



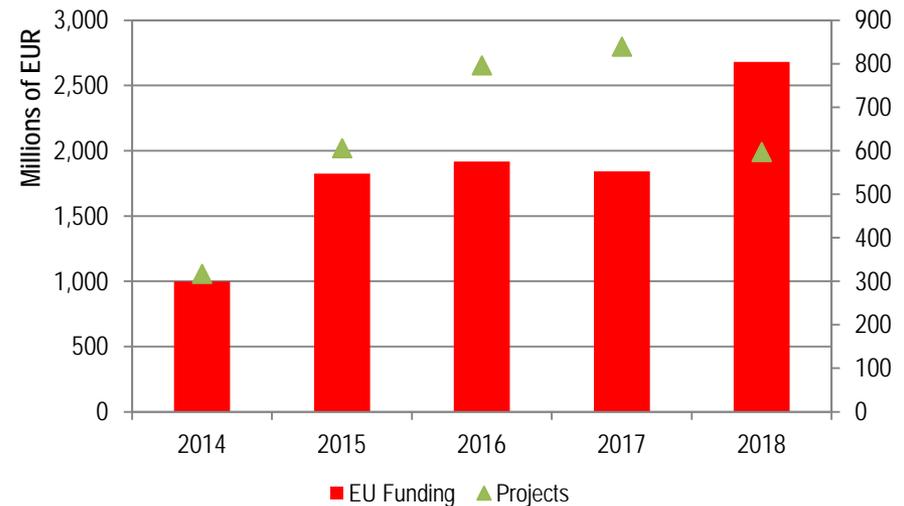
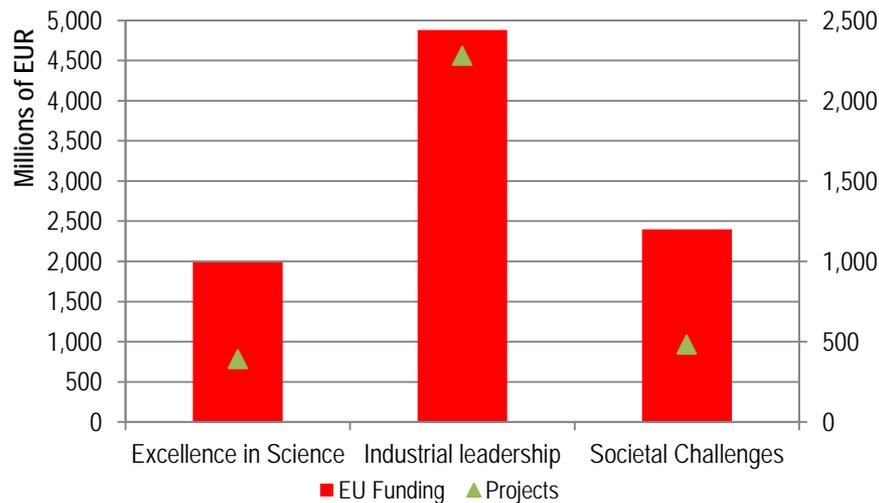
Research and Innovation: ICT projects in Horizon 2020

After five years of implementation, **Horizon 2020** has allocated approximately **EUR 9.3 billion** in EU funding to **more than 3,000 projects in ICT-related areas.**

The *Industrial Leadership* pillar covers R&I activities on generic ICT technologies driven by either industrial roadmaps or bottom-up processes. It accounts for about EUR 4.9 billion, or more than half of all funding for ICT-related projects. EUR 4.2 billion (86 % of the total) correspond to its LEIT ICT component. Industrial Leadership also accounts for about 2,280 projects (or 72 % of the total), of which more than half from LEIT ICT.

The *Excellent Science* pillar (e-infrastructures and Future & Emerging Technologies, or FET) supports research to uncover radically new technological possibilities and ICT contributions. Areas covered include high performance computing, quantum technologies and brain science. It accounts for about 20% of both funding (EUR 2 billion) and participations and 12 % of projects (483).

