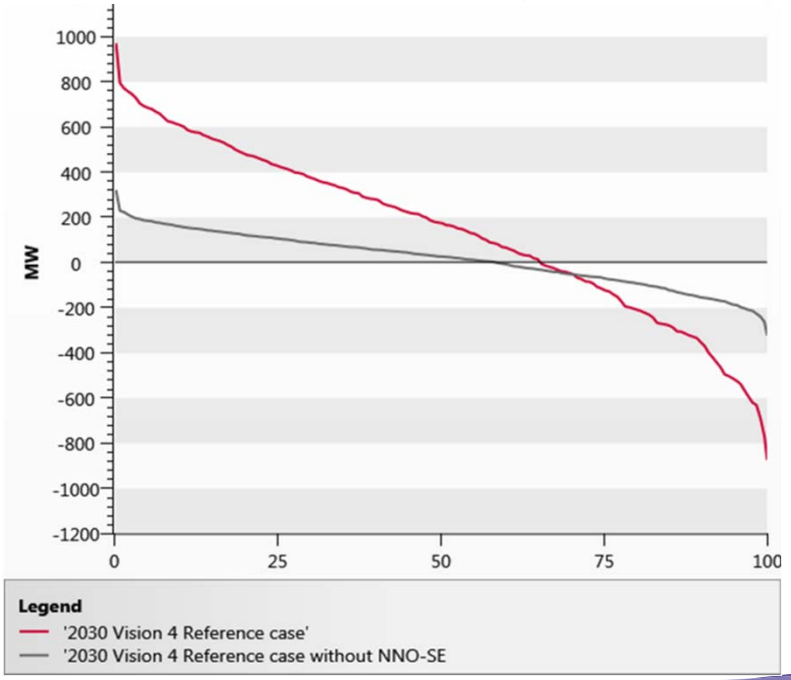
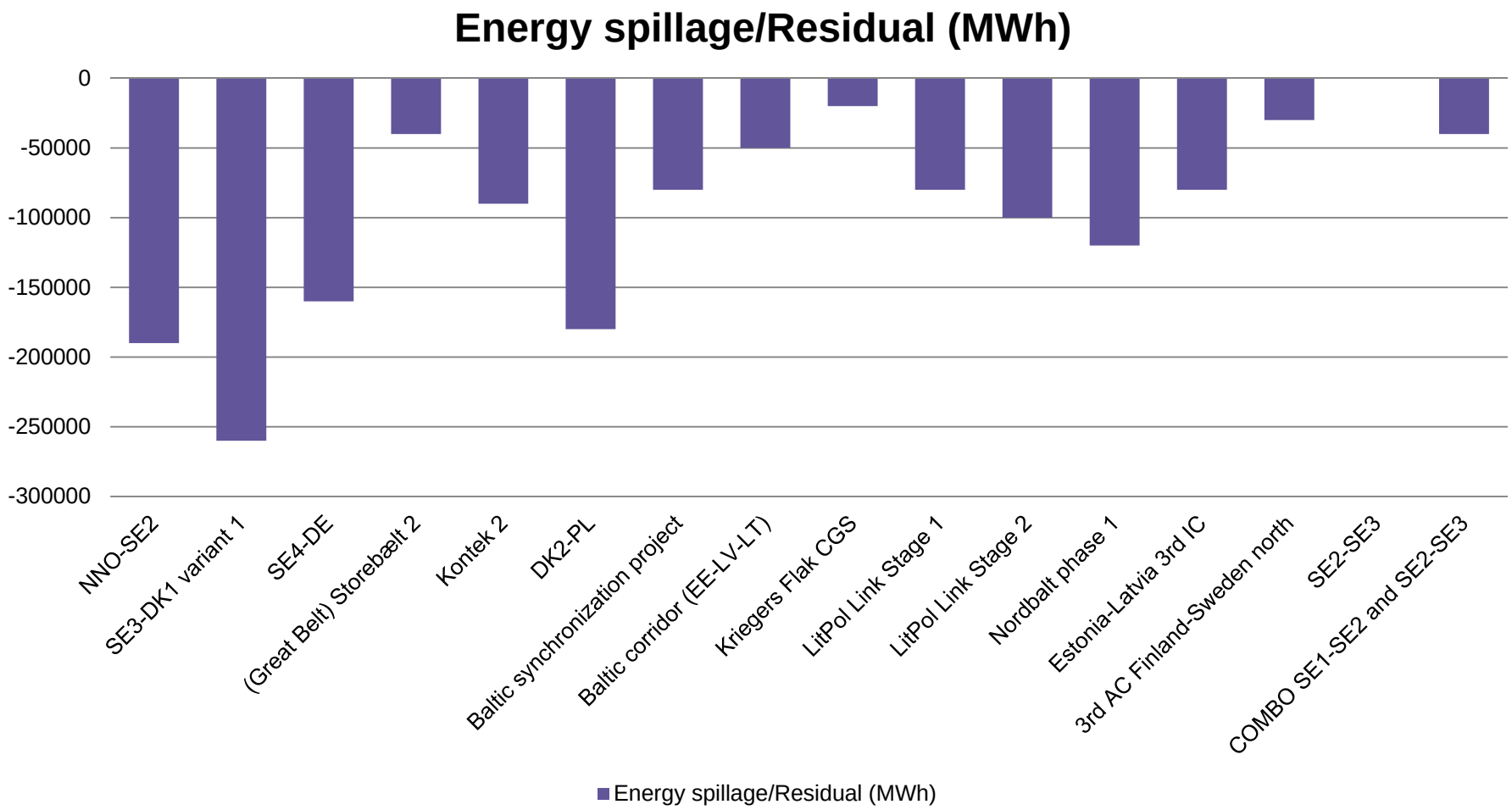
Project results NNO-SE2

