



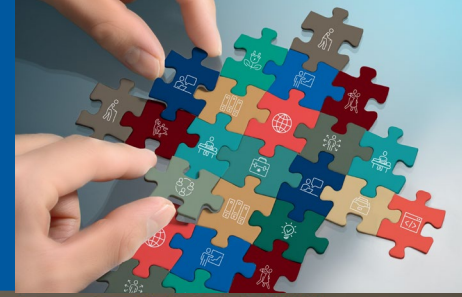
# Models for impact evaluation of biomedical scientific projects

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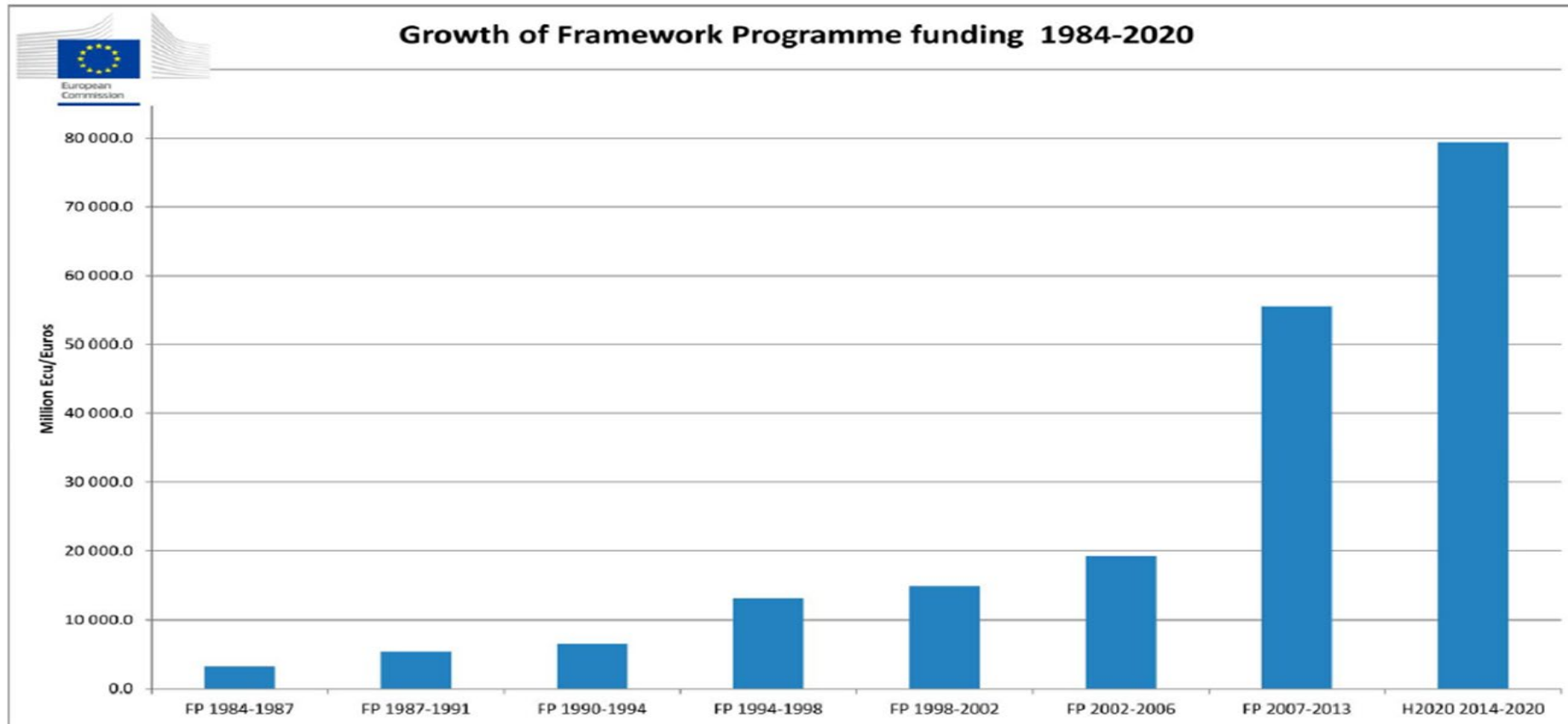


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- Understanding the complex relationship between research **funding** and achieved research **results**
- **Scientific research funding** - competitive grants, scholarships, funding programs, contract research, community donations, foundations and intellectual property income
- Active research grant **stakeholders** – researchers, funding agencies, professional organizations, investors, industry and governments
- Traditional academic research **indicators** - number of papers, number of citations, journal impact factor, journal quartiles, h-index, peer review





Increase in financing of the Framework Programs in the period 1984 - 2020

Source: Fact Sheet: Budget of the Horizon 2020 Program

[https://ec.europa.eu/research/horizon2020/pdf/press/fact\\_sheet\\_on\\_horizon2020\\_budget.pdf](https://ec.europa.eu/research/horizon2020/pdf/press/fact_sheet_on_horizon2020_budget.pdf)





- „Launch a project for the development and piloting of indicators designed to measure the social and economic **impact** of research in general, and of European / international collaborative research in particular.”

