



Horizon 2020

Les enjeux de la coopération internationale



Philippe Vialatte
DG RTD C1
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Research and
Innovation



OUTLINE

- 1. Strategy for EU International R&I Cooperation**
- 2. Lessons learnt from the Horizon 2020 Interim evaluation**
- 3. Horizon 2020 Work Programme 2018-20**
- 4. Prospects for FP9**



Strategy for EU International R&I Cooperation



Rationale

main drivers of international cooperation

- You can only succeed on excellence when there is **exchange and competition** among the world's best brains
- Challenges such as infectious diseases and clean energy are **global** in nature and cannot be dealt solely with local/national interventions: this is also the basic premise behind the SDGs
- **90% of market growth** over next decade is expected to be outside EU; today, **75% of IPRs** and knowledge is produced outside EU
- Science and international research cooperation can provide a common basis for engagement, trust and facilities with shared governance that can be blueprint for governance of broader issues (**science diplomacy**)



EU Strategy for International R&I Cooperation

COM(2012)497

Tackling global societal challenges

Supporting EU's external policies

International Cooperation
Mainstreamed across
Horizon 2020

Strengthening the EU's excellence and attractiveness in R&I as well as its economic and industrial competitiveness



International cooperation in Horizon 2020

Associated countries



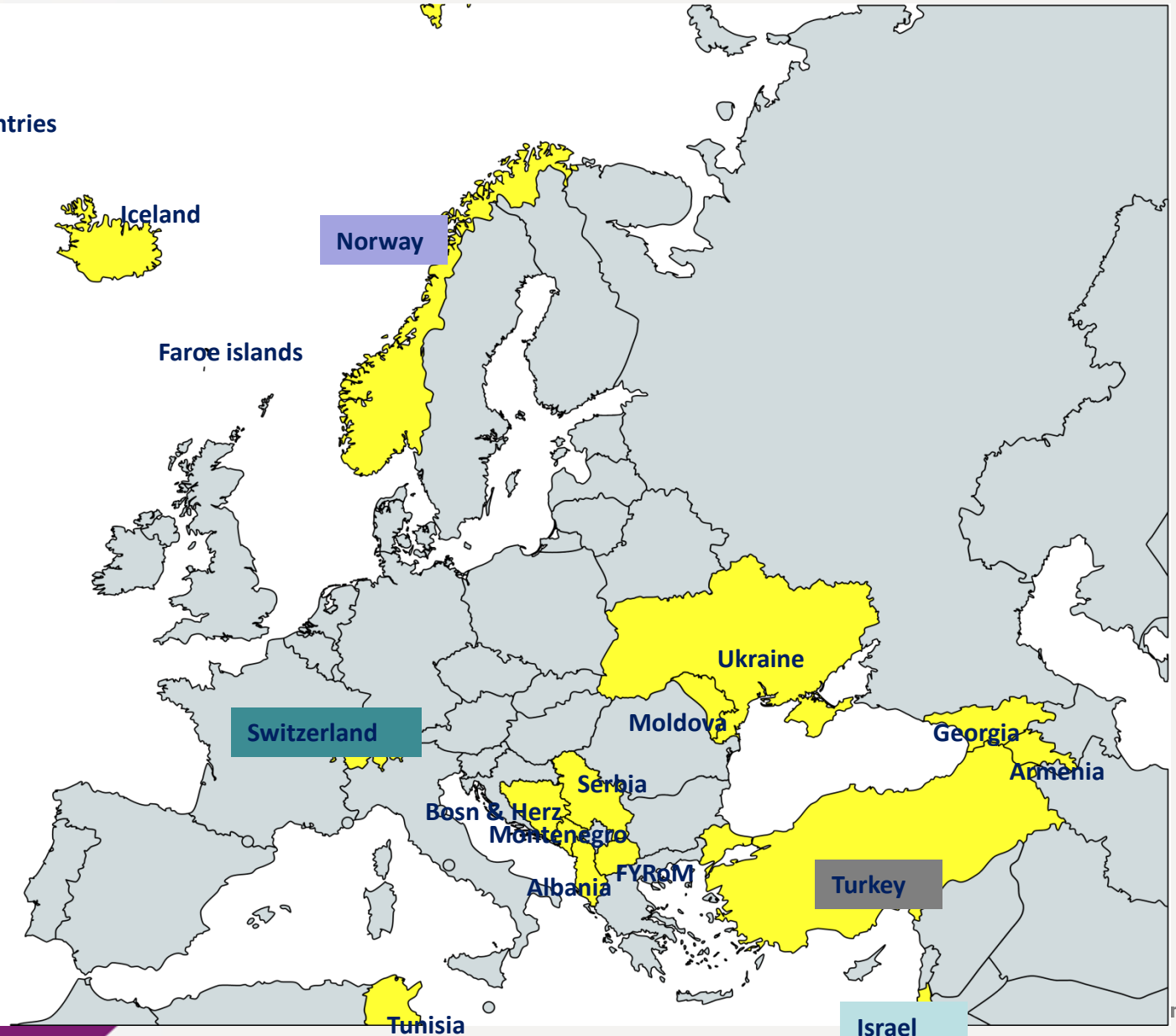
H2020 associated countries

1

2

3

4





Lessons learnt from the Horizon 2020 Interim evaluation



International cooperation in Horizon 2020

Achievements

Broad international outreach

- Applicants from 152 third countries; participants from 105 third countries (+ 16 associated countries)
- 7750 eligible proposals with third-country applicants (6.7% of total); 1120 of these retained for funding (7.6% of total)
- Success rates of proposals with third country applicants: 14.4% (compared to 12.7% overall)



