



Pan European Technology Energy Research Approach



PANTERA workshop – Sofia,
Bulgaria

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EU Energy Policy

Horizon 2020 and beyond

The energy transition

PANTERA

Conclusions

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EU Energy Policy

2030

50% of electricity to come from renewables



2050

Electricity completely carbon free



COP24·KATOWICE 2018
UNITED NATIONS CLIMATE CHANGE CONFERENCE

Thanks to the EU - ambitious **energy and climate commitments**



Unique opportunity to **modernise our economy** and to

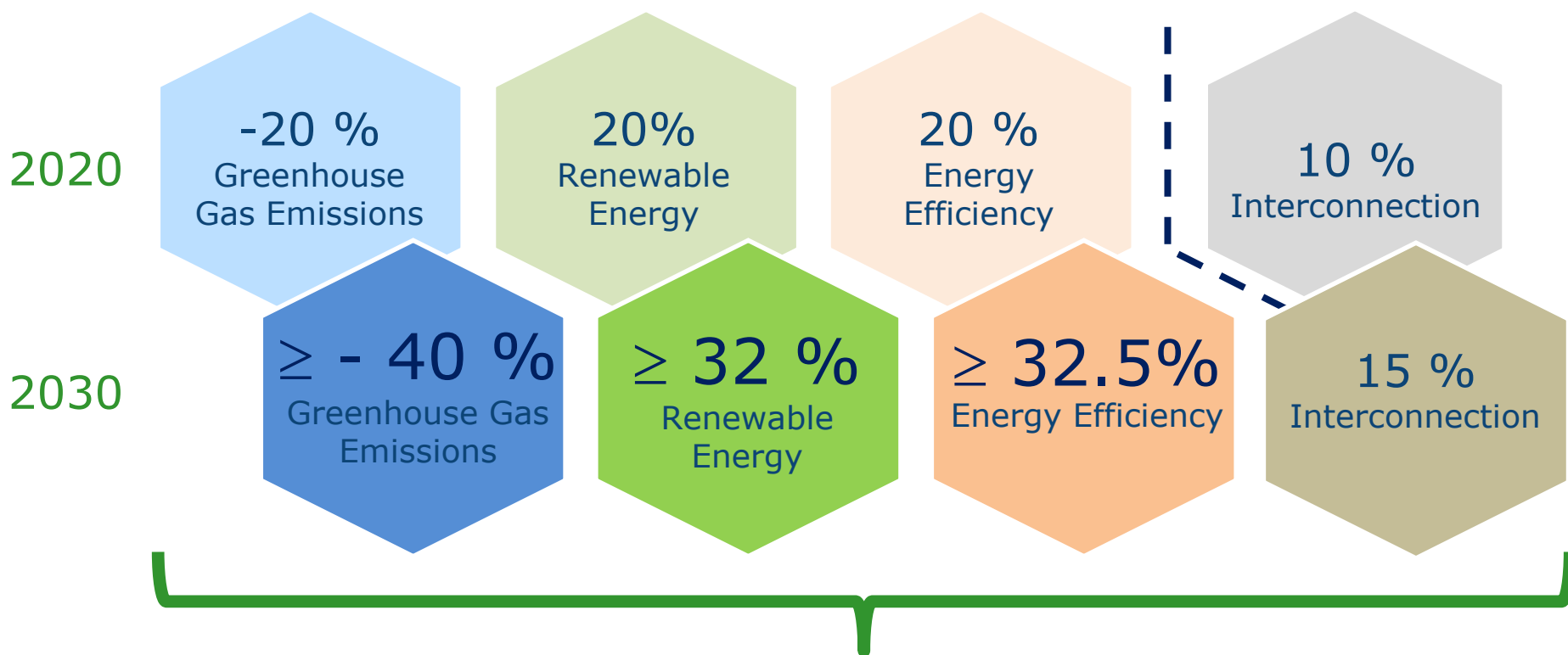
boost competitiveness

create growth and jobs



European
Commission

EU Energy targets



New governance system + indicators

Clean energy for all Europeans



Putting energy
efficiency first

- Reducing greenhouse gas emissions
- Securing energy supply
- Creating jobs and growth



Demonstrating
global leadership
in renewables



Delivering a
fair deal for
consumers



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From policy... ...to implementing instrument





