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COMMISSION STAFF WORKING DOCUMENT
EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

Accompanying the document

Proposals for a

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

DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on
establishing the specific programme implementing Horizon Europe – the Framework
Programme for Research and Innovation

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

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EXECUTIVE SUMMARY

This impact assessment accompanies the Commission proposal for Horizon Europe, the 2021-2027 Framework Programme for EU Research and Innovation, which will succeed the current Programme, Horizon 2020 (active between 2014-2020), and the proposal for the 2021-2025 Research and Training Programme of the European Atomic Energy Community (Euratom Programme).

Research and innovation help Europe deliver on citizens' priorities, as embodied in the Sustainable Development Goals and in the Paris Agreement on fighting climate change, to bring about sustainable growth and high-quality jobs, and to solve present and unforeseen global challenges. However, Europe overall currently underinvests in research and innovation compared to its main trading partners, and so risks being irreversibly outpaced.

EU-level investment, through successive Framework Programmes, has supported the provision of public goods with a high European added value. This added value comes from the Programmes' focus on excellence through EU-wide competition and cooperation. Framework Programmes support training and mobility for scientists, create transnational, cross-sectoral and multidisciplinary collaborations, leverage additional public and private investment, build the scientific evidence necessary for EU policies, and have structuring effects on national research and innovation systems. The significant and long-lasting impact of the Framework Programmes, in particular the current Programme, is acknowledged by the EU institutions, Member States and stakeholders alike.

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 impact.

Horizon Europe's general objectives stem from the Treaty on the Functioning of the European Union. These will be: to strengthen the scientific and technological bases of the Union and foster its competitiveness, including for its industry; to deliver on the EU's strategic policy priorities and contribute to tackling global challenges, including the Sustainable Development Goals. To address particular research and innovation challenges faced by the EU, Horizon Europe also has specific objectives. All objectives apply across the Programme, and all individual Programme parts will contribute to their achievement.

The evolution from Horizon 2020 is reflected in the revamped structure. The three-pillar structure will be continued, but redesigned for more coherence, both between and within pillars, in support of the Programme objectives.

Pillar 1 - Open Science will continue to focus on excellent science and high-quality knowledge to strengthen EU's science base through the European Research Council, Marie-Sklodowska Curie Actions and Research Infrastructures. As a "bottom-up", investigator-driven pillar, it will continue to give the scientific community a strong role.

Pillar 2 - Global Challenges and Industrial Competitiveness will better address EU policy priorities and support industrial competitiveness by integrating the Horizon 2020 *Societal Challenges* and *Leadership in Enabling Industrial Technologies* into five clusters (i.e. Health; Resilience and Security; Digital and Industry; Climate, Energy and Mobility; and Food and natural resources). The clusters will better support the full spectrum of the Sustainable Development Goals, and increase collaborative research and innovation across sectors, disciplines and policy fields – boosting flexibility, focus, and impact. Due to its policy focus, the pillar will be implemented "top-down", through a strategic planning process ensuring the

involvement of stakeholders and society, and alignment with Member States' activities. The pillar will give appropriate visibility to industry's essential role in achieving all the Programme's objectives, not least in tackling global challenges, including by developing key enabling technologies for the future.

Pillar 3 – Open Innovation will offer a one-stop shop for high-potential innovators with the European Innovation Council and increase cooperation with innovation ecosystems and actors. These activities will be determined largely "bottom-up", integrating and reorganising Horizon 2020 activities, such as Innovation in SMEs (notably the SME instrument), Fast-track to Innovation, as well as Future and Emerging Technologies. Innovation will continue to be supported throughout the whole Programme, not just in this innovation-focussed pillar.

Horizon Europe will reinforce the European Research Area through: Sharing excellence (extending the Horizon 2020 actions that help tackle low research and innovation performance i.e. Teaming, Twinning, ERA chairs, and COST); research and innovation reforms and policy, covering the Policy Support Facility; foresight activities; and Framework Programme monitoring, evaluation, dissemination and exploitation of results

The new Programme will also have some new features and enhancements of existing elements. With Horizon 2020 well on track to deliver excellence, impact and openness, these changes will make the successor Programme achieve even more impact (through the European Innovation Council and mission-orientation) and more openness (through strengthened international cooperation, a reinforced Open Science policy, and a new policy approach to European Partnerships).

The European Innovation Council will help place the EU in the lead for breakthrough market-creating innovation. It will support high-risk, market-creating innovation projects that do not (yet) generate revenues, to bridge the "valley of death" between research and commercialisation and help companies scale up. The tailor-made support to innovators will be channelled through two main funding instruments. The Pathfinder for Advanced Research will provide grants from the early technology stage (proof of concept, technology validation) to the early commercial stage (early demonstration, development of business case and development of strategy). The Accelerator will support the further development and market deployment of breakthrough and market-creating innovations, to a stage where they can be financed on usual commercial terms by investors (from demonstration, user testing, pre-commercial production and beyond, including scale-up). It will place a particular emphasis on innovation generated within the Pathfinder, although it will also fund projects from other parts of the Programme, such as the European Research Council or the Knowledge and Innovation Communities. The expected implications of the role played by the European Innovation Council include more innovation that creates the new markets of the future, more companies that scale up in Europe, higher growth among SMEs, and more entrepreneurship and risk-taking.

