



EU Research & Innovation Policy on Renewable Fuels and Bioenergy

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EUROPEAN COMMISSION

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Energy and Climate Policy

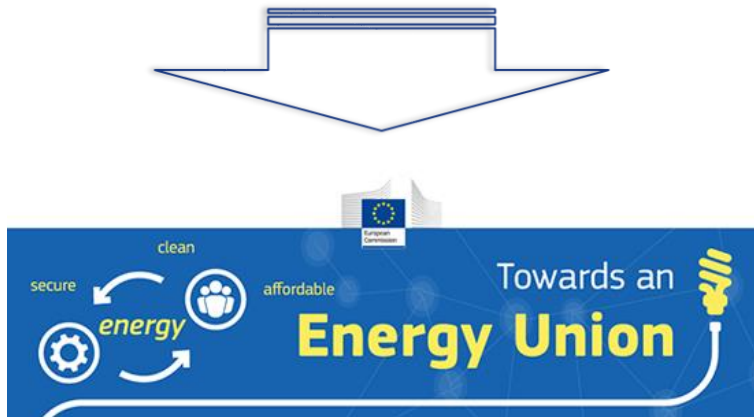
Paris agreement

Energy Union

The European Green Deal

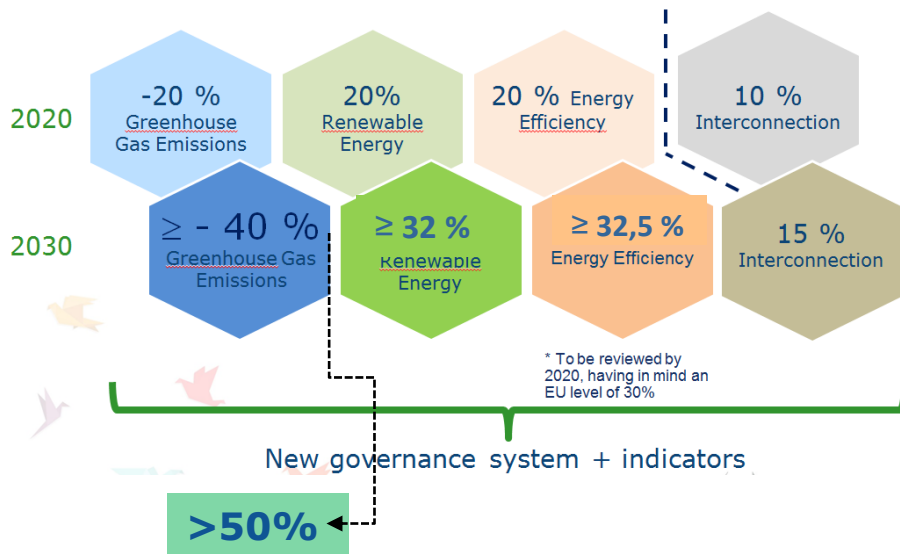
Sustainable Development

"European Green Deal"



"Clean Energy for all Europeans"

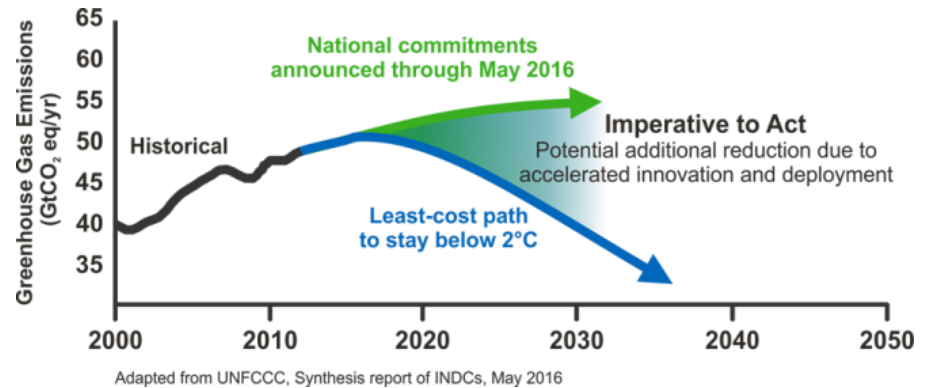
Agreed headline targets



Paris Agreement

Holding global average temperature to **well below 2°C** and limit its increase to **1.5°C**

Accelerating, encouraging and enabling **innovation** is crucial...



Other EU policy priorities

- Digital Single Market
- Jobs, Growth and Investments
- EU as a strong global actor
- Sustainable Development
- ...

*I want the **European Green Deal** to become Europe's hallmark. At the heart of it is our commitment to becoming the world's first **climate-neutral continent**. It is also a long-term **economic imperative**: those who act first and fastest will be the ones who grasp the opportunities from the ecological transition. I want Europe to be the **front-runner**. I want Europe to be the exporter of **knowledge, technologies and best practice***

President-elect Ursula von der Leyen announces distribution of portfolios



The European Green Deal

- 50% emission reduction target in 2030
- Lead international negotiations of major emitters by 2021
- Just Transition Fund
- Circular economy, blue economy
- Biodiversity
- Carbon footprint of EU transport
- Zero-pollution
- Carbon Border Tax
- Review of Energy Taxation Directive

