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# FINAL EVALUATION OF THE HORIZON 2020 PROGRAMME

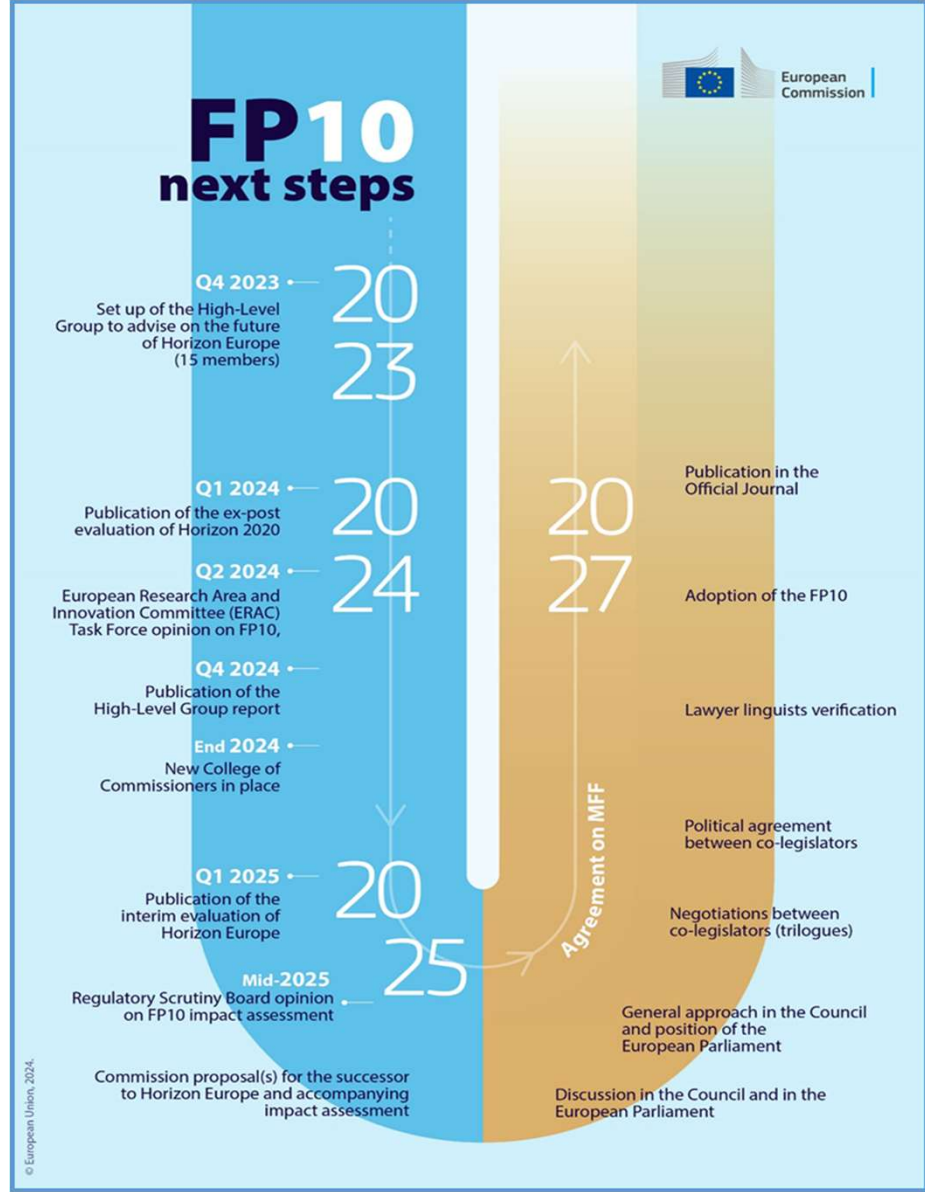
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RTD.G2: Common Programme Analysis  
& Regulatory Reform

9TH KNOWLEDGE PLATFORM ~ SLOVENIAN NATIONAL CONSULTATION  
ON FP10 ~


16. APRIL 2024, GRAND HOTEL UNION EUROSTARS





# FP10 next steps




# Sources of the evaluation


 **12 external evaluation studies** incl. more than **1 000 interviews** with beneficiaries, national authorities and implementing bodies, internal monitoring flashes

 Other sources by other EU institutions (i.e. reports by the Court of Auditors)

