Market Coupling – benefits, challenges and best practices

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The objectives of the Internal Electricity Market

The objectives of the **Internal Electricity Market** (IEM) implemented in the EU are:

a) Promoting effective competition in the generation, trading and supply of electricity;
b) Ensuring fair and non-discriminatory treatment of TSOs, NEMOs and market participants;
c) Introducing a fair market rules and fair price formation of electricity;
d) Ensuring operational security;
e) Ensuring optimal use of the transmission infrastructure;
f) Optimising the calculation and allocation of cross zonal capacity;
g) Ensuring and enhancing the transparency and reliability of market information;
h) Creating a level playing field for NEMOs.

The Internal Electricity Market consists of 2 markets: **SDAC** and **SIDC**.

Single Day Ahead Coupling (SDAC)

The **Single Day Ahead Coupling** is based on the price coupling algorithm (EUPHEMIA) and operated in a decentralised manner on the following principles:

a. One single algorithm;

b. One single set of input data for the whole coupled area (all coupled bidding zones);

c. One single set of market results for the whole coupled area (in respect to each bidding zone);

d. The input data to the algorithm is prepared and collected by each NEMO (bids and offers from its members) according to the local regulations in a common format;

e. The input data related to the cross zonal transmission capacity is prepared by each TSO according to the local regulations in a common format;

f. The complete input data file is received by the NEMO-Coordinator in an anonymised manner (Coordinator role is executed by each operational NEMO on rotational basis);

g. NEMO-Coordinator is responsible for computation of the market results („market coupling proces”);

h. Once market results are finally accepted by all NEMOs, they are absolutely firm and there is no possibility for any NEMO to contest the accepted market results.

The scope of the Single Day Ahead Coupling

- 1 single market solution
- 27 countries
- 32 TSOs
- 17 NEMOs
- 1530 TWh/year
- 98,6% of the EU electricity consumption is coupled

