

FLOW-BASED MARKET COUPLING IN THE NORDICS

Benefits and challenges

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FLOW-BASED
A METHOD FOR
REPRESENTING THE
PHYSICAL GRID AS
MARKET
CONSTRAINTS.



FLOW-BASED
IMPROVES THE
UTILIZATION OF THE
GRID.



NET TRANSFER CAPACITY (NTC)

- Represents the capacity between two bidding zones.
- Simple representation of the physical grid.
- Split of capacity between borders is decided by the TSOs → No transparency.
- 36 constraints delivered to the market coupling every hour in the Nordics.

FLOW-BASED (FB)

- Represents the capacity available for all relevant elements in the grid.
- More accurate representation of the physical grid → Increased complexity.
- Split of capacity is driven by the market at the time of allocation.
- Around 150 constraints delivered to the market coupling every hour in the Nordics.

FLOW-BASED GO-LIVE IN Q1 2024

“The Nordic NRAs find that the Nordic TSOs in the external parallel runs (EPR) report have demonstrated that the flow-based (FB) capacity calculation works sufficient in operational terms, given the current state of development.”

NordREG communication from the 12th July

The next phase is the final 6 month of external parallel run before go-live.

EXTERNAL PARALLEL RUN RESULTS

The external parallel run has produced simulated market results with capacities from the Nordic flow-based.

- Test environment for market algorithm used for simulations.
- Input data identical to day-ahead market coupling input.
 - Except capacities in capacity calculation region Nordic and Hansa.
- Output data and optimization on hourly level as today.

All data are available on the Nordic RCC website.



SIMULATED FB RESULTS COMPARED TO DAY-AHEAD MARKET COUPLING RESULTS

Flow-based impact January-July 2023

Total net export from the Nordic area increased by 5%

Social economic welfare in Europe increased by MEUR 184

NO2 net export decreased by 68%

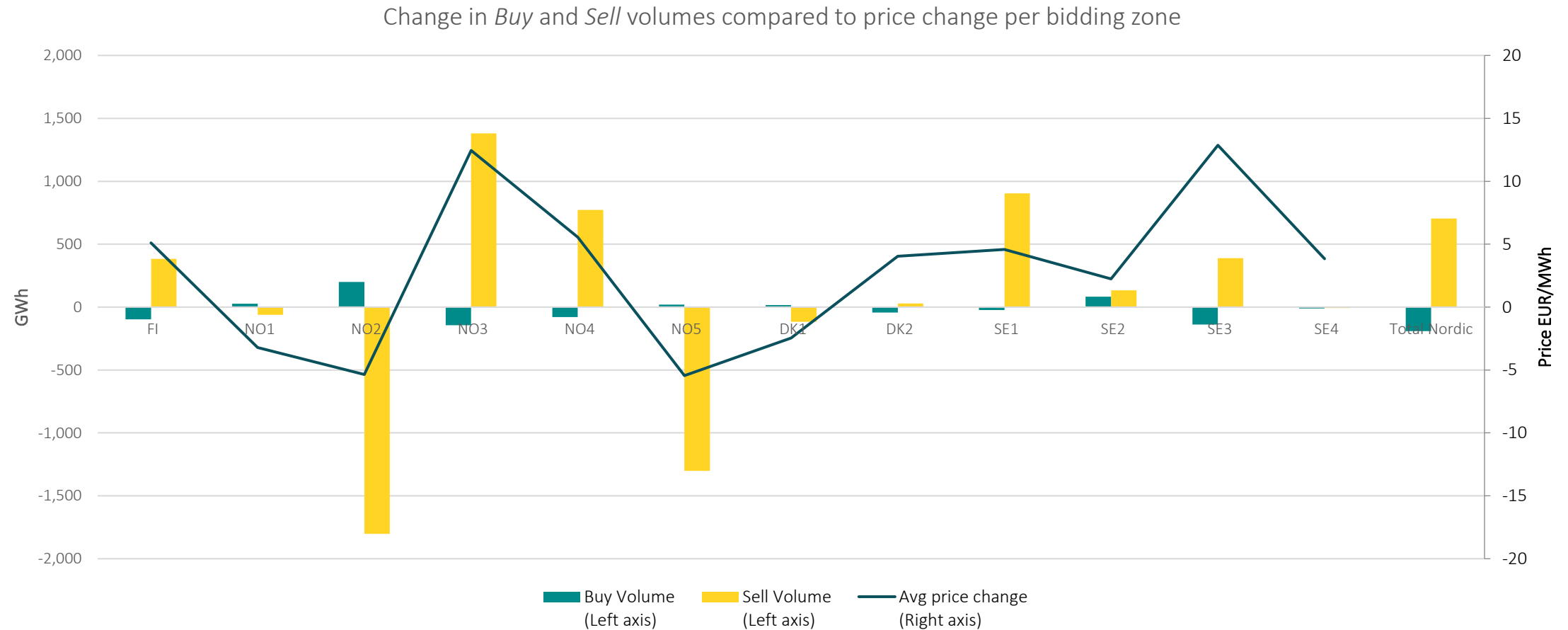
Average price of a MWh in the Nordic area increased by 4-6%

