



RESEARCH AND INNOVATION FUNDING: MAKING A REAL DIFFERENCE

HORIZON 2020 IS THE BIGGEST EU RESEARCH AND INNOVATION PROGRAMME EVER AND ONE OF THE LARGEST WORLDWIDE.



VERY ATTRACTIVE

High number of eligible proposals

76 427

(2014-2015)

19 038

proposals for the SME instrument (2014-2015)



SUPPORT FOR THE PRIVATE SECTOR

23.7% – SMEs overall participation in projects (2015)



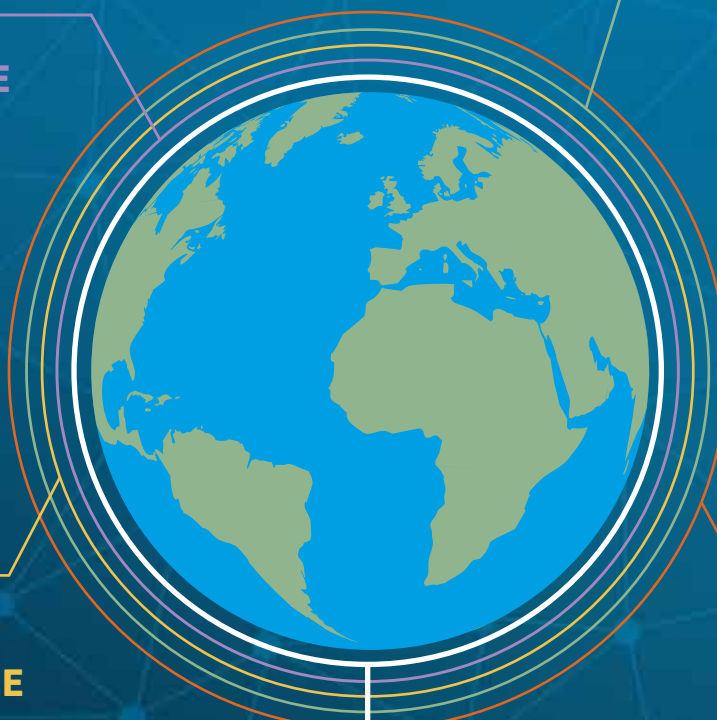
CLIMATE ACTION – A KEY PRIORITY

27% minimum level of budget to be invested for climate-related research and innovation (2015)



OPEN TO THE WORLD

22% of the budget on international cooperation topics (2015)



€ 77 BILLION
Budget 2014-2020

An initial assessment of the funding period 2014-2015 shows big improvements in the management of Horizon 2020 compared to its predecessor programme (e.g. 33% shorter time-to-grant).

AN INVESTMENT IN OUR FUTURE

Investment in Research and Innovation is essential for economic development and societal progress. To this end, Horizon 2020, the Framework Programme for Research and Innovation 2014-2020, aims at maximising Union added value and impact, focusing on objectives and activities that cannot be efficiently realised by Member States acting alone. With a budget of €77 billion over the period 2014-20, Horizon 2020 invests in excellent projects and people anywhere and in any way that delivers innovation from the lab to the market much faster than anyone dreamed possible in Europe.

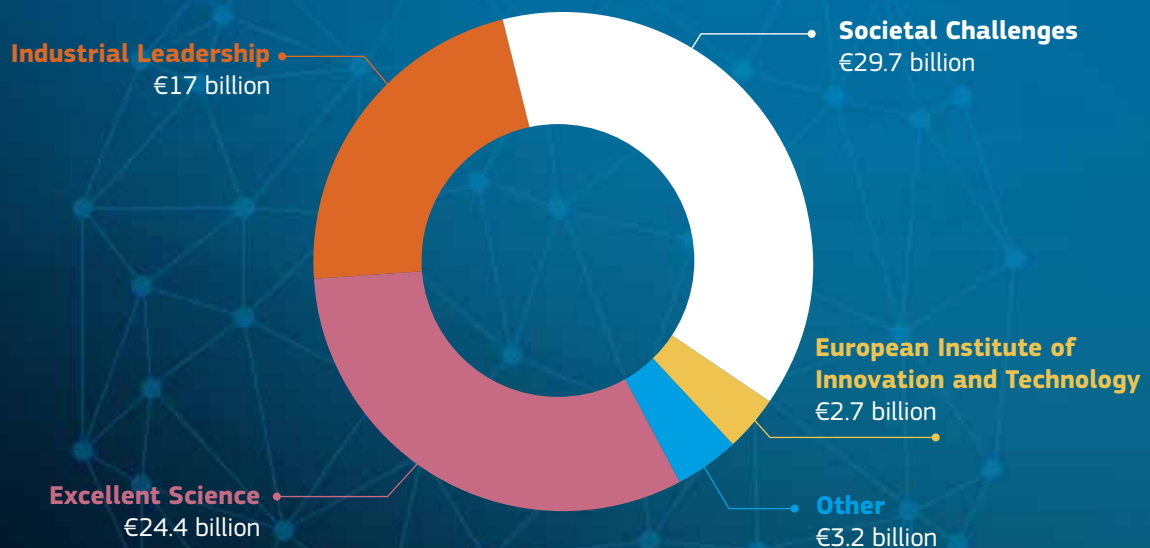
BENEFITS:

- ▶ promotes Europe's scientific and technological excellence
- ▶ extends the frontiers of human knowledge
- ▶ boosts the EU's economic competitiveness
- ▶ addresses societal challenges
- ▶ ensures Europe produces world-class science
- ▶ removes barriers to innovation, including between the public and private sector.

More information:

<https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>

HORIZON 2020 BUDGET (€77 billion)



+ €1.6 billion for Euratom

2014-2015

PARTICIPANTS

Total
13 748

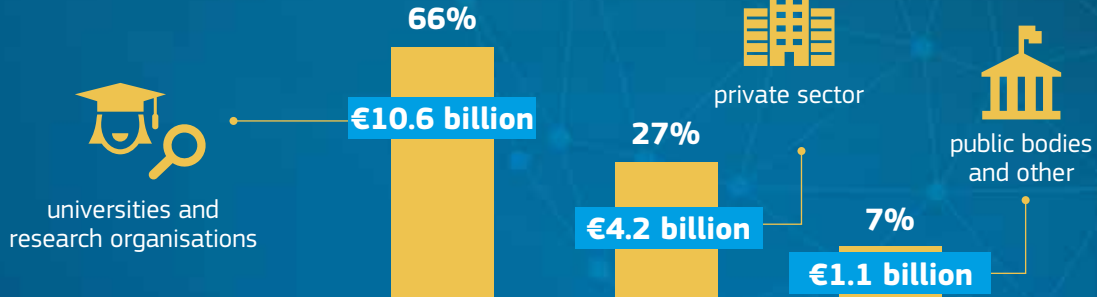


OPEN TO THE WORLD



22% of budget
allocated to international
cooperation topics

FUNDING



HORIZON 2020 IS OPEN TO ANYONE, ANYWHERE

The €1.1 billion invested in the Access to Risk Finance programme in 2014 and 2015 has managed to mobilise investments for an amount of €17.2 billion through debt financing for research and innovation.

EASY TO PARTICIPATE

- ▶ Individuals
- ▶ Universities
- ▶ Public bodies
- ▶ Private sector
- ▶ International organisations
- ▶ Research Organisations
- ▶ Applicants from associated countries

HORIZON 2020 IS A VERY ATTRACTIVE PROGRAMME

76 427 eligible proposals, of which around a quarter are from SME Instrument (2014-2015).

9 087 signed grants (2014-2015)

37 086 participations (2014-2015)

There is also a promising increase in collaboration with industry and SMEs, which fosters a better link between research and commercialisation.

More information:

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

SHAPING THE FUTURE

Horizon 2020 is a great opportunity to shape our future through research and innovation. The programme's structure focuses on the EU's long-term priorities and most pressing challenges through three pillars.

FOCUSING ON THREE PRIORITIES



EXCELLENT SCIENCE

produce frontier knowledge and develop Europe's human resources and infrastructures.



INDUSTRIAL LEADERSHIP

speed up the development of innovations and help innovative European SMEs grow into world-leading companies.



SEVEN SOCIETAL CHALLENGES

turn challenges into innovation opportunities in the fields of: health; food; energy; transport; resource efficiency and climate change; inclusive, innovative and reflective European societies; secure European societies.