Source: European Commission. Assessing Europe's university-based research: expert group on assessment of university-based research. Brussels: European Commission; 2010, p. 16

[https://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/assessing-europe-university-based-research\\_en.pdf](https://ec.europa.eu/research/science-society/document_library/pdf_06/assessing-europe-university-based-research_en.pdf)

- „Horizon Europe is built on the evidence and lessons learnt from the Horizon 2020 interim evaluation, and the recommendations of the independent High-Level Group on maximising the **impact** of EU research and innovation. The new Programme will be an evolution, not a revolution, focusing on a few design improvements to further increase openness and.”

Source: Commission staff working document impact assessment 7.6.2018 SWD(2018) 307 final Part1, p. 3

Proposals for:

1. Regulation of the European parliament and of the council establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination
2. Decision of the European parliament and of the council on establishing the specific programme implementing Horizon Europe – the Framework Programme for Research and Innovation
3. Council regulation establishing the Research and Training Programme of the European Atomic Energy Community for the period 2021-2025 complementing Horizon Europe – the Framework Programme for Research and Innovation

[https://ec.europa.eu/info/publications/horizon-europe-impact-assessment-staff-working-document\\_en](https://ec.europa.eu/info/publications/horizon-europe-impact-assessment-staff-working-document_en)



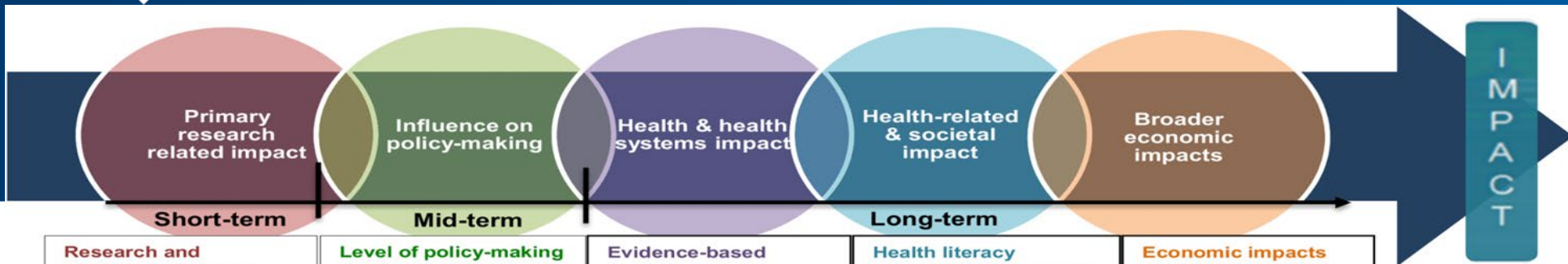


- „... **impact** is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, environment or quality of life, beyond academia.”

Source: Higher Education Funding Council for England. REF 2014: Assessment framework and guidance on submissions 2011, p. 26

- **Impact** of biomedical research ... is any demonstrable effect arising from the knowledge transfer between basic, clinical and public health research, and clinical trials, which improves health and quality of life and has positive effects on the economy, society, national security, environment, public policy, and similar areas.
- Research **translation** ... the process of knowledge creation and transfer that enables those who use created knowledge to apply it.