The *Societal Challenges* pillar addresses application-driven R&I from a multi-disciplinary perspective. Projects to some extent involving ICT are financed in all of the seven societal challenges, particularly health and wellbeing, clean and efficient energy, smart transport, inclusive and innovative societies and security and freedom. This pillar accounts for about 26 % of funding (EUR 2.4 billion), 15 % of projects and 28 % of participations.



More than 10,500 organisations, including an increasing number of private-sector companies, have participated in ICT-related projects in Horizon 2020 between 2014 and 2018.

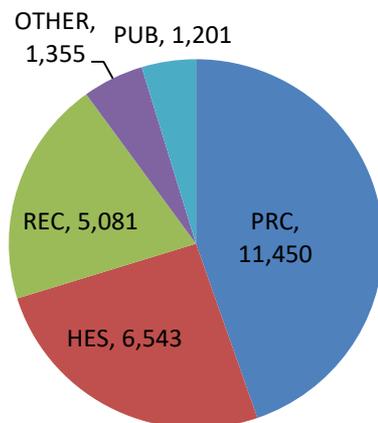
About 10,500 organisations have participated in ICT-related projects during the first five years of H2020. Business involvement has continued to rise, with private for-profit companies (PRC) accounting for about 40 % of the budget and 45 % of participations (compared with 35 % and 33 %, respectively, under FP7).

Secondary and higher education establishments (HES) and research organisations (REC), taken together, account for about 46 % and more than half of total funding. This represents a lower share than in FP7, which is partly explained by the higher involvement of the private sector.

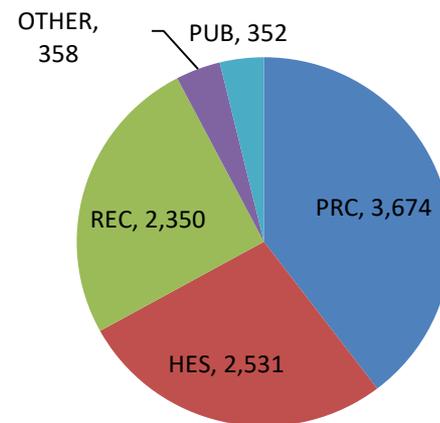
Public organisations other than those involved in research and education account for a relatively small share of both funding and participations (about 5 % and 4 % respectively), similar to the 'other' organisations category.

HES and REC are much more likely to be involved in a number of projects (roughly 5 to 6 participations on average) than their private sector counterparts (fewer than 2). This is partly explained by the fact that there are fewer education establishments or research organisations than companies. (which in turn affects the likelihood of engaging in multiple projects).

Participations, by type of organisation, cumulated values 2014-2018



EU funding, by type of organisation, cumulated values 2014-2018 (in EUR m)



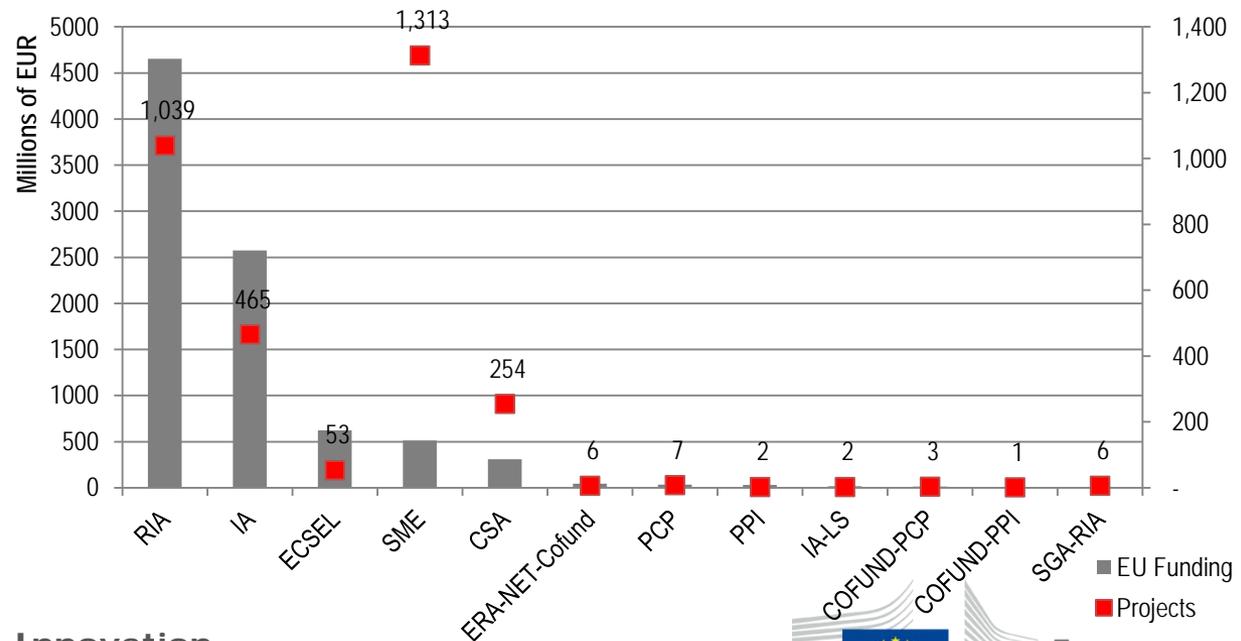
Research and innovation actions account for the bulk of funding in ICT-related topics in Horizon 2020. The **SME instrument** accounts for the largest number of projects, although these typically receive smaller amounts.

