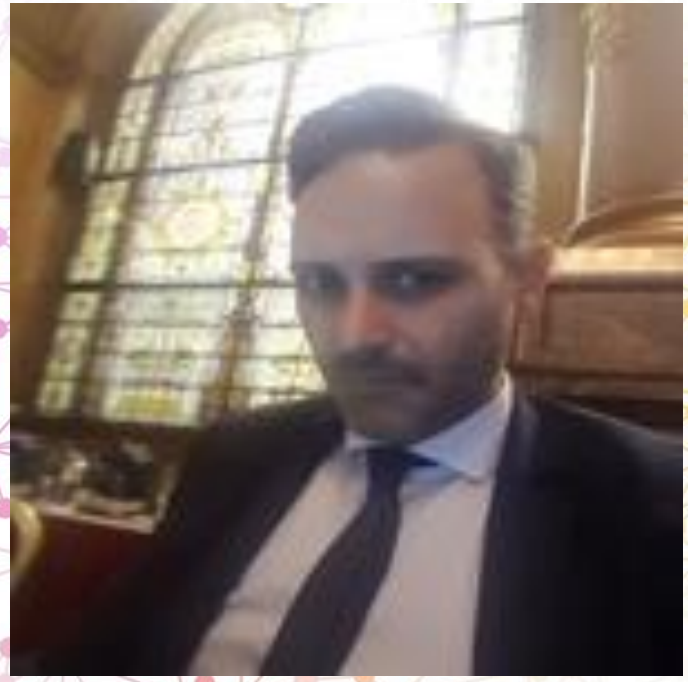
Wrap-up



Christos Dikeakos
Flexibility &Markets , IPTO
Convenor ENTSO-E RDIC

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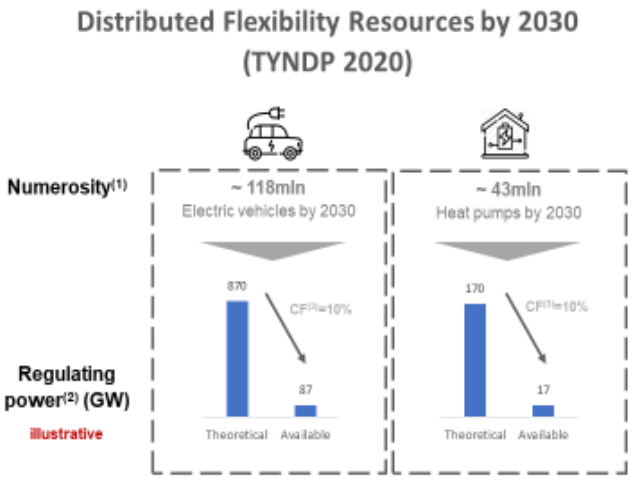
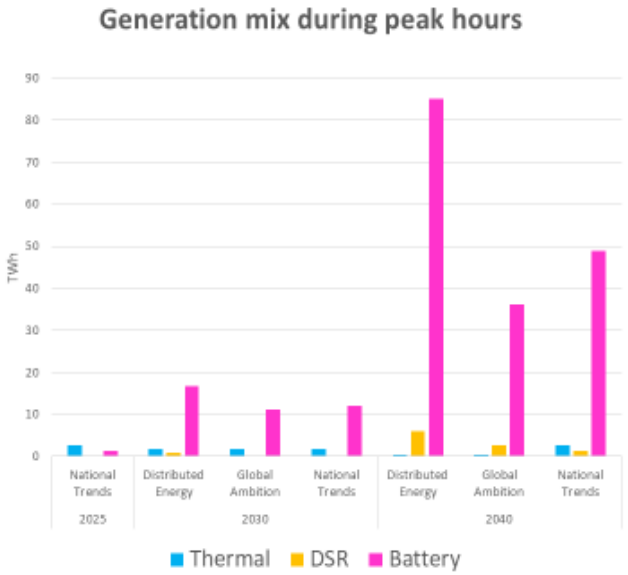
Vision & Framework

Vision: Distributed Flexibility could represent a significant source of flexibility for TSOs from 2030 onwards





Source: ENTSO-E TYNDP 2020 scenarios report
(1) Distributed Energy scenario
(2) Own elaboration assuming: (a) heat pump: 4kW, (b) electric vehicle charge point: 7,4 kW
(3) CF = Contemporary Factor: Average share of resources available to be turned off.