HORIZON 2020 IS FLEXIBLE

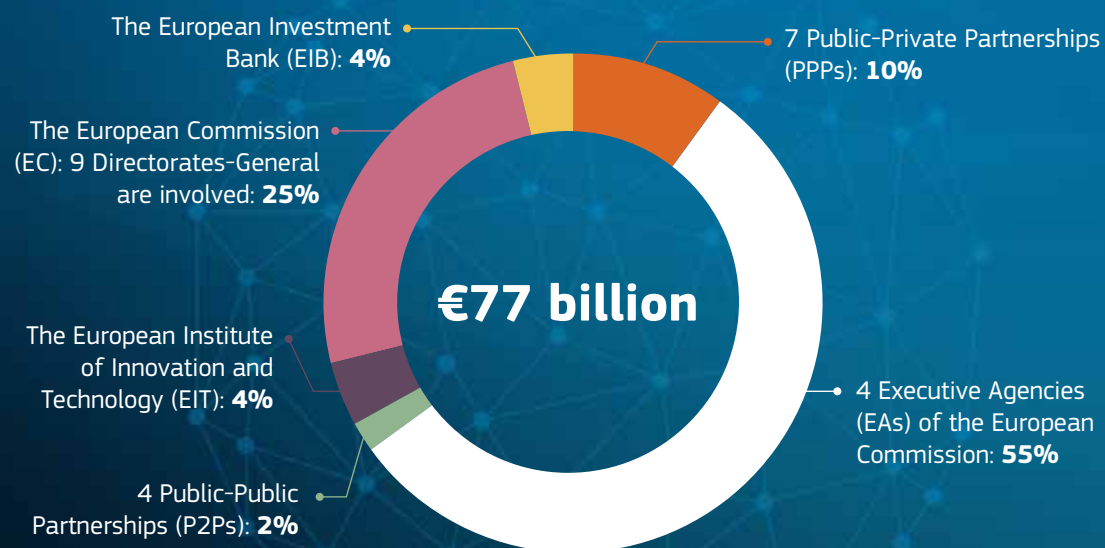
Rapid changes and emerging challenges require flexible responses from the EU and even changes of approach and priorities. Despite the fact the Horizon 2020 is a multi-annual programme it remains flexible enough to respond to emerging challenges. For example, resources were quickly redirected for the search for an Ebola vaccine following the outbreak; new priorities were defined for research on migration.

More information:

<http://ec.europa.eu/programmes/horizon2020/en/h2020-sections>

<https://ec.europa.eu/programmes/horizon2020/en/h2020-section/euratom>

HORIZON 2020 BUDGET SHARE BY IMPLEMENTING BODY



+ €1.6 billion for Euratom:
Nuclear research (safety and security) and training activities

KEY PERFORMANCE INDICATORS

OBJECTIVES

KEY PERFORMANCE INDICATORS FOR HORIZON 2020

HOW IS SUCCESS MEASURED?

To make sure every euro of the Commission has impacted reporting...



Share of publications from ERC-funded projects in the top 1% highly cited per field of science

EUROPEAN RESEARCH COUNCIL

FUTURE AND EMERGING TECHNOLOGIES

MARIE SKŁODOWSKA-CURIE ACTIONS

RESEARCH INFRASTRUCTURES

EUROPE'S INDUSTRIAL LEADERSHIP

ACCESS TO RISK FINANCE FOR INVESTING IN RESEARCH & INNOVATION



Publications in peer-reviewed high-impact journals



Patent applications and patents awarded in future and emerging technologies



Cross-sector and cross-border circulation of researchers, including Ph.D. candidates



Number of researchers with access to research infrastructures through EU support



Number of patent applications and patents awarded



Share of firms introducing innovations new to a company or the market



Number of joint public-private publications



Total investments via debt financing and venture capital investments



Number of organisations funded and amount of private funds leveraged

Key Performance Indicators help the Commission to track progress towards Horizon 2020's 12 objectives. The main benefits include increased accountability and transparency. The Performance framework provides EU decision makers and citizens with a clear picture of the progress towards expected results to be achieved with the money invested at the EU level.

PERFORMANCE INDICATORS HORIZON 2020

WHAT IS MEASURED?

How is money spent effectively, and how has it produced a performance mechanism.

