European Commission

Evaluation support study on Horizon Europe's contribution to a Resilient Europe

Final Report Phase 2

Independent Expert Report

Research and Innovation

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Evaluation study of the European Framework Programmes for Research and Innovation for a Resilient Europe – Final Report Phase 2

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Evaluation support study on Horizon Europe's contribution to a Resilient Europe

Final Report Phase 2

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Table of Contents

Key definitions, acronyms and glossary **4**

Abstract **8**

Executive summary **8**

1. Introduction **18**
1.1. Purpose of the study 18
1.2. Scope of the study 18

2. Background to the initiative **20**
2.1. Baseline 24
2.2. Evaluation questions and methodology 28

3. Implementation state of play **30**
3.1.1. Overview of implementation status 30
3.1.2. Overview of Horizon Europe implementation processes, inputs and activities 34

4. Relevance **40**
4.1. Addressing stakeholder and target group needs 41
4.2. Flexibility to respond to emerging and changing circumstances 46
4.3. Participation of international partners and Associated Countries 48
4.4. Timeliness of the performed research and innovation activities 50
4.5. Relevance and flexibility of partnerships 52

5. Coherence **53**
5.1. Coherence of Cluster 1, 2 and 3 between Framework Programme parts covered by this study 54
5.2. The internal coherence of Cluster 1 instruments and partnerships 58
5.3. Coherence among assessed partnerships 60
5.3.1. Are partnerships more effective in achieving synergies compared to other modalities of the programme? 61
5.4. International programme-level cooperation multilateral initiatives 62
5.5. Positioning of Cluster 1, 2 and 3 within the overall European R&I landscape 63
5.6. Horizon Europe approach to fostering synergies and coherence with other initiatives including at the regional and national level 64

6. Efficiency **74**
6.1 Budgetary resources and programme competitiveness 75
6.2 Proposal preparation costs 77
6.4 Support available to applicants 82
6.5 Efficiency of the selection and implementation process 84
6.6 Administrative costs of participation 86

7. Effectiveness **88**
7.1. Flexibility and openness of the programme implementation (Clusters 1, 2 and 3) 89
7.1.1. Enablers/barriers for security-related projects 91
7.2. Effectiveness in achieving prescribed objectives 92
7.3. Dissemination, communication and exploitation activities 95
7.4. Gender equality and integration in the R&I content 100
7.5. Structuring effect and durability of networks 101
7.6. Main results and outcomes of Horizon Europe programme parts Clusters 1, 2, and 3 104
7.6.1. Short-term scientific outputs 104
7.6.2. Short-term societal outputs 109
7.6.3. Short-term technological/innovation-related outputs 118

7.7. International cooperation 122
7.8. Consideration of ethical aspects in health research 124
7.9. The matching investments of Clusters 1, 2, and 3....125

7.10. Impacts on building or reinforcing the EU autonomy from the perspective of Cluster 1, 2 and 3 125
7.11. Feedback to policy....127

8. EU added value 129
8.1. EU added value to health research....129
8.1.1. EU added value of Cluster 1…….. 129
8.1.2. EU added value of the assessed partnerships…… 130
8.2. EU added value to culture, creativity and Inclusive Society....131
8.3. EU added value to security research....132

9. Partnership-specific criteria 134
9.1.1. Additionality of partnerships……134
9.1.2. Directionality……..136
9.1.3. International positioning and visibility……137
9.1.4. Transparency and openness of partnerships…….. 139
9.1.5. Phasing-out preparedness……..143

10. Key findings, conclusions and lessons learned....144

Key definitions, acronyms and glossary

AAL	Active and Assisted Living Research and Development Programme
AAL2	Active and Assisted Living Research and Development Programme 2
AGA	Annotated Grant Agreement
AI	Artificial Intelligence
AIDS	Acquired Immune Deficiency Syndrome
AMR	Anti-microbial resistance
Applicant	Legal entity submitting an application for a call for proposals
Application	The act of involvement of a legal entity in a Proposal. A single Applicant can apply for different proposals.
Associated Country	Third Countries that are party to an association agreement with the European Union
AU-EU	The Africa-EU Partnership
BM	Border Management
BRG	Better Regulation Guidelines
CEPI	Epidemics Preparedness Initiative
CH	Coherence
CS	Case Study
CSA	Coordination and Support Action
CSO	Civil Society Organisation
DG Connect	Directorate-General for Communications Networks, Content and Technology
DG Grow	Directorate-General for Health and Food Safety
DG RTD	Directorate-General for Research and Innovation
DG Sante	Directorate-General for Health and Food Safety
DRS	Disaster-Resilient Society
EA	Executive Agencies
EAV	EU added value
EC	European Commission
ECA	European Court of Auditors
ECDC	European Centre for Disease Prevention and Control
EDAP	European Democracy Action Plan
EDCTP	European and Developing Countries Clinical Trials Partnership
EDCTP2	European and Developing Countries Clinical Trials Partnership 2
EDCTP3	European and Developing Countries Clinical Trials Partnership 3
EFC	Effectiveness
EFF	Efficiency
EIT	European Institute of Innovation and Technology
EMA	The European Medicines Agency
ENI	European Neighbourhood Instrument
ENP	European Neighbourhood Policy
EPRS	European Parliament's Research Service
ERA	European Research Area
ERA4Health	Fostering a European Research Area for Health Research
ESF+	European Social Fund Plus