International cooperation in Horizon 2020

Achievements

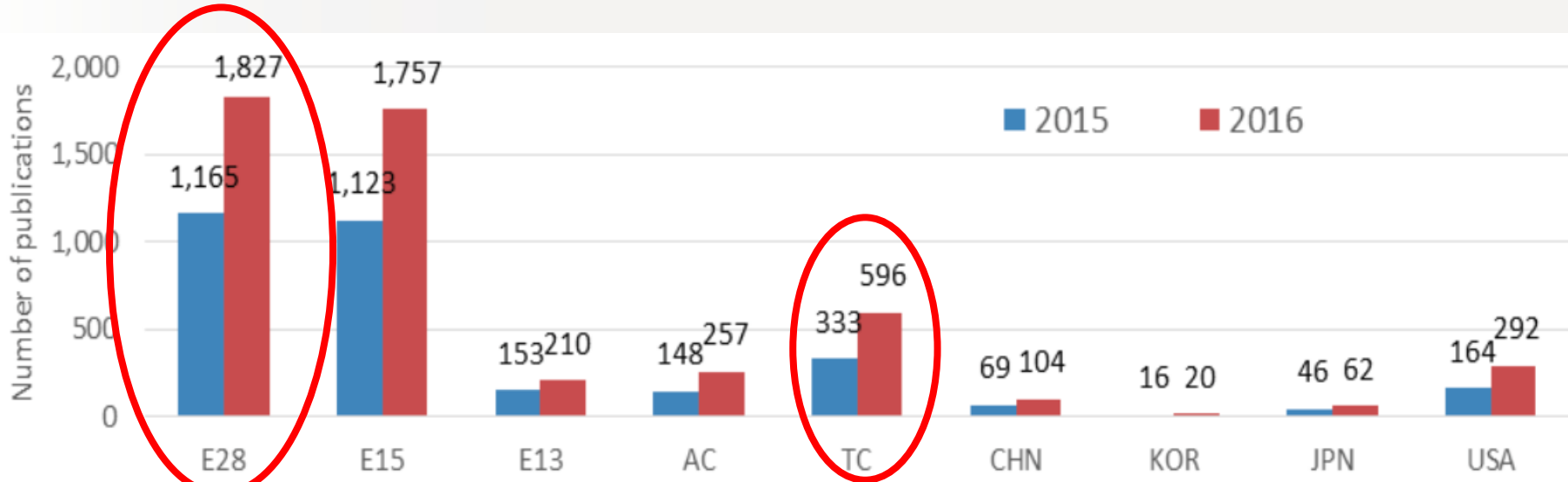
Cooperation level	Instrument	Input
Researcher to researcher	<ul style="list-style-type: none">• MSCA• ERC	<ul style="list-style-type: none">• Incoming MSCA fellows (140 nationalities) 17% in H2020, similar to FP7• Incoming ERC fellows 2.5% in H2020, similar to FP7
Organisation to organisation	<ul style="list-style-type: none">• Collaborative projects• Coordinated calls• Twinning of projects	<ul style="list-style-type: none">• Participations of third-country entities 2.5% in H2020, 4.3% in FP7 (+0.6% in H2020, +0.7% in FP7 if coordinated calls are included)
Programme to programme	<ul style="list-style-type: none">• Multilateral initiatives• Art. 185	<ul style="list-style-type: none">• Investment in multilaterals (e.g. health, PRIMA, GEO, etc.): €630m so far in H2020• Leveraged investment of third countries 3-4 times the EU investment• Contribution to EDCTP €683m in H2020, €200m in FP6
EU to third country	<ul style="list-style-type: none">• Associations• Co-funding mechanisms	<ul style="list-style-type: none">• Number of associated countries 16 so far in H2020, 12+Croatia in FP7• Number of co-funding mechanisms 9 so far in H2020, 2 in FP7



Further facts

More than 30% of Horizon 2020 funded publications are co-publications with non-associated third countries

Total publication output of Horizon 2020-funded research per geographical group



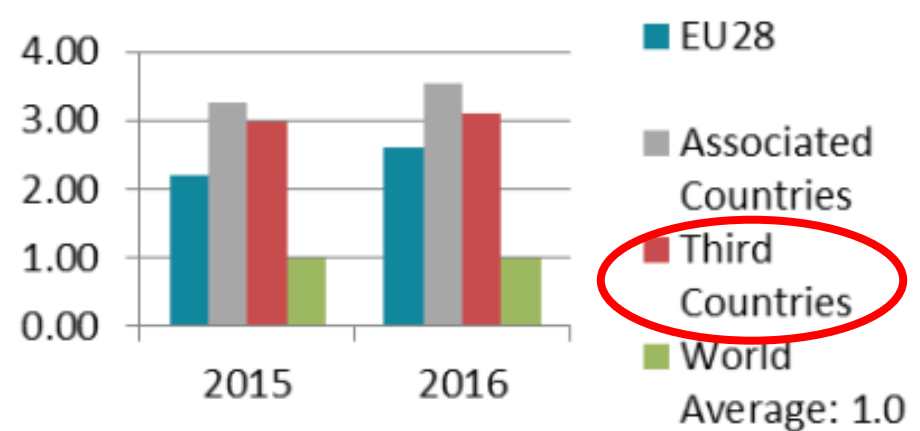
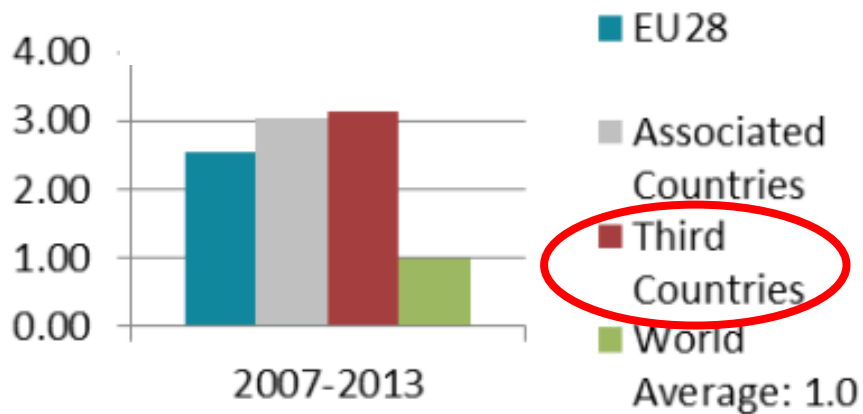
Source: Scopus [study by Elsevier]