 **Surveys** of successful and unsuccessful applicants

 A **mix of evaluation techniques** including counterfactual analysis

 A **stakeholder consultation** gathering **1 818 replies**

 **Review** of documentation and analytical data

# Overall positive conclusions

- **Support to the implementation of EU policies**, and of the European Research Area (ERA). Examples: quick response to COVID-19, science steering efforts to tackle climate change.
- Support to **fundamental research**: more and higher quality publications compared to FP7, larger proportion of publications in open access rose from 65% in 2014 to 82% in 2022.
- Increased R&D spending in Europe by **leveraging co-investment from public and private resources** (1 euro = 0.23 euro brought from project participants' own resources). **Strongest leverage in Joint Undertakings**.
- Positive economic effects, both at **macro level** (429 billion over the 2014-2040 period) and at **micro level** (participating firms observed average increase of 20% in employment + average increase of 30% in turnover and total assets + higher propensity to invest in intangible assets),
- **Horizon 2020 efficient : one euro of cost to society**, associated with the programme, is estimated to bring about **five euros of benefits for EU citizens**. (*Benefit Cost Ratio of 5*).

# Areas for improvement

- **Dissemination and exploitation of R&I results** is uneven.
- **Uptake of research results from H2020 in other (EU) programmes or by industry** needs to be strengthened. The European Innovation Council pilot is addressing this shortcoming.
- Stronger measures to support **women researchers, entrepreneurs, and innovators**.
- **Synergies with other programmes** could be improved, especially downstream (availability of other (EU) programmes to take up results of H2020 projects) and complementary funding (bringing together funding from Horizon 2020 and ESI Funds in the same complex projects).
- **Widening participation** to entities located in the least R&I performing countries improved, but only at a modest rate. National reforms in R&I systems can have a stronger impact on the readiness to take part in excellent collaborative projects at European level.
- Monitoring arrangements were **too narrow** to capture wider societal impacts and suffered from **weak indicator design**. Efforts are ongoing under Horizon Europe to improve the **monitoring framework**.

# Success Rate

Excellent Science

13,7%



Industrial Leadership

8,7%



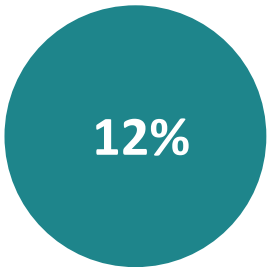
**Overall  
Success Rate**

**11,9%**



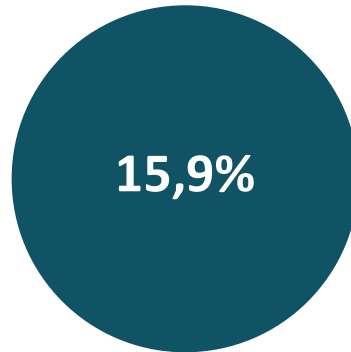
Societal Challenges

12%



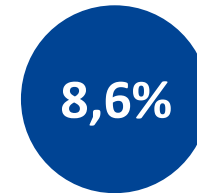
Spreading excellence  
and widening participation