4

ASSETS:

The assets to provide a significant proportion of the flexibility that the current electricity system requires already exist and are connected to distribution and transmission networks.

FLEXIBILITY PLATFORMS:

Flexibility Platforms are one of the mechanisms that can **unlock** this flexibility to address the constraints the current electricity system is facing and those it will have to overcome in the future.

New CEP triggers

- **DSOs to use local flexibility**
- **Distributed flexibilities to access to all markets**
- **Market-based congestion management**

Flexibility platforms: Design options

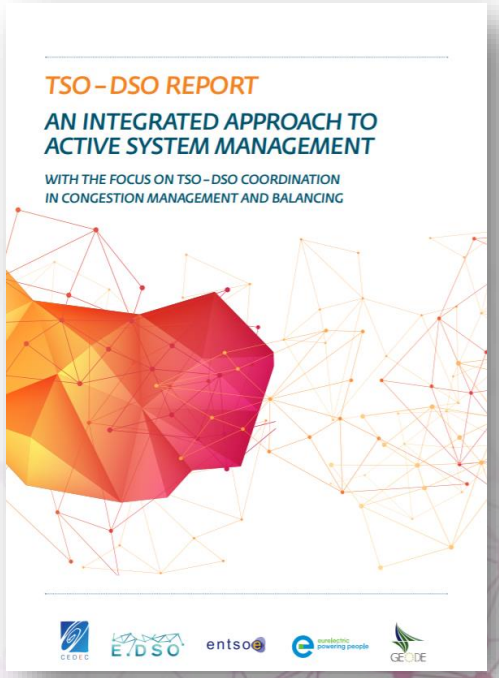
Taxonomy of platform functionalities

Source: https://www.ofgem.gov.uk/publications-and-updates/ofgem-s-future-insights-paper-6-flexibility-platforms-electricity-markets

Main questions

- Approach: market- or cost-based?
- Market operator: regulated or commercial?
- Buyer: TSO or DSO? Market parties?
- Service: congestion or balancing? Others?
- Payment: reserve or availability?
- Product: standardized or tailor-made?
- Integration: local or combined?
- Timeframe: real-time operation, operational planning or grid planning?

ASM PRINCIPLES/RECOMMENDATIONS

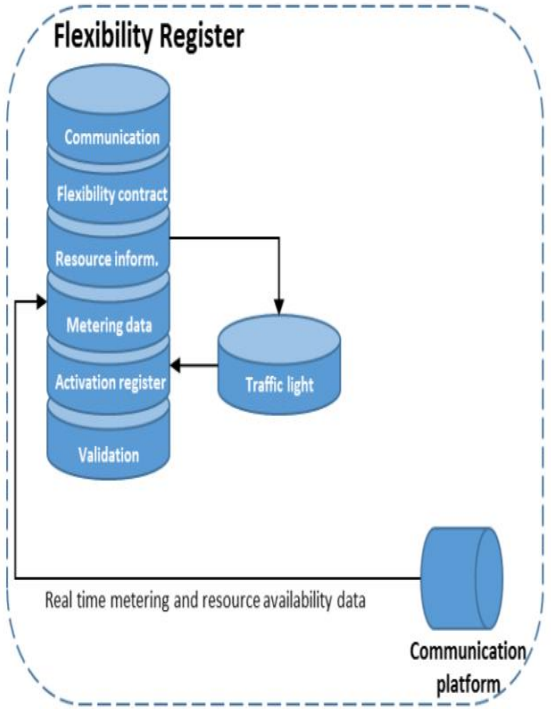


- **Access** should be easy for the **customer**.
- **Interoperability** with other platforms must be ensured.
- Platforms must **avoid harmful interference** and conflicts beyond their associated grids. This requires correct and **timely data exchange** between platforms and a set of well designed algorithms.
- **TSO – DSO coordination and mutual data exchange** is essential
- Platforms solutions should be **technology agnostic**