Research & Innovation Policy

Horizon 2020

Horizon Europe

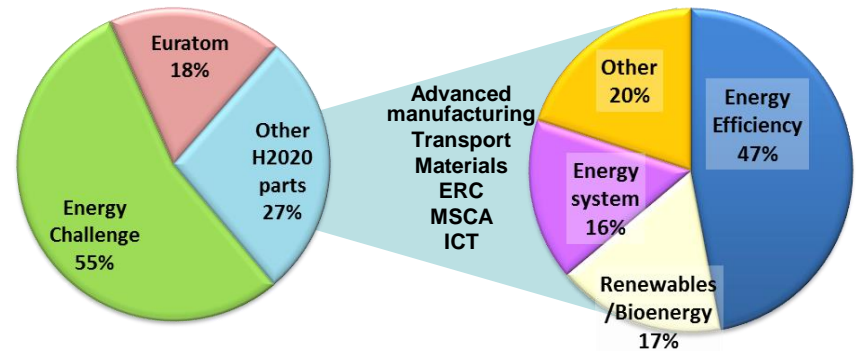
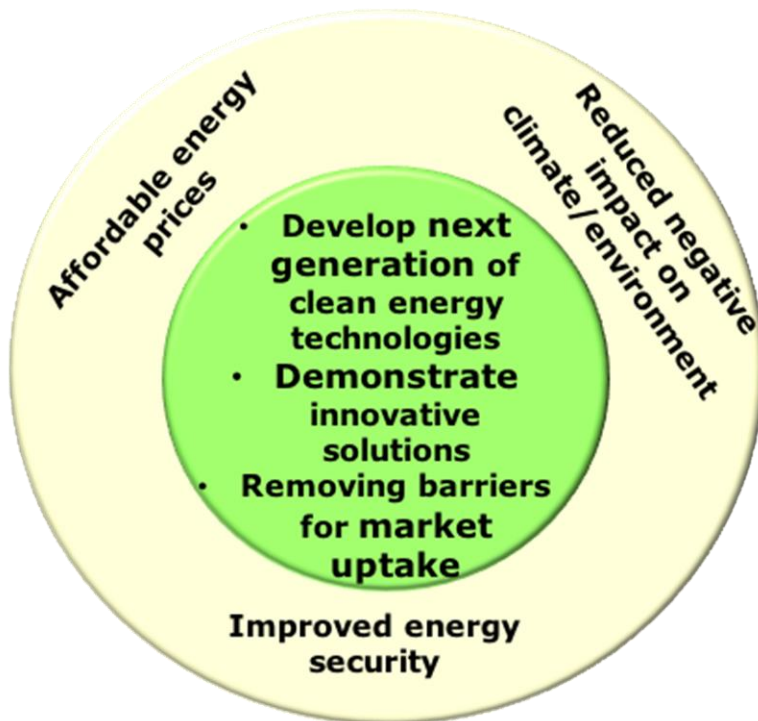
SET Plan