15,9%

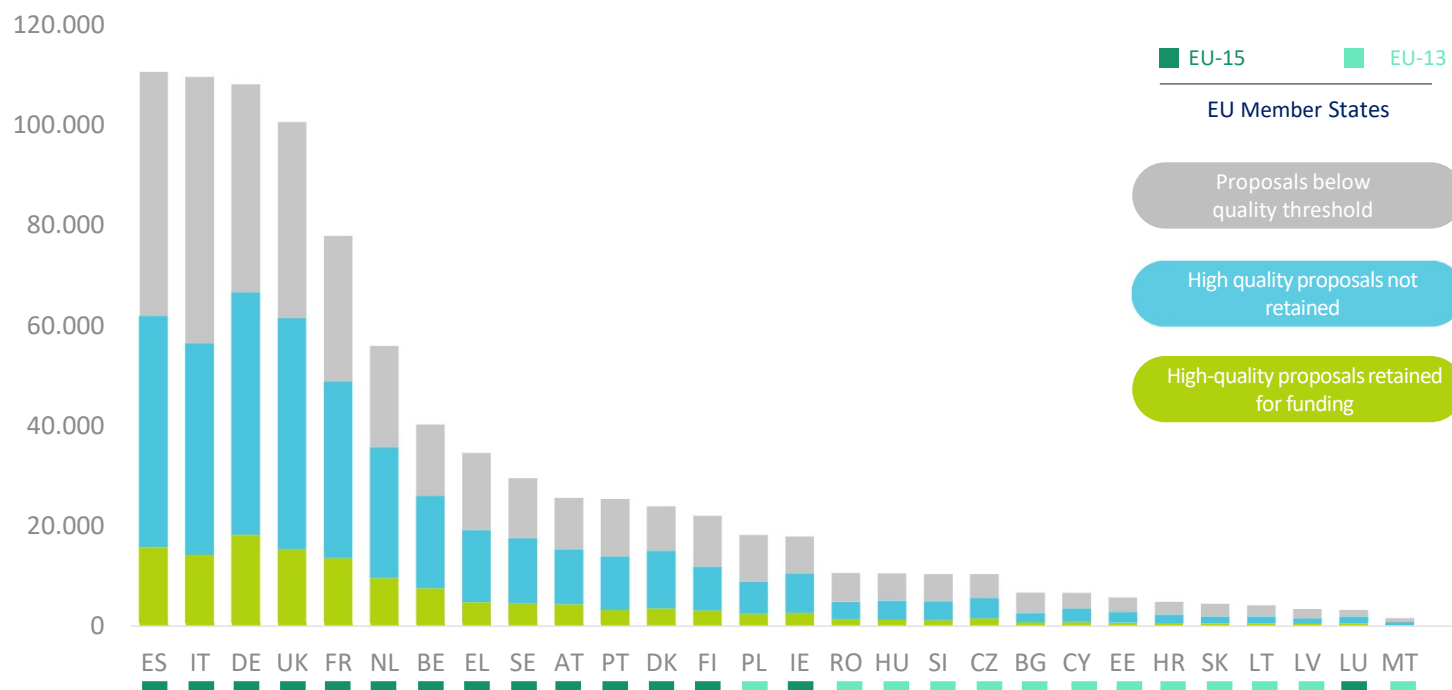


Other

8,6%



# Key data: applications by Member State



# Widening participation in Horizon 2020 (1/3)

- **935 million** funding for **Spreading Excellence and Widening Participation** (SEWP) in lower R&I-performing countries.
- Modest increase of participation: 12.3% of participations from widening countries, 1.3% increase from FP7. Participation from widening countries is much higher for SEWP actions (51%).
- All widening countries, except Croatia and Hungary, increased their participation.
- **Widening countries performed well** compared to other Member States, especially Cyprus, Estonia and Slovenia regarding the average number of applications received per 1 000 scientists and engineers as a proportion of the country's population, and the amount of EU funding received as a percentage of GDP.
- SEWP-funded researchers and research groups often previously participated in the FP: **few new entrants**.
- The **large-scale effects of the widening instruments** will only be visible in the long term, as change depends on R&I investments and reforms at national level.
- The causality of widening measures in raising levels of participation across Horizon 2020 is difficult to measure.



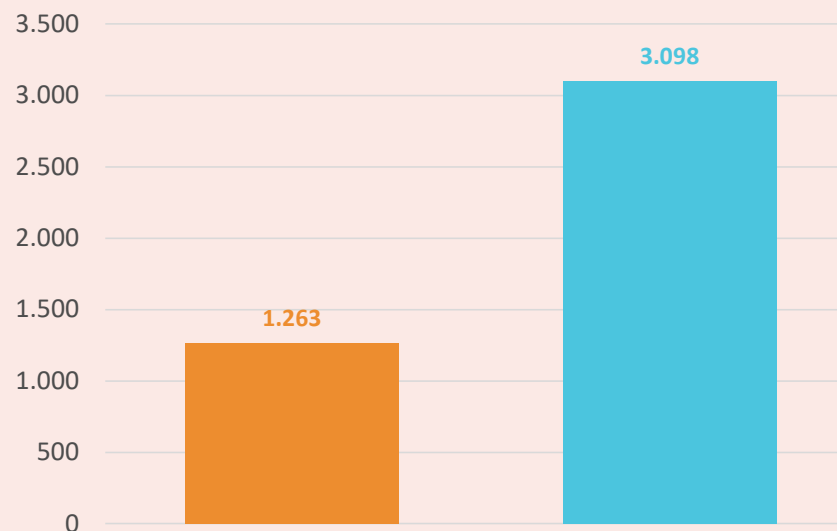
## Widening participation in Horizon 2020 (2/3)

- SEWP interviewees and survey respondents reported that the widening actions had a **positive impact on research careers** across all career stages because of:
  - Study visits to institutions in countries where the research was more advanced;
  - Knowledge exchange with partners more advanced in the field;
  - Training activities and access to and more effective use of high-quality research infrastructure.
- **71% of the SEWP beneficiaries** indicated that their project increased the research skills, knowledge and competences of researchers, incl. an increase in researchers' transferable skills (73%).
- Participating researchers and research groups from widening countries **improved research production and quality** thanks to the participation in SEWP.