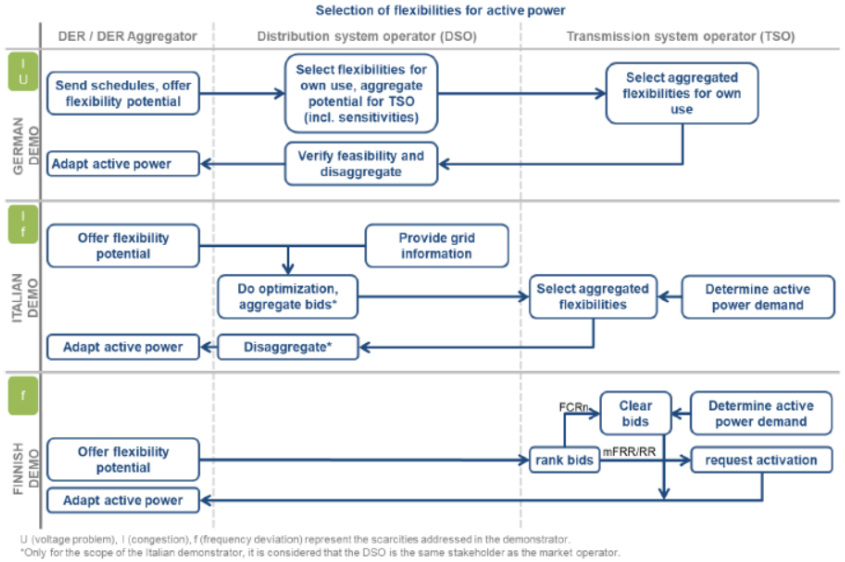
- ……. **congestion** should be solved through a market-based allocation of flexibility services
- Information on flexibility resources that are pre-qualified or are seeking participation in congestion management and balancing should be shared and available through a **flexibility resources register**

- Product definition should allow for aggregation as much as technically feasible.
- Products for congestion management should comply with the needs of system operators within the **different timeframes from long-term to real time**…

FLEXIBILITY RESOURCES REGISTER/ CONGESTION MANAGEMENT PRODUCTS/ TS0-DS0 COORDINATION; STATE OF RESEARCH



Flexibility register concept proposal
Source: Interrface deliverable 3.2, 2020



Demonstrators for Flexibility Provision from Decentralized Resources, Common View. Source: EU-SYSFLEX, Deliverable 6.6, 2019

INCIT-EV will develop a Decision Support System to assist Mobility Planners (City Planner, DSO and TSO) on the development of ad-hoc action plans to boost the penetration of electric vehicles in their area

Benefits/relevance

- **Develop regional flexibility solutions for power markets**
- **Develop technical procedures to manage grid and system limitations via the aggregated control of consumption and / or generation**
- **The platform will provide strong assistance for developing the electricity market and increase market liquidity Implement complete and qualified system**
- **Coordination on CM and on Balancing as well as coordination on bid grid prequalification**
- **Scalability and replicability**
- **Maturity**
- **Clear design**
- **Direct activation and coordination mechanisms between TSO-DSO to ensure flexibility bids won't cause congestion in TSO/DSO grid.**