Proj. ID	GTC (ΔMW)	B1 SOS (LoLP)	B2 socio-economic (M€/year)		B3 RES increase (ΔMWh)		B4 Losses increase, ΔMWh (MEur)		B5 CO2 decrease (ktons)		B6 Resili-ence (0-6)	B7 Robust ness/fl ex (0 - 6)
			V1	*V4*	*V1*	*V4*	*V1*	*V4*	*V1*	*V4*		
180 NNO-SE2	750	0	0	0	10000	14000		-55600	24	50	NA	NA



Energy spillage per project V4



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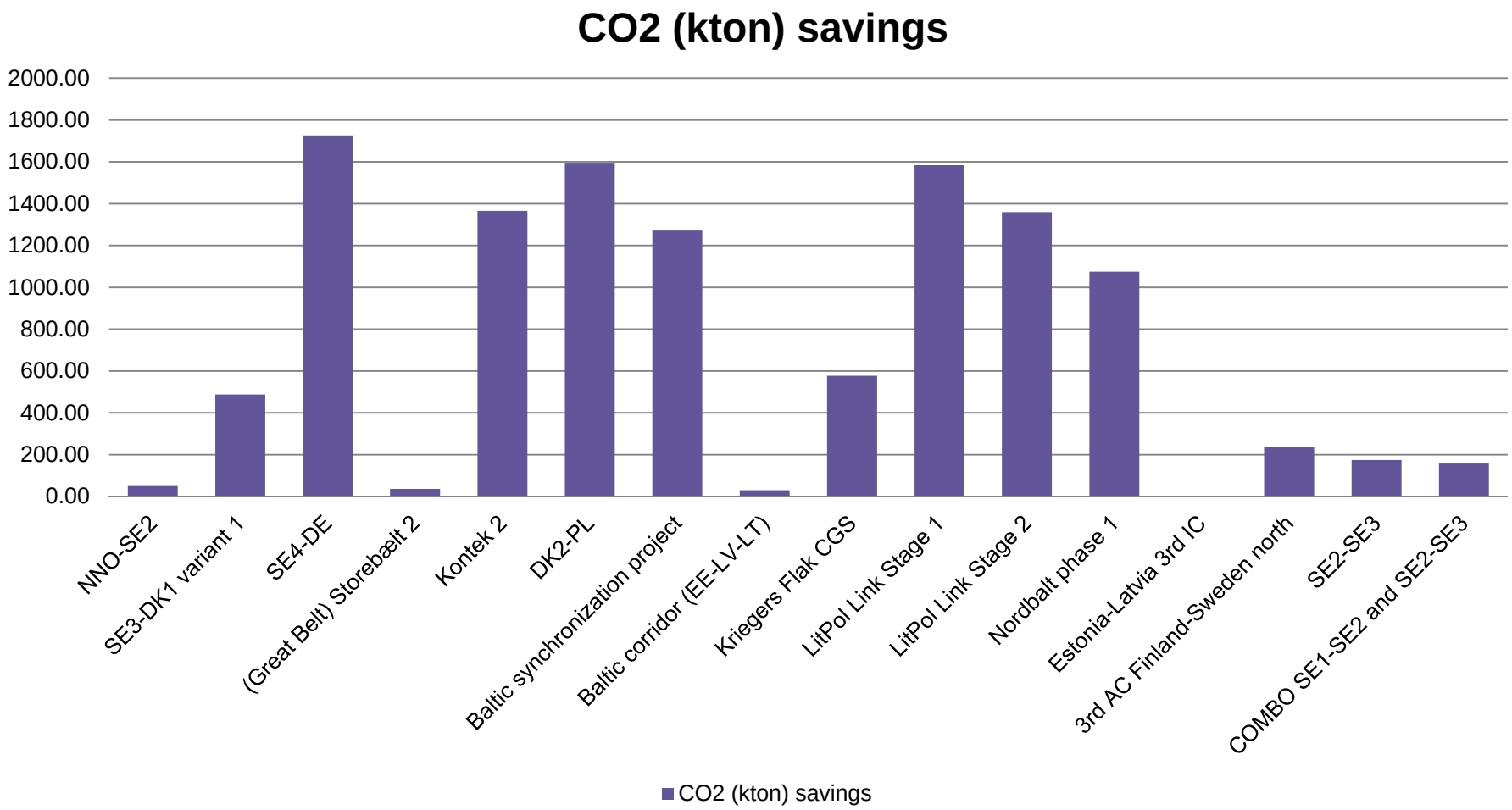
CO2 savings Vision 4 per project