# Widening participation in Horizon 2020 (3/3): effect of ERAChair and twinning



\*\*“Evolution (compared to a reference period prior to the signature of the grant agreement) of the publications in high impact journals in the given research field of the research organisation funded”. Numbers are expected to increase when all Horizon 2020 projects are finalised.



SOURCE: Excellent Science evaluation study (2023), Annex I, p. 223

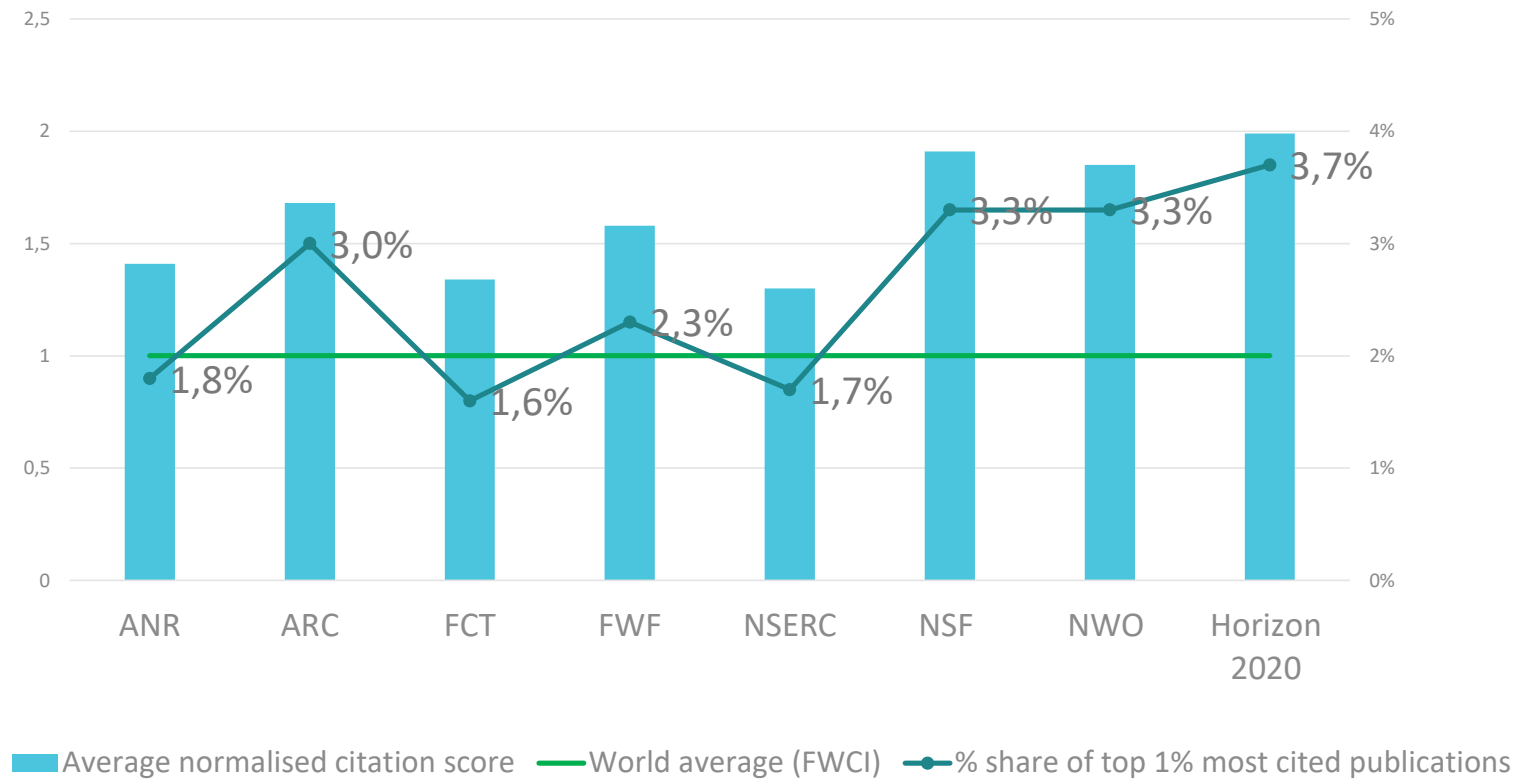
Before EU funding

After EU funding

# Scientific impact of Horizon 2020

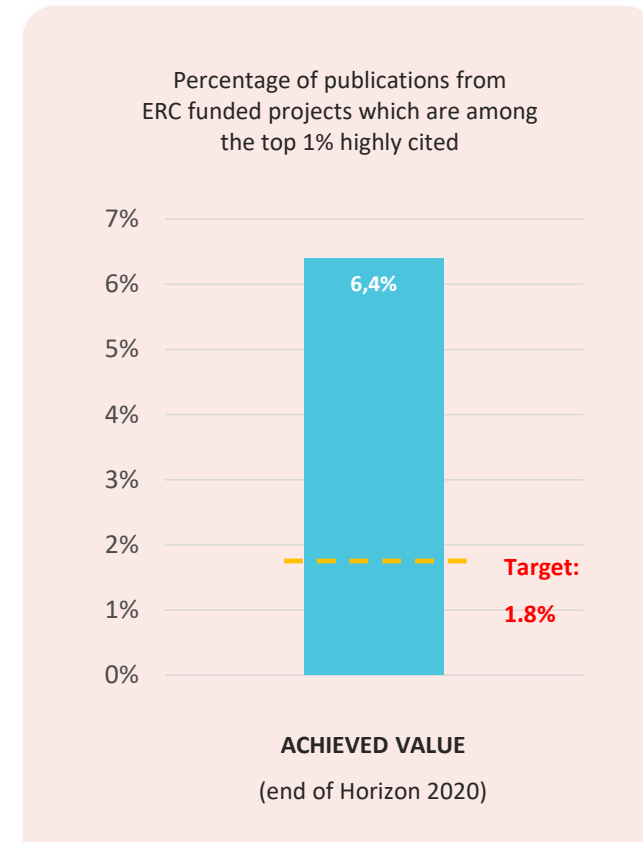
- **Scientific excellence** was assured by means of pan-European competition for funding and a stringent project proposal evaluation process. Actions across all Horizon 2020 pillars contributed to achieving scientific impact.
- Horizon 2020 supported **33 Nobel Prize, six Wolf Prize and one Fields Medal winners**.
- Horizon 2020's **open access** principles and requirements had a positive impact on the proportion of publications that were made freely and publicly available online.
- Percentage of open access publication rose **from 65% in 2014 to 82% in 2022**.
- The same applies to open datasets, even though this data did not systematically meet the **FAIR principles** (findability, accessibility, interoperability, reusability), with significant variations across disciplines and programme parts.

# Scientific impact: citations of publications



# Scientific impact: European Research Council

- ERC accounts for the **highest number of peer-reviewed publications** across Horizon 2020 (49 496 publications, or more than one in three Horizon 2020 publications).