European
Commission

H2020 grid projects overview

Distribution Grids	Distributed Storage	Transmission grids	Large-scale storage	RES and H&C
<p>2014: 10 projects, 60 M€</p>	<p>2014: 7 pjts, 72 M€</p>	<p>2015: 4 pjts, 82 M€</p>	<p>2015: 2 pjts, 25 M€</p>	<p>2016: 2 pjts, 8 M€</p>
<p>2016: 7 projects, 90 M€</p>	<p>2017: 4 projects, 76 M€</p>			



Bridge initiative

Data
management

Business Models

Regulations

Customer
engagement

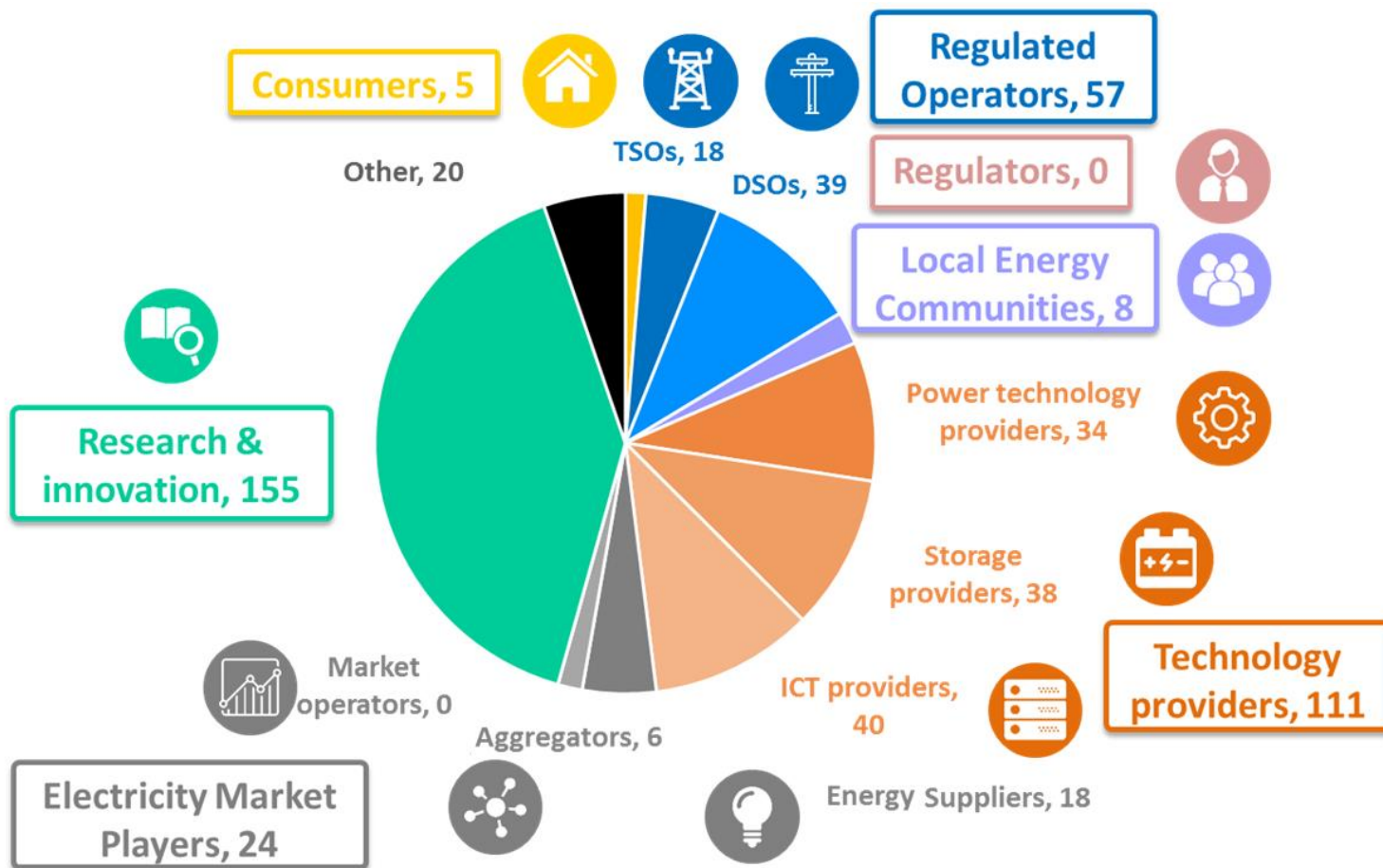
- It is a European Commission initiative
- It gathers Horizon 2020 Smart Grid and Energy Storage demonstration projects
- Creates a structured view of obstacles to innovation
- Fosters continuous knowledge sharing amongst projects
- Deliver conclusions and recommendations with a single voice