Horizon Europe will see the introduction of a limited set of highly visible research and innovation 'missions' under Pillar 2 (but potentially also providing direction to the other pillars). Missions will prioritise investment and set directions to achieve objectives with societal relevance, thereby creating more impact and outreach, encouraging a systemic approach (moving from a view of narrow sectors to entire systems), and aligning instruments and agendas for research and innovation across Europe. Missions will either accelerate progress towards a set scientific, technical or societal solution, by focusing large investment on a specific target; or transform an entire social or industrial system within an established timeframe. They will be selected after the Programme launch, according to strict selection criteria, and co-designed with Member States, stakeholders and citizens. The expected implications of this new mission approach include more cross-sectoral and cross-disciplinary

cooperation, higher impact on global challenges and EU priorities, and a reduced gap between science and innovation, and society.

Strengthened international cooperation is vital for ensuring access to talent, knowledge, facilities and markets worldwide, for effectively tackling global challenges and for implementing global commitments. The Framework Programme will intensify cooperation and extend openness for association to all countries with excellent science, technology and innovation capacities, to make cooperation and funding of joint projects as smooth as possible. The programme will continue to fund entities from low/middle income countries. Entities from industrialised and emerging economies will be funded only if they possess essential competences or facilities. The expected implications include higher excellence in the Programme, more influence for the EU in shaping global research and innovation systems, and higher impact.

Open Science will become the modus operandi of the new Programme, going beyond Horizon 2020's open access policy to require immediate open access for publications and data (with opt-out possibilities for the latter), and research data management plans. The Programme will encourage the proliferation of FAIR data (findable, accessible, interoperable, and re-usable) and support a sustainable and innovative scholarly communications ecosystem. It will foster activities to improve researcher skills in Open Science and the reward systems that promote this. Research integrity and citizen science will play a central role, as will the development of a new generation of research assessment indicators.

The new approach to European Partnerships will be more impact-focussed. The need to establish future European Partnerships or renew existing ones will be identified as part of the strategic programming process for the Framework Programme. All European Partnerships will be open to all types of stakeholders (e.g. industry, Member States and philanthropic foundations) and will be limited in time, with clear conditions for the phasing out of the Framework Programme funding. They will be based on the principles of Union added value, transparency, openness, impact, leverage effect, long-term financial commitment from all parties, flexibility, coherence and complementarity with Union, local, regional national and international initiatives. The future partnership landscape will ensure optimal coherence between Framework Programme activities and partnerships. There will be only three types: i) co-programmed European Partnerships, based on memoranda of understanding or contractual arrangements; ii) co-funded European Partnerships, based on a single, flexible co-fund action; iii) institutionalised European Partnerships (based on Article 185 or 187 of the Treaty on the Functioning of the European Union). Following a life-cycle approach, the Framework Programme will set out the criteria for selecting, implementing, monitoring and phasing out all European Partnerships.

The changes to the Programme's structure and the improvements to it will facilitate the achievement of the Programme's objectives, making it more effective and helping it generate even more economic benefits and value for money. These effects will be amplified by strengthened synergies and complementarities with other EU programmes, for example through the Seal of Excellence.

Efficient delivery is essential for meeting all the objectives. It is also key to achieving higher impact and further simplification. Building on the achievements of Horizon 2020, simplification remains a continuing endeavour also in the new Programme. Several improvements have been made to streamline delivery for impact. The Programme will aim at further simplification within the present real cost reimbursement system with its simplified funding model. Increased use will be made of project funding against fulfilment of activities (i.e. lump sum) and other simplified forms of funding allowed by the new Financial Regulation. Cross-reliance on audits across EU programmes and acceptance of usual cost

accounting practices will be developed. To increase flexibility, the Programme will support the intersection of disciplines and sectors and allow allocation of funds between and within pillars to react swiftly to emerging issues or challenges. Further improvements to the proposal submission and evaluation process will be envisaged by continuously trying to reduce the 'time to grant' and by improving feedback to applicants. The evaluation criteria, process and involvement of independent experts will underscore the Programme's excellence and impact. Innovation support schemes will be streamlined under the European Innovation Council, while the complementarity between grants and financial instruments could be reinforced through blended finance.

Impact depends ultimately on the dissemination and exploitation of research and innovation data and results, and it needs to be effectively captured and communicated. An ambitious and comprehensive strategy will increase the availability of such data and results and accelerate their uptake to boost the overall impact of the Programme. Portfolios of mature results will be exploited in synergy with other EU programmes to ensure their uptake at national and regional level, maximising European innovation potential. This will be complemented by effective communication and outreach campaigns that build trust and engage citizens.

Progress towards the Programme's objectives will be tracked along 'impact pathways' (on scientific, societal, and economic impact). The impact pathways will be time-sensitive, distinguishing between the short, medium and long term. The impact pathway indicators will contain both qualitative and quantitative information, the availability of which will depend on the Programme's stage of implementation. Individual programme parts will contribute to these indicators to varying degrees and through various mechanisms. The data behind the key impact pathway indicators will be collected in a centrally managed and harmonised way that imposes minimum reporting burden on beneficiaries, including using unique identifiers for applicants and sourcing data automatically from existing external public and private databases. Baselines, targets and benchmarks will be established before the Programme's launch. Management and implementation data from the Programme will continue to be collected in near real-time. An analysis of progress on key dimensions of management and implementation will be carried out every year. Interim and ex-post evaluations will ensure that methodologies are consistent and coverage is comprehensive.