

# 03 Building the IEM in electricity

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# Structure of the power market

- Integrated sector + lack of storage potential + high costs of outages.
- Generators – networks – consumers.
- Generators – TSOs/DSOs – suppliers/traders – consumers (+ power exchanges/NEMO)
- NRAs (+ ACER, ENTSO-E)
- Liberalized vs. regulated parts of the market.
- Wholesale vs. retail market.
- Balancing; intra-day; day ahead; future markets.

# Building of the IEM

Aim: to integrate national markets to single (internal) electricity market. (*Why?*)

- ~~Liberalization and competition – withdrawal of the state from the energy sector, removing the barriers for the free entry to the sector.~~
- But also regulation – to limit the power of (natural) monopolies and to remove the legacy of pre-liberal paradigm – regulation to competition.
- Common trading regime.
- Interconnectors.

Target model – agreed blueprint for the architecture of both electricity and gas markets.

Two principles:

- Energy only regional markets (generator's revenues depend on the price for each marginal unit of energy).
- Market coupling (to achieve convergent prices across the EU).

# Harmonization of the regulation

- Harmonization of the rules on wholesale markets (detecting of market abuse, prohibiting of using of insider information or the spreading of incorrect information).
- Regulation of who can use cross-border infrastructure and under what conditions.
- Access to infrastructure (exemptions from TPA to implement risky investments which cannot be made otherwise).
- Rules on government intervention (state aid for RES, backup capacity...).
- Consumer rights and protection.

# Regulatory structure - NRAs

- Independent both from industry and government's interests. Separate legal entities, have their own budget.
- Can issue binding decisions on companies and impose penalties on those that do not comply with their legal obligation.
- Generators, network operators and suppliers have to provide them with accurate data.
- Are required to co-operate with each other (ACER).

# Regulatory structure - ACER

- Drafts guidelines for the operation of cross-border electricity networks and gas pipelines.
- Reviews the implementation of EU-wide network development plans.
- Deciding on cross-border issues if NRAs cannot agree or if they ask it to intervene.
- Monitoring the functioning of the IEM including retail prices, network access for electricity produced from RES, and consumers rights.

# Regulatory structure – ENTSO-E + ENTSO-G

- They develop the standards and draft Network Codes to help harmonize the flow of electricity and gas across different transmission systems.
- They coordinate the planning of new network investments and monitor the development of new transmission capabilities. Europe-wide 10 year investment plan (TYNDP) to help identify gaps every two years.

# Regulatory structure – NEMO

- Nominated Electricity Market Operator – operates the day-ahead and intraday trading services.
- (Usually) power exchanges.
  - Receives orders from market participants.
  - Match and allocate orders.
  - Publish prices.
  - Act as a central counterparty for clearing and settlement of the exchange of energy.

