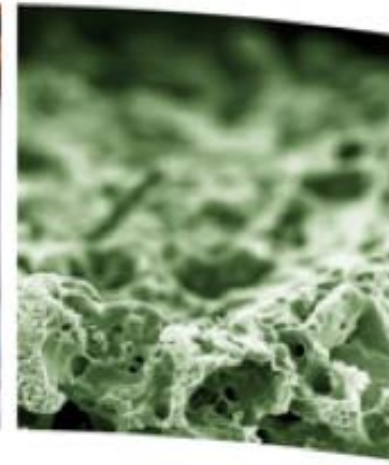




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## Markets to trade with aggregated energy flexibility

Barcelona,  
Energy Flexibility in Buildings: A key asset in the future energy system

26th March-2018

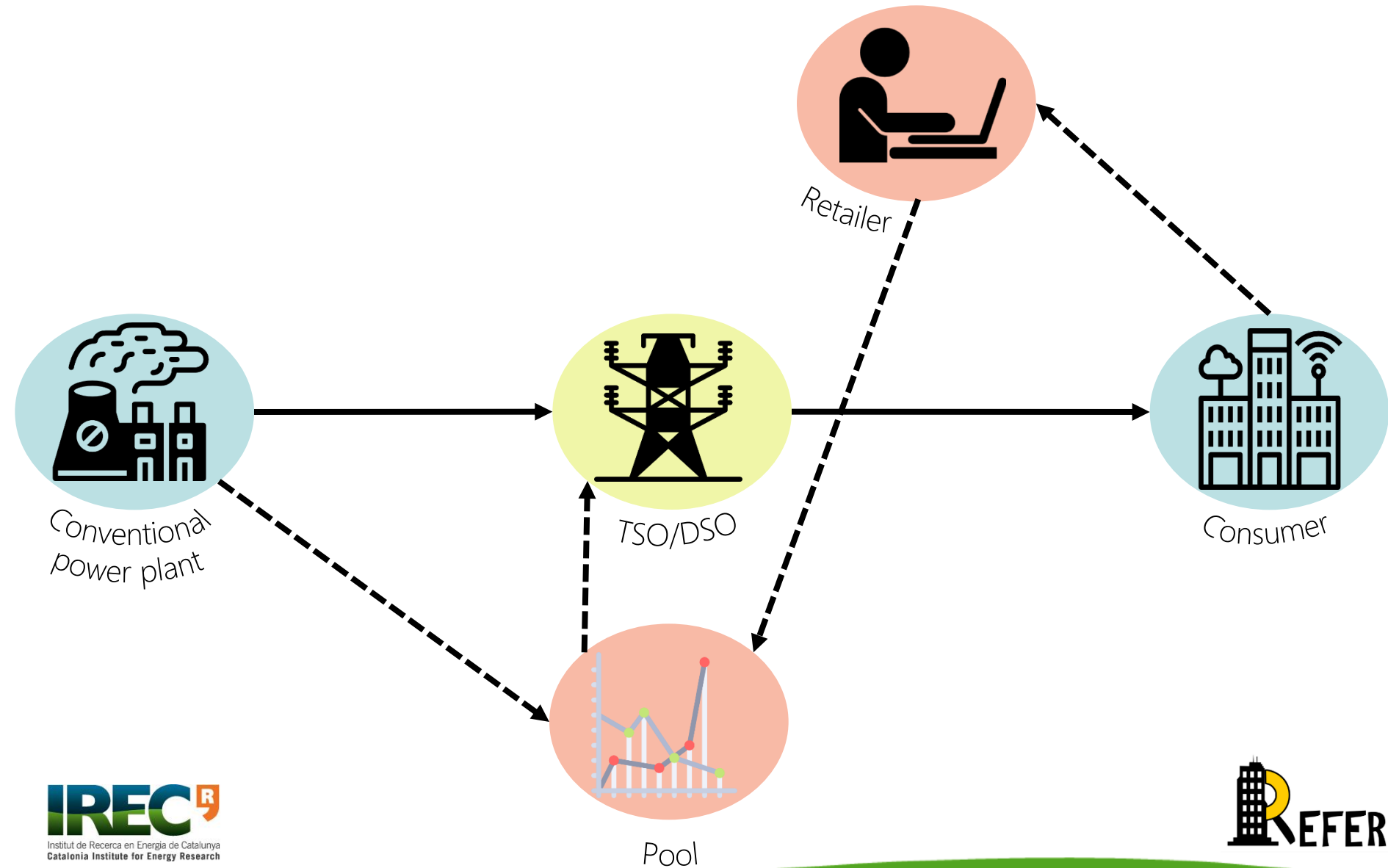
Mattia Barbero, Cristina Corchero and Lucia Igualada