<https://www.h2020-bridge.eu/>

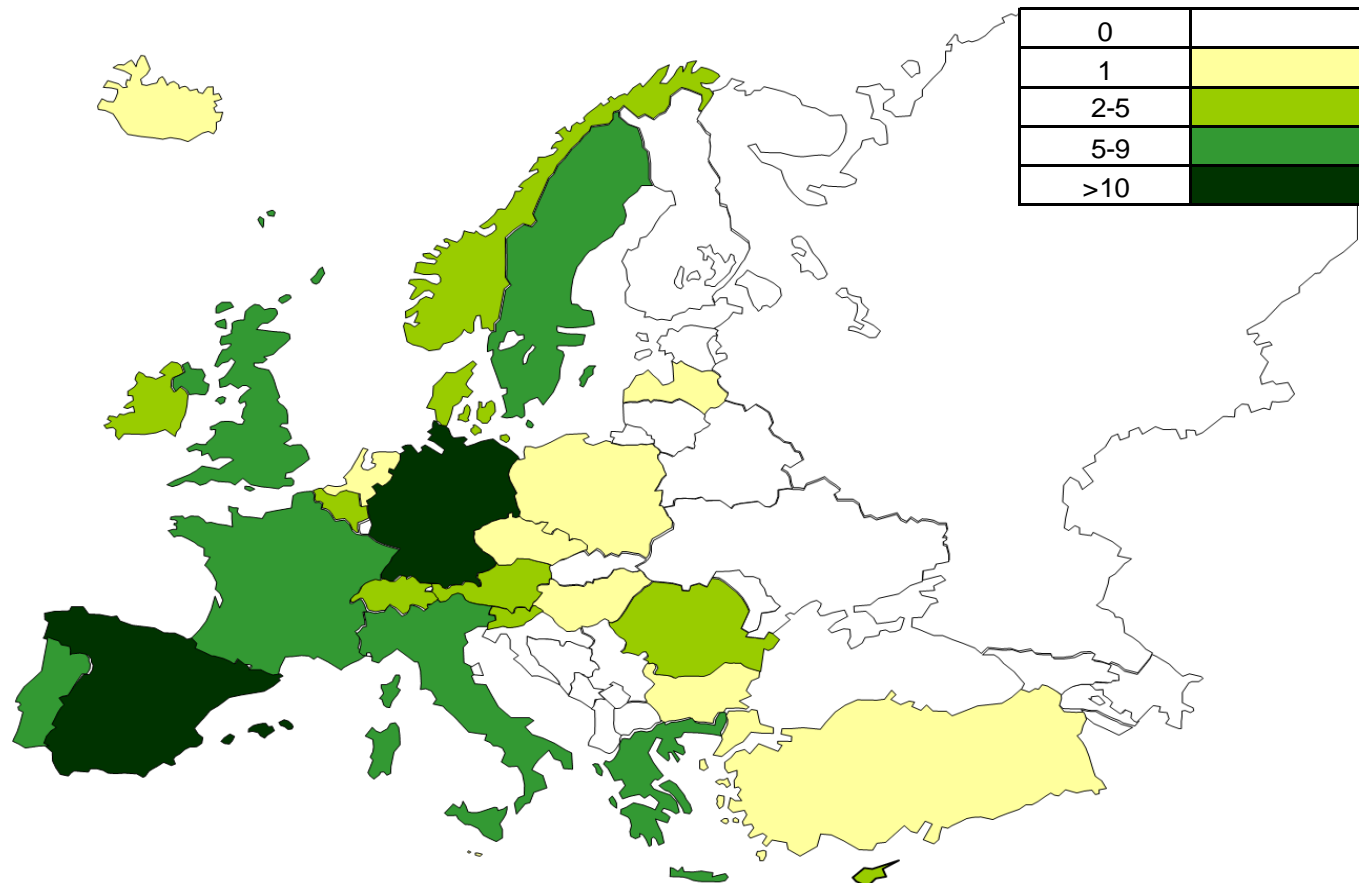


European
Commission

A wide range of Stakeholders = 379



26 countries are hosting BRIDGE demos or pilots





European
Commission

Technologies tackled by BRIDGE projects

Technologies for consumers



- Demand response
- Smart appliance
- Smart metering

Grid technologies



- HVDC
- HVDC breaker
- HVAC
- Inertia
- Multi terminal
- Network mgmt
- Protections
- Micro-grid

