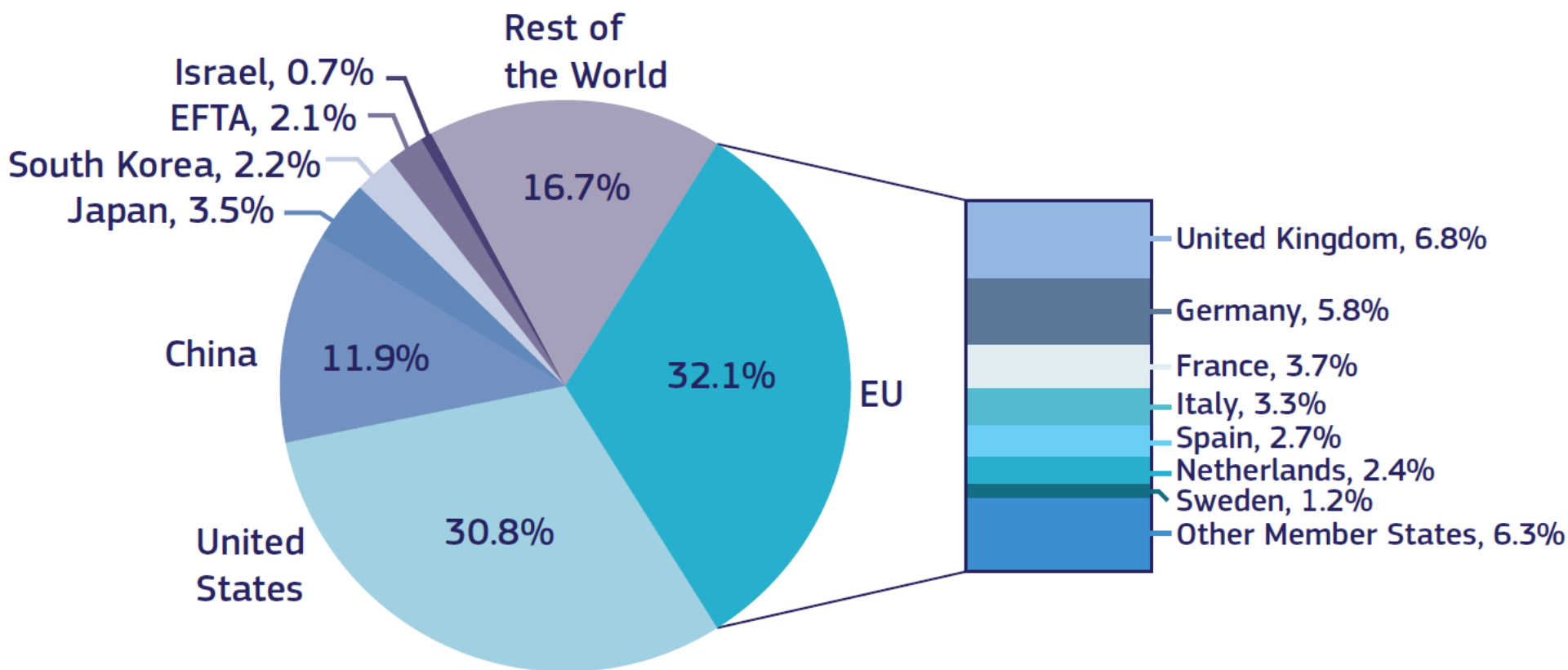# EU Research & Innovation Policy + Horizon 2020 Work Programme 2016-2017