# INDEX

- Introduction
- Aggregator agents' perspectives in Europe
- Business models
- Technical requirements
- Conclusions

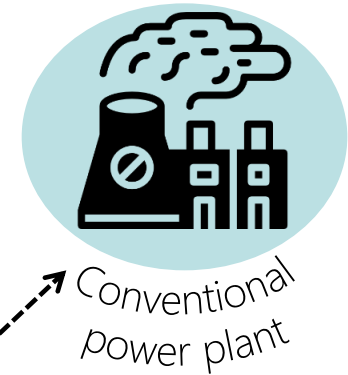
# DEMAND AGGREGATOR CONCEPT-CONVENTIONAL SYSTEM



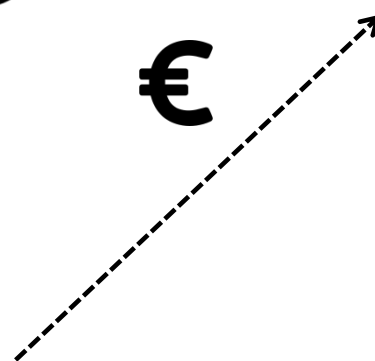
# DEMAND AGGREGATOR CONCEPT-CONVENTIONAL SYSTEM

## S.O ROLE

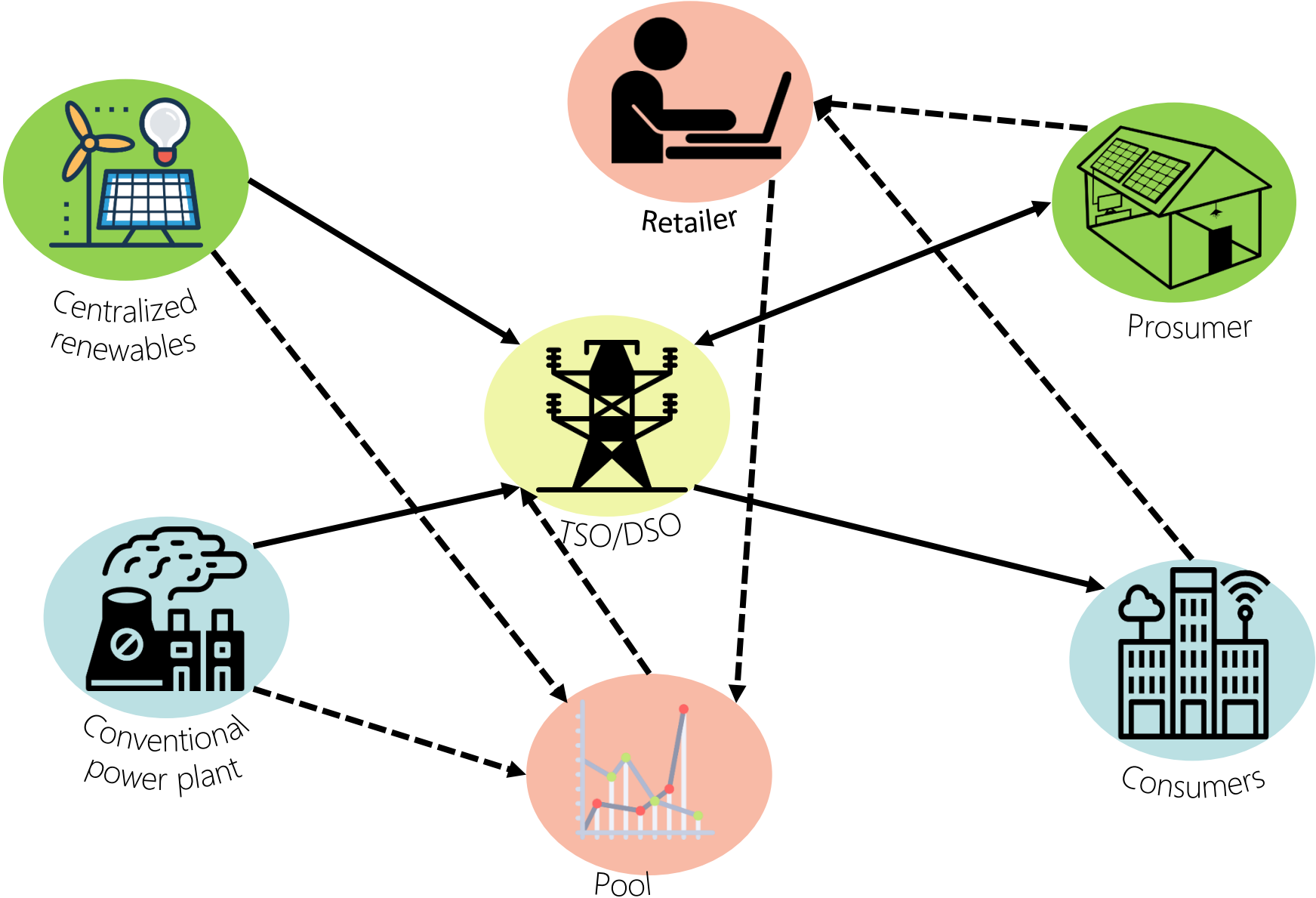
