



#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018–2020

Digitalisation of the energy system

Marc VAN STIPHOUT, UNIT C2
European Commission – DG ENERGY

Research and
Innovation

GOALS OF THE CLEAN ENERGY FOR ALL EUROPEANS PACKAGE

LEADING THE ENERGY TRANSITION - CREATING VALUE FOR CITIZENS AND BUSINESS



Putting energy
efficiency first



Demonstrating
global leadership
in renewables



Delivering a
fair deal for
consumers



European
Commission

EMPOWERING CITIZENS AND COMMUNITIES

A EU-LEVEL FRAMEWORK FOR RENEWABLE SELF-CONSUMPTION IN WHICH CITIZENS ARE AT THE CORE



Renewable self-consumers to be allowed to generate, store, sell and consume their own electricity



Renewable self-consumers in multifamily houses to be allowed to generate, store, sell and consume their electricity jointly



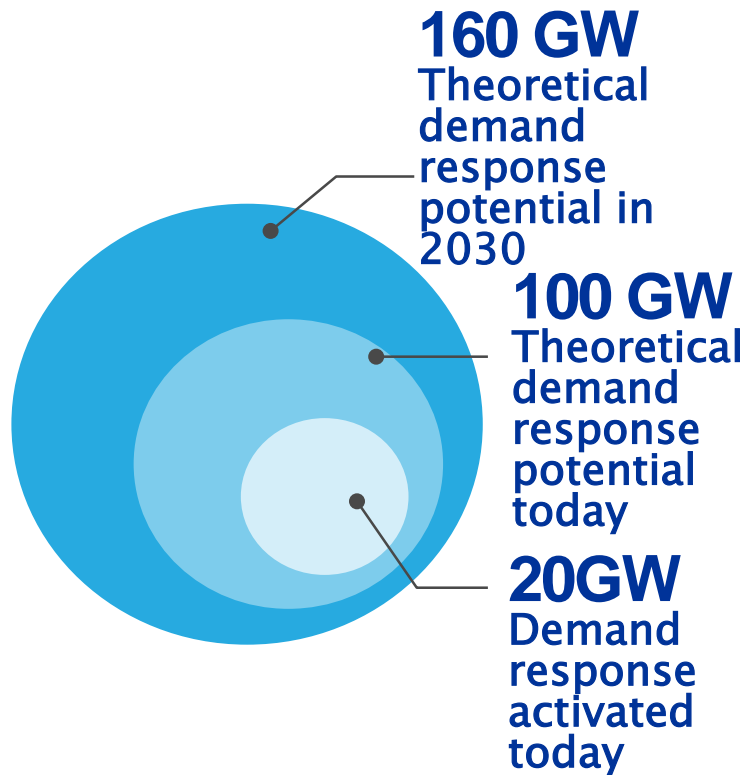
No disproportionate procedures and charges that are not reflective