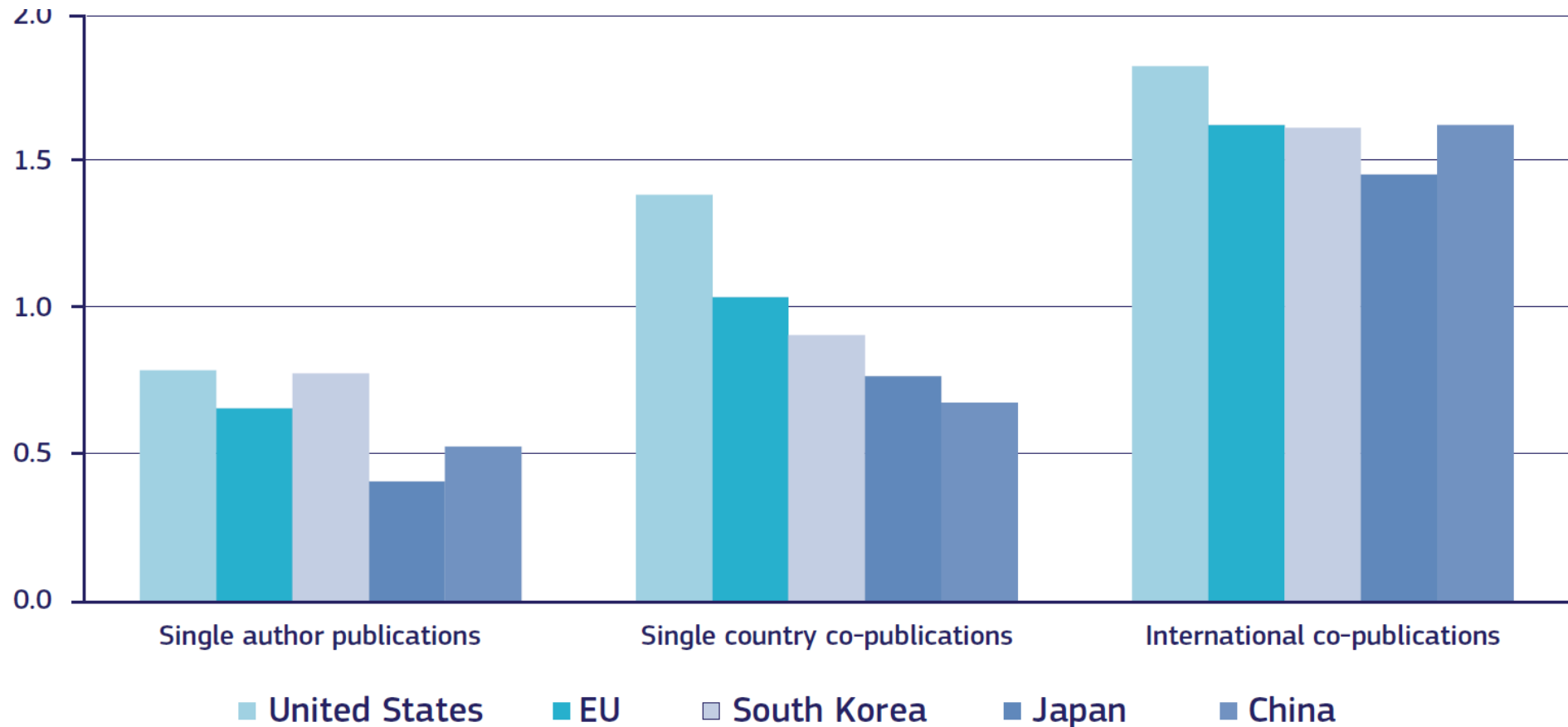*Michael Arentoft*
European Commission
DG Research & Innovation
EU R&I Day, Seoul, 4 October 2016