Market



- Electricity market
- Ancillary services

H₂



Large-scale storage technologies

- Power to gas
- Compressed Air Energy Storage
- Hydro storage



Distributed storage technologies

- Batteries
- Electric Vehicles
- Power to heat



Generation technologies

- Wind Turbine
- PV
- Solar thermal
- Biogas
- Micro-generation



European Commission

The Funding & Tenders Portal is the entry point (the Single Electronic Data Interchange Area) for participants and experts in funding programmes and tenders managed by the European Commission and other EU bodies.



Find calls for proposals and tenders

Search calls for proposals and tenders by keywords, programmes...

Search

What are calls for proposals? >

What are calls for tenders? ▾

How to participate in 5 steps >

With calls for tenders the Commission aims to purchase goods, services or works in exchange for payment of an agreed price.

In a nutshell:

- Payment to agreed conditions and price
- Delivery of goods, services or works in compliance with predefined requirements
- Execution according to contractual conditions.

[See all calls for Tenders >](#)

[Read more about call for tenders](#)

Calls for proposals by EU Programme ▾

[2nd Health Programme](#)

[Asylum, Migration and Integration Fund](#)

[Consumer Programme](#)

[Creative Europe](#)

[Erasmus+ Programme](#)

[European Maritime and Fisheries Fund](#)

[HERCULE III](#)

[Horizon 2020 Framework Programme](#)

[Internal Security Fund Borders and Visa](#)

[Internal Security Fund Police](#)

[Justice Programme](#)

[Pilot Projects and Preparatory Actions](#)

[Programme for the Competitiveness of Enterprises and small and medium-sized enterprises](#)

[Promotion of Agricultural Products](#)

[Research Fund for Coal & Steel](#)

[Rights, Equality and Citizenship Programme](#)

[Union Civil Protection Mechanism](#)

[Previous Framework Programs \(FP7 - CIP\)](#)

[Overview of EU funding](#)

News >

Useful links >

Commission proposal for Horizon Europe

THE NEXT EU RESEARCH & INNOVATION
PROGRAMME (2021 – 2027)





Horizon Europe

- Commission proposal for a € 100 billion research and innovation funding programme for seven years (2021-2027)
 - to strengthen the EU's scientific and technological bases
 - to boost Europe's innovation capacity, competitiveness and jobs
 - to deliver on citizens' priorities and sustain our socioeconomic model and values
- Additional € 4.1 billion are proposed to be allocated for defence research, in a separate proposal for a European Defence Fund

Horizon Europe: what is new?

Lessons Learned from Horizon 2020 Interim Evaluation

-  Support breakthrough innovation
-  Create more impact through mission-orientation and citizens' involvement
-  Strengthen international cooperation
-  Reinforce openness
-  Rationalise the funding landscape



Key Novelties in Horizon Europe

European Innovation
Council

R&I Missions

Extended association
possibilities

Open science policy

New approach to
Partnerships

Synergies with other Union programmes

Horizon Europe



Enhanced synergies

Compatibility

Harmonisation of funding rules;
flexible co-funding schemes;
pooling resources at EU level

Coherence and complementarity

Alignment of strategic priorities in
support of a common vision

Other Union Programmes, including

Common Agricultural Policy	<i>LIFE</i>	Erasmus
ERDF	<i>Connecting Europe Facility</i>	<i>Innovation Fund</i>
External Instrument		Internal Security Fund
Maritime & Fisheries Fund	<i>Digital Europe</i>	ESF+
<i>InvestEU</i>	Space Programme	Single Market Programme