Specific provisions for energy communities

EMPOWERED CONSUMERS

COMPETITIVE PRICES, DEMAND-RESPONSE, SELF-GENERATION, NEW SERVICES



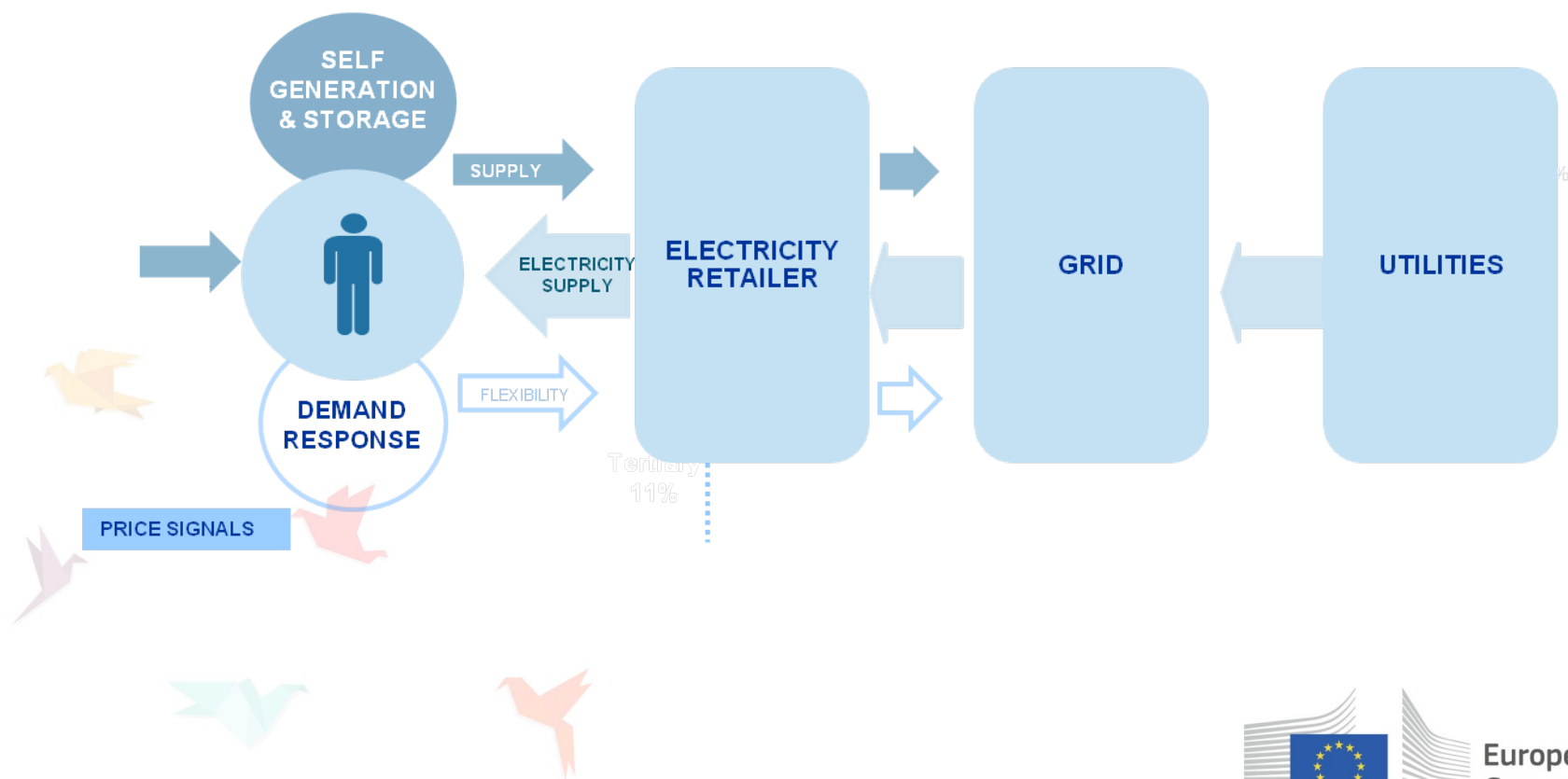
- 17 Member States maintain some form of price regulation for either electricity or gas services for households.
- In some Member States self-generating and self-consuming electricity is effectively banned.
- Most consumers in the EU do not have access to independent aggregators which are the gateway to trading self-generated electricity and to effectively benefit from demand response schemes.

- Allow price signals to pass from wholesale to retail markets.
- Grant consumers the entitlement to generate electricity and either consume, store or sell back on the market.
- Ensure fair and full market access for independent aggregators and other third party service providers.