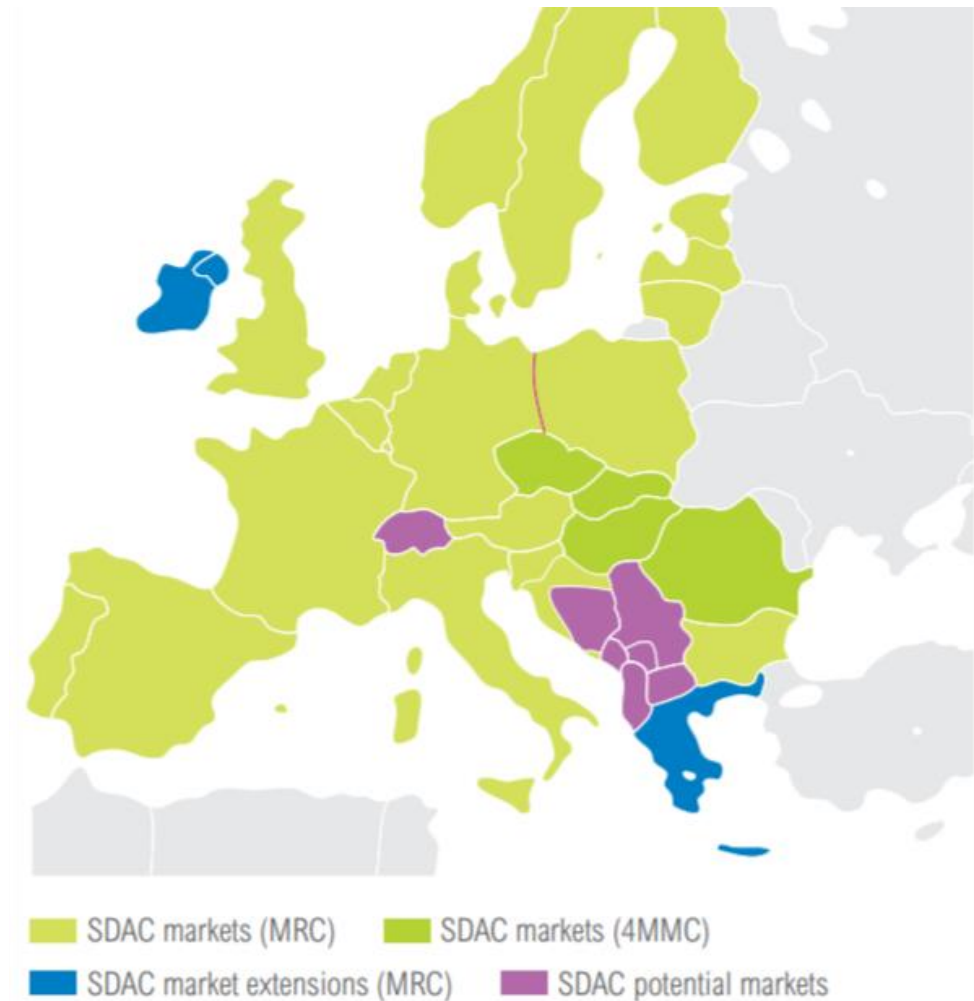


# Common trading regime – market coupling

- Primarily day-head (DA) and intra-day (ID) markets. Balancing markets are still largely national or bilateral.
- DA market coupling through the coupling of cross-border electricity exchanges. Coupling of regional electricity markets – Nordic market, Central West, North West Europe... .
- (DA) market coupling optimises interconnection capacity utilisation (calculation and allocation) and facilitates linking of buyers and sellers on either side of a border.
- Cross-border capacity allocation is carried out together with the financial energy settlement in one single operation at the exchange (no need for prior reservation of capacity) = implicit auctioning.
- Driven by Network Codes (Capacity Allocation and Congestion Management and others) and Framework Guidelines.