EU Energy Policy

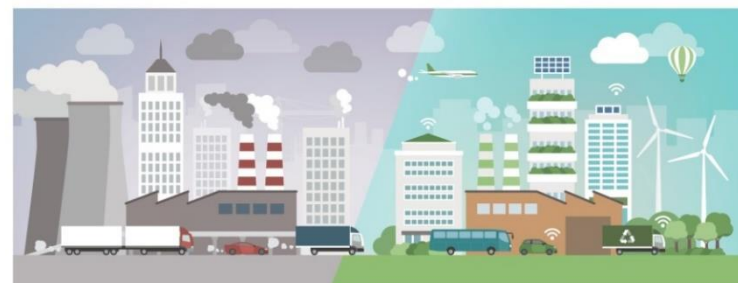
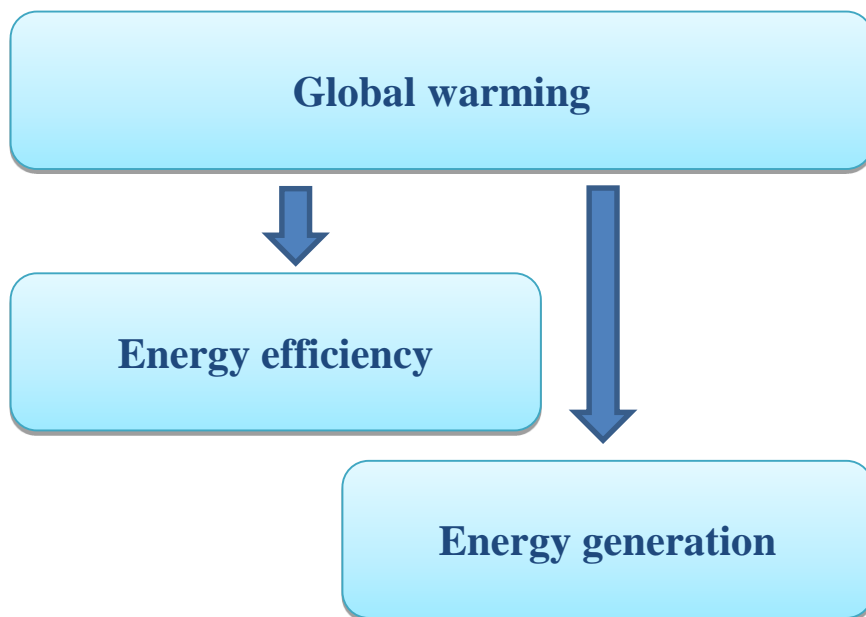
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European Commission

EU-28 Energy Flow – 2016 (Mtoe)



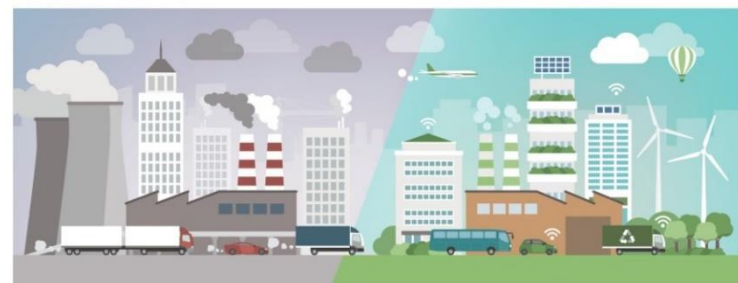
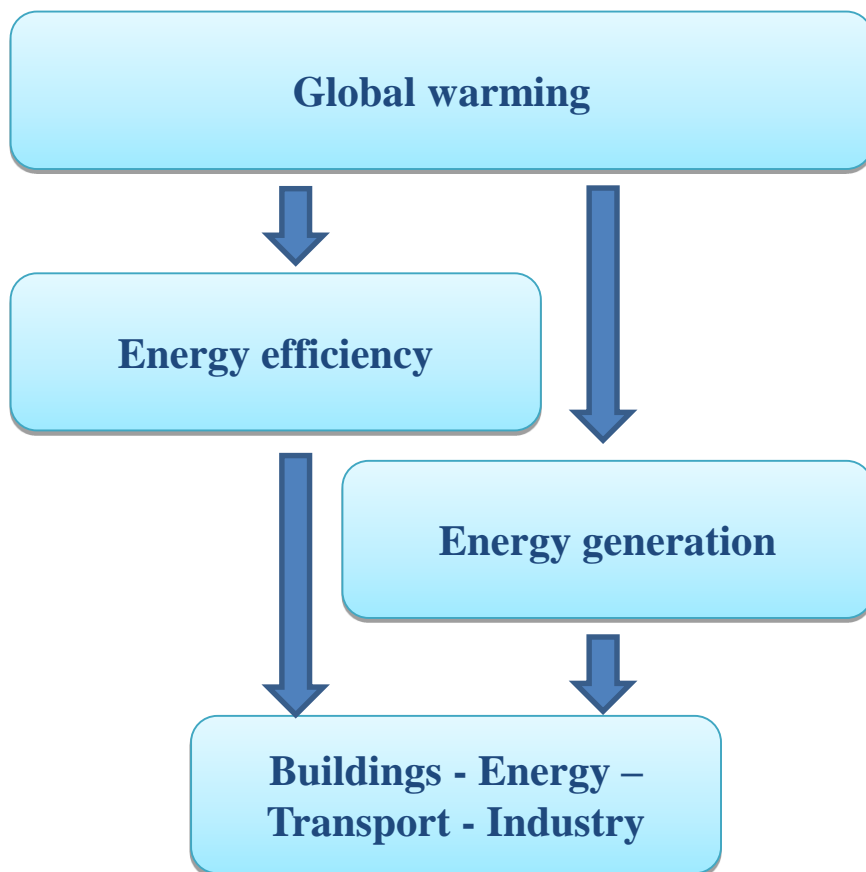
Source: Eurostat, May 2018