Research Policy Framework

Horizon 2020 (2014-2020) €70,2 billion

H2020 ENERGY Challenge

H2020-Energy Challenge budget
EUR 5,7 billion

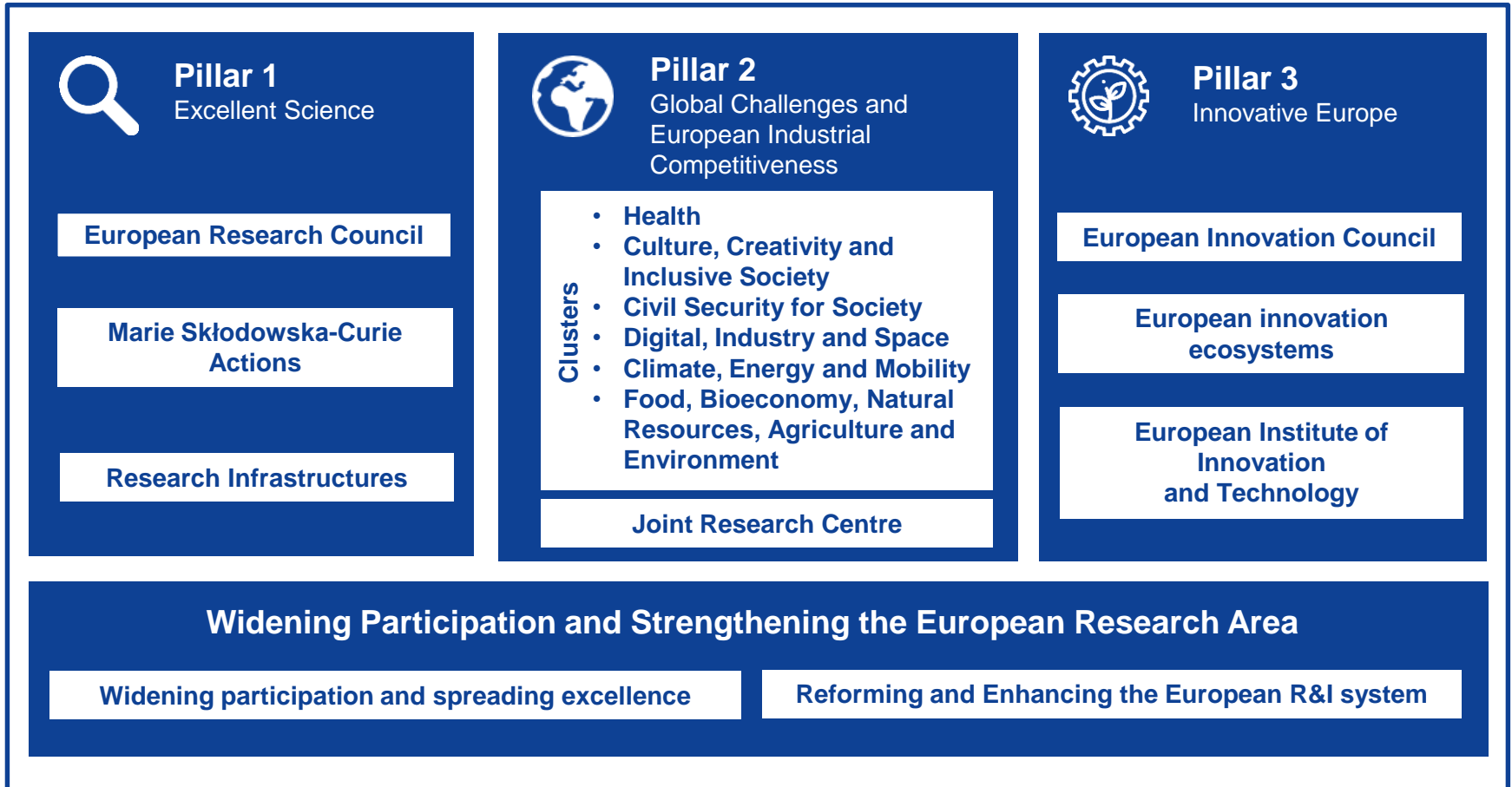


Additional energy-related spending in H2020 outside Energy Challenge:
~50% of Energy Challenge budget

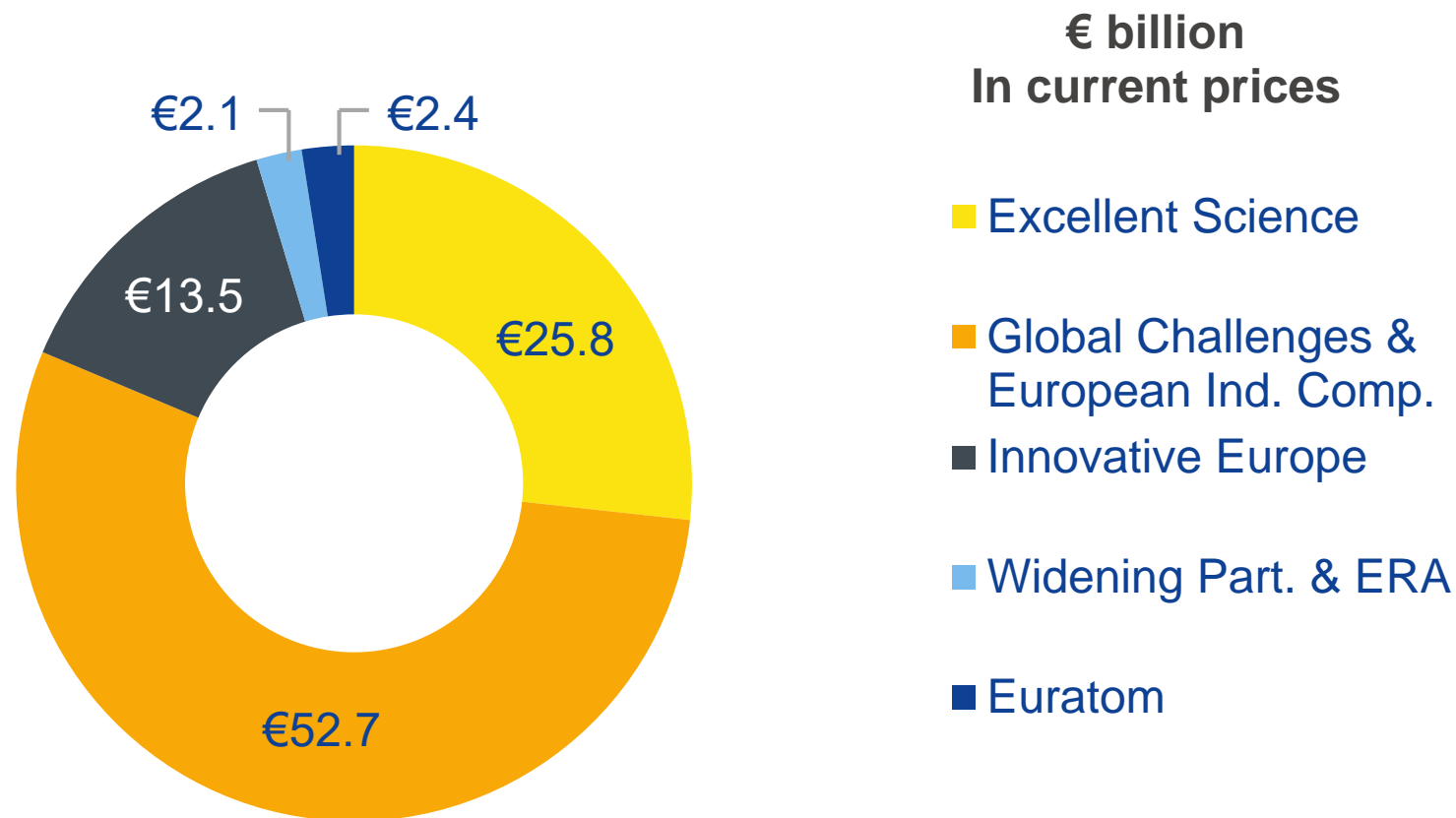
✓ H2020 total Energy budget ~ **EUR 8.5 billion, 11,4%**

