European Commission

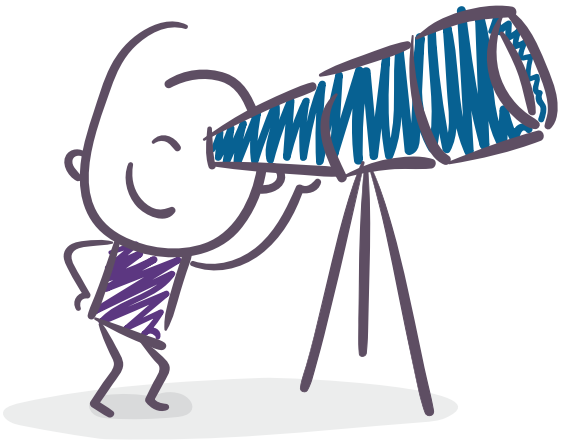
EUROPEAN RESEARCH & INNOVATION
KEY FACTS & FIGURES

Historically, Europe has been at the forefront of many of the most ground-breaking, world-changing scientific, technological and medical advances, including the printing press, the calculus, general relativity, pasteurisation, antibiotics, vaccinations, the discovery of atomic structure, quantum theory and modern optics.

Today the European Union remains a scientific powerhouse and produces almost one third of the world's best science[1] despite having just 7% of the world's population. Successive EU R&I Framework Programmes have supported the tradition of European leadership in research by stimulating the entire European science, research and innovation system.

With a total budget of nearly €80 billion over the period 2014–2020, the current programme, Horizon 2020, is the largest publicly funded, cross-border, cross-disciplinary and cross-sectoral research and innovation scheme in the world. Since 2014, Horizon 2020 has funded more than 1.5 million one-to-one collaborations between participants from 149 countries.[2] These collaborations generate network and spillover effects. As a result, EU-funded researchers are twice as likely to be cited by other scientists, collaborate with twice as many partners and are 40% more likely than other researchers to turn their research into potential products or services.[3]

R&I Framework Programmes provide vital support to today's top scientists, including at least 17 Nobel Prize laureates[4], and innovators who are addressing key societal concerns, delivering major scientific breakthroughs and building the technology of the future. Examples are multiple: new Ebola vaccines, better breast cancer treatments, rare disease therapies, reduction of food waste thanks to nano-packaging, the discovery of planets outside our solar system, the Higgs boson and gravitational waves, the first image of a black hole, the development of bombproof technologies making passenger aircraft safer, re-entry proof devices to guide falling satellites safely into the seas and the use of graphene to make 'never-ending' batteries.



1 32% of the top 1% of highly cited scientific publications in 2014, p. 158 Science, Research and Innovation Performance of the EU, 2018.
2 From Horizon 2020 to Horizon Europe Monitoring Flash # 2.1 Dynamic Network Analysis.
3 EU-funded peer-reviewed research publications are cited more than twice the world average; EU-funded R&I teams had, on average, 13.3 collaborations vs. 6 collaborations in the control group; EU-funded R&I teams are around 40% more likely to be granted patents or patent applications compared with non-funded teams. Annex 4, Lab-Fab-App: Investing in the European future we want – Report of the independent High Level Group on maximising the impact of EU Research and Innovation Programmes.
4 At least 17 Nobel Prize winners got support from Horizon 2020 prior to or after their award. Horizon 2020 Interim Evaluation, p 88-89

Furthermore, massive investments in R&I play a large role in making Europe the world leader in managing the impact of climate change, arguably the most pressing global challenge of our time, and in creating a zero-waste circular economy. For example, EU R&I funding has supported these initiatives:

- A fully renewable and self-sufficient energy system is being designed and tested on a Greek island to provide a global blueprint for smart microgrids;[5]
- Faster, greener aircraft[6] and commercial hybrid aircraft[7] are in development;
- Zero-emission busses are transporting passengers on European streets. The fleet runs on hydrogen fuel cell technology and the only emissions are harmless water vapour;[8]
- A fully electric, zero-emissions ferry is being built and tested to carry passengers and vehicles to the Danish island of Aeroe;[9]
- A fully biodegradable bioplastic with no significant aquatic toxicity, made from waste milk protein that can be used for packaging detergent;[10] and
- Energy positive sewage treatment plants that use novel processes to demonstrate that sewage plants can be a source, rather than a consumer, of energy.[11]

Last but not least, EU-funded R&I generates a sizeable economic impact: estimated GDP gains from Horizon 2020 will amount to €400 to €600 billion by 2030. In addition, investments in new technologies, leveraged by EU R&I funding, combined with other public and private investment in Europe, have the potential to create an enormous number of new jobs. For instance, by 2030, renewable energy developments are expected to create 900,000 jobs, while bio-based industries could add around one million jobs[12].

[5] https://www.tiloshorizon.eu/
[6] https://www.cleansky.eu/
[7] https://mahepa.eu/
[8] https://www.fuelcellbuses.eu/
[9] http://e-ferryproject.eu/
[10] http://lactips.com/en/about-lactips/
[11] http://powerstep.eu/story
[12] A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment, 2018 (from EuropaBio Report, Jobs and growth generated by industrial biotechnology in Europe, 2016)