Further facts

FP-funded co-publications with non-associated third countries have higher citation impact than intra-EU publications

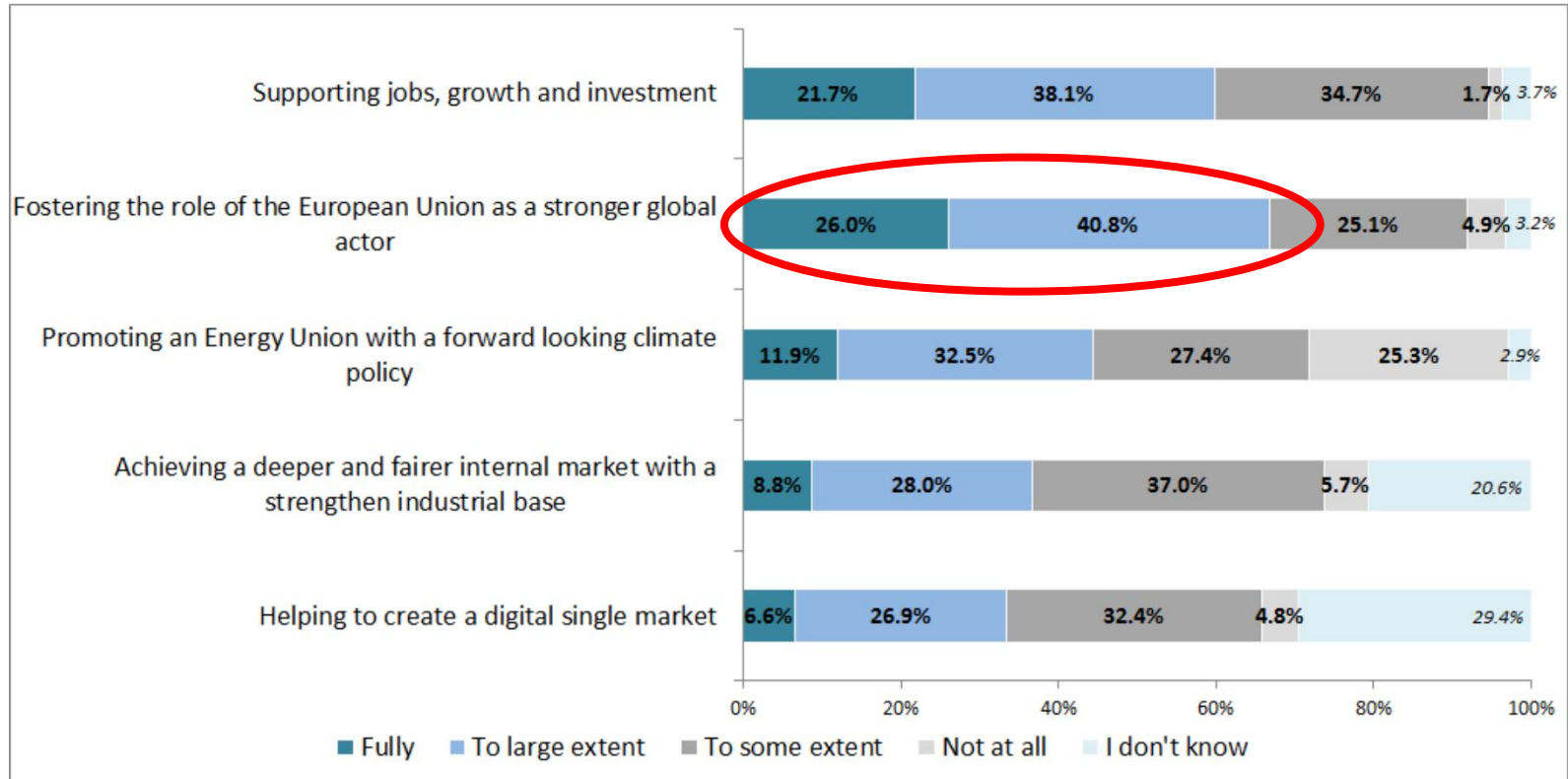
Field Weighted Citation Impact for FP7 publications (left side) and for Horizon 2020 (right side)





Stakeholders: "Horizon 2020 contributes to a large extent to make the EU a stronger global actor"

Do you think that Horizon 2020 is contributing to the following priorities of the European Union?



Source: Replies to stakeholder consultation questionnaire launched in the framework of the Interim Evaluation of Horizon 2020, October 2016-January 2017, N=3483



International cooperation in Horizon 2020

Lessons learnt

1. Passive openness is not enough to exploit the programme's potential for international cooperation

Although the programme is open to the world, third countries are much less involved in projects compared to FP7

	2014	2015	2016	H2020	FP7
Share of <u>participations</u> of third countries	2.2%	2.8%	2.6%	2.5%	4.3%
Share of <u>grants</u> with at least 1 TC participant	11.4%	11.8%	9.8%	10.7%	18.3%
Share of <u>budget</u> allocated to TC participants	0.7%	1.0%	0.9%	0.8%	1.8%