Research and innovation actions (RIA) aim to uncover new knowledge and/or explore the feasibility of a new or improved technology, products, processes, services or solutions. They account for the largest share of funding overall as well as in the Industrial Leadership and Excellent Science pillars. They have received approximately EUR 4.6 billion between 2014 and 2018. Innovation actions (IA) are the second most important instrument in terms of funding (EUR 2.6 billion) and the preferred action type under the Societal Challenges pillar. They aim to produce plans and arrangements or designs, and may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. SME instrument projects account for a large share of projects but, given their relatively small size, a much smaller share of funding.

Coordination and support actions (CSA) involve accompanying measures such as standardisation, dissemination, awareness-raising and communication. They received EUR 310 million and accounted for over 250 projects between 2014 and 2018.

Other action types, such as pre-commercial procurement (PCP) actions, public procurement for innovation (PPI) actions and European research area (ERA-NET) actions have a more limited scope of application. They therefore account for a relatively small share of both projects and funding.

EU Funding and projects by type of action, cumulated values 2014-2018



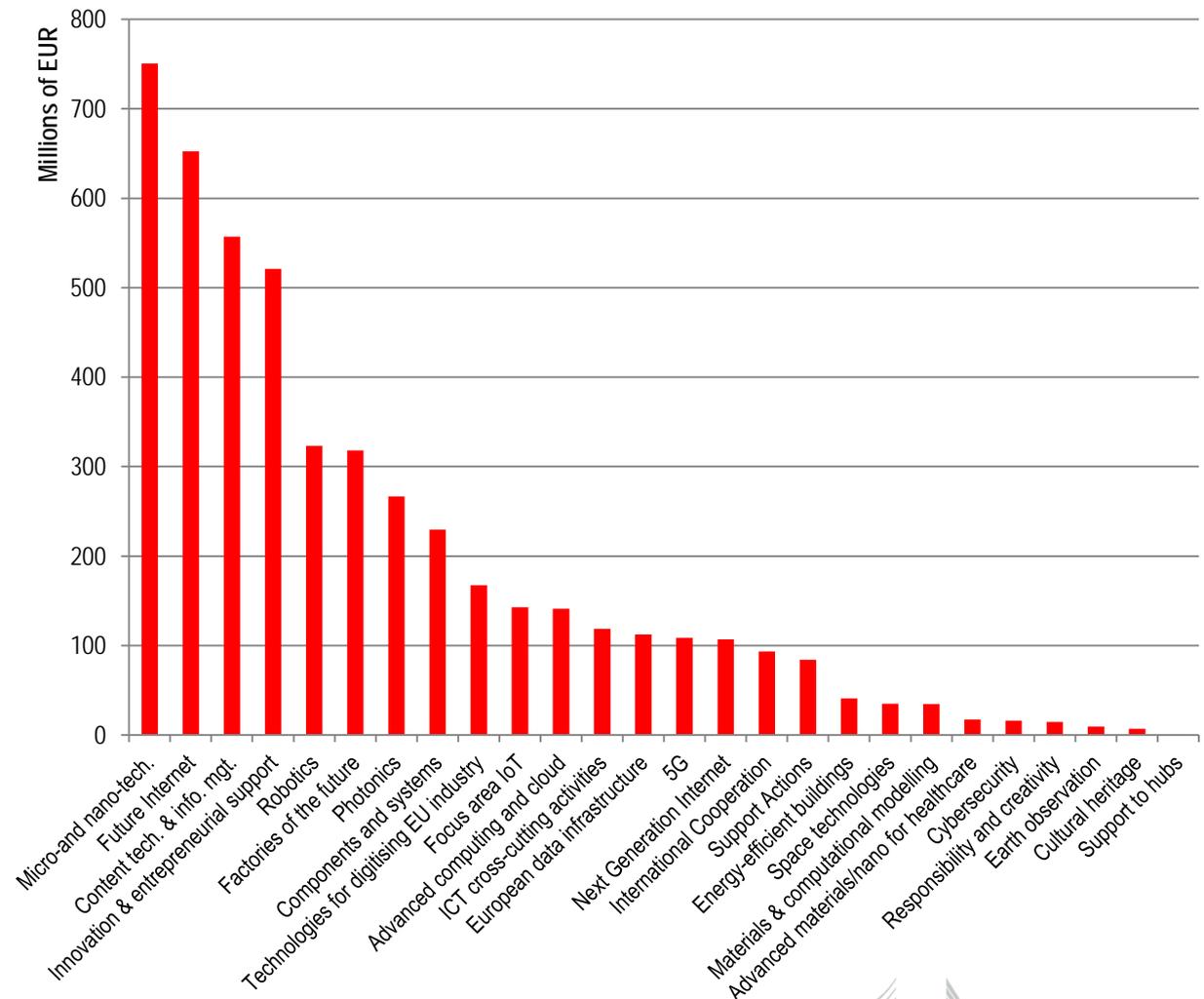
Micro- and nano-electronics, future networks and internet and content technologies continue to attract a sizeable share of both funding and participants, as do **e-Infrastructures and FET**. Many ICT-relevant projects are also financed within the **Societal Challenges pillar**.

Within *Industrial Leadership*, projects in the areas of micro- and nano-electronic technologies (including the ECSEL joint undertaking on electronic components and systems) and future/next generation internet and 5G (taken together, including the 5G cPPP) have received the largest funding amounts (nearly EUR 800 million each). Content technologies and information management area (including funding for the Big Data cPPP) received nearly EUR 560 million.

Within *Excellent Science*, e-Infrastructures are a major area of work (EUR 520 million), as are the different components of Future and Emerging Technologies (FET): FET Open and the FET flagships received approximately EUR 530 million each; FET proactive, nearly EUR 400 million.

Many ICT-relevant projects are also financed under *Societal Challenges*, notably in the areas of smart transport, health and wellbeing and secure societies, which encompasses a number of relevant cybersecurity projects.