- They received on average **24 citations each**, over twice the worldwide average.
- Biological sciences, gene expression and environmental engineering are the top three frontier research areas.
- **ERC promotes mobility**: half of ERC team members are nationals of a country other than that of the host institution, while 40% of the scientific and technical staff moved to a new country when they started working on the ERC grant.



# Societal impact: gender equality

- Horizon 2020 encouraged **gender balance in research teams**, which were favoured if tied in evaluation score, but only unstructured data was available in evaluation reports on gender.
- **42% of project participants** were women (increase 1 percentage point compared to FP7).
- **23% of coordinators** were women (increase 3 p.p. compared to FP7), but bad data quality hampers comparability.
- **37% of researchers** were women (decrease of 2 p.p. compared to FP7).
- **49% “other than researchers”** (admin, financial, legal) were women (increase 6 p.p.).
- Horizon 2020 encouraged **gender balance in decision-making**: results achieved are 43% of advisory group members (target of 50% not met) and 42% of evaluators were women (40% target met).

# Economic impact of Horizon 2020: innovation outputs

- Horizon 2020 has produced **3 898 applications** for **Intellectual Property Rights** (with a ratio of **0.57 applications per EUR 10 million funding**). IPR performance of Horizon 2020 is similar to FP7, at the same stage. IPR outputs from FP7 increased almost three times compared to the figure available at the time of the final evaluation of FP7 (+179%).