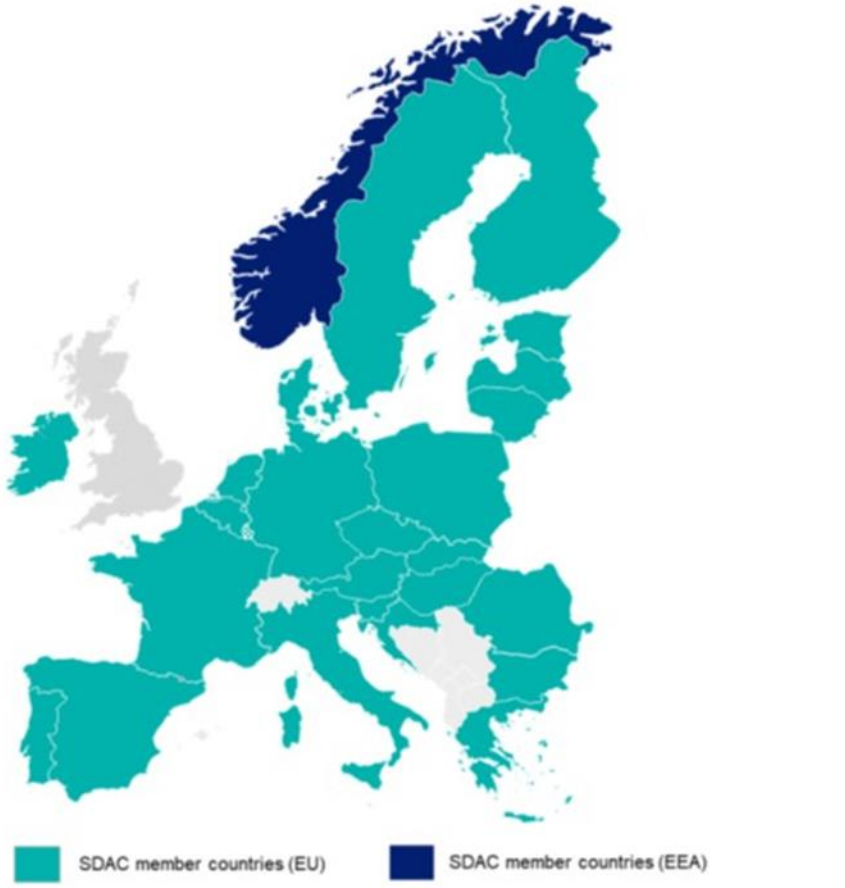
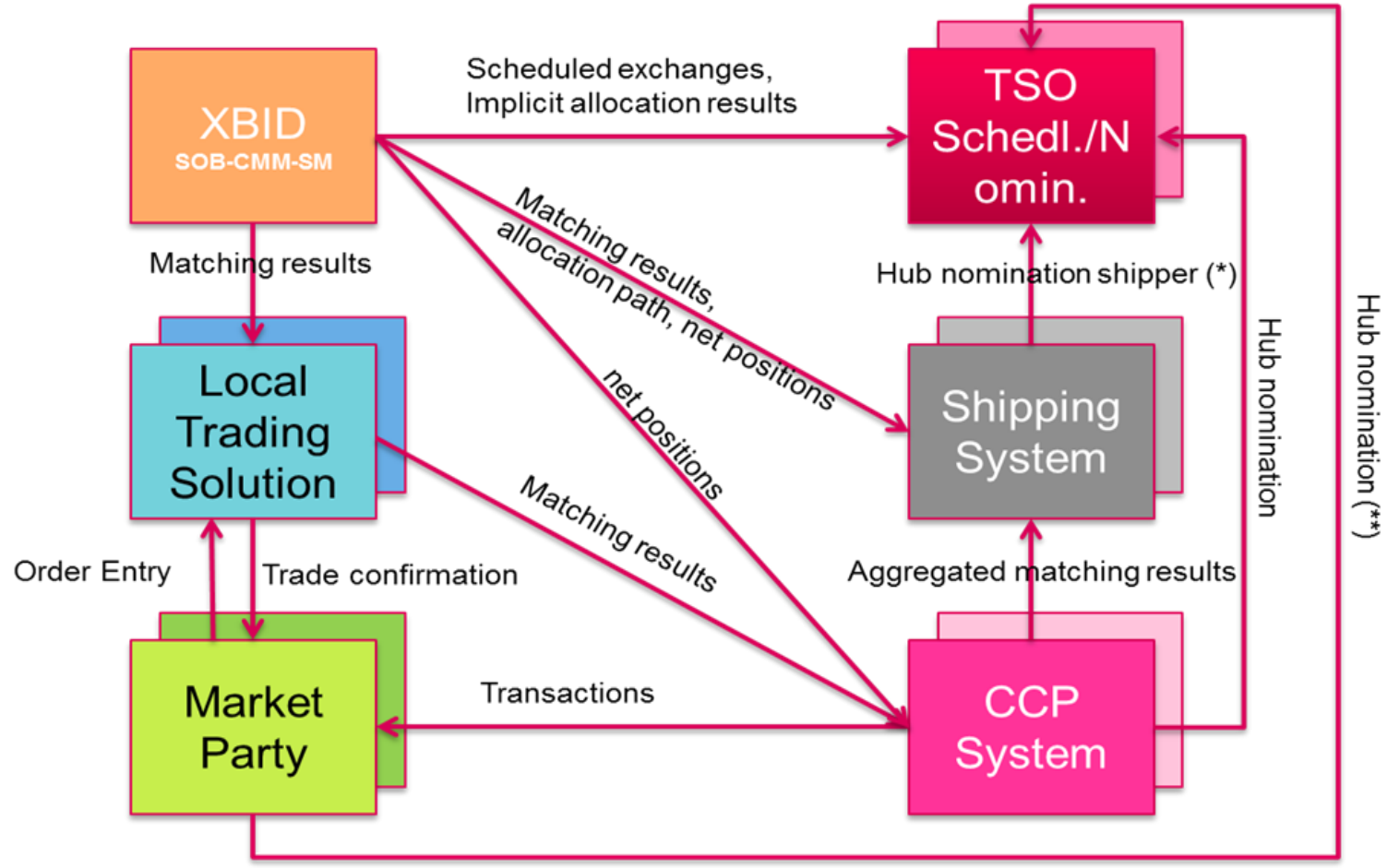


Figure 11 Countries of SDAC (as of June 2022)

Single Intra-Day Coupling (SIDC) 1

1. The **Single Intra-Day Coupling** is based on the continuous matching of orders for the whole coupled area (the SOB) as well as on the TSO functionalities in respect of the relevant available intraday cross-zonal capacity (the CMM), as well as the calculation of scheduled exchanges for shipping and settlement for TSOs (the SM).
2. The Intraday System is a centralised system supporting 24/7 continuous trading.
3. The Intraday System consists of the following modules:
    a. **Shared Order Book** (the SOB) that supports the collection and matching of ID (Intraday) orders from all connected NEMOs LTS (Local Trading System) via Public Message Interface (PMI).
    b. **Capacity Management Module** (the CMM) that collects directly from TSOs the Cross-Zonal Capacity available at any instant for ID trading, and ensures that the concluded ID trades respect such capacities.
    c. **Shipping Module** (the SM) that computes the scheduled exchanges for shipping and settlement calculations for TSOs and central counter parties to ship and settle cross-zonal and cross-delivery area and cross-central counter party trades, where relevant.