NOT LEGALLY BINDING

Horizon Europe: Preliminary structure



Commission proposal for budget: €100 billion* (2021-2027)



* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

Clusters in 'Global Challenges and Industrial Competitiveness'

Clusters	Areas of intervention	
Health	<ul style="list-style-type: none"> • Health throughout the life course • Non-communicable and rare diseases • Tools, technologies and digital solutions for health and care, including personalised medicine 	<ul style="list-style-type: none"> • Environmental and social health determinants • Infectious diseases, including poverty-related and neglected disease • Health care systems
Culture, creativity and inclusive society	<ul style="list-style-type: none"> • Democracy and Governance • Social and economic transformations 	<ul style="list-style-type: none"> • Culture, cultural heritage and creativity
Civil security for society	<ul style="list-style-type: none"> • Disaster-resilient societies • Protection and Security 	<ul style="list-style-type: none"> • Cybersecurity
Digital, Industry and space	<ul style="list-style-type: none"> • Manufacturing technologies • Advanced materials • Next generation internet • Circular industries • Space, including Earth Observation • Emerging enabling technologies 	<ul style="list-style-type: none"> • Key digital technologies, including quantum technologies • Artificial Intelligence and robotics • Advanced computing and Big Data • Low-carbon and clean industry • Emerging enabling technologies
Climate, Energy and Mobility	<ul style="list-style-type: none"> • Climate science and solutions • Energy systems and grids • Communities and cities • Industrial competitiveness in transport • Smart mobility 	<ul style="list-style-type: none"> • Energy supply • Buildings and industrial facilities in energy transition • Clean, safe and accessible transport and mobility • Energy storage
Food, bioeconomy, natural resources, agriculture and environment	<ul style="list-style-type: none"> • Environmental observation • Agriculture, forestry and rural areas • Circular systems • Food systems 	<ul style="list-style-type: none"> • Biodiversity and natural resources • Seas, oceans and inland waters • Bio-based innovation systems in the EU Bioeconomy

The Strategic Energy Technology Plan (SET Plan) - *coordinating research and innovation across Europe*



Overall objective: Accelerating the development and deployment of low-carbon technologies through cooperation among EU countries, companies, research institutions, and the EU itself, based on **common priorities, targets and actions**.

Priority Actions:

- 1&2. Improving performance and reducing cost of renewable energy
3. Smart solutions for consumers
4. Smart Resilience and Secure Energy System
5. Energy Efficiency in Buildings
6. Energy Efficiency in Industry
7. Batteries and e-Mobility
8. **Renewable Fuels and Bioenergy**
9. Carbon Capture Utilisation and Storage
10. Nuclear Safety

Defining priorities

- SET-Plan Communication 2015

Setting targets

- Declaration of Intent

Implementation Plans (IP)

- Temporary Working Groups

Execution of IPs



European
Commission



The Implementation Plans by country

SUSTAIN TECHNOLOGICAL LEADERSHIP IN RENEWABLES (1 AND 2)

- Solar Photovoltaics (PV) IP
- Concentrated Solar Power / Solar Thermal Electricity (CSP/STE) IP
- Offshore Wind Energy IP
- Deep Geothermal Energy IP
- Ocean Energy IP

A SMART CONSUMER-CENTRIC ENERGY SYSTEM

- Smart Solutions for Energy Consumers IP (3.1)
- Towards Positive Energy Districts for Sustainable Urbanisation IP (3.2)
- Energy Systems IP (4)

DEVELOP AND STRENGTHEN ENERGY EFFICIENT SYSTEMS

- Energy Efficiency in Buildings IP (5)
- Energy Efficiency in Industry IP (6)