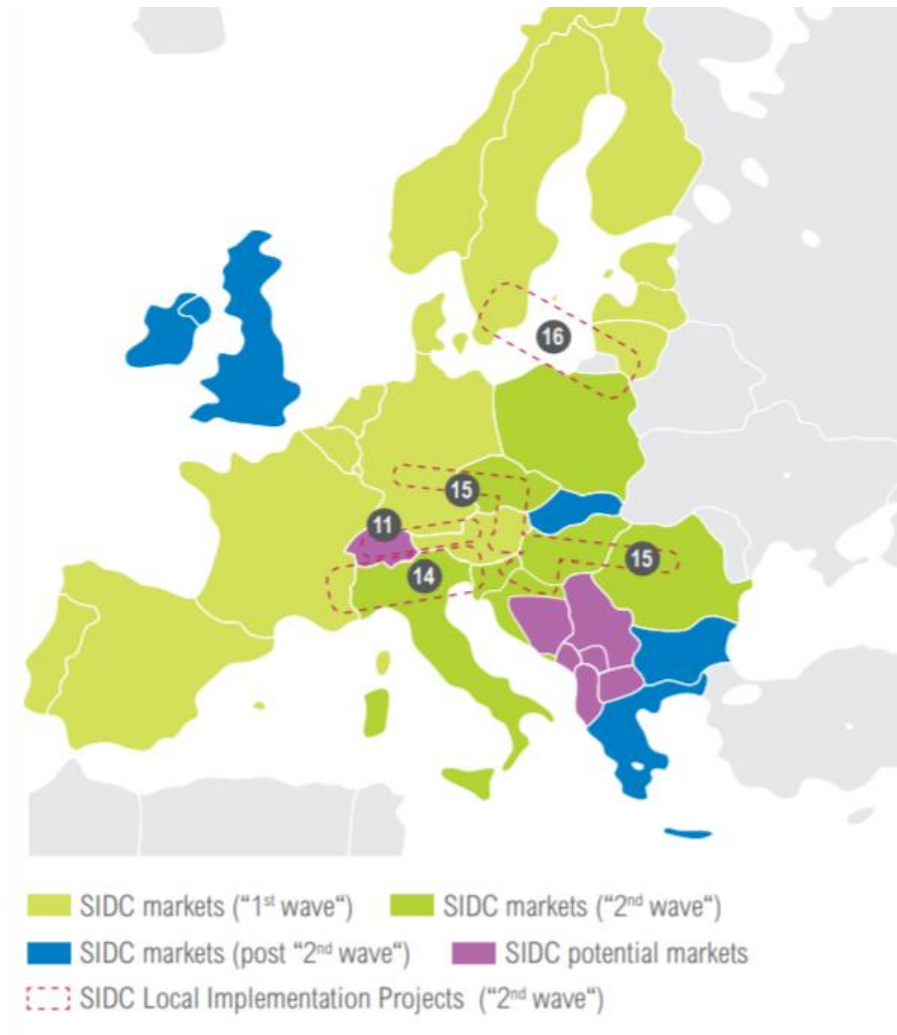
# Single Day-Ahead Coupling (July 2018)

- Update: Croatian – Hungarian border is last to be coupled in March 2022 – done.

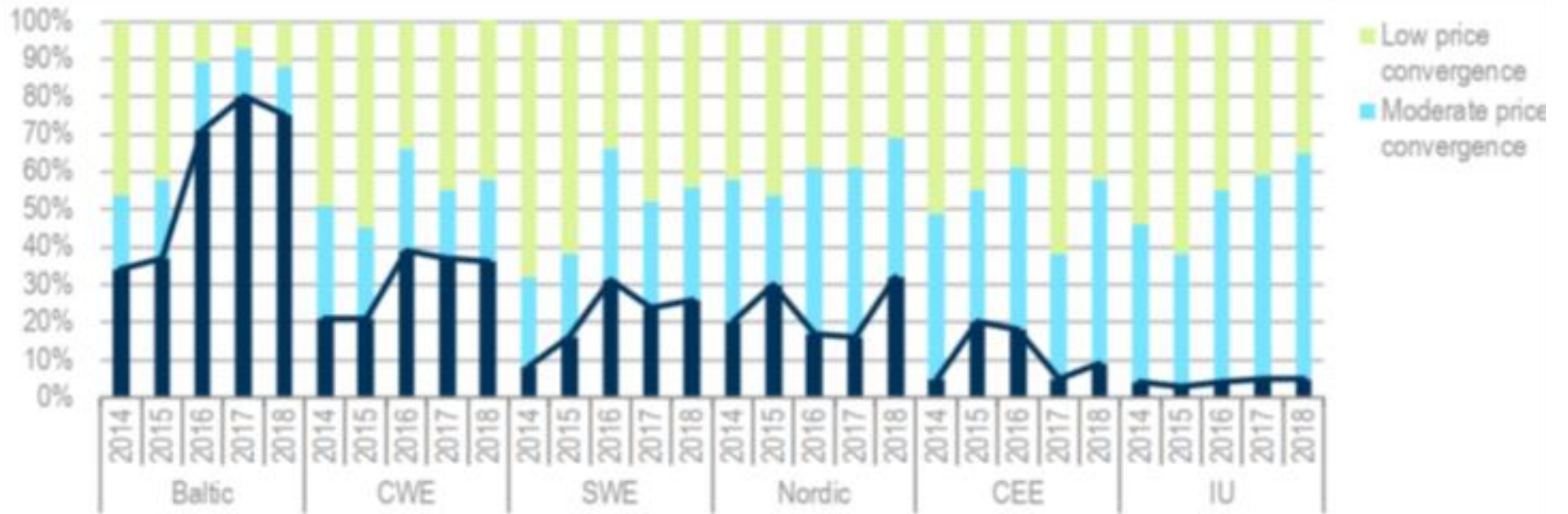


# Single Intraday Coupling (July 2018)

- Update: Coupling of Italy, Greece and Slovakia still to be done.