SIDC – functional diagram



(*) XB nominations could be also needed in areas where nomination behalf is not applicable
(**) According to local procedures (direct or indirect nominations)

Transit shipping within SIDC

Single Intra-Day Coupling (SIDC) 2

The Intraday cross-zonal matching of orders within **Single Intra-Day Coupling** is based on the following principles:

a. First-come first-served where the orders with highest buy price and the lowest sell price get served first given that also the cross zonal capacity constraints are respected if the orders are in separate bidding zones;

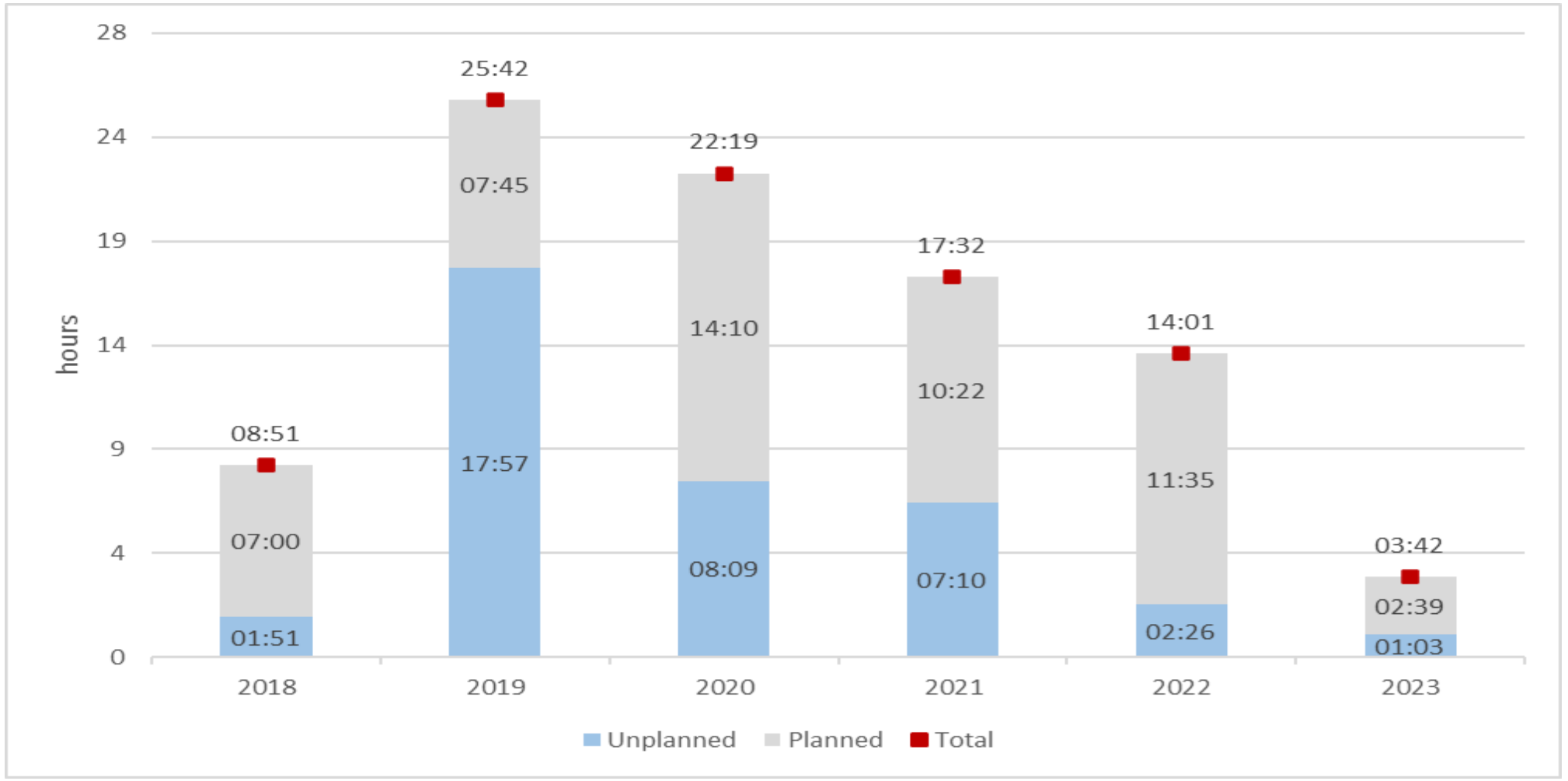
b. Cross zonal capacities and order books (OBK) are simultaneously updated in the CMM and SOB respectively on a continuous basis based on latest matching of orders and creation, modification and deletion of orders as well as capacity upgrades by TSOs;