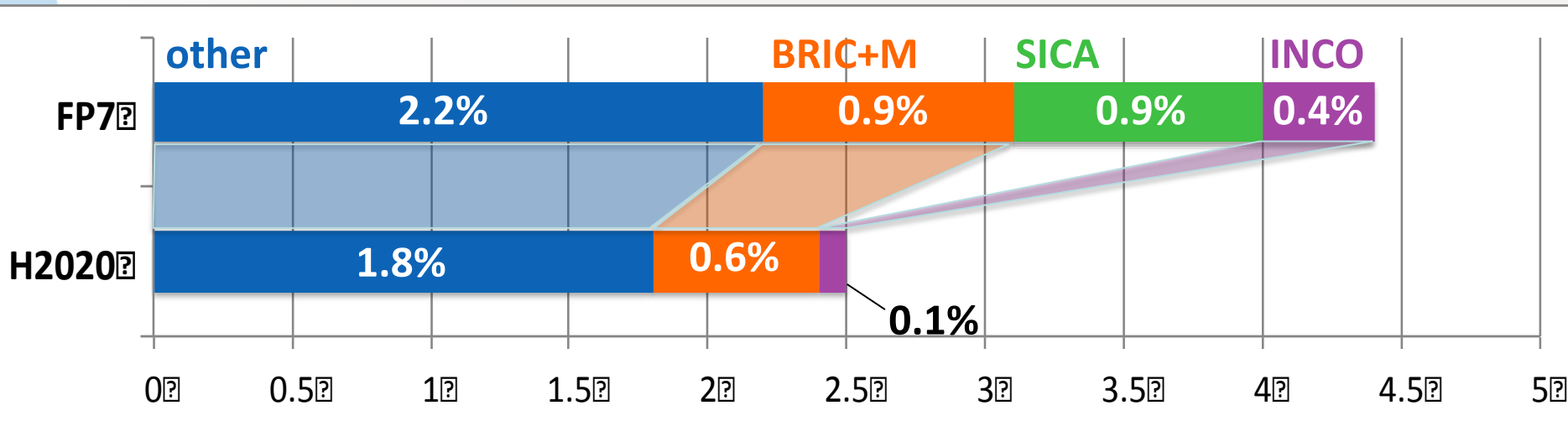
International cooperation in Horizon 2020

Lessons learnt

Main reasons for the drop

- Lack or no use of specific incentives (e.g. FP7 INCO theme or the SICA actions)
- BRIC+M countries are no longer automatically eligible for funding

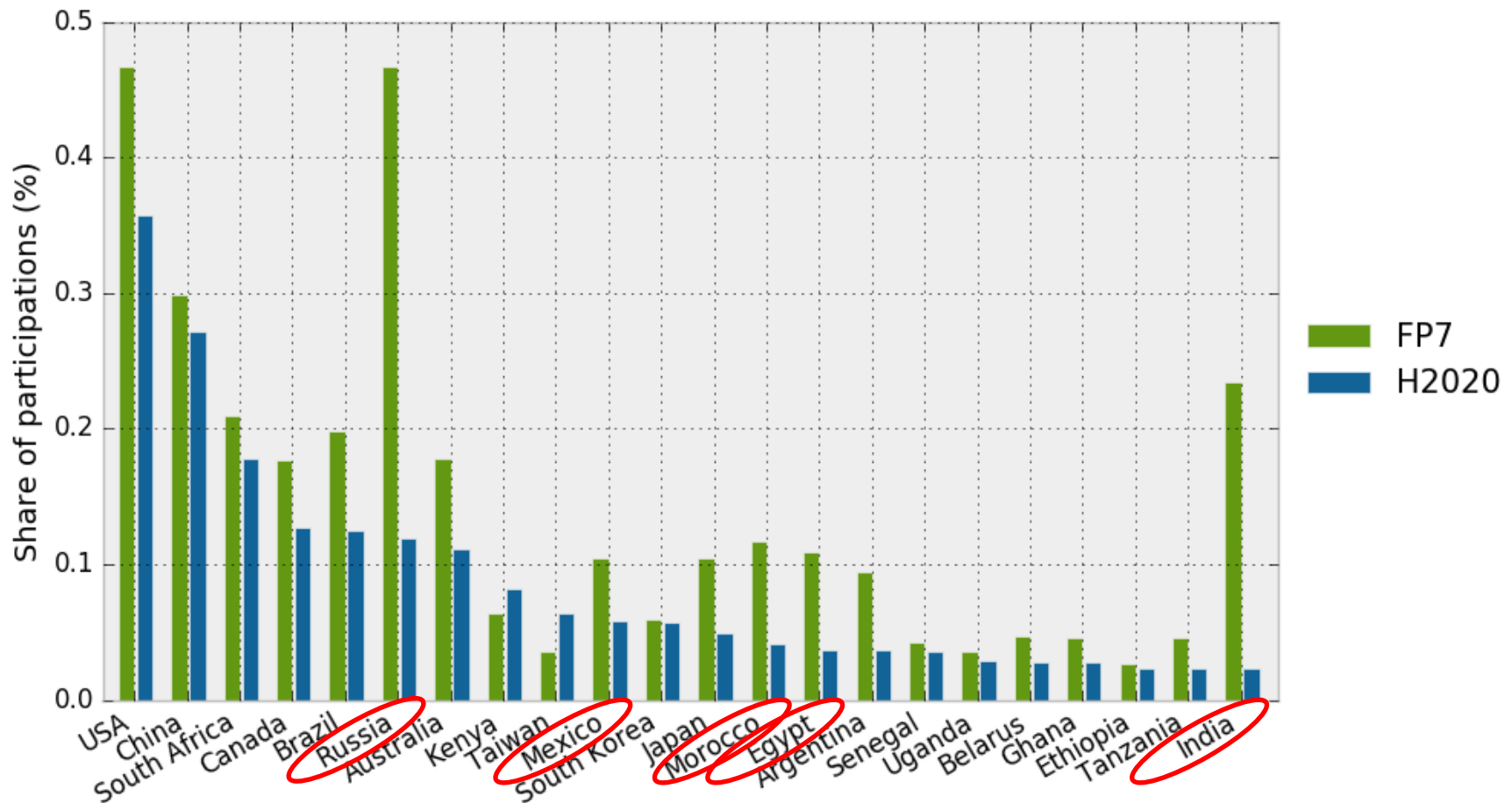
Participation share of third countries in collaborative projects