The EU leads in high quality science

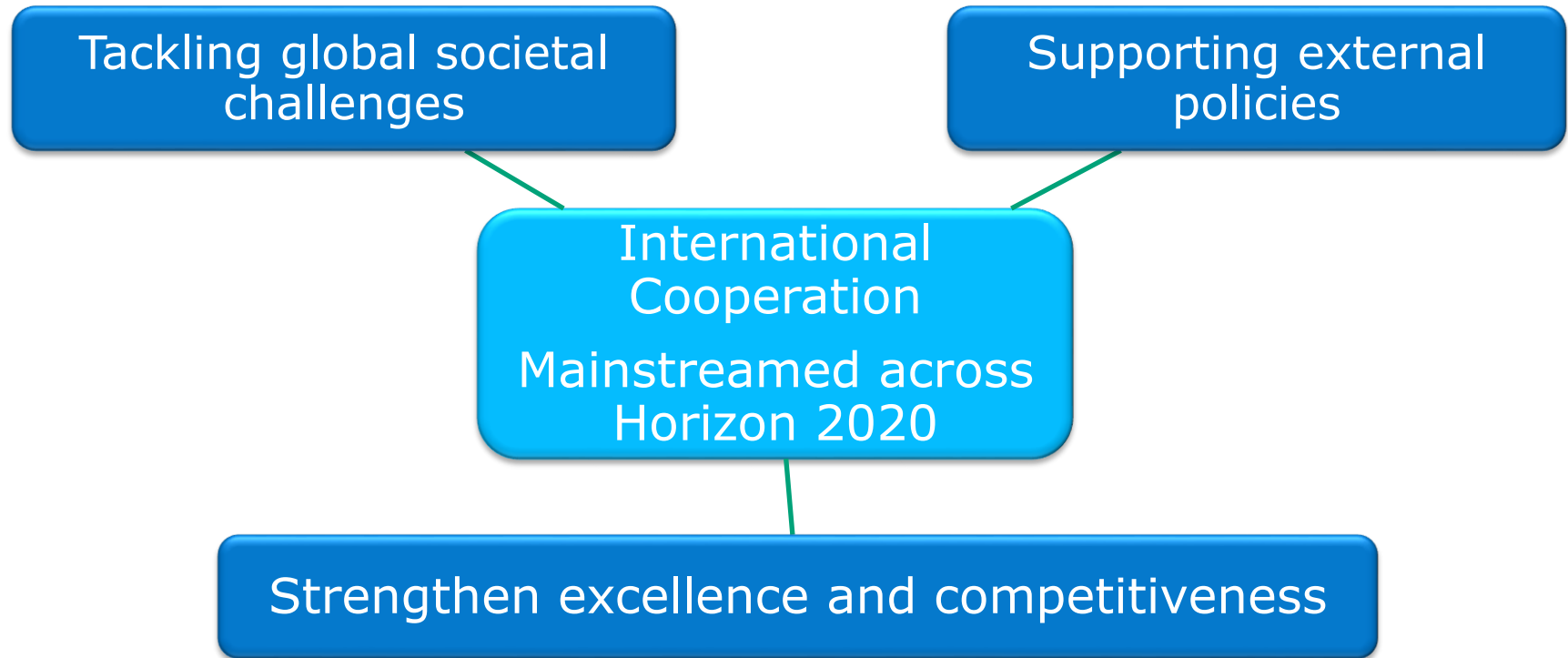World share of highly cited scientific publications

- Rest of the World 16.7%
- Israel, 0.7%
- EFTA, 2.1%
- South Korea, 2.2%
- Japan, 3.5%
- China 11.9%
- United States 30.8%
- EU 32.1%
  - United Kingdom, 6.8%
  - Germany, 5.8%
  - France, 3.7%
  - Italy, 3.3%
  - Spain, 2.7%
  - Netherlands, 2.4%
  - Sweden, 1.2%
  - Other Member States, 6.3%

Research and Innovation

International cooperation increases quality

Average Relative Citations (ARC) of publications by type of co-operation

Research and Innovation

International Cooperation Strategy
Enhancing and focusing EU international cooperation in research and innovation

Tackling global societal challenges

Supporting external policies

International Cooperation

Mainstreamed across Horizon 2020

Strengthen excellence and competitiveness

Horizon 2020

The biggest EU Research & Innovation programme ever

- Nearly €80 billion of funding available over 7 years (2014 to 2020)
- In addition to the private investment that this money will attract

Coupling research and innovation to help achieve smart, sustainable and inclusive growth

- Promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market
- Emphases excellent science, industrial leadership and tackling societal challenges – with criteria of excellence, implementation and impact

Open to everyone

- Most open funding programme in the world – teaming up with the best
- Simple structure that reduces red tape and time so participants can focus on research and innovation and achieving results faster

Research and Innovation

Horizon 2020
Open to the World

General opening

Horizon 2020 is fully open to participation of entities from across the globe

Targeted opening

Many topics are flagged as being specifically relevant for international cooperation, identifying upfront the targeted area and partner country or region