Demand with imbalance



System Operator



# DEMAND AGGREGATOR CONCEPT-CONVENTIONAL SYSTEM WITH RENEWABLES



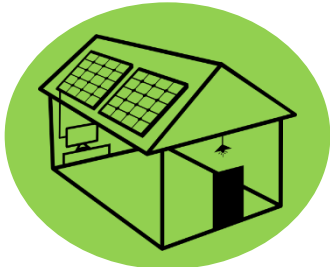
# DEMAND AGGREGATOR CONCEPT-CONVENTIONAL SYSTEM WITH RENEWABLES- S.O ROLE

Demand with imbalance

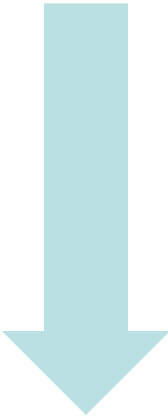
Renewable with imbalance



Consumer



Prosumer



Centralized renewables

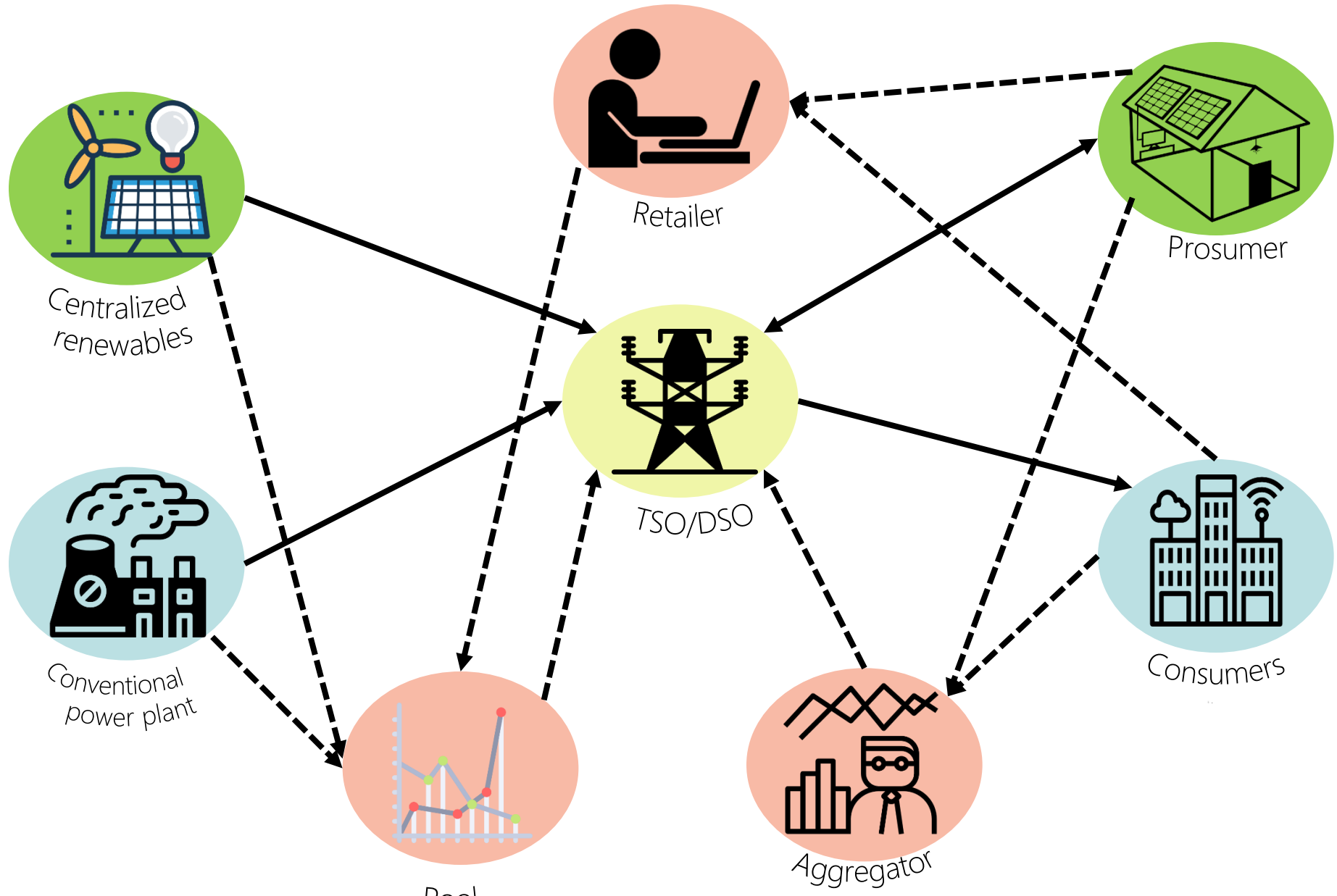


Conventional power plant



System Operator

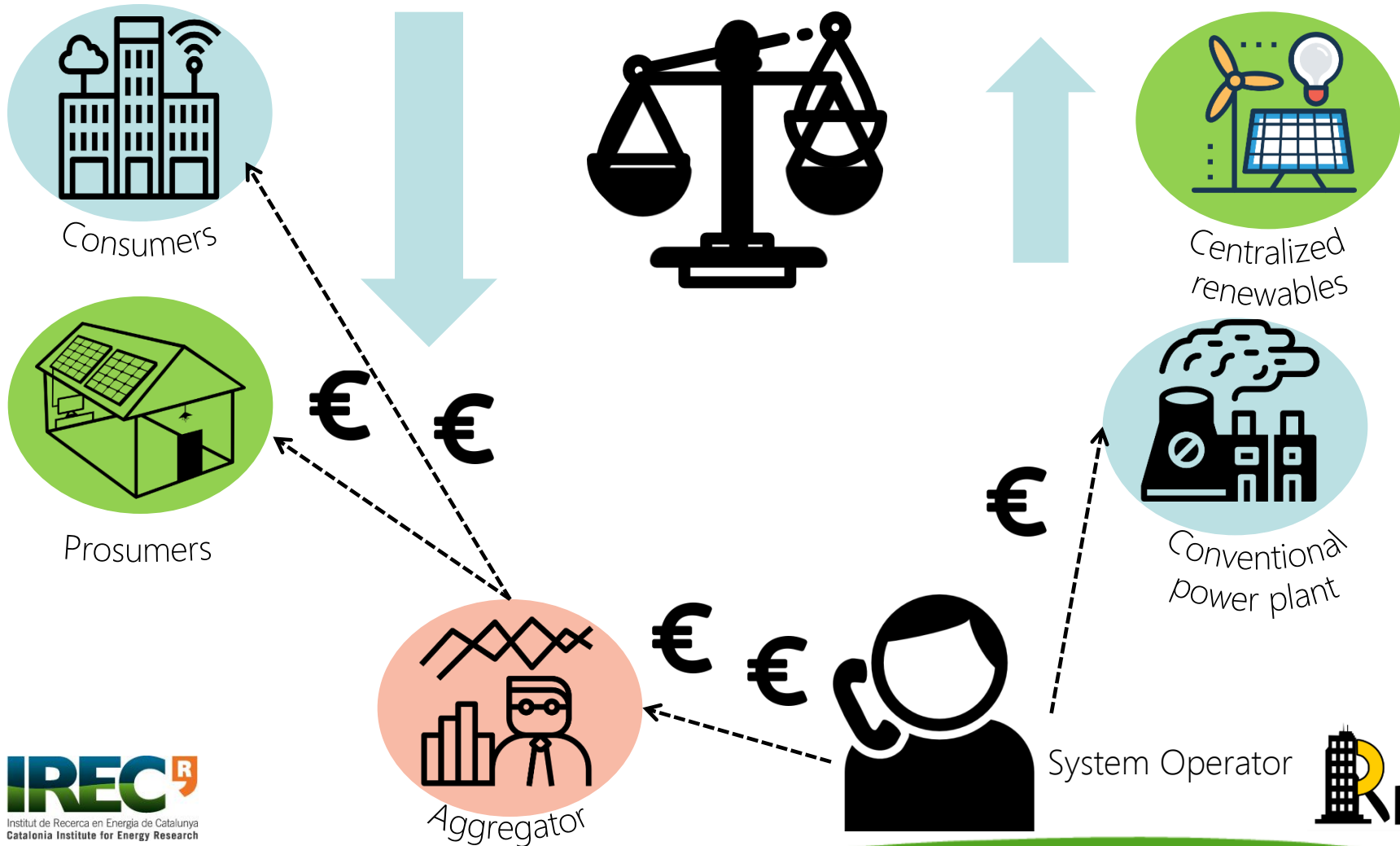
# DEMAND AGGREGATOR CONCEPT-ELECTRICAL SYSTEM WITH AGGREGATOR



# DEMAND AGGREGATOR CONCEPT- S.O ROLE WITH AGGREGATORS

Demand with imbalance

Renewable with imbalance





# EUROPEAN LEGISLATION

Energy Efficiency Directive 2012/27/EU, art 15.8