Most third countries participate less in Horizon 2020 projects than under FP7

Participation shares of most active third countries in collaborative projects of H2020 and FP7



Note: Signed collaborative projects. Participations of beneficiaries or third-parties.
Source: DG RTD - International Cooperation
Data: CORDA (JRC, EIT & art.185 not included), extraction date: 17/10/2017



International cooperation in Horizon 2020

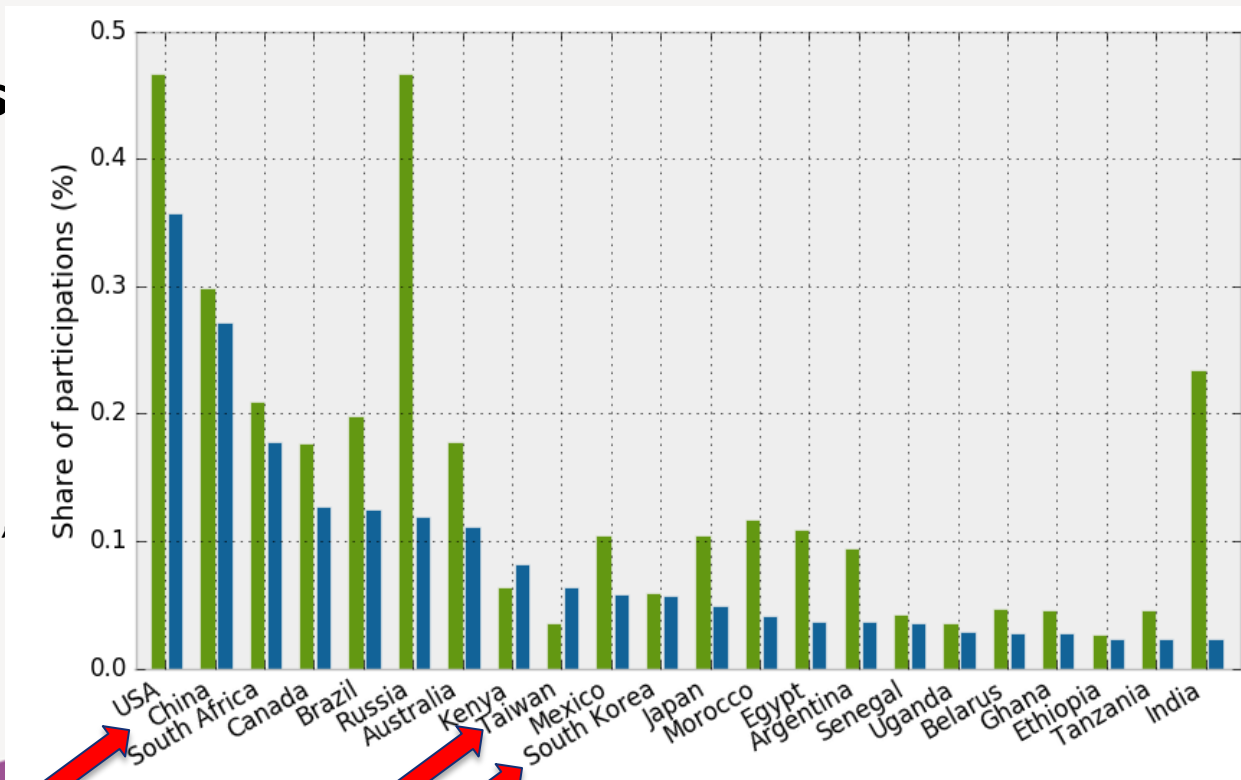
Lessons learnt

2. Targeted activities are important incentives to attract international engagement

- $\frac{3}{4}$ of international participation is attracted in only $\frac{1}{4}$ of topics (the 'Inter Coop' flagged)

3. Secured funding is an important incentive to attract international engagement

- When no H2020 funding, effective co-funding mechanisms are instrumental to support targeted actions