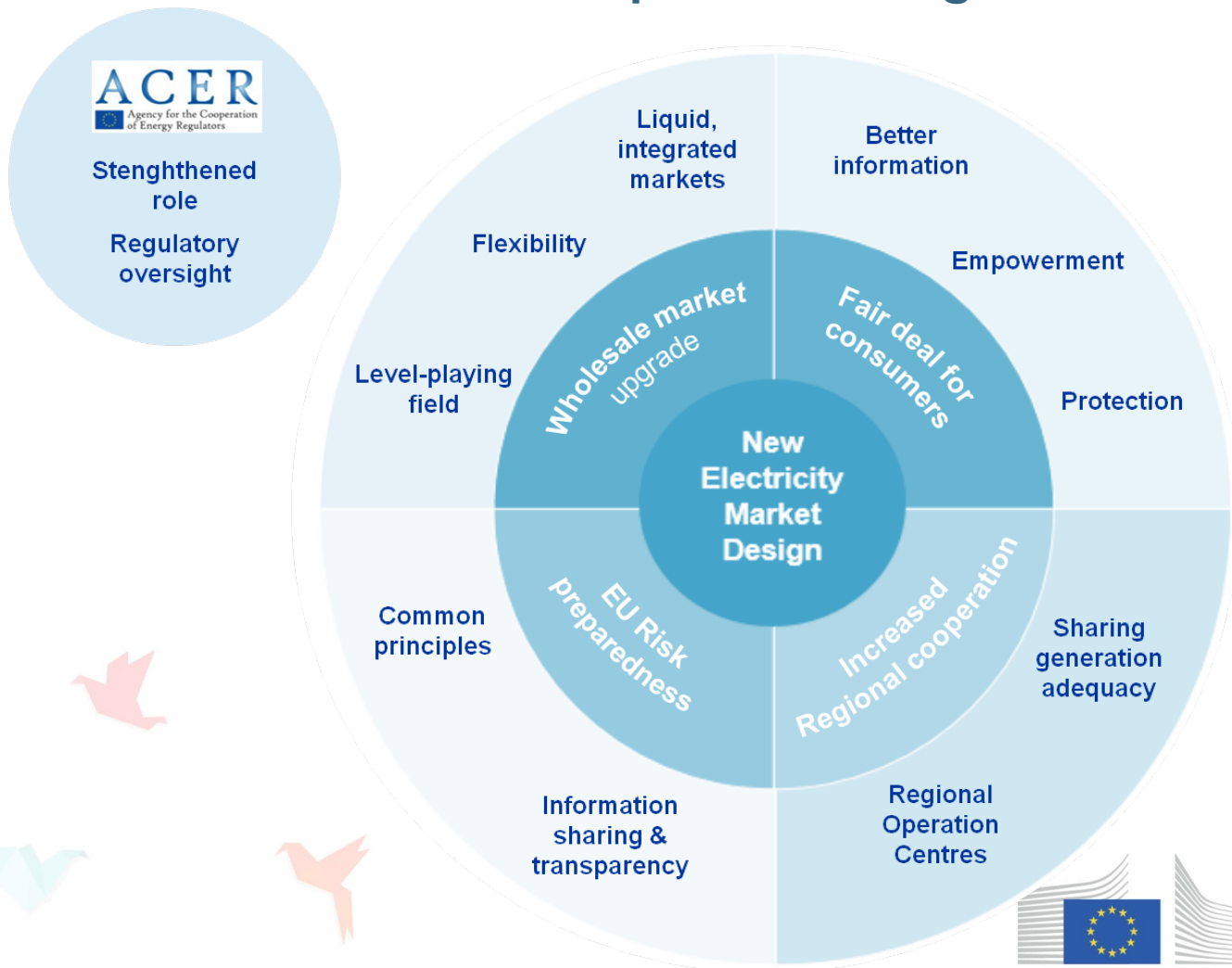
EC
PROPOSAL

Active consumers can gain more control over their energy consumption and spending and keep their energy costs in check

CONSUMERS ARE KEY TO DELIVERING A MORE FLEXIBLE ENERGY SYSTEM...