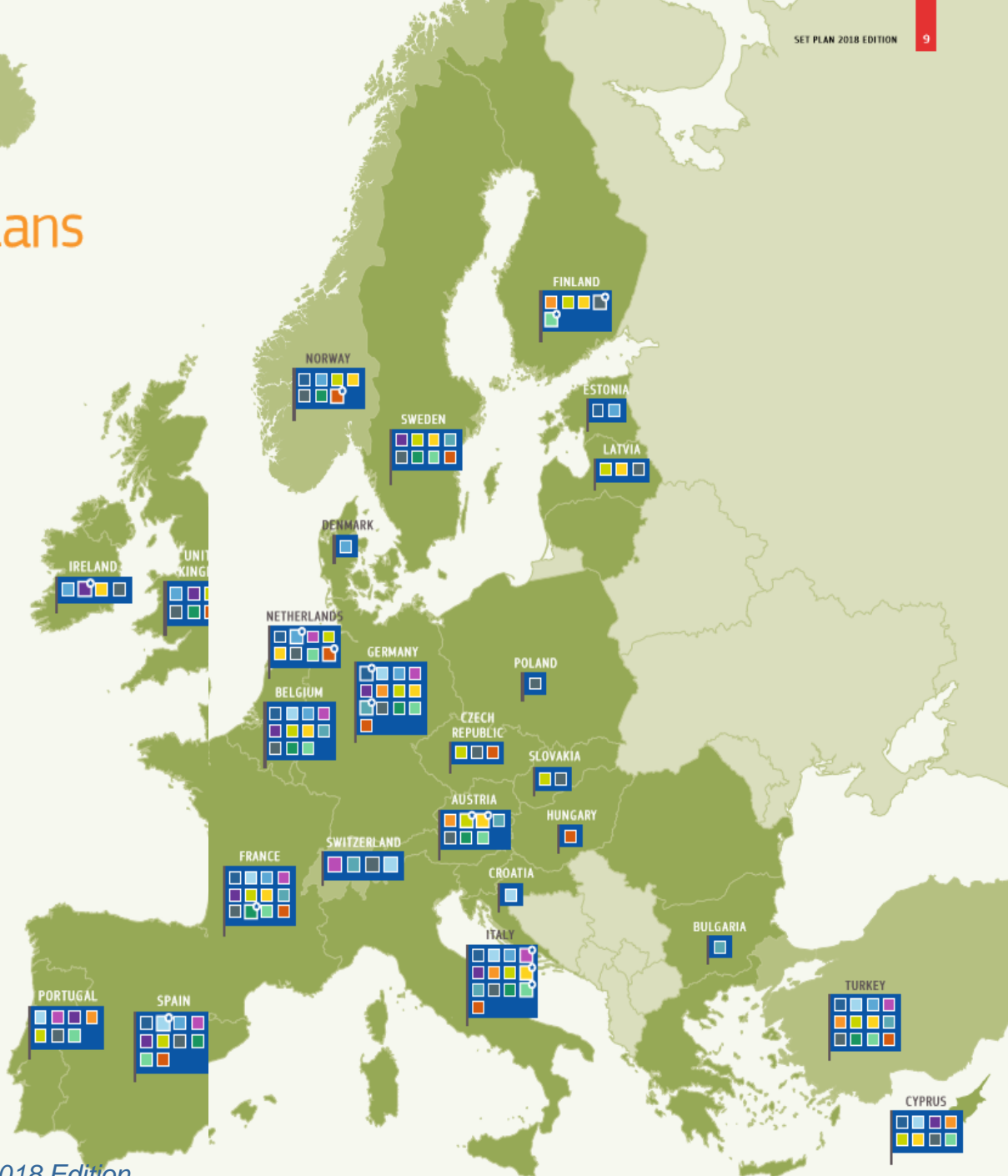
ENERGY OPTIONS FOR SUSTAINABLE TRANSPORT SYSTEMS

- Batteries for E-Mobility and Stationary Storage IP (7)
- Renewable Fuels and Bioenergy IP (8)

CCUS

- Carbon Capture Utilisation and Storage IP (9)

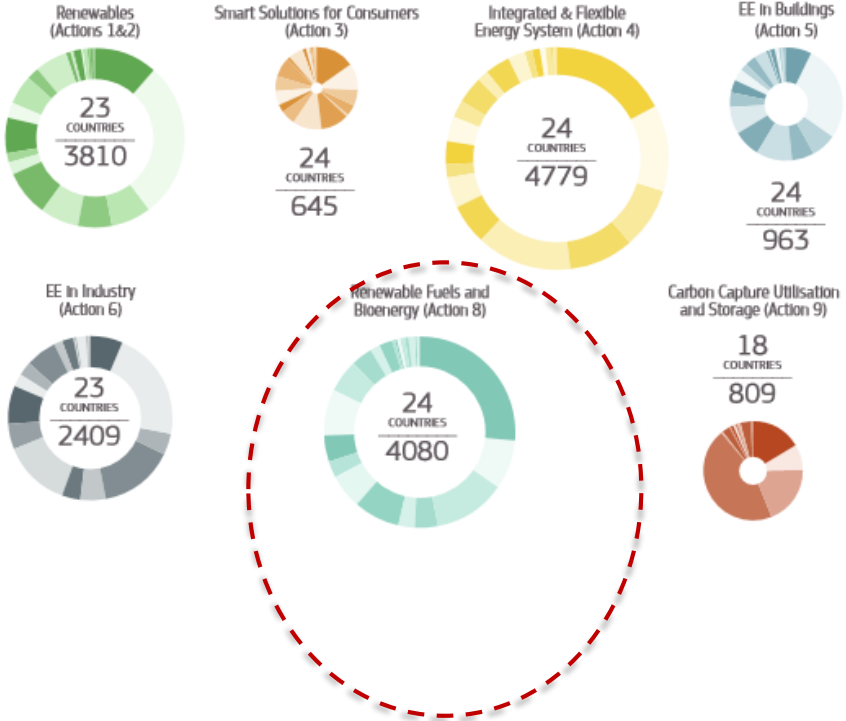
★ Chair



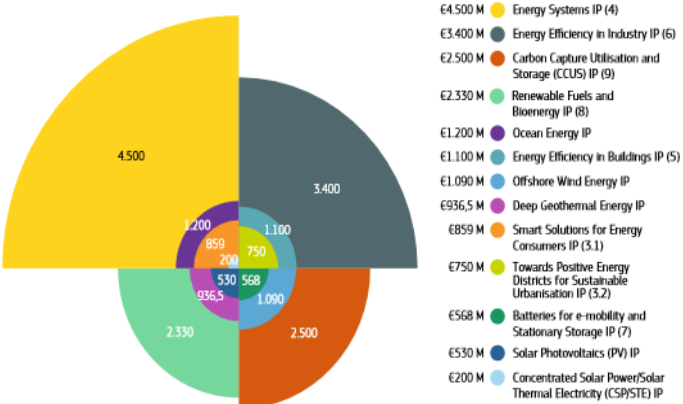
National R&I Expenditure

SET Plan Investments

NATIONAL R&D EXPENDITURE PER SET PLAN ACTION (2012-2016) [EUR MILLION]