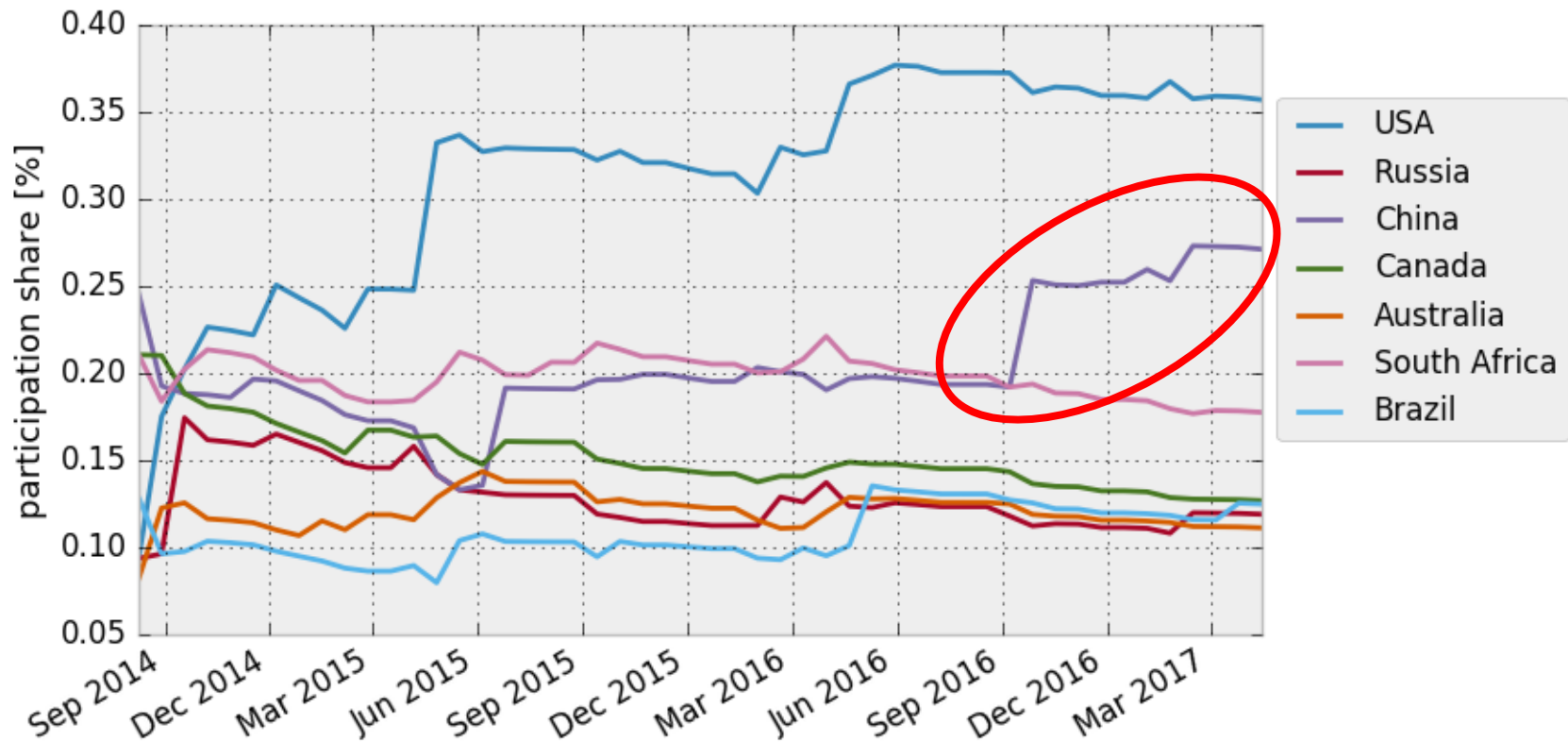




International cooperation in Horizon 2020

Lessons learnt: Secured funding is important incentive

Evolution of participations
of the most active non associated countries



Note: Signed collaborative projects of Horizon 2020. Data for beneficiaries and third-parties.
Each line shows the cumulative share of participations of a country within all H2020.
Source: DG RTD - International Cooperation
Data: CORDA (JRC, EIT & art.185 not included); extraction date: 17/10/2017



Further facts

- **Third-country participants are mostly universities and research organisations**

For-profit companies correspond to only 19% of third-country participations as compared to 36% overall

- **Innovation actions attract significantly less international participations than average**

Third-countries correspond to only 0.8% of participations in Innovation Actions as compared to 2.9% for Research and Innovation Actions and 3.7% for Coordination and Support Actions



Corrective measures

- **WP topics of sufficient scale & scope specifically devoted to international cooperation**
 - International cooperation flagship initiatives under WP 2018-2020
- **Co-funding mechanisms for increased number of countries and topics**
 - China, Japan, South Korea, Russia, India, Australia, Mexico, regions of Brazil and Canada
- **Refined communication strategy**
 - Service Facility to support international cooperation strategy
 - European R&I Centres



Horizon 2020 Work Programme 2018-20



Work Programme 2018-2020

Strategic objectives

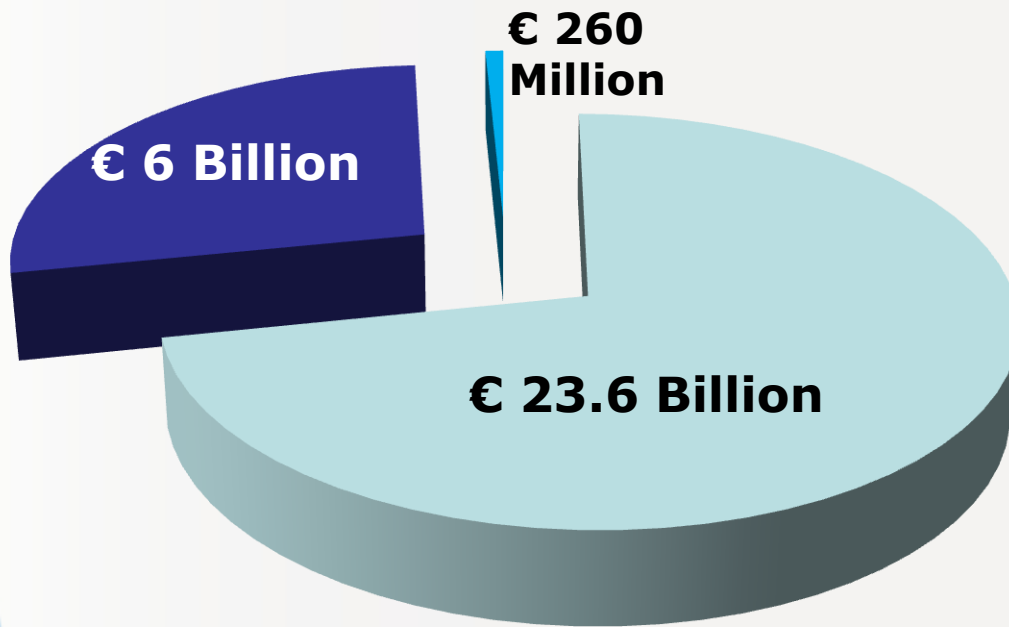
Provide for a coherent implementation of the **Horizon 2020 objectives** and the multiannual approach, taking account of the **Interim Evaluation and the first two work programmes** (for 2014-15 and 2016-17)