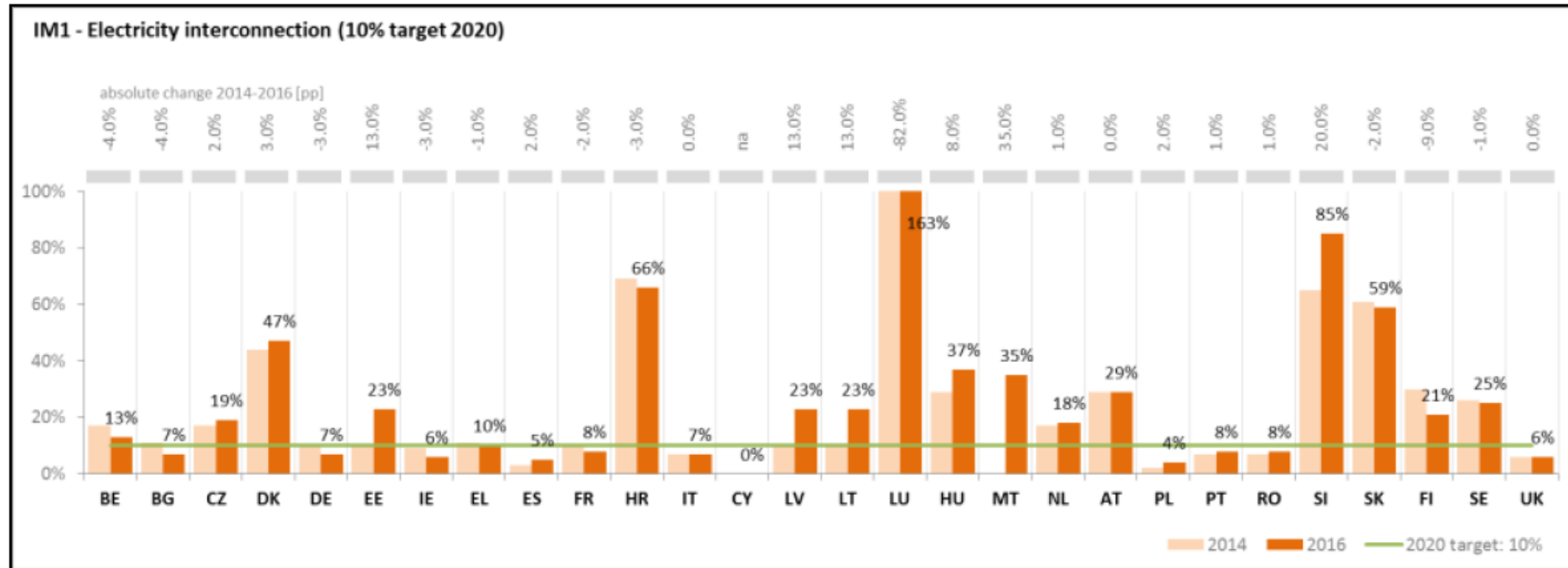
# Price convergence



# Cross-border infrastructure

- Grids designed to serve the needs of the national states, not for cross-border trading.
- Interconnectors are expensive, attract local opposition and disputes about the costs and benefit distribution, they invite competition.
- Every MS should have interconnection capacity equal to at least 15% by 2030.