01/07/2019

Energy

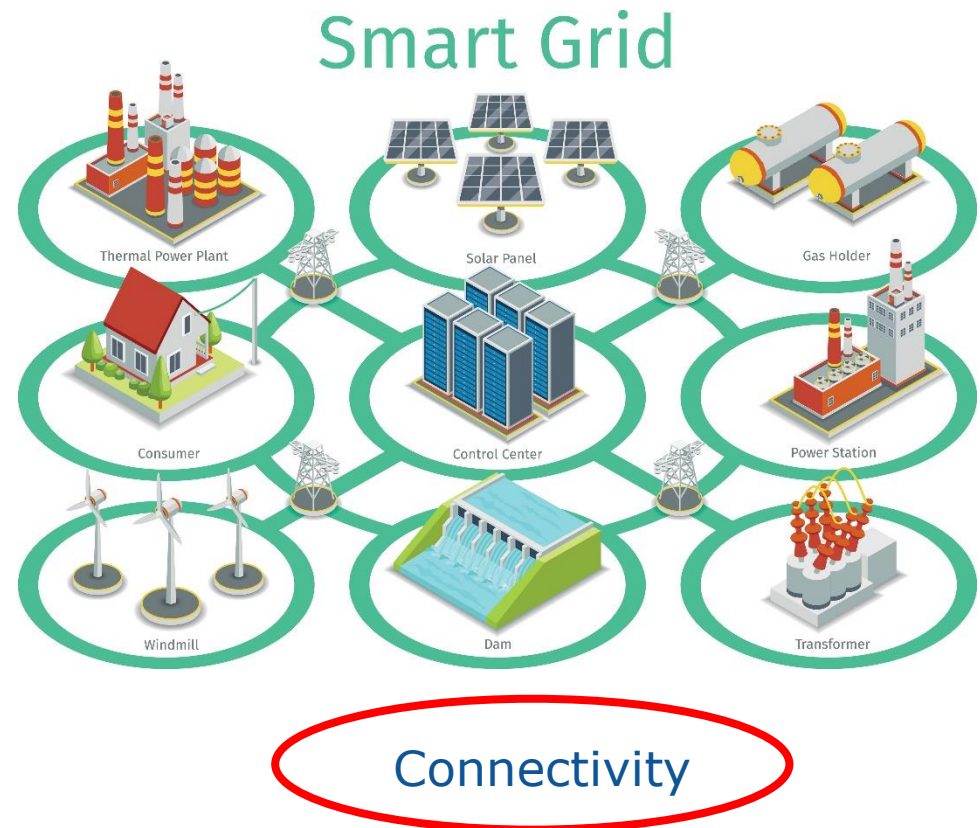
PANTERA workshop - Sofia, Bulgaria

Energy transition



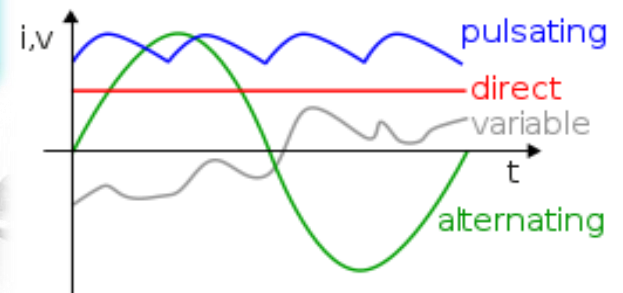
New energy system

- Electrification (EV, smart charging, etc.)
- Decentralisation (demand response, PV, storage, etc.)
- Digitalisation (network technologies, smart metering, beyond the meter measures, smart appliances, IoT, etc.)