EXPECTED VOLUME OF INVESTMENTS IN R&I ACTIVITIES AS IDENTIFIED IN THE IMPLEMENTATION PLANS (EUR MILLION)



- In 2030 more than EUR 20 billion aggregated investments in R&I
- Part of wider effort to decarbonize EU energy system

SET Plan delivering results, SET Plan 2018 Edition

Energy Financing in the Energy Union

- Investment Plan for Europe
- European Structural & Investment Funds
- Horizon 2020
- Horizon Europe
- Digital Europe Programme
- Just Transition Fund
- InvestEU for R&I
- Innovation Fund
- EU Finance for Innovators

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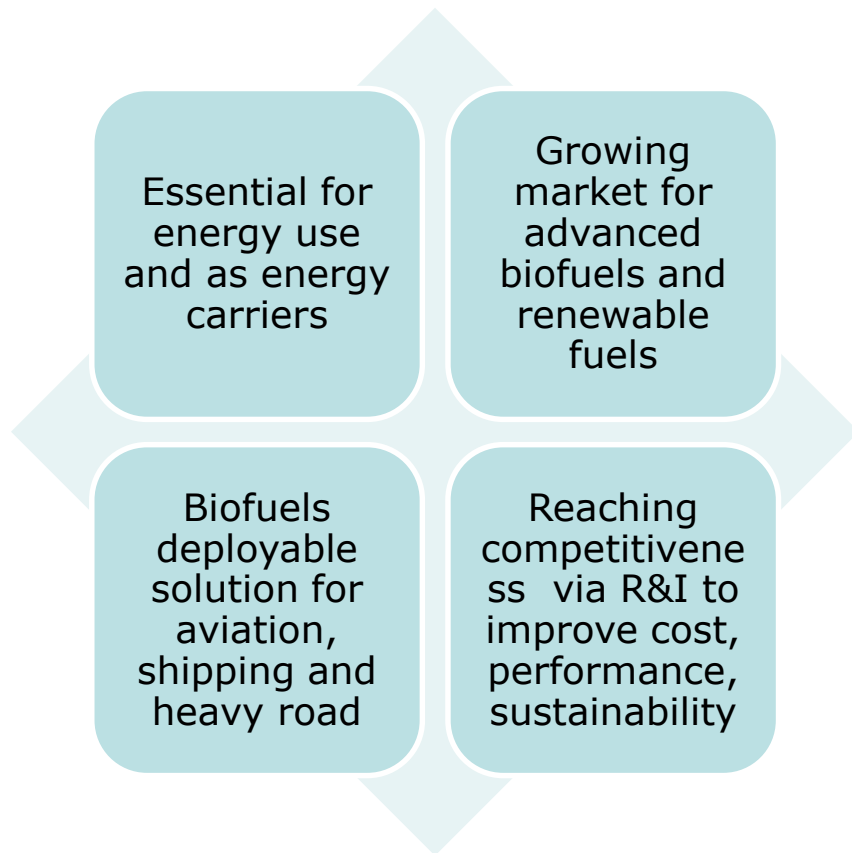
Renewable Fuels and Bioenergy