INNOVATION
IN SMES

SEVEN SOCIETAL
CHALLENGES

SPREADING
EXCELLENCE
AND WIDENING
PARTICIPATION

SCIENCE WITH
AND FOR SOCIETY

NON-NUCLEAR
DIRECT ACTIONS
OF THE JOINT
RESEARCH CENTRE

THE EUROPEAN
INSTITUTE OF
INNOVATION AND
TECHNOLOGY

Organisations from universities, business and research integrated in knowledge and innovation communities



Collaboration inside the knowledge triangle leading to the development of innovative products, services and processes



Number of occurrences of tangible specific impacts on European policies

Number of peer reviewed publications in high-impact journals



Share of research organisations implementing actions to promote responsible research and innovation



Evolution of publications in high-impact journals



Publications in peer-reviewed high-impact journals



Patent applications and patents awarded

Number of prototypes and testing activities

Number of joint public-private publications



Share of SMEs introducing new innovations



Growth and job creation in participating SMEs



More information:

http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/fp/h2020-eu-establact_en.pdf

http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/sp/h2020-sp_en.pdf

HOW WELL HAS HORIZON 2020 PERFORMED SO FAR?

It takes time for research and innovation to produce significant results. Even so, an initial assessment of the funding period 2014-2015 shows that the Horizon 2020 budget is being implemented well.

EXAMPLES



18 000 researchers (of which 7 000 PhD candidates) benefited from Horizon 2020 funding through **Marie Skłodowska-Curie** Actions – meeting the set target.

23.7 % of participants in the field of ‘Leadership in enabling and industrial technologies’ and in ‘Societal challenges’ are **SMEs** – well above the 20% target.



92.3 % of the funding for the energy societal challenge has gone to research in **renewable energy**, end-user energy-efficiency, smart grids and energy storage – more than the 85 % target defined for research related to non-fossil fuel.

27 % of the total Horizon 2020 budget (2015) went towards helping deliver on the **EU’s climate objectives** – climate action is a key priority for the Commission, but the ambitious target of 35% is not yet reached.



EU FUNDING AT WORK

Here are a selection of research and innovation projects where Horizon 2020 is bringing concrete benefits to Europe and its citizens.

A MAJOR CONTRIBUTION TO ERADICATING EBOLA

Horizon 2020 and Europe's pharmaceutical industry invested about EUR 300 million to speed up vaccine development and treatments for the deadly disease. Project examples:

<http://ec.europa.eu/research/health/index.cfm?pg=area&areaname=ebola-projects>

EU-AFRICA: INCREASED COOPERATION IN RESEARCH AND INNOVATION

It will enhance the coordination of Research and Innovation (R&I) programmes relevant to food and nutrition security in Europe and Africa. The EC has launched an Eranet cofund of 10 million euros in Horizon 2020 to achieve this. European and African countries are expected to contribute with around 20 million euros.

<http://au.int>

NEXT GENERATION OF INTERNET

The METIS-II project develops the overall 5G radio access network design and to provide the technical enablers needed for an efficient integration and use of the various 5G technologies and components currently developed.

<https://5g-ppp.eu/metis-ii/>

TOWARDS NEAR ZERO-ENERGY BUILDINGS

ZERO-PLUS aims to reduce by 16% the current cost of developing near zero-energy buildings by optimising energy consumption in neighbourhoods.

<http://www.zeroplus.org/>

SMART CITIES AND COMMUNITIES

GrowSmarter brings together cities and industry to integrate and demonstrate '12 smart city solutions' in energy, infrastructure and transport, with the aim to create a market for these smart solutions to support growth and the transition to a smart, sustainable Europe.

<http://www.grow-smarter.eu/home/>

SUPPORTING A CIRCULAR ECONOMY

Horizon 2020 projects support efforts to make products and resources last longer and to minimise waste. It has developed ways of assessing the environmental performance of products, goods and services.

H VISONBY3DSTIM

The loss of sight is debilitating and causes great distress. Progress under this innovative research project holds real promise that it will be possible to reactivate those parts of the brain associated with visual perception to restore sight.

https://erc.europa.eu/press_release/erc-consolidator-grant-2015-project-examples

More information:

http://cordis.europa.eu/projects/home_en.html

HORIZON PRIZES: ARE YOU UP FOR THE CHALLENGE?

Horizon Prize
CO₂ REUSE

COMPETE, INNOVATE & WIN €1.5 MILLION

The EU is offering €1.5 million to anyone who develops commercial products that reuse CO₂ to significantly reduce CO₂ emissions.

WHY?
The EU aims to lead the world in **DEVELOPING AND USING LOW CARBON TECHNOLOGIES** and in **PREVENTING CLIMATE CHANGE.**

REUSE CO₂
The EU is making huge efforts to reduce greenhouse gas emissions – a major cause of man-made global warming.