# European Innovation Council

- Confirming finding from the interim evaluation, Horizon 2020 has **addressed, but not overcome**, the long-established issue of **translating high-quality European research into new innovations on the market**.
- The **EIC pilot** (2018-2020) was designed to translate research breakthroughs into innovation, bringing pre-existing Horizon 2020 instruments: the Future Emerging Technologies Open (FET), the SME Instrument (SMEI), the Fast Track to Innovation (FTI) and Horizon 2020 Prizes.
- The EIC support filled a gap as limited breakthrough schemes existed at national level.



# Economic impact: microeconomic impacts

A counterfactual study on all Horizon 2020 participating firms observed that **participating firms** (compared to comparable non-funded firms) showed:

- Average increase of **20%** in employment growth.
- Average increase of **30%** in turnover and total assets growth.
- **Higher propensity** to invest in intangible assets.

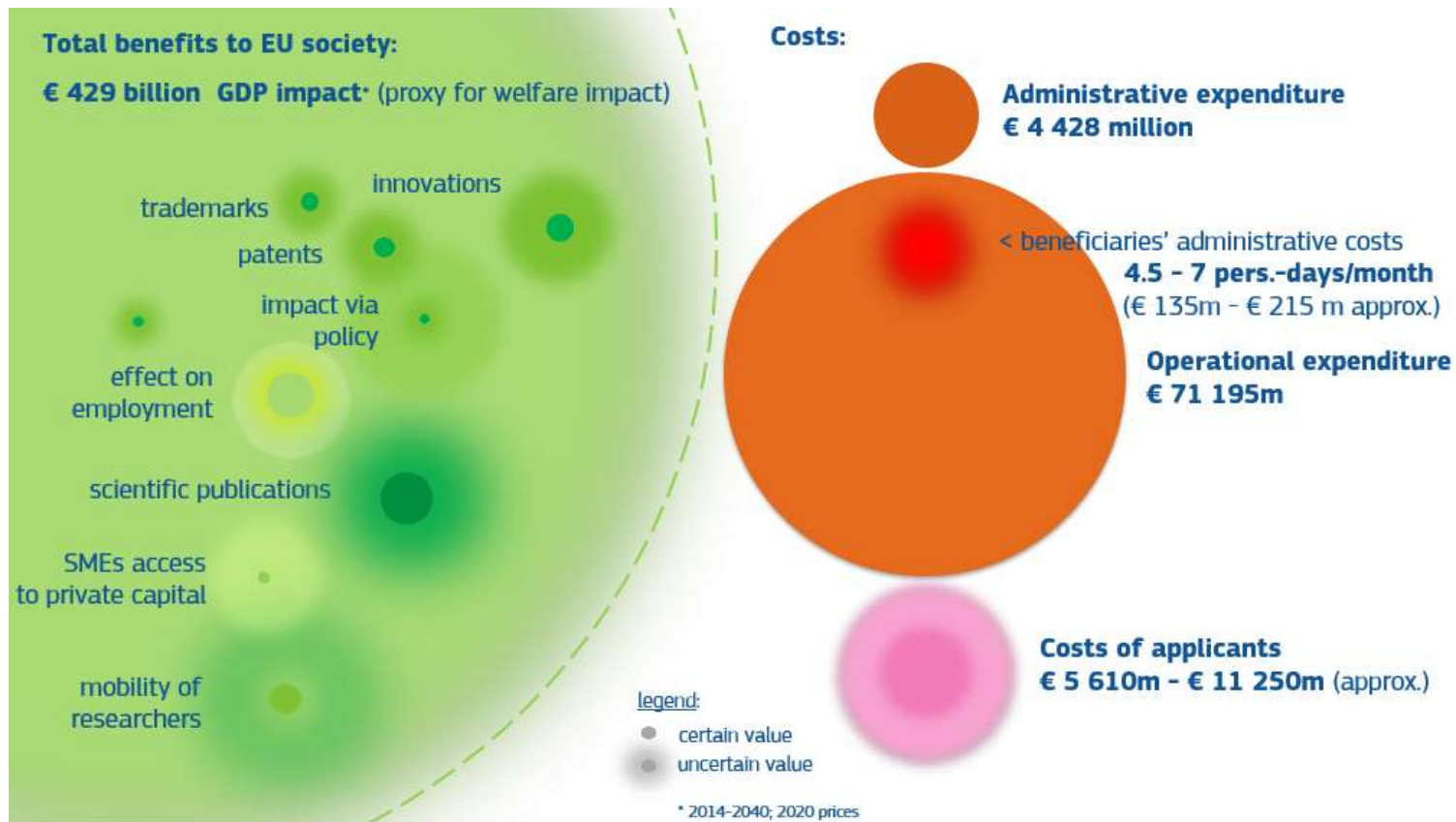


# Exploitation and dissemination of results

- The **exploitation and dissemination of results** is a **best effort obligation** for Horizon 2020 projects.
- The main challenge is the **amount and consistency of the information available** on the exploitable results of projects, as the information published on project results is often incomplete and inconsistent.
- In **business-oriented projects**:
  - Lack of incentive to communicate the findings of their research activities, due to concerns about confidentiality and protecting market potential.
  - Satisfactory level of dissemination of results within the scientific community and towards policy makers, depending on the field:
    - In the field of health, demographic change and well-being (SC1): **53.4% projects reported carrying out dissemination activities.**
    - Projects addressing other societal challenges (SC2, SC3, SC4 and SC5) failed to reach satisfactory levels of dissemination of scientific results.
  - Beneficiaries reported a **lack of resources and skills needed for dissemination**, and a need for continued knowledge management after the end of a project.

# Benefits and costs of Horizon 2020

One euro of cost to society, associated with the framework programme, is estimated to bring about five euro of benefits for EU citizens. (*Benefit Cost Ratio of 5*)



# Simplification: Have simplification efforts worked?

Electronic grant management workflow, annotated grant agreement and withdrawal of the negotiation stage contributed to:

**90%**

of grants were signed on time (FP7: 41%)  
and time-to-grant period (excl. ERC)  
was substantially reduced to

**187 days**

(FP7: 313 days).

# Simplification: Have simplification efforts worked?

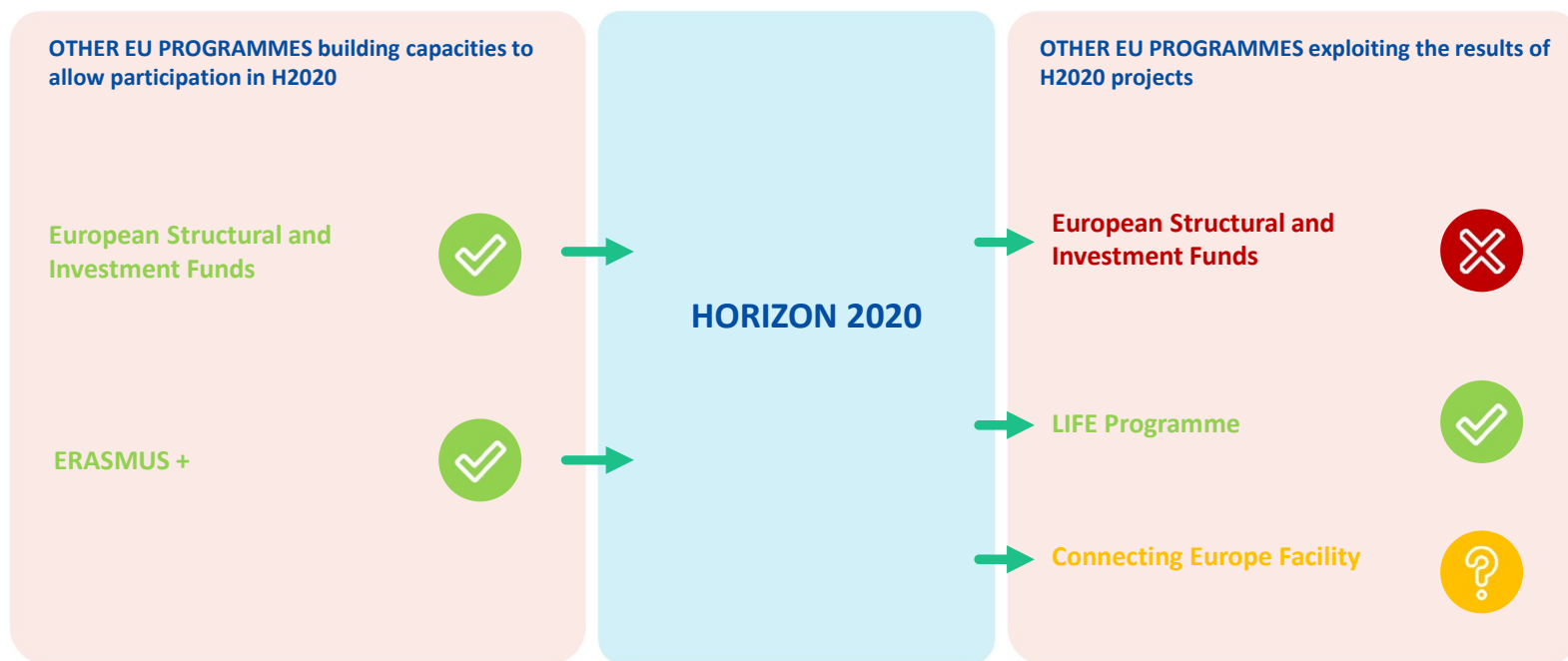
## Revised control and risk strategy and single set of rules:

- **Error rates** remain elevated but have improved, even in context of “trust-based approach”.
- Beneficiaries’ **audit burden** reduced, about 2 500 fewer audited unique beneficiaries.
- **Financial errors** still of repeated and avoidable nature in operational expenditure (personnel costs).

## Lessons learned / potential for further simplification:

- Further target **beneficiaries’ administrative costs**, which stayed high despite simplification efforts. Potential in careful and well-monitored implementation of **lump sum funding**.
- Simplification to target **application costs** to limit the loss of effort in light of low success rates. Potential in extending **Seal of Excellence** and well-targeted **two-stage applications**.
-

# Horizon 2020 coherence with other EU programmes



+ 20,042 proposals awarded with the Seal of Excellence under Horizon 2020  
26% of them have been subsequently funded by ESIF

# Added value of Horizon 2020: unique programme

- The **only programme in Europe supporting transnational R&I activities** from multiple countries and disciplines.
- Supported larger scale and more complex **research** than possible at national level.
- The majority of unsuccessful applicants did not implement their projects or only implemented it with significant changes – the predominant reason being **lack of alternative funding** for their type of research.
- Horizon 2020 increased excellence in research and innovation, by **creating EU-wide competition**.

# Added value of Horizon 2020: leverage

Direct leverage of public-private partnerships:

JUs under Horizon 2020	Expected members' contributions, as per founding Regulation and legal decisions			Actual members' contributions, as of 31.12.2021		
	EU contribution, in EUR	Total contributions by partners, in EUR	Expected direct leverage factor	EU contribution, EUR	Total contributions by partners (out of which, in cash), EUR	Actual direct leverage factor
SESAR	585	772	1.32	536	535 (24)	1
CS2 – CA	1 755	2 194	1.25	1536	2 141 (27)	1.39
IMI2 -IHI	1 638	1 638	1	838	889 (32)	1.06
FCH2 - Clean H2	665	380	0.57	546	1 140 (11)	2.09
ECSEL - KDT	1 185	2 828	2.39	1 058	1 741 (472)	1.65
BBI - CBE	835	2 730	3.27	728	1 797 (18)	2.47
S2R - EU-RAIL	398	470	1.18	339	495 (11)	1.46
EuroHPC (3)	536	908	1.69	307	138 (120)	0.45



# Relevance of Horizon 2020

- Europe's overall **competitive position** has not fundamentally changed over the duration of Horizon 2020. Having an EU R&I programme is therefore still highly relevant
- Perception of relevance by stakeholders: 70% of respondents in the stakeholder consultation conducted for this evaluation agreed or strongly agreed that '**Horizon 2020 helped develop and implement EU policies**'. 70% of respondents stated that "Horizon 2020 is **flexible enough** to respond to unforeseen emergencies, such as the COVID-19 pandemic, Zika and others.
- Enhanced **consultation of stakeholders and experts** were a novelty in Horizon 2020. But consultation perceived by some interviewees as an instrument for legitimizing EC priorities, not as an instrument that can open the discussion and bring in new aspects.
- The ambition to generally **increase the participation of civil society organisations** in projects faced some obstacles, although their participation increased compared to FP7. Respondents indicated that assessment criteria in research funding were still (too) focused on scientific excellence, with societal impacts difficult to assess.



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# Thank you!

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