c. Input data (orders) to the matching submitted from the various NEMO LTSs is centralised in one SOB to enable full cross matching between the connected OBKs and combined with utilization of cross zonal capacities available via CMM;

d. Input data in the form of intraday cross zonal capacities between bidding zones to the matching is made available by the TSOs in CMM;

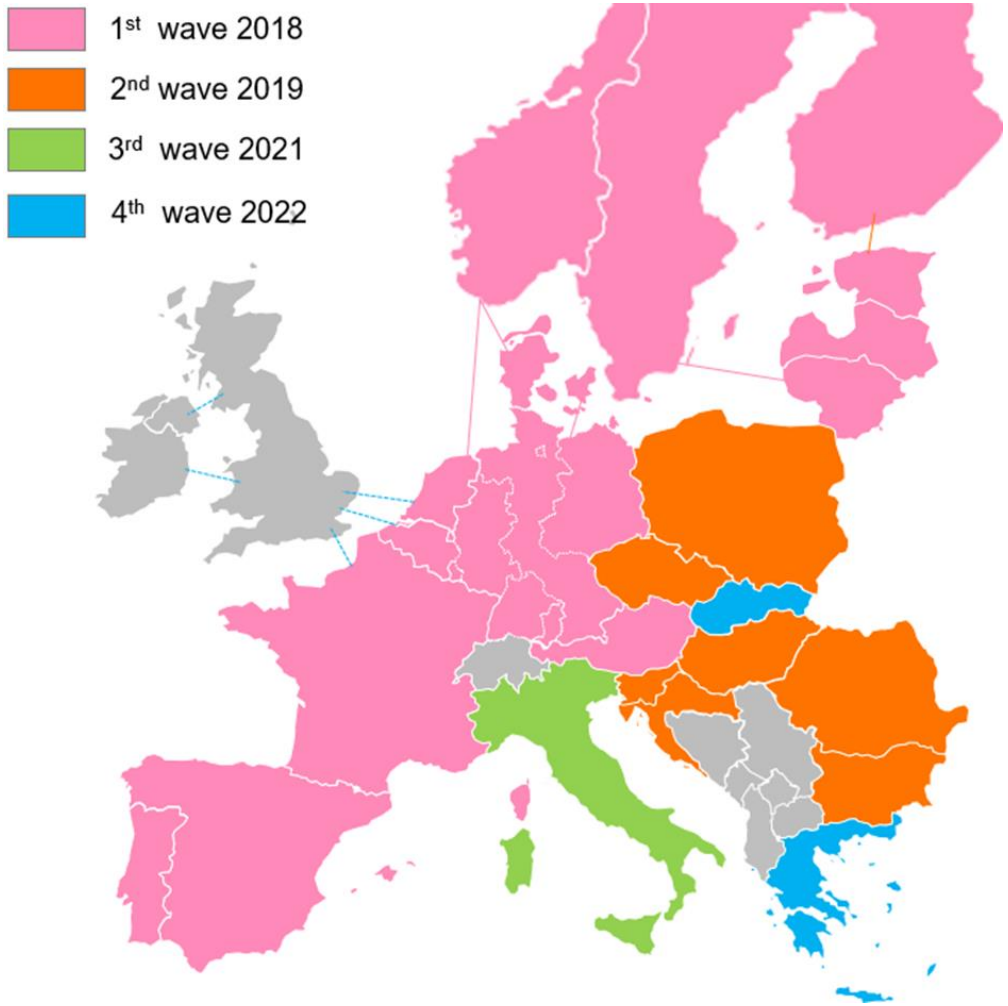
e. All input data regarding bids/offers coming from the respective NEMOs individual LTSs are shared in the SOB in a fully anonymised manner to ensure both that competing NEMOs do not know which market participants connected to another NEMOs LTS are placing the individual orders and in general to protect the confidentiality of individual market participants' orders.

Time of non-availabilities of SIDC (in hours)



Development of the Single Intra-Day Coupling

- 1 single market solution
- 25 countries
- 30 TSOs
- 15 NEMOs
- 242 milion trades have been executed within SIDC since its inception in June 2018 until the end of February 2023



THANK YOU FOR YOUR ATTENTION!

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