Opportunities & Challenges

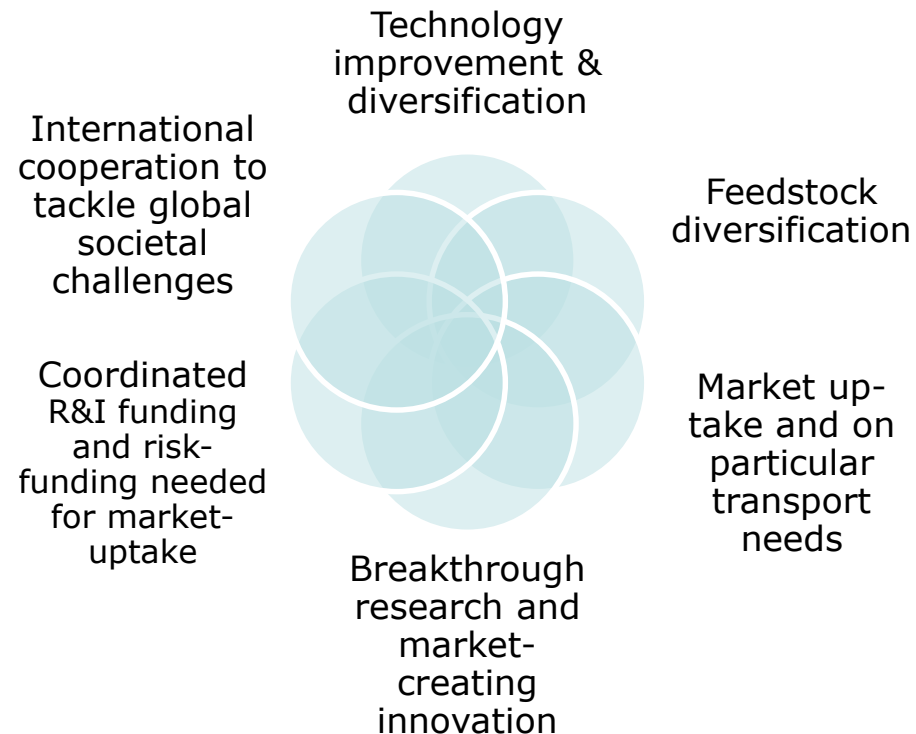
R&I Policy

R&I portfolio

Opportunities & Challenges



R&I Policy



Horizon 2020 topics

Secure Clean and Efficient Energy



Next generation technologies for biofuels and sustainable alternative fuels

Demonstrating advanced biofuel technologies

Next generation technologies for renewable electricity and heating/cooling

Renewable energy solutions for energy system implementation

Market Uptake Support

Supporting the development of a European research area in the field of energy

Horizon 2020 funded projects "Secure Clean and Efficient Energy"

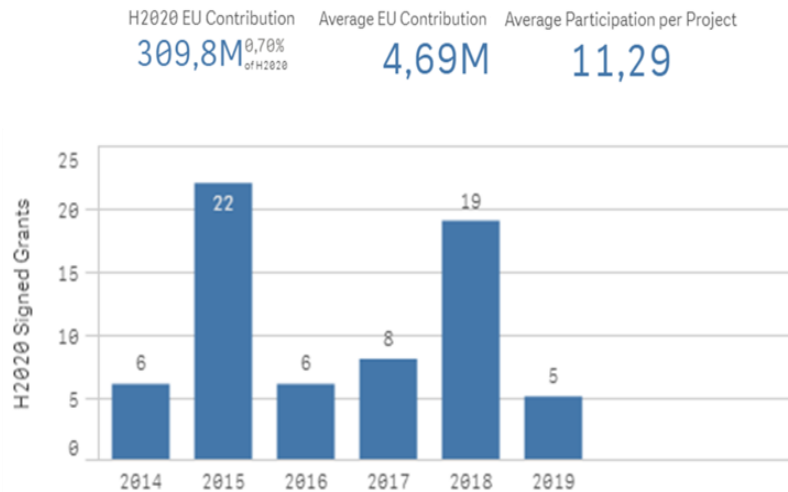
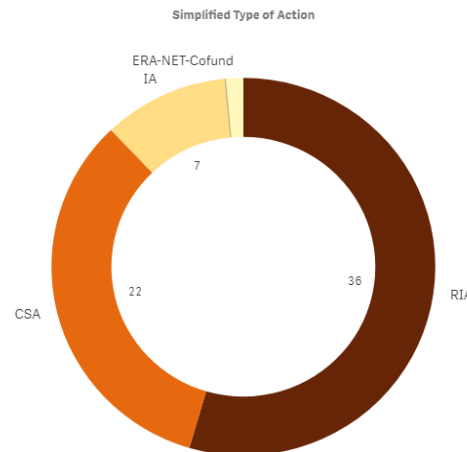


Fig. 1 Signed Grants per year



H2020 Participations

745 (0,64% of H2020)

370M (0,67% of H2020)