NO4 net export increased by 15%

THE IMPACT OF FLOW-BASED IS VERY DIFFERENT FROM BIDDING ZONE TO BIDDING ZONE **ENERGINET**

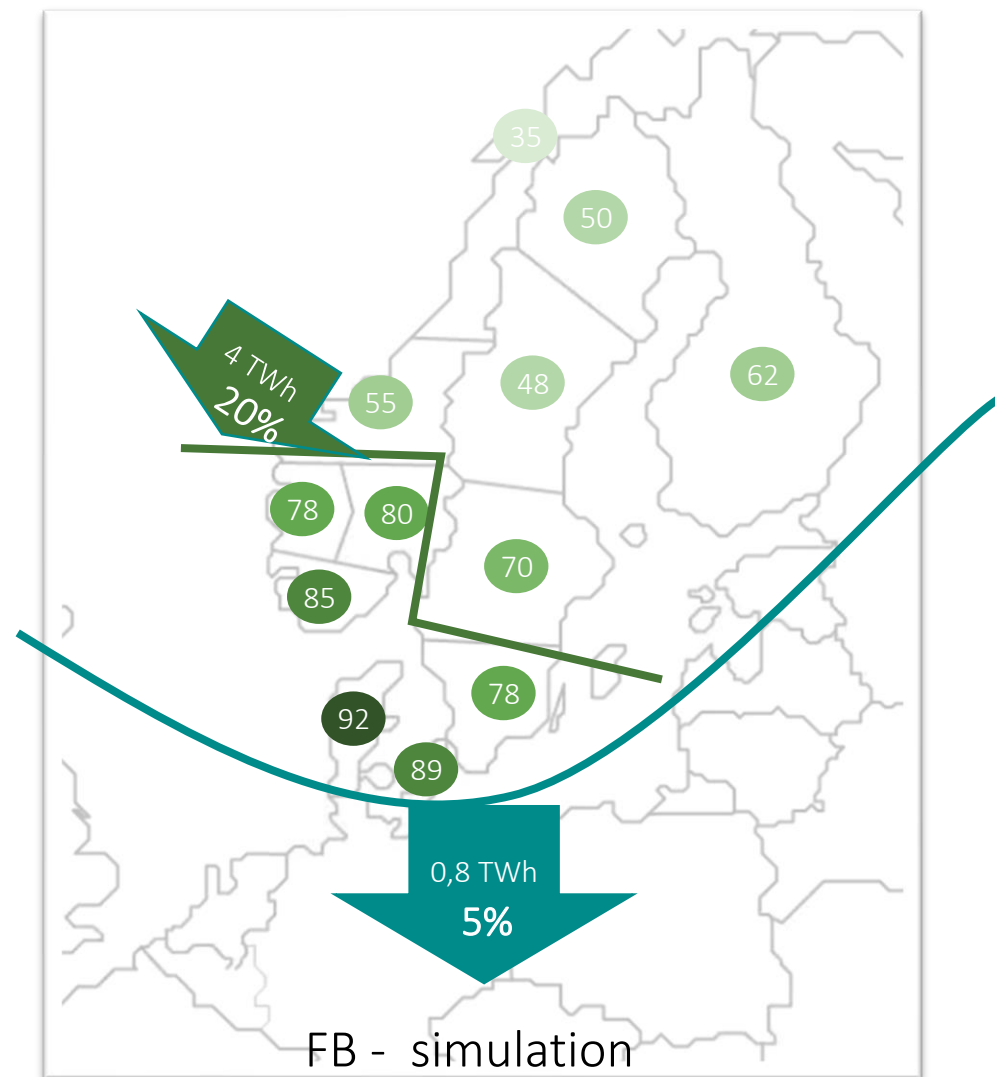
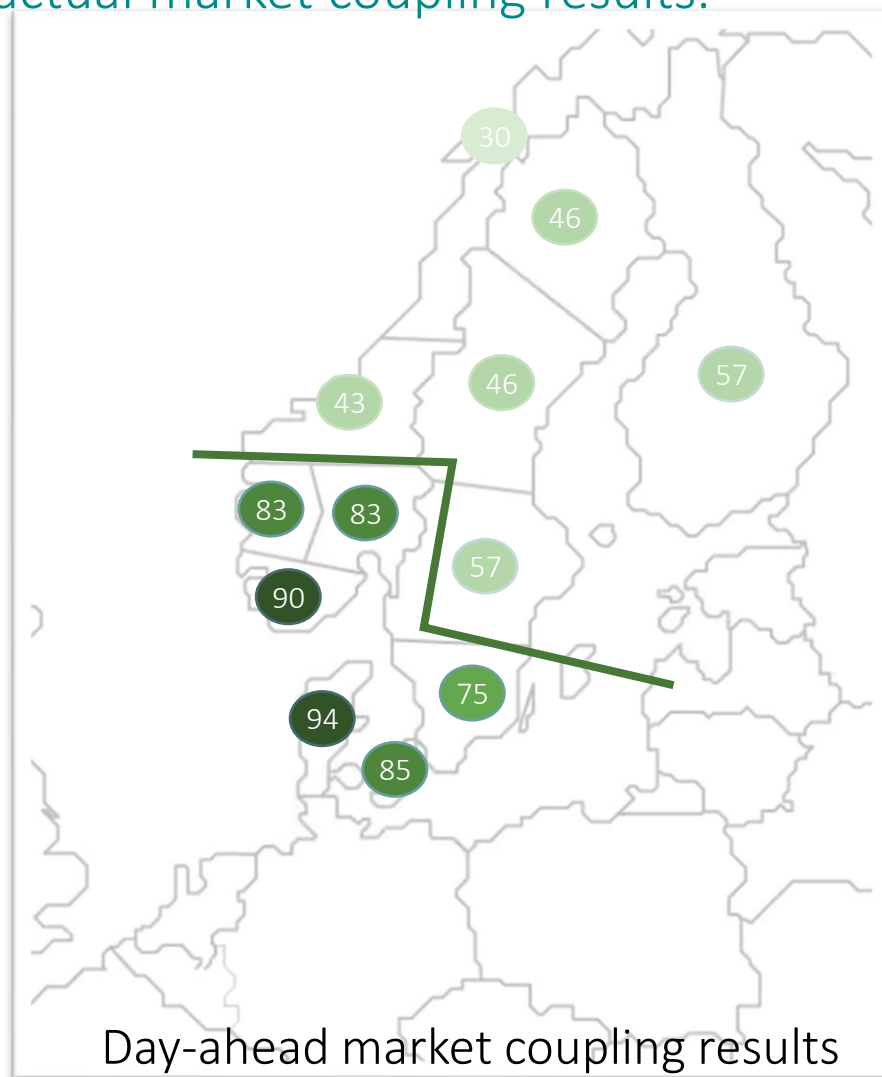
Flow-based impact January-July 2023