# Electricity interconnection (2014-2016)



*Note: The three Baltic states (Estonia, Latvia and Lithuania) are not yet synchronised with the European grid and are therefore treated as one entity. The value of 23 % for the three Baltic States refers to the interconnectivity of the entire Baltic zone with the European electricity market; the interconnectivity between the individual countries is higher.*

# TYNDP and PCIs

- Rolling (every 2 years, non-binding) TYNDP prepared by the ENTSO-E as a collection of scenarios on how EU power system may look in the future. To identify the best grid configuration for the next 10 years.
- TYNDP should identify infrastructure projects crucial to the EU's climate and energy targets (PCI projects – 2 or more states) from the overall TYNDP list.
- From the moment TYNDP project becomes PCI it may benefit from a favorable treatment (accelerated planning, permit granting, EU funds).
- Both TYNDP and PCI should help to speed up the construction work, ease the administrative burden and attracts both EU (Connecting Europe Facility – EUR 4,7 bn. between 2014-2020) and national funds.

# TYNDP and PCIs

[https://ec.europa.eu/energy/infrastructure/transparency\\_platform/map-viewer/main.html](https://ec.europa.eu/energy/infrastructure/transparency_platform/map-viewer/main.html)



# The Clean Energy for all Europeans package, 2019 (the „Winter package/4th liberalization package)“

- Scarcity pricing, flexibility for generation, demand response and storage, co-ordination of national resource adequacy assessments, cross-border participation in capacity remuneration mechanisms.
- Rules on crisis prevention, co-operation via Regional Co-operation Centres, enhanced bidding zone review proces.
- Faster switching of suppliers.

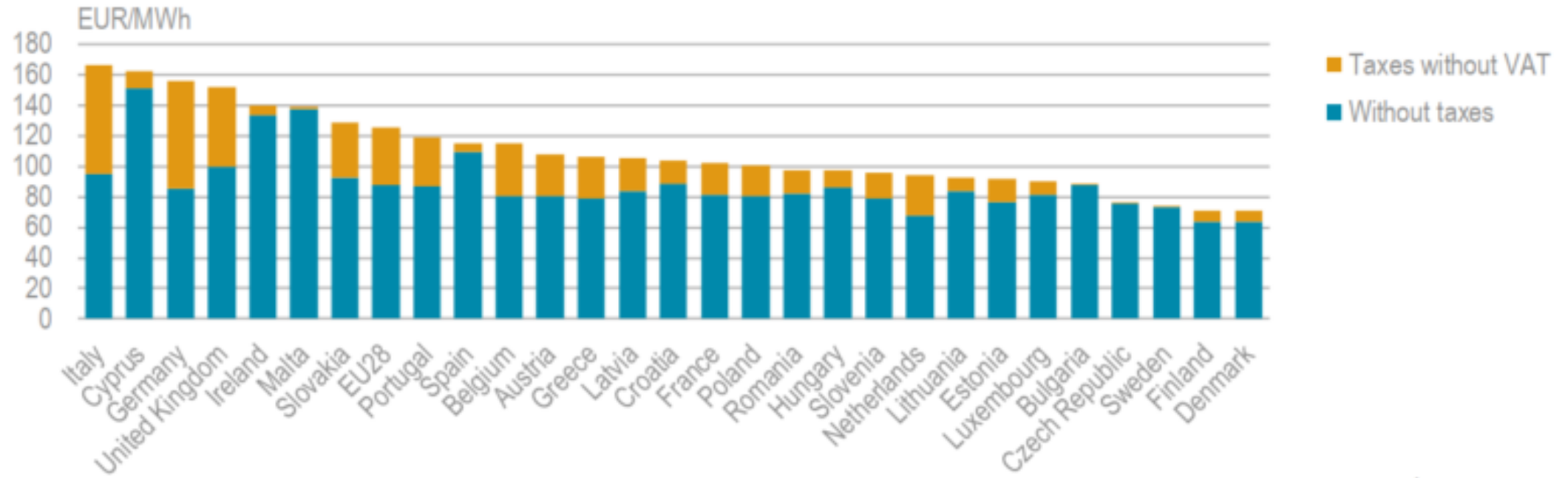
# Retail markets

- Still fragmented, regulated, with low level of switching.
- Still high generation concentration. In 8 MS more than 70% of generation controlled by historic incumbent.
- 14/28 EU members still some form of intervention in price setting (2019).