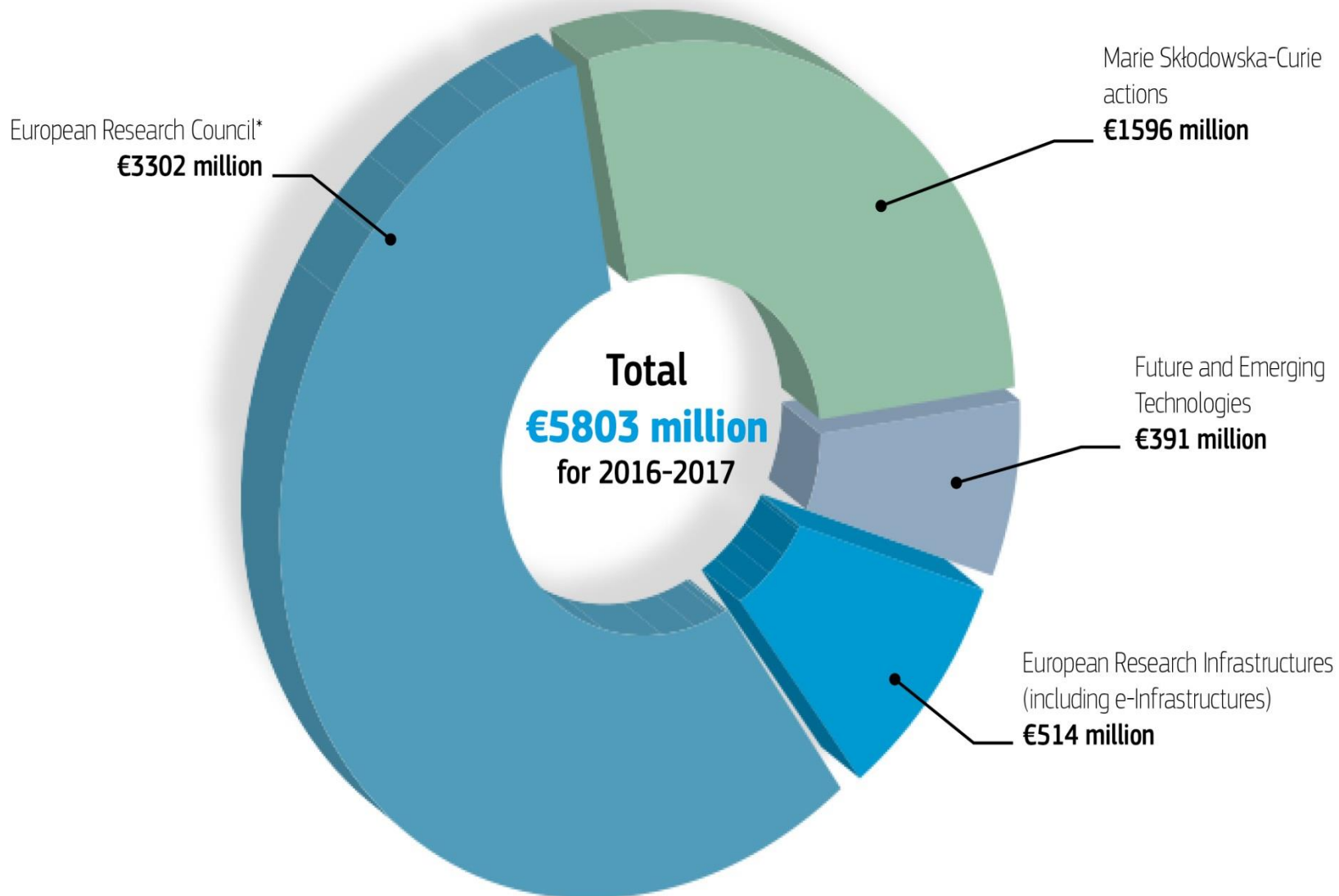# Horizon 2020 Work Programme 2016-17

Excellent Science

European Research Council*
€3302 million

Marie Skłodowska-Curie actions
€1596 million

Total
€5803 million
for 2016-2017

Future and Emerging Technologies
€391 million

European Research Infrastructures (including e-Infrastructures)
€514 million

* separate work programme for 2017

Industrial Leadership

Innovation in small and
medium-sized enterprises
(does not include Eurostars)
€794 million