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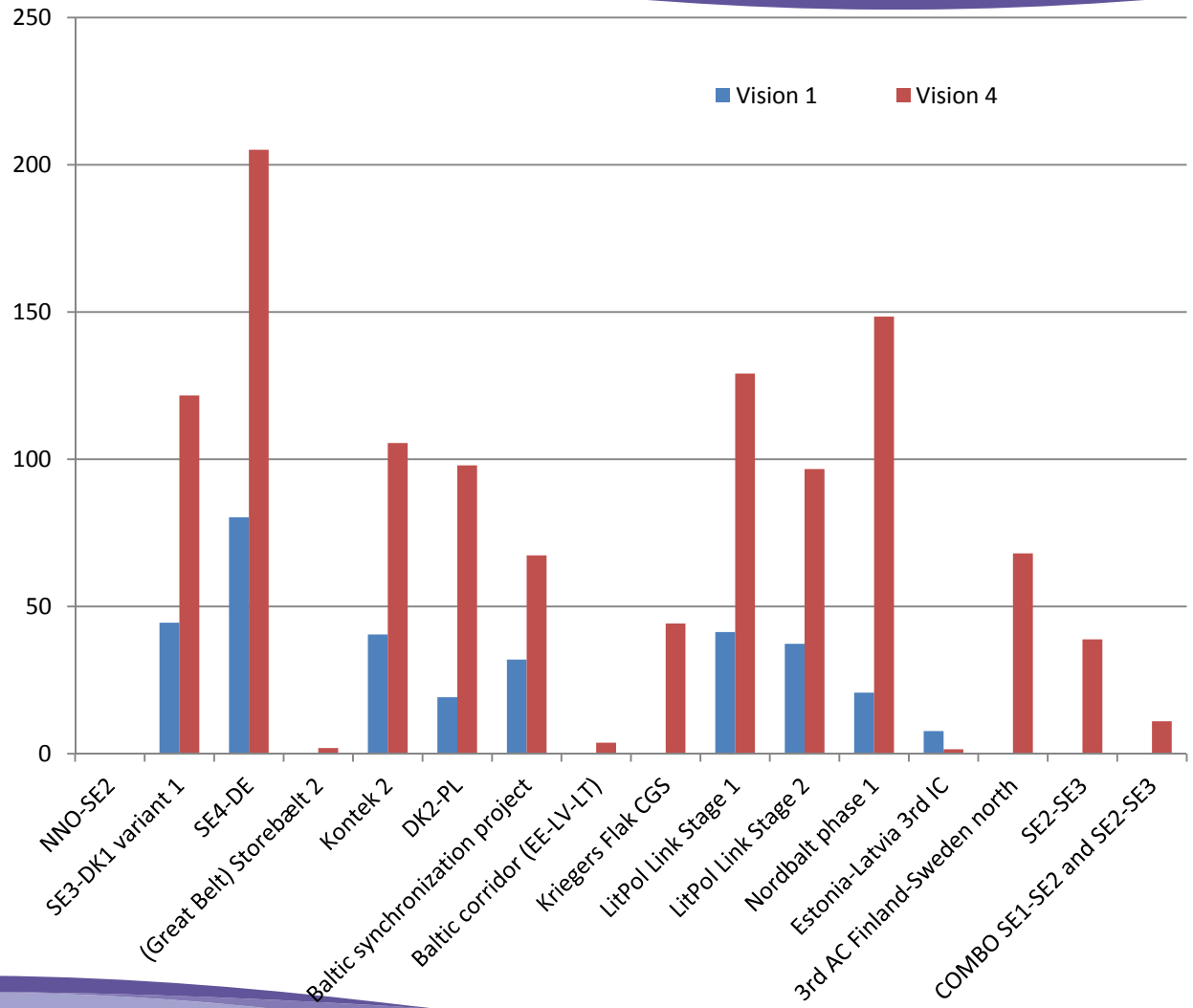
Socio-economic benefit per project



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Main conclusions

Security of supply is good in Vision 1 and Vision 4

Interconnections from Nordics to Continental Europe have large benefits in Vision 4

Substantial savings in CO2 emissions for some projects

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