Enhance relevance and impact by delivering against the **EU policy priorities and three O's**

Prepare for a bridge in the last years of the programme to enable a **smooth transition to any successor to Horizon 2020**



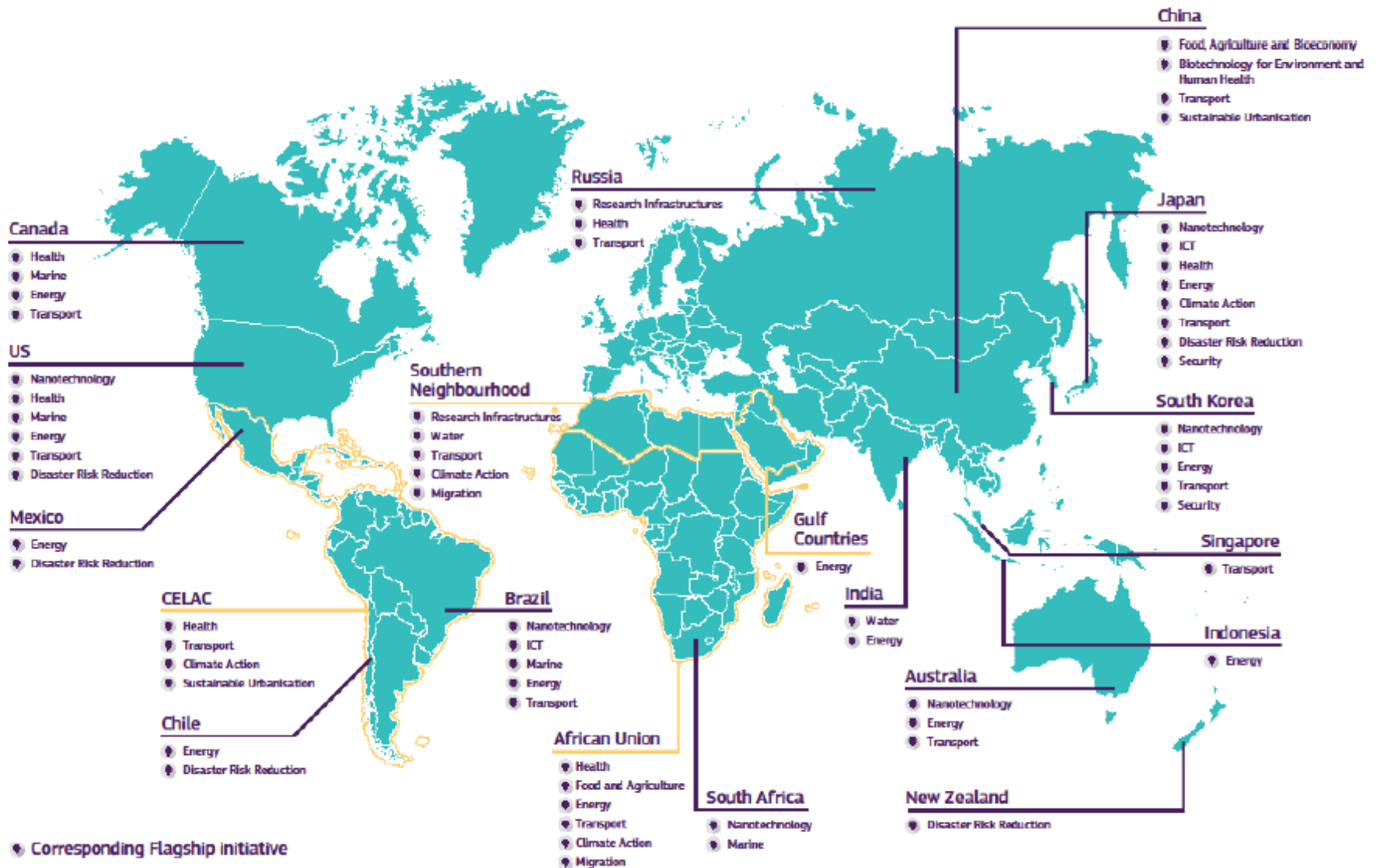
Work Programme 2018-2020: R & I investment of **€ 30 billion for 3 years**



- Main Horizon 2020 Work Programme (2018-2020)
- European Research Council (2018-2020)
- Euratom, including Fusion (2018)



International Cooperation Flagships of WP1820





International Cooperation Flagships of WP1820

Research Infrastructures

€ 33 million

Flagship	Indicative budget	Targeted geographies
Building on the output of the EU-CELAC RI Working Group	€ 1.5 million	CELAC, Brazil, Mexico
Cooperation with Russia	€ 25.5 million	Russia
SESAME beam-line	€ 6 million	SESAME countries



International Cooperation Flagships of WP1820

ICT

€ 52.2 million

Flagship	Indicative budget	Targeted geographies
EU-China 5G Collaboration	€ 6 million	China
EU-Japan joint call on advanced technologies, 5G & beyond	€ 6 million	Japan
EU-Korea joint call on Cloud, IoT and AI technologies & 5G	€ 6.2 million	South Korea
EU-Taiwan 5G collaboration	€ 4 million	Taiwan
Unconventional nanoelectronics	€ 30 million	JP, KR, TW, US



International Cooperation Flagships of WP1820

NMBP

€ 82 million

Flagship	Indicative budget	Targeted geographies
Environmental remediation & plastics bio-degradation	€ 30 million	China
Nanosafety	€ 52 million	US, KR, BR, CA, AU, CN, JP, ZA



International Cooperation Flagships of WP1820

Health (SC 1)