Access to Risk Finance
€745 million

**Total
€3397 million**
for 2016–2017

Space
€182 million

Information and
Communication Technologies
€1088 million

Nanotechnologies,
Advanced Materials,
Biotechnology and Production
€588 million
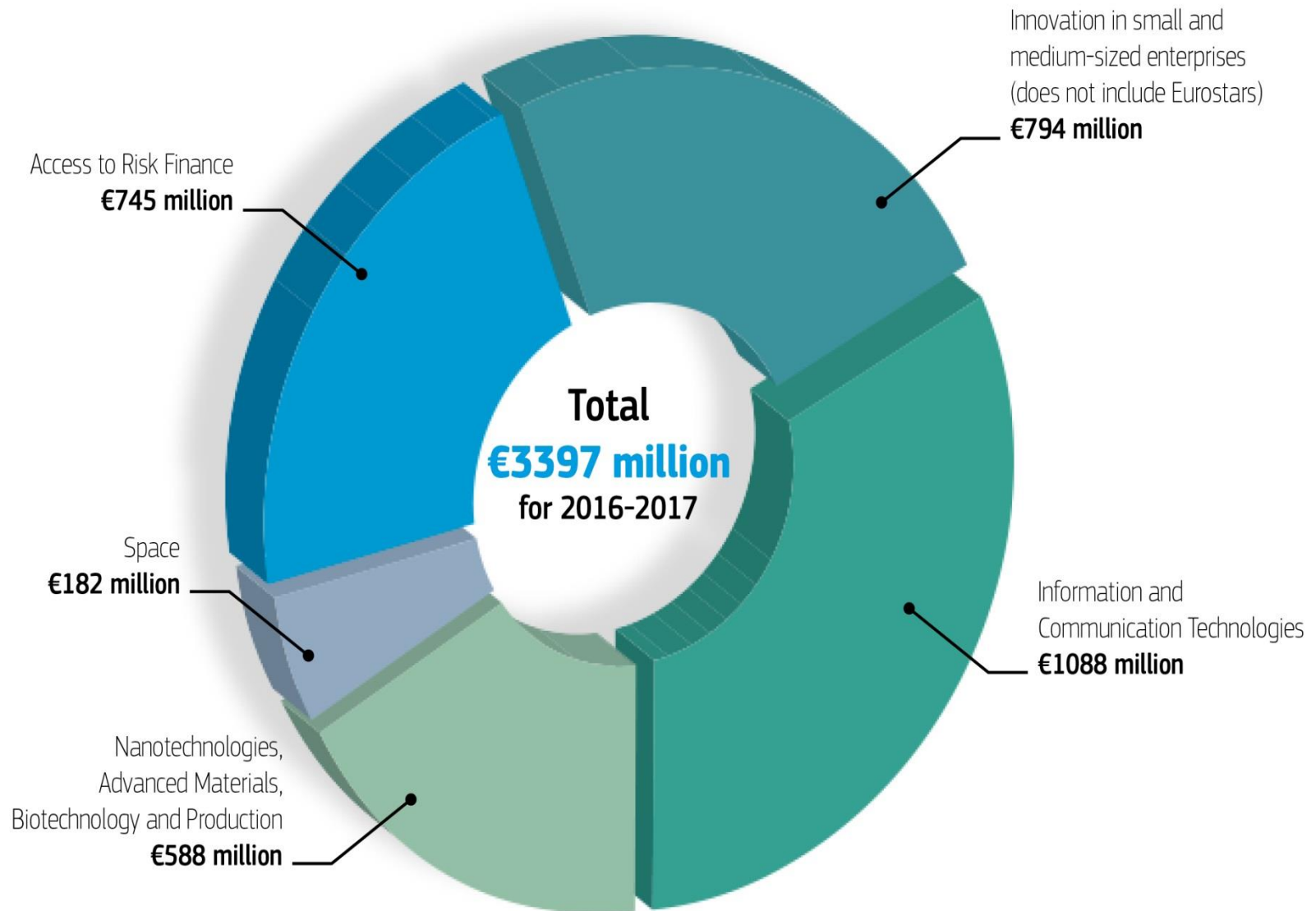
Societal Challenges