“Member States shall promote access to and participation of demand response in balancing, reserve and other system services markets”

EU winter package “Clean Energy for All Europeans”, 2016

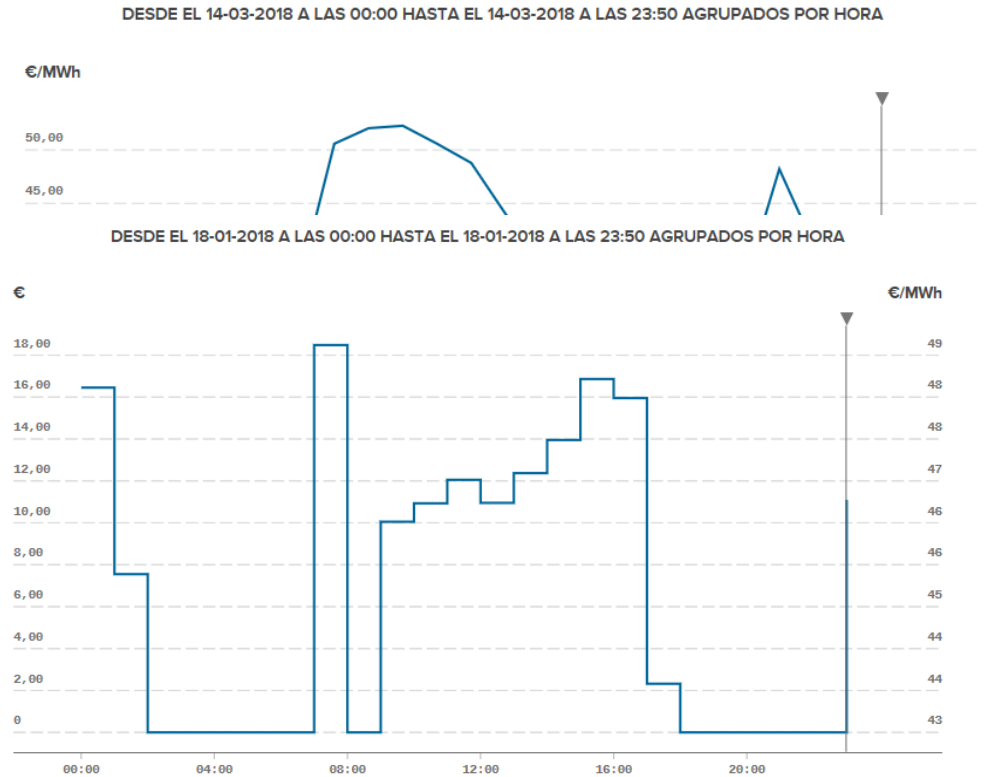
The role of the aggregator is reinforced and countries are incentivized to promote DR