EU funding, Industrial Leadership pillar, by area, cumulated values 2014-2018

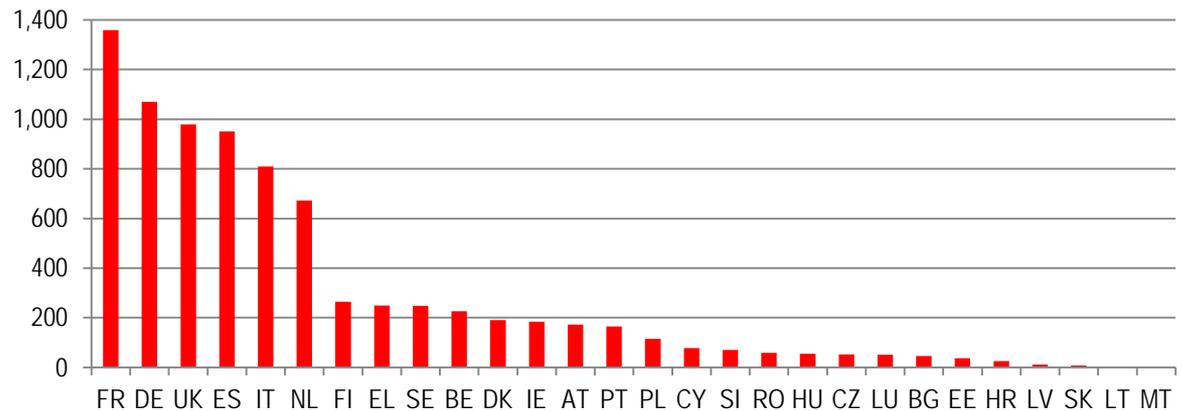


In absolute terms, **France, Germany** and the **United Kingdom** are the biggest recipients of EU funding. **Cyprus, Greece and Slovenia** receive the highest levels of funding relative to the size of their ICT sector.

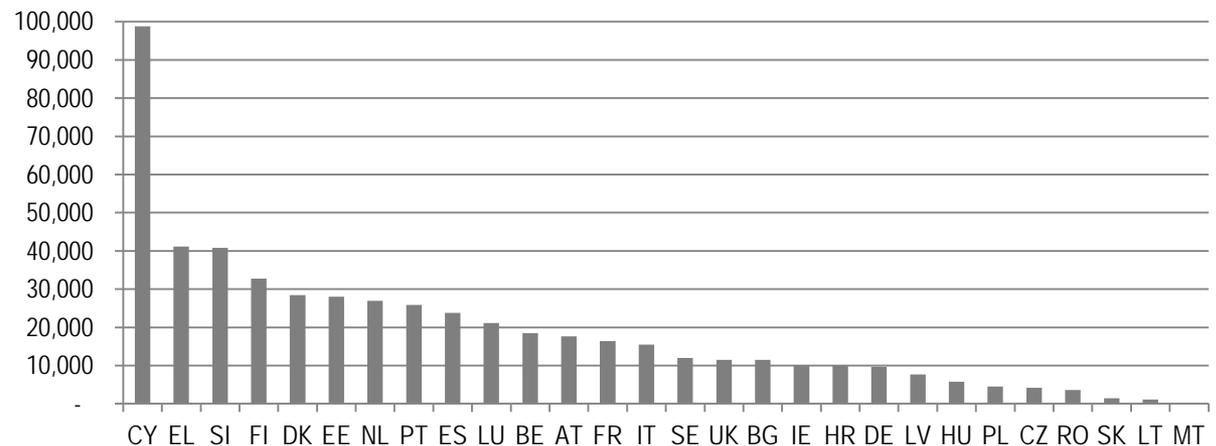
In absolute terms, the EU's largest economies are the main recipients of EU funding for ICT-related projects under Horizon 2020. France, Germany, the United Kingdom, Spain and Italy alone accounted for about 63 % of total EU funding and a similar share of participations in the first five years of implementation. These countries also lead in terms of the number of projects coordinated. When considering the recipient countries' ICT sector value added, Cyprus, Greece and Slovenia are among the Member States having received the highest amounts of funding in proportional terms.

In all Member States, the largest share of funding has gone to projects from the Industrial Leadership pillar, particularly LEIT ICT. There are relatively large variations across Member States with regard to the amount of funding having come from the other parts of the programme.

EU funding by Member State, cumulated values, 2014-2018, in EUR million



EU funding by Member State, cumulated values, 2014-2018 in EUR per million ICT VA



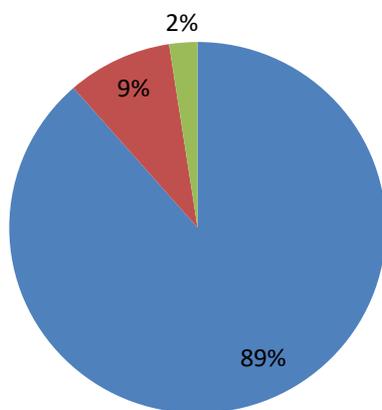
There is significant involvement of international participants in ICT-related projects in Horizon 2020: between 2014 and 2018, **11 % of funding went to non-EU countries**, primarily associated countries with a strong R&I sector.