1. Health, demographic change and wellbeing
   €658 million

2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
   €716 million

3. Secure, clean and efficient energy
   €917 million

4. Smart, green and integrated transport
   €756 million

5. Climate action, environment, resource efficiency and raw materials
   €326 million

6. Europe in a changing world - inclusive, innovative and reflective societies
   €212 million

7. Secure societies – protecting freedom and security of Europe and its citizens
   €393 million

Total
€3978 million
for 2016-2017*
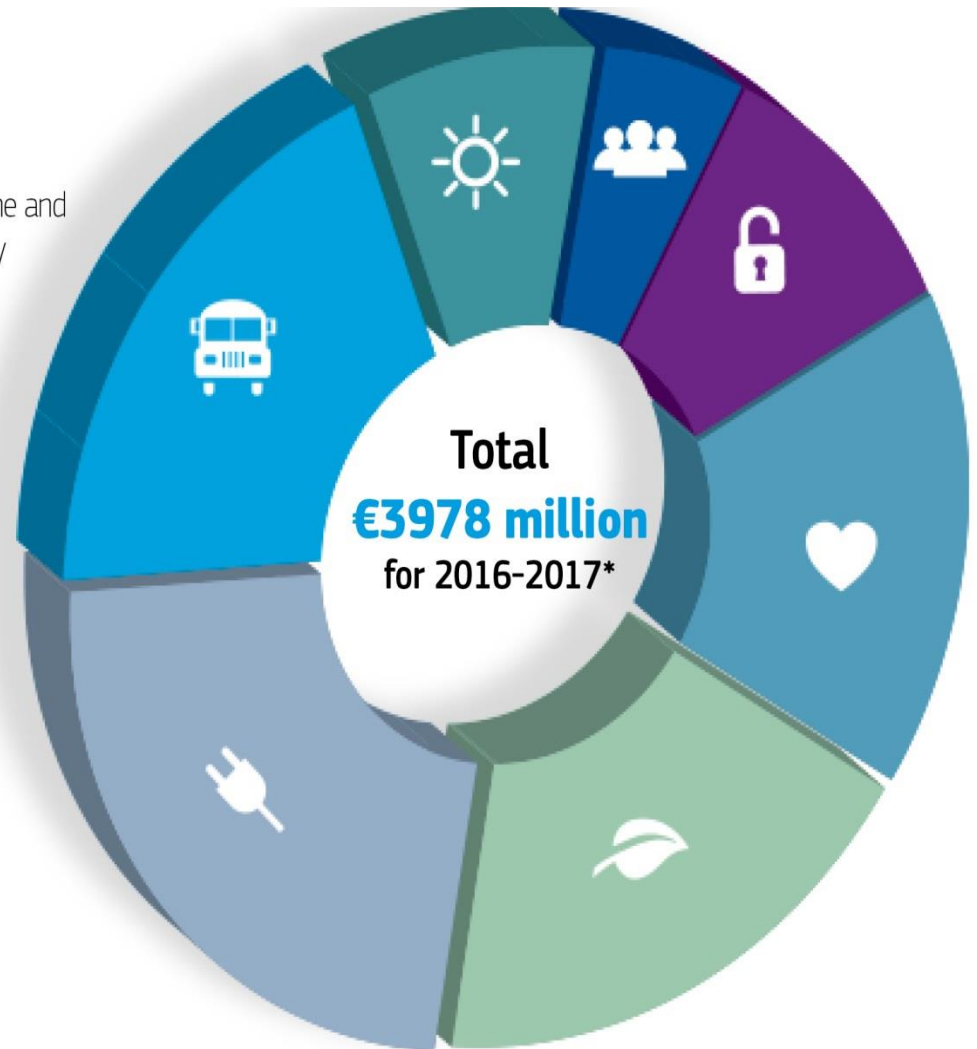
* Additional €1040 million will be dedicated to Cross-Cutting Calls:
Internet of things, Industry 2020 in the Circular Economy, Smart and Sustainable Cities

International cooperation in WP 2016-17

Number and combined budget of **specifically targeted international cooperation topics** increased by more than 20%

Number of **joint, coordinated or twinning calls** with international partner countries increased by 20%

Higher number of topics contributing to **global multilateral initiatives**

(compared with WP 2014-15)

Example: ICT

EU-South Korea Joint Call: 5G/IoT/Cloud

EU-Japan Joint Call: 5G/IoT/Cloud/Big Data/Testbeds

EU-Brazil Joint Call: Cloud/IoT

China: Collaboration on Future Internet, e.g. IoT and 5G

Mexico: Collaboration on ICT e.g. FIWARE

International partnership building in low and middle income countries. Target: sub-Saharan Africa and ASEAN countries

Example: Energy

Underground CO$_2$ & natural gas (LCE-27)

CCS in industrial applications (LCE-29)

Geothermal energy (LCE-23)

CO2 capture (LCE-24)

Advanced biofuels (LCE-22)

CO$_2$ storage (LCE-30)

IRENA
International Renewable Energy Agency

International Energy Agency
iea

Research and Innovation

Example: Health

Notably for global multi-lateral initiatives

IRDiRC
INTERNATIONAL
RARE DISEASES RESEARCH
CONSORTIUM
www.irdirc.org/

InTBIR
International Initiative for
Traumatic Brain Injury Research
http://intbir.nih.gov/