€ 75 million

Flagship	Indicative budget	Targeted geographies
Human data storage, integration & sharing to enable personalised medicine approaches	€ 40 million	Canada
EU-CELAC cooperation on cancer research	€ 25 million	CELAC
Research on HIV, tuberculosis and/or hepatitis C	€ 10 million	Russia



International Cooperation Flagships of WP1820

Food (SC 2)

€ 130.75 million

Flagship	Indicative budget	Targeted geographies
All Atlantic Ocean Research Alliance	€ 31 million	ZA, BR, countries bordering the Atlantic Ocean
EU-Africa Partnership on Food, Nutrition Security & Sustainable Development	€ 63.75 million	Africa
EU-China FAB initiative	€ 18 million	China
The Future of Seas and Oceans	€ 18 million	all



International Cooperation Flagships of WP1820

Energy (SC 3)

€ 118.5 million

Flagship	Indicative budget	Targeted geographies
Cooperation with Africa on renewable energies	€ 16 million	Africa
Mission Innovation	€ 102.5 million	Mission Innovation countries, China, US, Gulf



International Cooperation Flagships of WP1820

Transport (SC 4)

€ 156 million

Flagship	Indicative budget	Targeted geographies
Aviation	€ 71 million	CN, CELAC, Asia, US, JP, CA, RU, BR, AU
Integrated multimodal, low-emission freight transport systems and logistics	€ 14 million	US, JP, CA, CN, Latin America
Road automation	€ 53 million	US, JP, KR, SG, AU
Urban mobility and sustainable electrification	€ 18 million	Asia, CELAC, Africa, China



International Cooperation Flagships of WP1820

Environment/Climate (SC 5)

€ 218.85 million

Flagship	Indicative budget	Targeted geographies
Climate change	€ 147 million	Africa, CELAC, US, CA, CN, JP, RU, KR, NZ, IN, SG
Cultural heritage innovation & diplomacy	€ 3.85 million	ENP
Earthquake forecasting	€ 18 million	US, NZ, JP, CL, MX
EU-India water cooperation	€ 15 million	India
Development of climate policies	€ 25 million	all
Sustainable urbanisation	€ 20 million	CN, CELAC



International Cooperation Flagships of WP1820

EU in a changing world (SC 6)

€ 24 million

Flagship	Indicative budget	Targeted geographies
Addressing the challenge of forced displacement	€ 9 million	Africa, Middle East
Global Governance	€ 6 million	all
Drivers and contexts of violent extremism	€ 9 million	MENA region & Balkans



International Cooperation Flagships of WP1820

Security (SC 7)

€ 59 million

Flagship	Indicative budget	Targeted geographies
Human factors, and social, societal and organisational aspects for disaster-resilient societies	€ 10 million	Japan
Technologies for first responders	€ 49 million	Japan, South Korea



International Cooperation Flagships of WP1820 example

Food, agriculture & biotechnology cooperation with China

- 2013 letter of intent between EC and CAAS
- Priorities identified by EU-China Task Force on FAB
- Focus on food safety controls, sustainable soils and land management, organic fertilisers from biogas digestate
- Implementation through co-funding
- Horizon 2020 (AGRI)

WP2014-2015: 17 MEUR

WP2016-2017: 20 MEUR

WP2018-2020: 18 MEUR



International Cooperation Flagships of WP1820 example

Framework conditions

WP topics specifically devoted to international cooperation and Co-funding mechanism

- China to provide financial support based on their own rules to Chinese entities in projects selected under H2020;

Reciprocity in access to STI funding programme

- Agreement to *"ensure reciprocal access to respective research and innovation funding programmes through the promotion of participation rules based on equal treatment, the regular exchange of data on actual participation and the provision of timely and clear information to participants"*

Open Science

- The two sides will endeavour to promote open science and to exchange best practices in open access to publications and research data, with open access as the default option for research they fund.

• IPR, Standards, & Public Procurement

- Addressed in separate dialogues by DG TRADE and DG GROW. ICD to complement and reinforce EU policy line. Both sides committed to a solid and comprehensive IP framework based on fairness and transparency.

• Visa for S&T staff

- Need for more flexibility in the Visa policy, to facilitate international mobility for scientists exchange at all levels, including experts as well as young talents.



Prospects for FP9



Main questions

- The Impact Assessment for the future Programme will consider several ways of stimulating international cooperation in order to make sure that European researchers work with the best and most appropriate actors worldwide.
- Several issues are being re-considered such as:
 - ✓ How can the FP create incentives for effective international cooperation?
 - ✓ Should the modalities for funding international partners be adjusted?
 - ✓ How to make openness to the world and industrial competitiveness mutually reinforcing and create win-wins?
- The Commission will also reconsider the criteria and rules for Associated Countries based on excellence in R&I.



Commissioner's views: speech at the Royal Society of Edinburgh (16/10/2017)

- "... I would like that new programme, FP9, ... become the most open international research programme in the world ..."
- "... One of the ... recommendations in the Lamy report is 'to make international cooperation a trademark of EU research and innovation'. I couldn't agree more. But we need to find new ways to achieve this. To make it easier for scientists to collaborate internationally. ..."
- "... Earlier this month Nature published an article looking at the effect of open research systems. Systems that encourage international collaboration. The authors found a direct link between being open and producing high impact research. They found that the EU research impact has been rising. And they link this to Horizon 2020's aim of being "open to the world". ..."
- "... The next Framework Programme must be more international. To be more precise:
 - It should support greater international mobility of scientists.
 - It should enable more collaborative projects with non-European partners
 - It should increase support to research and innovation to address global challenges. ..."
- "... I hope that the next framework programme will be larger. More international. More open. And more ambitious. What is certain is that excellence will remain at its core. ..."



Thanks for your attention