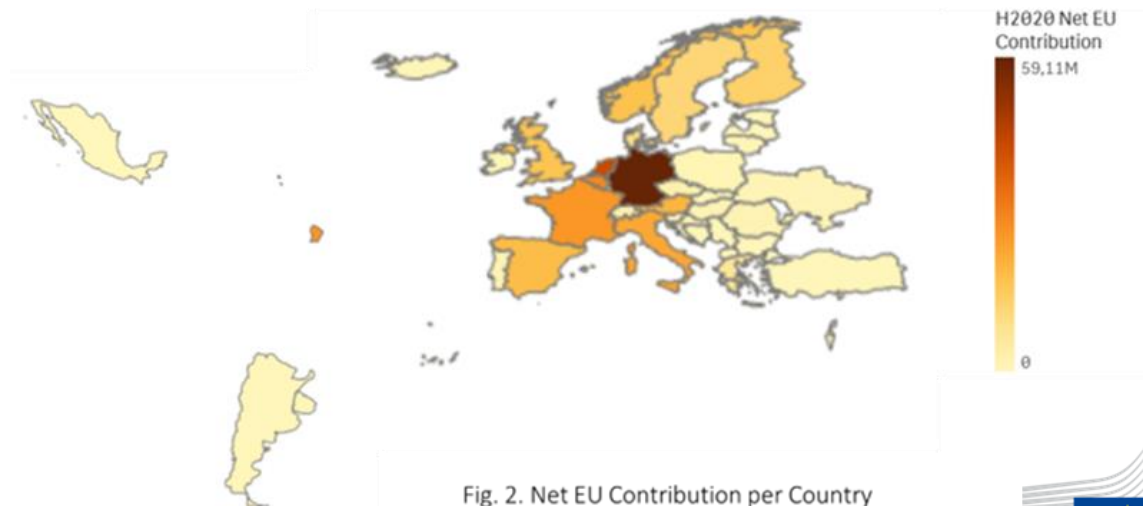
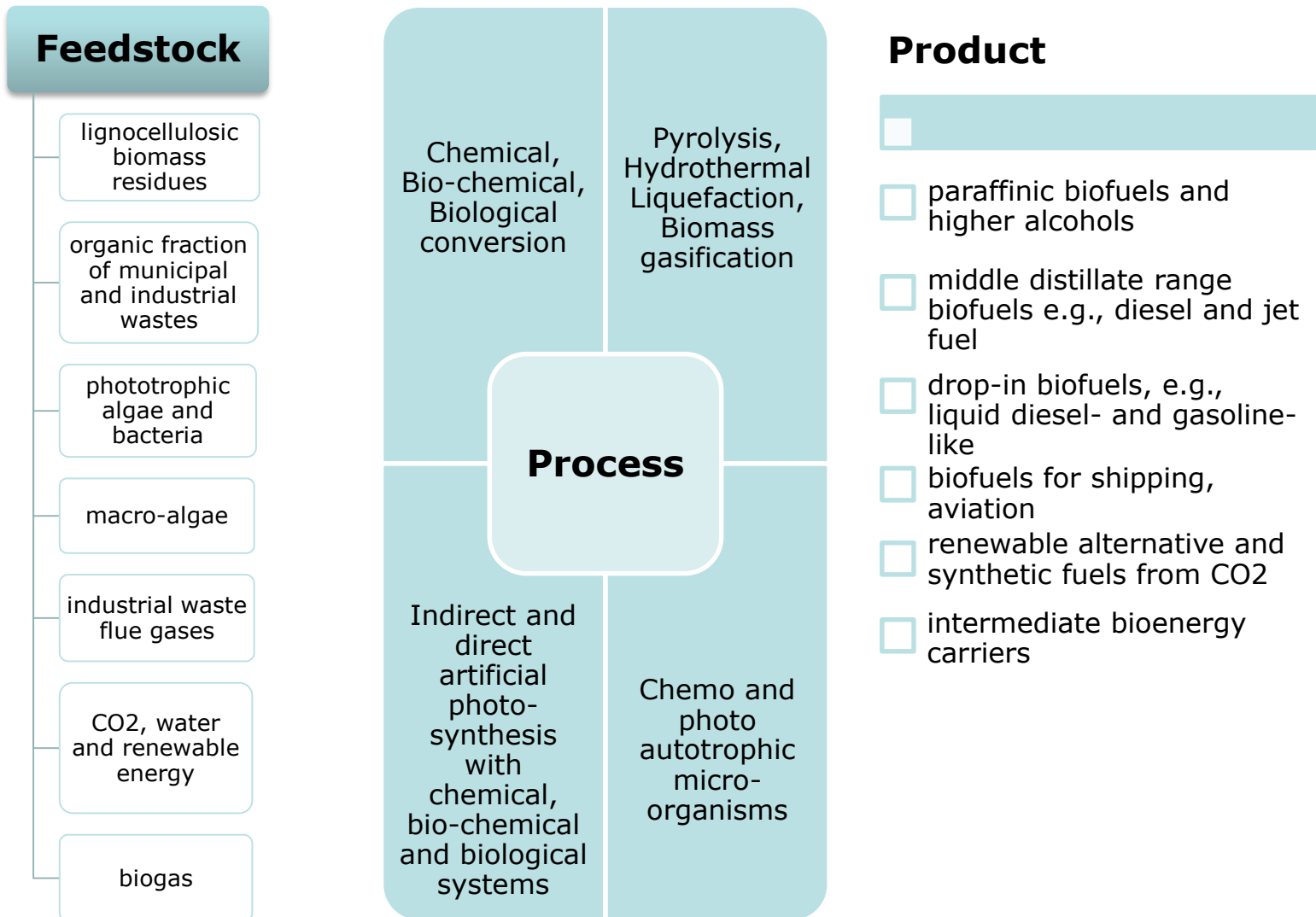


Fig. 2. Net EU Contribution per Country

Thematic areas - Renewable fuels



Thematic areas - Renewable power, H&C

Next generation technologies

- micro, and small-scale CHP systems
- residential-scale low emission boilers
- medium and large-scale biomass-based cogeneration
- renewable energy integration to biomass heating and cogeneration
- intermediate bioenergy carriers from biogenic residues and wastes and energy crops from marginal lands.

Demonstration of medium to large-scale biomass CHP

- retrofitting existing plants
- production of intermediate bioenergy carriers

Thematic areas - Cross cutting



- supply chains
- sustainability, standards
- public acceptance
- communication, training
- biogas and bio-methane barriers
- supply and market barriers, logistics and trade centres for intermediates
- marginal lands
- stakeholders awareness and capacity building

Overarching

market
creating
innovation
Bionic Leaf

pre-
commercial
production
of advanced
aviation
biofuel

retrofitting
of existing
industrial
installations

international
cooperation

The way forward

- A vast portfolio of technologies and value chains
- Support at all TRL & value chains including new
- Flexibility of installations
- Collaboration across EU and internationally
- Understanding early innovation potential
- Ensuring financing at later stages
- Regional approach and clustering of market players
- System integration
- Public acceptance
- Integrated approach



**Thank you for
your attention!**

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