CO₂ main greenhouse gas

ONE POSSIBLE STRATEGY
REUSE CO₂ IN CONSUMER AND INDUSTRIAL PRODUCTS

chemicals
fuels
minerals

BUT...
CO₂ reuse technologies face technical, commercial and financial barriers which prevents their widespread application

THE HORIZON PRIZE
CO₂ REUSE
aims to accelerate innovation in CO₂ reuse technologies and overcome these barriers.

The prize aims to:

- encourage industry to reduce atmospheric CO₂ emissions by improving their processes and products
- attract private R&D investment, non-traditional players, & create new partnerships
- motivate researchers and innovators to find new ways to reduce CO₂ emissions

CAN YOU CRACK THIS CHALLENGE?
Find out more at www.ec.europa.eu/horizonprize/CO2reuse
#horizonprize

Horizon Prizes offer a cash reward to innovators who can most effectively meet a defined challenge. The aim is to stimulate innovation and deliver solutions to problems that matter to European citizens.

Challenge prizes are a tried and tested way to support and accelerate change in the world and are an important driver of innovation in the public, private, and philanthropic sectors worldwide.

LATEST HORIZON PRIZES

- ▶ **CO₂ Reuse**
- ▶ Cleanest Engine of the Future
- ▶ Better Use of Antibiotics
- ▶ Food Scanner
- ▶ Low-Carbon Hospital
- ▶ EU Prize for Women Innovators
- ▶ The European Capital of Innovation Award
- ▶ Photovoltaics Meets History
- ▶ Engine Retrofit for Clean Air

More information:

<https://ec.europa.eu/research/horizonprize>

RESEARCH & INNOVATION HAVE A POSITIVE IMPACT ON SOCIETY AND PEOPLE'S LIVES

An independent group of high-level experts evaluated the previous framework programme for research (FP7) and concluded that funding boosted excellent science and strengthened Europe's industrial competitiveness – contributing to growth and jobs in Europe.

More information:

https://ec.europa.eu/research/fp7/index_en.cfm

FP7 DEMONSTRATED ITS MULTIPLICATION EFFECT

ECONOMIC GROWTH AND JOBS

About **130 000** research jobs created over 10 years and **160 000** additional jobs indirectly over 25 years

Increasing industrial competitiveness: **25 %** of funding in open calls went to the private sector

1 euro invested by FP7 generated around **11 euros** in indirect and direct economic effects



TRANSNATIONAL SOCIETAL CHALLENGES

Helped to set up a common scientific base for pan-European challenges e.g. health, food, safety, energy, environment, employment, poverty and exclusion

KNOWLEDGE, INNOVATION, EUROPEAN RESEARCH AREA

Enhancing researchers' mobility: **50 000** researchers (~10 000 PhD candidates)

Boosting innovation: **1 700** patent applications; **7 400** commercial exploitations

Strengthening scientific excellence: **170 000 publications**, eight Nobel laureates and three Fields Medalists

“ One euro invested leads to multiple results ”

Carlos Moedas

Commissioner for Research, Science and Innovation



Research, science and innovation are core pillars of the Europe 2020 strategy and among the priority areas for additional investment through the Jobs, Growth, and Investment Package that President Jean-Claude Juncker has committed himself to.

The economic impact of the EU research budget is considerable, due to the **economies of scale** that pooling resources for research at the EU level can generate.

For example, funding research on **green transport** covers a variety of areas such as greener engines, alternative fuels, as well as electric and hybrid vehicles and infrastructure.

It develops **knowledge** in a wide range of areas, including materials, information technology, engines, fuels, recycling, aerodynamics, which are essential for developing safer and cleaner vehicles. This investment in green transport creates **job opportunities** directly — for the principal investigator, industries, SMEs, research teams, lab technicians and others who help support the work — and indirectly, through **innovations** that lead to new technologies, new industries and new companies and new markets.

The 21st century challenges we face require a collective European response: scarcity of resources, global warming, changing power balances and a rapidly ageing population concern all of us. Research helps to develop appropriate responses. The investment may also lead to the development of new models for transport in order to ensure sustainable, efficient and affordable transport services that could have a significant **impact on society** – improving our quality of life, preserving our environment, and enhancing our security.

Horizon 2020 grants give researchers access to a Europe-wide open space for **knowledge** and technologies in which transnational synergies and complementarities are fully exploited – contributing to the continued reinforcement of the **European Research Area**.

It is essential for the EU's global competitiveness and long-term economic health that it invests significantly and consistently in research and innovation.

More information:

<https://ec.europa.eu/programmes/horizon2020/en/newsroom/achievements/>