Horizon 2020 will support to test the innovations asked for in the Clean Energy for All Europeans Package



Digitalisation of energy

Aims to:

- fully seize the opportunities offered by **digital technologies to the energy sector** in order to contribute to achieving the **Digital Single Market** and the **Energy Union** objectives;
- increase the digital capacity of the energy sector for the benefit of the system that is able to integrate higher shares of **renewable energy** and to optimise energy use by improving overall **energy efficiency**
- Digitising the energy sector: an opportunity for Europe
<https://ec.europa.eu/digital-single-market/en/blog/digitising-energy-sector-opportunity-europe>

Digitisation of the energy system

Multiplication of connected objects (Internet of Things)



Exponential increase in Generation of data (Big Data)



Reliable & Secure energy & telco infrastructure

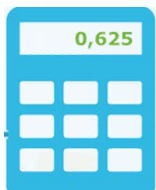
Develop the future energy system
– increase the digital capacity of the energy sector for the benefit of a system that is able to integrate higher shares of RES and promotes energy efficiency

Digitisation to support the energy transition

Horizon2020 – key calls: work programme 2018-2020



Active network management: procurement of services by network operators in markets and on platforms



Optimise asset management through a toolbox for data analysis, management, processing



Interoperability for smart homes, buildings and grids



Develop, test and demonstrate Cyber-security technologies for the electricity system; 5G

LC-SC3-ES-5-2018: Upgrading smartness of existing buildings through innovations for legacy equipment

- Demonstrate at a large-scale how markets and platforms enable electricity TSOs and DSOs to procure energy services from large-scale and small-scale assets connected to the electricity network.
- **Key issues (how?):**
- Define the needs of network operators for system operation, and turn these into services and products, based on interaction with suppliers, aggregators and energy service companies, that test what services can be provided by what assets;
- Test the needs of network operators and technological capabilities of the assets, including to ensure reliability of supply;
- Identify the relevant system data that enable market participants to better assess and forecast the need for grid services and publish such data (as much as possible);
- Test innovative ways to promote consumer participation, engagement and perception, such as peer-to-peer trading, and innovative ways to reduce transaction costs, such as via distributed ledgers (blockchain);
- investigate the possibilities for innovative pricing and compensation;
- **Expected impact:**
- demonstrating cost-efficient & replicable model(s) for electricity network services that can be scaled up to include networks operated by other TSOs and DSOs;

LC-SC3-EE-4-2019: Upgrading smartness of existing buildings through innovations for legacy equipment

Rationale (why?):

Need for easy and cost-efficient integration of smart home energy management in existing buildings with installed systems and appliances.

Key issues (how?):

- Demonstrate technological solutions in existing buildings to achieve levels of smartness that optimise building energy use and enable active-demand side services including demand-response and storage including via H&C, DHW and charging of EV.
- Several types of domestic appliances, that are relevant for contributing to the above-mentioned goals, should be tested in order to assess their performance and reliability in fulfilling new functionalities.

-Expected impact:

Demonstrate in several pilots how the smart systems (smart controllers and smart appliances) can be integrated in the existing buildings to interface and/or to control the major energy consuming domestic appliances that are already installed;

LC-SC3-EE13-2018-2019: Enabling next-generation of smart energy services

Rationale (Why?)

New energy technologies and services are emerging. It is crucial that these include, up-grade and valorise energy efficiency and demand-side flexibility; engage more and new actors and sectors; contribute to the verification of energy savings and flexibility.

Key issues (How?)

Develop and validate the use case and commercial framework for new types of demand-side energy services, e.g. by

- developing and testing business models integrating energy efficiency, demand-side flexibility, other services and non-energy benefits (incl. "pay for performance" to reduce peaks);
- conceptualising the use of 'big data' generated by equipment and sensors enabling accurate measurement and verification.

Expected impact

- up-take of innovative energy services based on distributed demand-side resources;
- up-take of innovative data gathering methods for monitoring and verification;
- improved viability of innovative energy services

Thank you!

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