Similar changes in volume do not have the same price impact.



INCREASE IN FLOW THROUGH THE NORDIC GRID

Changes in average prices in the Nordic area from January to July, comparing flow-based to the actual market coupling results.

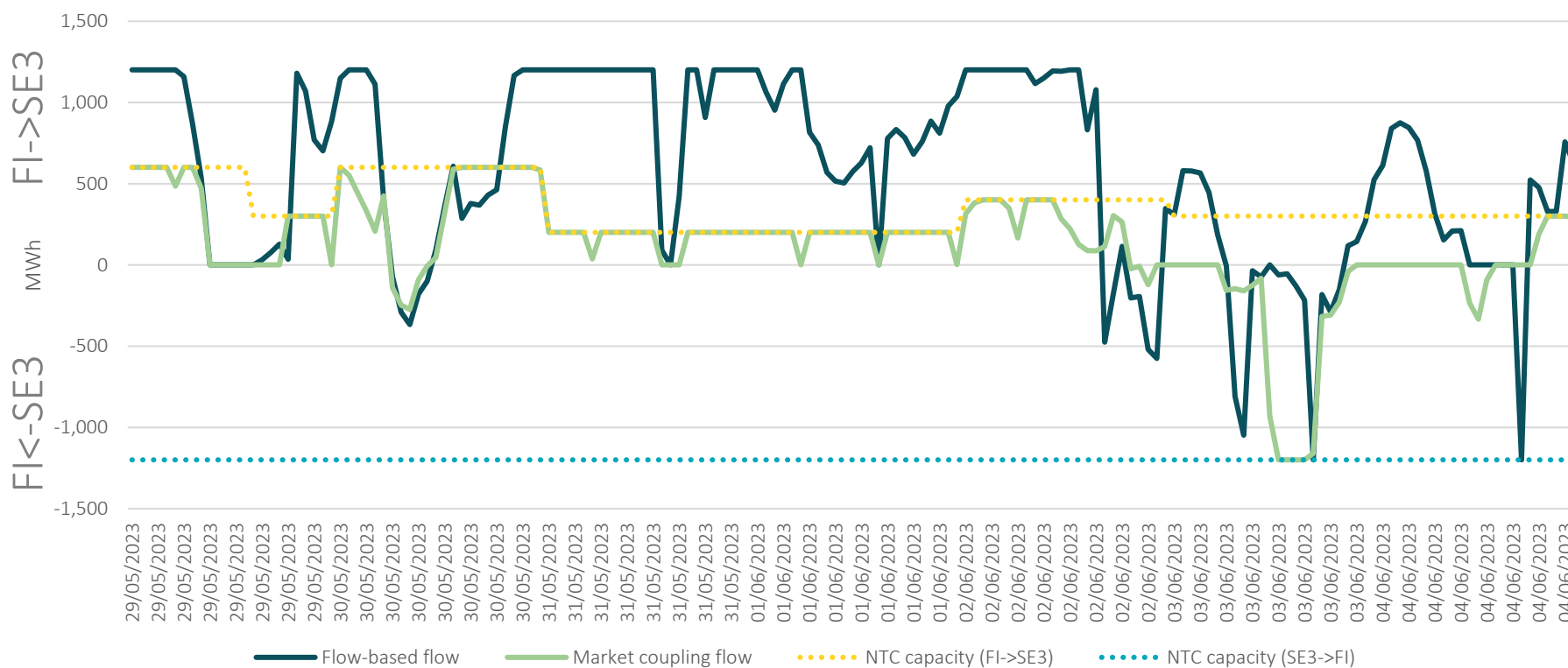


INCREASED USE OF FENNO-SKAN

The capacities available on the interconnector Fenno-Skan (FI->SE3) are limited in the market coupling today, but with flow-based the utilization of the interconnector.



Flow allocated by flow-based compared to market coupling flow on *Fenno-Skan*



ARE YOU READY FOR FLOW-BASED?

More information?

- Flow-based capacity calculation results: <https://test-publicationtool.jao.eu/nordic>
- Market reports, phenomenon report, ID gate opening results, and other relevant EPR data: <https://nordic-rcc.net/flow-based/simulation-results/>
- 3-months parallel run evaluation report: <https://nordic-rcc.net/wp-content/uploads/2023/06/Parallel-run-report-final-public.pdf>
- NordReg communication regarding the TSOs June 2023 EPR report <https://www.nordicenergyregulators.org/2023/07/nra-communication-regarding-the-tsos-june-2023-epr-report/>

JAO
JAO Publication Tool
Nordic CCR

Flowbased Domain
Test data. Full Disclaimer

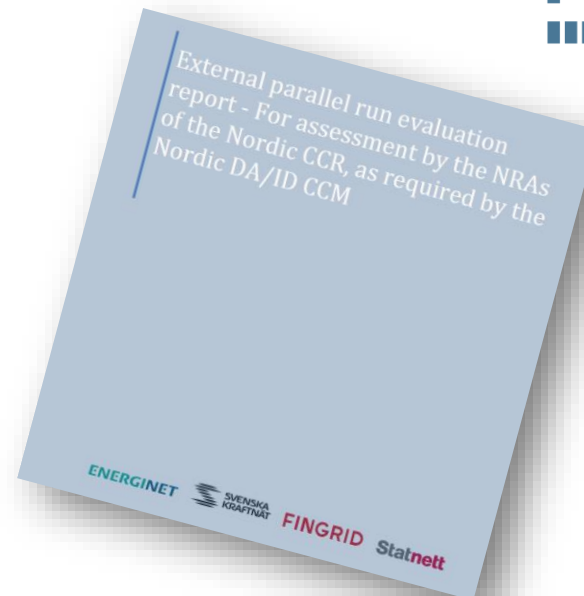
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SEARCH

CNEC or Combined Dynamic Constraint

Date	Name	Type	TSO	Name	EIC	Status
2023-03-17 00:00:00	FI_PO_ISOKANGAS-PYHANSELKA_PIRTTIKOSKI-PIKKARALA	BRANCH	FINGRID	ISOKANGAS - PYHANSELKA - Terminal: IK: IK4-PS4 1 4	44T-IS-PS-000007	OK
2023-03-17 00:00:00	13792_10 300 Vagamo-Ovre Vinstra	BRANCH	STATNETT	S 300 Ovre Vinstra-Vagamo	50TL00000001083K	OK

NORDIC
RCC



WEEK 7, 2023

[CCM EPR Market report week 7](#)

[CCM EPR Market report Appendix week 7](#)

[Market simulation Results week 7](#)

[Grid Constraint Matrix week 7](#)

[ATCE graphical report week 7](#)

[ATCE results week 7](#)