# MAP OF AGGREGATOR'S MARKET DEVELOPMENT IN EUROPE

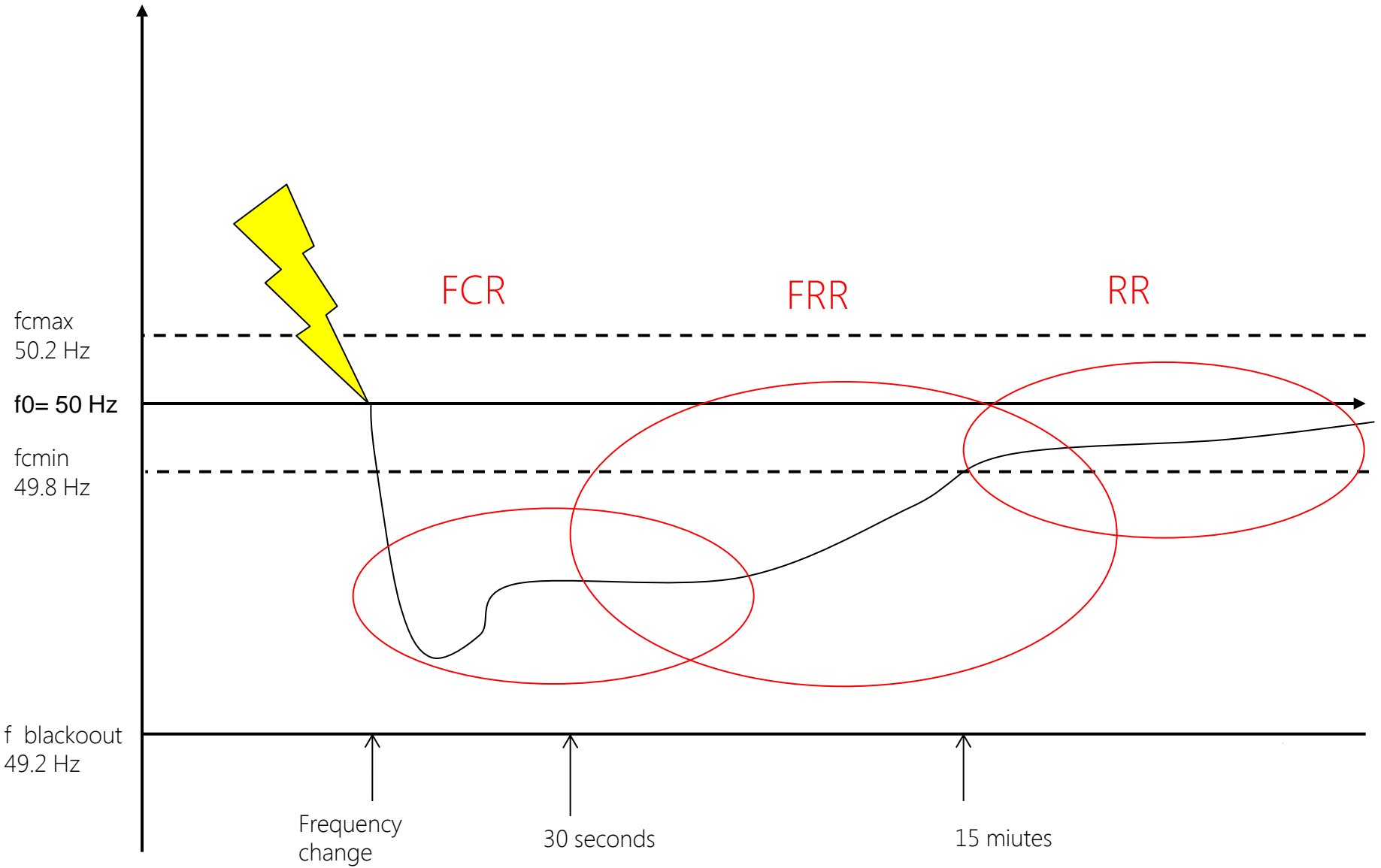


# AGGREGATOR'S BUSINESS MODEL

- Spot market
- Cover sourcing costs



# BALANCING SERVICES



# A REAL EXAMPLE: KIWI POWERED

## The Benefits to Customers



# TYPE OF TECHNICAL REQUIREMENTS

- Prequalification
- Minimum bid size
- Notification time
- Max. activations per day
- Product resolution
- Symmetricity
- Duration of delivery

# CONCLUSIONS

- Potential market will increase in the near future;
- Nowadays, there is not and ideal market in Europe for aggregators agents;
- There will be necessary consumed-oriented requirements (prequalification, symmetry...);
- Aggregators represent a great opportunity for consumers.

# Thank you for your attention

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