IHEC
International Human Epigenome Consortium
http://ihec-epigenomes.org/

GACD
GLOBAL ALLIANCE FOR CHRONIC DISEASES
AN ALLIANCE OF HEALTH RESEARCH FUNDERS
www.gacd.org/

International Cancer Genome Consortium
https://icgc.org/

GL PID-R
Global Research Collaboration for Infectious Disease Preparedness
http://www.glopid-r.org/

Global Genomic Medicine Collaborative

http://www.iom.edu/Activities/Research/GenomicBasedResearch/Innovation-
Collaboratives/Global_Genomic_Medicine_Collaborative.aspx

Research
and
Innovation

2016 Calls targeting EU-ROK cooperation...

ICT

- Joint Call
  - 5G - Next Generation Communication Networks (EUK-01-2016)
  - Internet of Things joint research (EUK-02-2016)
  - Federated Cloud resource brokerage for mobile cloud services (EUK-03-2016)

  9 proposals received; 3 selected: 5G-CHAMPION, Wise-IoT, BASMATI

- In addition:
  - Future Internet Experimentation (ICT-13-2016)

Energy

- Twinning Call
  - International Cooperation with South Korea on new generation high-efficiency capture processes (LCE-24-2016)

  17 proposals received; 3 selected: ROLINCAP, GRAMOFON, NanoMEMC2

…2016 Calls targeting EU-ROK cooperation

Nanotechnology

- Cooperation through Nanoreg, the multilateral nanosafety initiative for regulatory testing of nanomaterials
- In addition:
  - Promoting safe innovation through global consolidation and networking of nanosafety centres (NMBP-27-2016)

Health and bio-medical challenges

- Cooperation in the context of
  - The Global Research Collaboration for Infectious Disease Preparedness (ref: www.glopid-r.org)
  - The International Rare Diseases Research Consortium (ref: www.irdirc.org)
  - The International Human Epigenome Consortium (ref: www.ihec.org)

Nuclear energy research

- Euratom Work Programme

2017 Calls targeting EU-ROK cooperation...

- 5G PPP Research and Validation of Critical Technologies and Systems (ICT-07-2017)

  - Aim: to validate research results in proof of concepts and demonstrators having use cases from sectors such as eHealth, automotive, video/TV broadcast, and energy.

  - Covers: wireless access and radio network architecture and technologies; high-capacity elastic optical networks; and software networks

  - International cooperation with clear EU industrial benefits may be considered, preferably with nations having launched strategic 5G initiatives, e.g. China, Japan, South Korea, Taiwan, USA.

  - Budget: € 104 million. Deadline: 8 November 2016

…2017 Calls targeting EU-ROK cooperation…

- 5G PPP Convergent Technologies (ICT-08-2017)

  - Aim: to innovate in new optical access network solutions based on integrated optical device prototypes; and to develop flexible virtual network functions useful for operators, service providers, and third parties.

  - International cooperation with clear EU industrial benefits may be considered, preferably with nations having launched strategic 5G initiatives , e.g. China, Japan, South Korea, Taiwan, USA.

  - Budget: € 45 million. Deadline: 8 November 2016

...2017 Calls targeting EU-Korea cooperation

- **Micro- and nanoelectronics technologies** (ICT-31-2017)

  - Research and Innovation Actions:
    - The development of new approaches to scale functional performance of information processing and storage substantially beyond the state-of-the-art technologies with a focus on ultra-low power and high performance
    - 3D sequential integration (at transistor scale) possibly mixed with 3D parallel integration (at circuit level) for system solutions to increase functionalities and capabilities

  - In line with the strategy for EU international cooperation in H2020, cooperation is encouraged with countries that have substantial research in the area, e.g. Japan, South Korea, Taiwan and the USA

  - For Japan and South Korea: the call is open to project twinning where proposals shall foresee budget provisions to exchange knowledge and experience and exploit synergies; implemented on a bilateral basis by clustering of projects on nanoelectronics topics of mutual interest

  - Budget: € 23 million. Deadline: 25 April 2017

Where to find more information?

Horizon 2020 Participant Portal
http://ec.europa.eu/research/participants/portal/desktop/en/home.html

DG Research and Innovation
http://ec.europa.eu/research/index.cfm

National Contact Points
(listed in the Participant Portal)