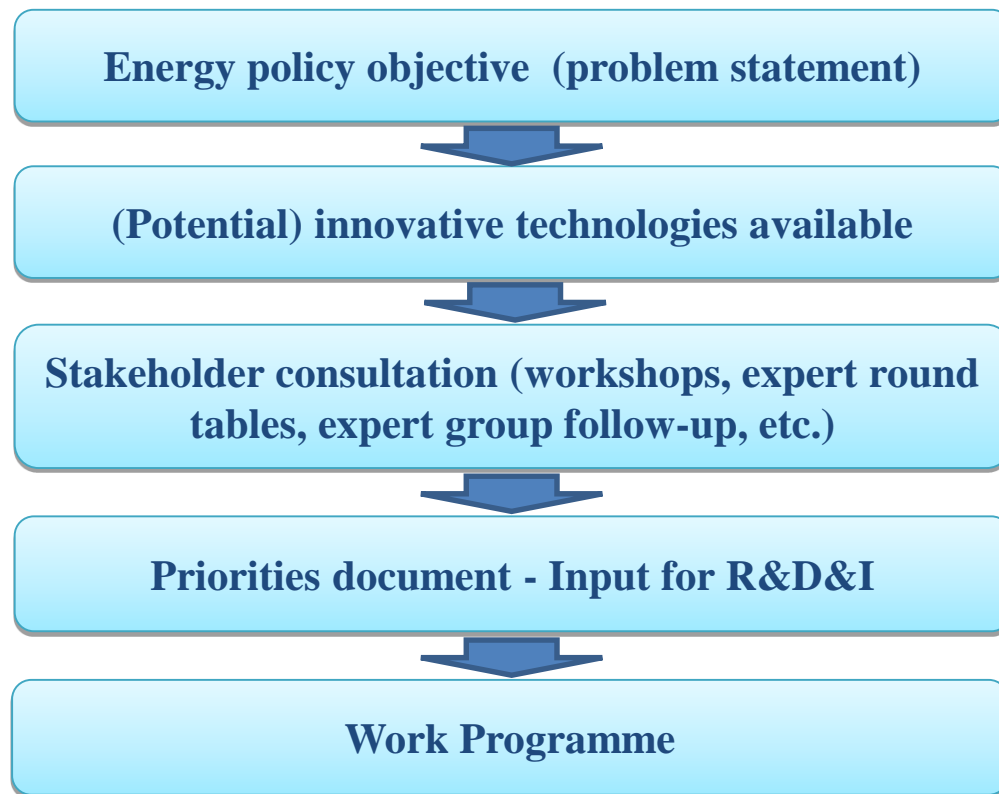


Examples of technologies for R&D topics

- IoT
- HPC
- 5G
- AC - DC – hybrid grids
- Power electronics
- EV
- Cybersecurity
- Blockchain



R&D&I supporting energy policy objectives





From technology discussion...to R&D activities

5G (fifth generation of cellular mobile communications):

- 1st workshop on 14 March 2017
- 2d workshop on 22 November 2017



Call ICT-19-2019: Advanced 5G validation trials across multiple vertical industries

Cybersecurity:

- Workshop on 15 March 2018



Call SU-DS04-2018-2020: Cybersecurity in the Electrical Power and Energy System (EPES): an armour against cyber and privacy attacks and data breaches

From technology discussion...to R&D activities

DC - AC/DC Hybrid grids:

- workshop on 17 May 2018: “DC grids - AC/DC Hybrid grids”



LC-SC3-ES-10-2020: DC – AC/DC hybrid grid for a modular, resilient and high RES share grid development

Electronics in Energy:

- Workshop on 04 September 2017: expert round table on the impact of electronic components and systems in the energy domain