Although beneficiaries from the EU Member States account for the vast majority of funding and projects, Horizon 2020 projects (including ICT-related) are becoming increasingly attractive for international participants, who contribute valuable knowledge and expertise in return.

This is illustrated by the fact that, between 2014 and 2018, organisations from non-EU countries received approximately EUR 1 billion in funding (about 11 % of the total). These figures do not capture EU affiliates of non-EU companies.

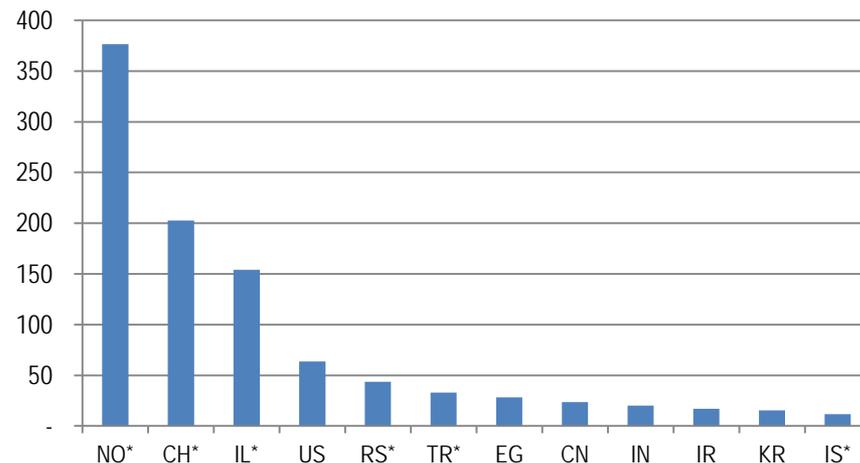
Close to 80 % of funding for non-EU beneficiaries went to associated countries. Research-oriented players such as Norway, Switzerland and Israel are the largest recipients within this group. The remainder of the budget went to other non-EU countries.

EU funding of Horizon 2020 ICT-related projects 2014-2018, by country type (in % of total)



■ EU MS ■ Associated ■ Other

EU funding to selected non-EU countries (having received at least EUR 10 million), in EUR million, 2014-2018



* = Associated country

Notes

Coverage:

- This report considers projects supported through Horizon 2020 funding in ICT-related topics, as defined in the Commission's "Guide to ICT-related activities"*.
- To ensure full consistency with the Guide, the criteria for the inclusion of projects for analytical purposes have been slightly updated compared with previous editions. As this has broadened the scope of the analysis, the results presented here are not fully comparable with those from previous years. In the same vein, the categories and structure used correspond to those in the Guide (i.e. for the sake of clarity, SMEInst topics are included under Industrial Leadership).
- The Fast Track to innovation pilot and parts of the European Innovation Council pilot are excluded from the analysis.
- The report considers projects signed as of 31 December 2018. Only projects for which the signature year was known at the time of writing are taken into account.

Acronyms for types of organisations:

- PRC: Private for profit companies
- SME: small and medium-sized enterprises
- PUB: public bodies (excluding research and education)
- REC: research organisations
- HES: secondary and higher education establishments
- OTH: other entities

The following country groupings are used for the chart on international participation:

- Associated countries (art. 7 of the H2020 Regulation): Iceland, Norway, Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Turkey, Israel, Moldova, Switzerland (partial association: Excellent Science Pillar only), Faroe Islands.
- Other: all other non-EU countries.

Source: the report is based on the Commission's "Guide to ICT-related activities" as well as on CORDA data elaborated by DG CONNECT. The source of data for ICT Value Added is PREDICT.

*For further details: <https://ec.europa.eu/digital-single-market/en/news/guide-ict-related-activities-horizon-2020>;
<https://ec.europa.eu/digital-single-market/en/news/guide-ict-related-activities-horizon-2020-work-programme-2018-20>