Concept

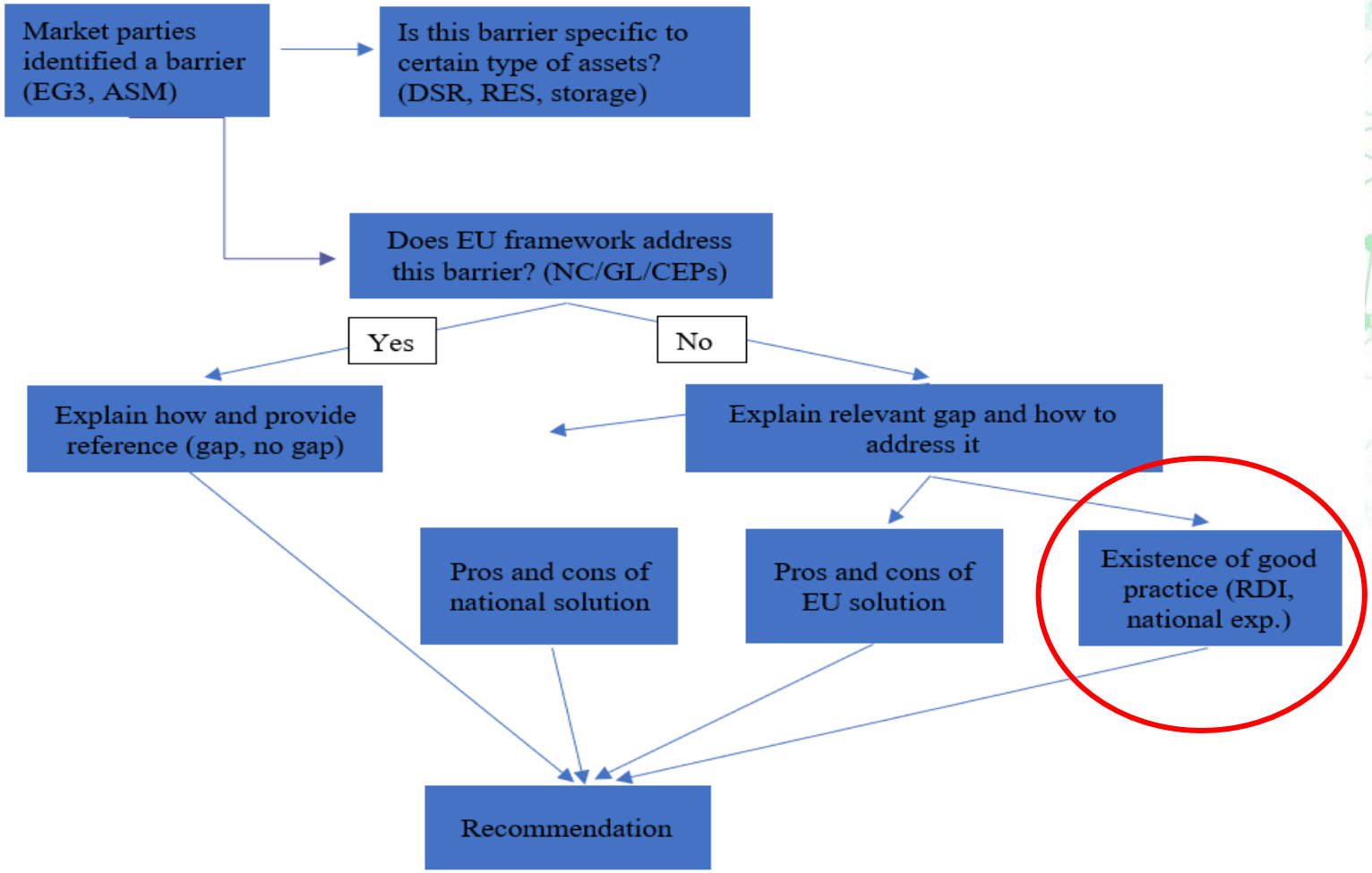
Two products are defined 1) a reserved product (capacity-based) procured at certain availability price and 2) non-reserved product (energy-based) procured at an energy price, most likely close to delivery