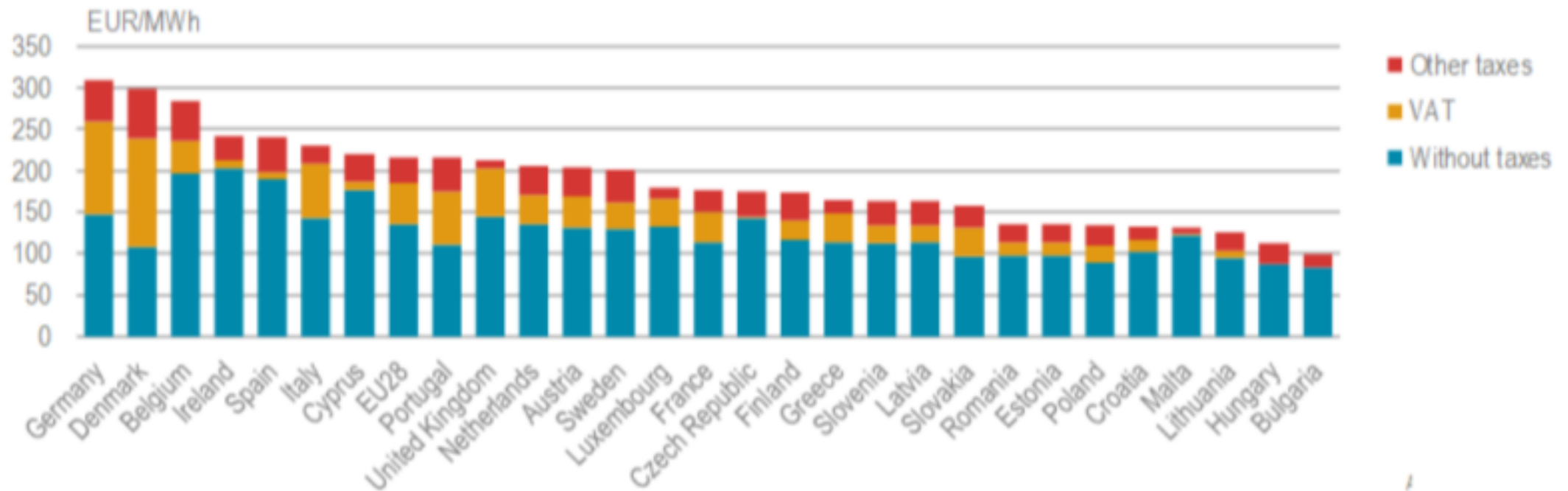
# Prices

- Gap between household and industry prices – different levels of taxation and RES surcharges.
- Since 2008 the wholesale prices have fallen by 1/3, retail prices have been increasing by 4%/y.
  - Due to the persistence of regulated prices and market concentration, the higher level of levies, taxes and network cost and low responsiveness of consumers to switch suppliers to better offer.

# Prices for industry, first half of 2019 (eur/MWh)



# Prices for household consumers, 2019 (eur/MWh)



# Composition of retail prices



Figure 3: Household price components in 2020 (in %). Source: Eurostat.

# Sources

- IEA (2014): Energy Policies of IEA Countries – The European Union.
- EC (2017): EU Energy in Figures.
- ACER (2016): Market Monitoring Report 2015 – Electricity and Gas
- European Parliament (2016): Understanding electricity markets in the EU.
- European Commission (2017): Second Report on the State of Energy Union: Monitoring progress towards the Energy Union objectives – key indicators.
- European Commission: State of the Energy Union 2021.

# Supplementary materials

- Clean Energy for All Europeans package („The fourth liberalization package).
  - Update of the EU 2030 targets – 40% greenhouse gas reduction, 32% of RES in energy mix, 32,5% efficiency target.
- Energy Performance in Buildings (Directive 2018/844)
- Renewable Energy Directive (2018/2001)
- Energy Efficiency Directive (2018/2002)
- Governance of the Energy Union Regulation (2018/1999)
- Electricity Regulation (2019/943)
- Electricity Directive (2019/944)
- Risk Preparedness Regulation (2019/942)
- ACER Regulation (2019/942)