Proactive collaboration ETIP - European Energy Technology & Innovation Platform (e.g. wind, solar and batteries) and ECSEL



Joint calls DG ENER - DG CNECT

- LC-SC3-ES-5-2018: TSO – DSO – Consumer interaction
- DT-ICT-10-2018: Interoperable and smart homes and grids
- DT-ICT-11-2019: Big data solutions for energy
- SU-DS04-2018-2020: Cybersecurity in the Electrical Power System
- ICT-19-2019: Advanced 5G validation trials across multiple vertical industries



LC-SC3-ES-10-2020:

DC – AC/DC hybrid grid for a modular, resilient and high RES share grid development

- Challenges: increasing complexity of AC based grid architectures; multiple grid planning scenarios; cascading effects due to faults/cyberattacks; the need to increase the share of renewables in the grid to meet the decarbonisation objectives.
- Scope: design, modelling, simulation, development, demonstration, test and validation of DC-based grid architecture(s). The modular grid planning and development, the “firewall” effect against faults or cyberattacks and the accommodation of higher shares of renewables in a DC-based system will be part of the demonstration and validation exercise.
- Expected Impact: facilitating planning and investments; increasing grid resilience; increasing penetration of RES; increasing the efficiency
- Opening: September 3, 2019
- Deadline: January 20, 2020
- Budget: EUR €14 million (2 projects)
- <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home>

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Objective (why are we here today?)

- To better frame the status of EU grids
- To disseminate EU R&I&D activities on grid modernisation for the energy system transition
- Raise awareness on possible application/replication throughout EU
- Pan European Technology Energy Research Approach
- Exchange of experiences, knowledge, use cases, etc.
- PANTERA aims to deliver a pan-European multi-dimensional platform for a modern grid contributing to the energy policy objectives



Methodology/Activities

- R&I activities in EU investigation
- Thematic areas investigations (8)
- Design collaboration
- Raising interest on R&I&D
- Workshops



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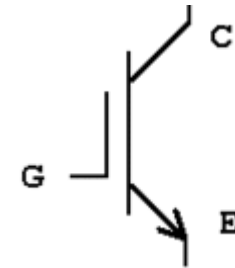
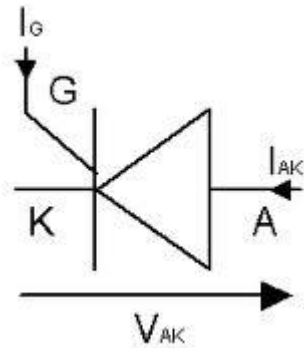
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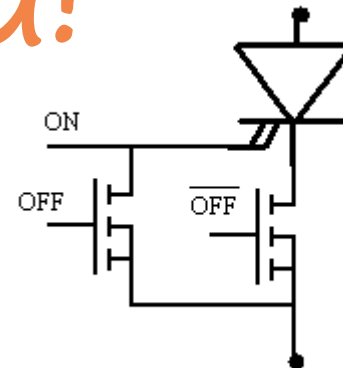
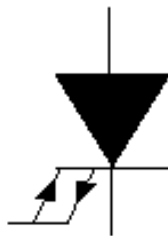


Conclusions

- The aim is the decarbonisation of the energy system and our economy to contribute significantly to the reduction of the global warming of our planet.
- Innovative technologies and new grid architectures support the energy transition looking at 2050.
- The European Commission supports R&D&I through the Work Programmes and other Union Programmes. Horizon 2020 and Horizon Europe is about large demonstration projects to de-risk technologies and enable the energy transition.
- The more widespread is the replication across EU of systems and new markets, the more efficient and fast will be the action.
- PANTERA identifies and implements initiatives aimed at levelling the participation of EU countries to a common energy market at the benefit of all EU citizens.



Thank you!



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Useful links

Directorate General For Energy: <https://ec.europa.eu/energy/en/home>

Horizon2020 web site: <http://ec.europa.eu/programmes/horizon2020>

Horizon Europe: <http://ec.europa.eu/horizon-europe>

AC – DC hybrid round-table:

<https://ec.europa.eu/energy/en/content/round-table-ac-dc-hybrid-grids-17-may-2018-conclusions>

Electronics in energy round-table:

<https://ec.europa.eu/energy/en/events/cnect---ener-expert-round-table-impact-electronic-components-and-systems-energy-domain>

Funding and tender opportunities:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home>