Attribute	Reserved	Non-reserved
Preparation period	Specific for FSPs*	Specific for FSPs
Ramping period	Specific for FSPs	Specific for FSPs
Full activation time	Specific for FSPs	Specific for FSPs
Min quantity	0.1 MW or 1MW	0.1 MW or 1MW
Max quantity	N.A.	N.A.
Deactivation period	Specific for FSPs	Specific for FSPs
Granularity	0.1 or 0.01MW	0.1 or 0.01MW
Min delivery period	Specific for FSPs	Specific for FSPs
Max delivery period	Specific for FSPs	Specific for FSPs
Mode of activation	Manual	Manual
Availability price	Yes	No
Activation price	Possible	Yes
Divisibility	Both	Both
Location	Included in the bid	Included in the bid
Recovery period	Specific for FSPs	Specific for FSPs
Aggregation allowed	Yes	Yes
Symmetric/Asymmetric	No symmetry required	No symmetry required

Source: Coordinet, Deliverable 1.3, 2019

Regulatory gap analysis on the integration of distributed flexibilities in balancing and congestion management services

Methodology: A top down regulatory approach…



Scope: Participation of all type of distributed assets in balancing and CM services procured by TSO or CM services procured by DSO

Services

- Balancing
- TSO congestion management
- DSO congestion management

Assets

- Residential customers
- Non-residential customers
- Distributed generators
- Distributed Storage

Issues

1. Roles and responsibilities
2. Telemetry requirements
3. Product, pricing and settlement
4. Prequalification procedures
5. Data exchange requirements
6. Interaction with other processes

Recommendations

- ✓ Addressed by current framework – implementation is sufficient
- No need for regulatory action but open to further discussion
- Amendment or new regulation is relevant

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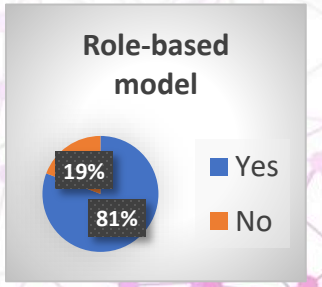
Methodology: …complemented by a bottom-up analysis of RDI projects

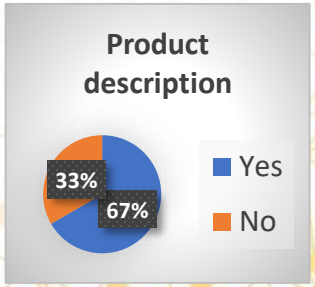
26 Research & Development & Innovation projects analyzed to identify good practices

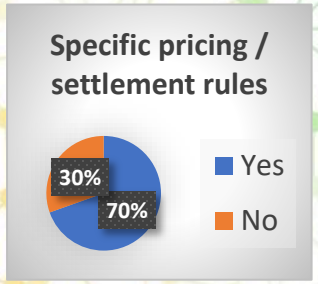
Figures below show the share of analyzed projects which address each types of barriers

1 Roles and responsibilities

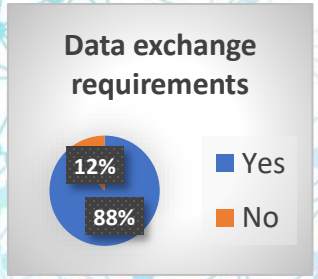


3 Product, pricing and settlement

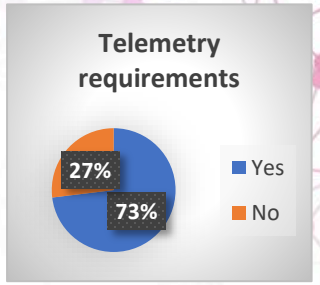




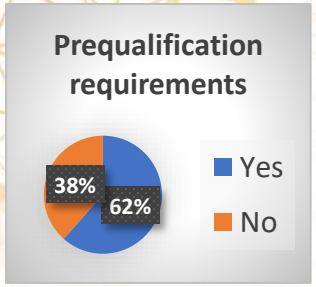
5 Data exchange requirements



2 Telemetry requirements



4 Prequalification procedures



6 Interaction with other processes