Short-term	Mid-term		Long-term	
<b>Research and innovation outcomes*</b> <ul style="list-style-type: none"> <li>❖ Publications</li> <li>❖ Peer-reviewed articles (journal impact factor)</li> <li>❖ Citation rates</li> </ul> <b>Dissemination and knowledge transfer*</b> <ul style="list-style-type: none"> <li>❖ Conferences, seminars, workshops and presentations</li> <li>❖ Teaching</li> <li>❖ Mass media</li> </ul> <b>Capacity building, training and leadership*</b> <ul style="list-style-type: none"> <li>❖ PhD and post-doc studentships</li> <li>❖ Academic careers advancement</li> <li>❖ Subsequent grants received</li> </ul> <b>Academic collaborations, research networks and data sharing</b>	<b>Level of policy-making</b> <ul style="list-style-type: none"> <li>❖ Presentations to decision-makers</li> <li>❖ Influence on public policy debate</li> <li>❖ Information base for political and executive decision-making</li> </ul> <b>Type and nature of policy impact</b> <ul style="list-style-type: none"> <li>❖ Changes to legislations, regulations and government policy</li> <li>❖ Influence and involvement in the decision-making process</li> <li>❖ Changes to clinical or healthcare training, practice or guidelines</li> </ul> <b>Policy networks</b> <ul style="list-style-type: none"> <li>❖ Collaborative research with industry</li> <li>❖ Staff movement between academia and industry</li> </ul>	<b>Evidence-based practice</b> <ul style="list-style-type: none"> <li>❖ Improving diagnostics and response prediction</li> <li>❖ Fulfilling previously unmet clinical needs</li> </ul> <b>Quality of care and service delivery</b> <ul style="list-style-type: none"> <li>❖ Improved health outcomes (QALYs)</li> <li>❖ Patient satisfaction (PROMS)</li> <li>❖ Making services more accessible for local communities</li> <li>❖ Reduction in waiting times</li> </ul> <b>Cost containment and effectiveness</b> <ul style="list-style-type: none"> <li>❖ Cost savings</li> <li>❖ Increased service effectiveness</li> </ul> <b>Resource allocation</b> <ul style="list-style-type: none"> <li>❖ Better targeting and accessibility while allocating resources</li> </ul> <b>Health workforce</b> <ul style="list-style-type: none"> <li>❖ Reduction in the number of work loss days</li> </ul>	<b>Health literacy</b> <ul style="list-style-type: none"> <li>❖ Activities to change health-risk behaviours such as strategies and campaigns</li> </ul> <b>Health knowledge, attitudes and behaviours</b> <ul style="list-style-type: none"> <li>❖ Increased levels of public engagement with science and research</li> <li>❖ Outcomes from focus groups to assess changes in attitudes, behaviours and attitudes</li> </ul> <b>Improved social equity, inclusion or cohesion</b> <ul style="list-style-type: none"> <li>❖ United Nations Millennium Development Goals</li> <li>❖ Human rights</li> </ul>	<b>Economic impacts</b> <ul style="list-style-type: none"> <li>❖ Attracting R&amp;D investment from NHS, medical charities and overseas</li> <li>❖ Income from intellectual property</li> <li>❖ Spill over effects</li> <li>❖ Patents granted/licenses awarded and brought to the market</li> <li>❖ Spin-out companies</li> <li>❖ Research contracts and income from industry</li> </ul>

Key: [Bold, [impact categories]; Diamond, [impact subgroups]; \*top three metrics]

Impact metrics of existing RIAFs, grouped into different subgroups and impact categories. Source: Cruz Rivera S, Kyte DG, Aiyegbusi OL, Keeley TJ, Calvert MJ. Assessing the impact of healthcare research: A systematic review of methodological frameworks. PLoS Med. 2017 Aug 9;14(8):e1002370. doi:10.1371/journal.pmed.1002370.





- „**RIAF** was defined as a conceptual model / framework and / or a collection of evidence, designed to assess the translation or impact of health and medical research beyond traditional academic outcomes.”

Source: Deeming S, Searles A, Reeves P, Nilsson M. Measuring research impact in Australia’s medical research institutes: A scoping literature review of the objectives for and an assessment of the capabilities of research impact assessment frameworks. Health Research Policy and Systems. 2017 Mar 21;15(1):22. doi:10.1186/s12961-017-0180-1.

- Conceptual frameworks can further help organize data collection, analysis and reporting to promote clarity and consistency in the allocation of research funding, project application planning, and research impact assessment.
- The value of the **RIAF** is integrated into the research process with the intention of reducing the additional administrative burden for researchers, and even more as an incentive mechanism for researchers to demonstrate and optimize the impact of their work.





### National meritocratic university research funding systems

Source: Hicks D: Performance-based university research funding systems. Res Policy. 2012, 41 (2): 251-261.

doi: [10.1016/j.respol.2011.09.007](https://doi.org/10.1016/j.respol.2011.09.007).



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- Original search strategy identified 494 documents from Scopus, 211.826 documents from WoS CC, 71 documents from PubMed, and 301 documents from other sources (Google Scholar, funding agency websites and expert communication).
- Preliminary results of the baseline data have showed high increase in publications cooperated to general RIAF review conducted in 2013 where it listed 193.343 documents in total

Source: Milat AJ, Bauman AE, Redman S. A narrative review of research impact assessment models and methods. Health Research Policy and Systems. 2015.

- Five broad categories of impact are also emerging: **a) advancing knowledge, b) capacity building, c) informing decision-making, d) health benefits, e) broad socio-economic benefits.**
- Review will allow researchers and funders to consider pathways to impact at the design stage of a study and to understand the elements and metrics that need to be considered to facilitate prospective assessment of impact.





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