ESIR	Expert group on the economic and societal impact of research and innovation
EU	European Union
FAIR	Findable, Accessible, Interoperable, and Reusable
FCT	Fighting Crime and Terrorism
FET	Future and Emerging Technologies
FP	Framework Programme
FWCI	Normalised Citation Index
GA signature	Signing the grant agreement
GACD	The Global Alliance for Chronic Diseases
GDP	Gross domestic product
GDPR	General Data Protection Regulation
GEP	Gender Equality Plan
GH EDCTP3 JU	Global Health EDCTP3 Joint Undertaking
GloPID-R	The Global Research Collaboration for Infectious Diseases
HaDEA	European Health and Digital Executive Agency
HEI	Higher Education Institutions
HERA	Health Emergency Preparedness and Response Authority
HES	Higher or Secondary Education institutions
High-Quality Proposal	A proposal that scores above a set evaluation threshold, making it eligible for funding
IA	Innovation Action
ICPC	International Partner Cooperation Countries
IHI	Innovative Health Initiative
IICS	Investigator-initiated clinical studies
IMI	Innovative Medicines Initiative
IMI2	Innovative Medicines Initiative 2
INFRA	Resilient Infrastructure
IPA III	Instrument for Pre-accession Assistance
IRDiRC	The International Rare Disease Research Consortium
JPI	Joint Programming Initiative
JRC	Joint Research Centre
JU	Joint Undertaking
KIC	Knowledge and Innovation Community
KIP	Key Impact Pathways (KIPs)
KSOs	Key Strategic Orientations
LEA	Law Enforcement Agency
LEIT	Leadership in Enabling and Industrial Technologies
MENA	The Middle East and North Africa
MSCA	Marie Skłodowska-Curie Actions
NCPs	National Contact Points
NDICI	Neighbourhood, Development and International Cooperation Instrument
Newcomer	A Horizon Europe participant who was not involved in a project in a previous R&I framework programme (in particular, not a FP7 or Horizon 2020 participant)
NGO	Non-Governmental Organisation

NIH	National Institute of Health
OECD	Organisation for Economic Co-operation and Development
OPC	Open public consultation
OTH	Other entities (a category of entities participating to the Framework Programme which are not HES, REC, PUB nor PRC)
P2P	Public-to-Public Partnership [please relate to PPP below]
PARC	European Partnership for the Assessment of Risks from Chemicals
Participant	Any legal entity carrying out an action or part of an action under Horizon Europe
Participation	The act of involvement of a legal entity in a Project. A single Participant can be involved in multiple Projects
PCP	Pre-Commercial Procurement
PPI	Public Procurement of Innovative Solutions
PPP	Public-Private Partnerships
PRC	Private for-profit institutions
Project	Successful proposals for which a Grant Agreement is 'signed'
PSC	Partnership-Specific Criteria
PSIA	Participating States Initiated Activity
PUB	Public bodies
REA	Research Executive Agency
R&D	Research and development
R&I	Research and Innovation
REC	Research Organisations
RIA	Research and Innovation Actions
RV	Relevance
SC1	Horizon 2020, Pillar 2, Societal Challenge 1: Health, demographic change and well-being
SC6	Horizon 2020, Pillar 2, Societal Challenge 6: Europe in a changing world - inclusive, innovative and reflective societies
SC7	Horizon 2020, Pillar 2, Societal Challenge 7: Secure societies protecting freedom and security of Europe and its citizens
SDG	Sustainable Development Goals
SME	Small or Medium-Sized Enterprise
SRIA	Strategic Research and Innovation Agenda
SSH	Social Sciences and Humanities
Success rate	The share of proposals that are retained for funding out of the total number of eligible proposals
SWG	Synergies Working Group
TB	Tuberculosis
TFEU	Treaty for the Functioning of the European Union
THCS	Transforming Health and Care Systems
Third Country	A state that is not a Member State of the EU. The 'Third Countries' list does not include Associated Countries

TRL	Technology Readiness Levels are indicators of the maturity level of particular technologies. This measurement system provides a common understanding of technology status and addresses the entire innovation chain: TRL 1 – basic principles observed; TRL 2 – technology concept formulate; TRL 3 – experimental proof of concept; TRL 4 – technology validated in lab; TRL 5 – technology validated in relevant environment; TRL 6 – technology demonstrated in relevant environment; TRL 7 – system prototype demonstration in operational environment; TRL 8 – system complete and qualified; TRL 9 – actual system proven in operational environment
TTG	Time-To-Grant (monitoring metric of administrative efficiency; the number of calendar days between the call's closing date and the signing of the grant agreement)
TTI	Time-To-Inform (The time from call closure until the notification on evaluation outcome)
TTP	Time-To-Pay (The time from invoice issuance to invoice payment date)
TTS	Time-To-Sign (Time from the evaluation outcome to Grant Agreement (GA) signature)
VET	Vocational Education and Training
WHO	World Health Organization
Widening countries	Countries that are low performing in the area of research and innovation (less than 70% of the EU average)
WP	Work Programme
WT	The Wellcome Trust

Abstract

This publication is the final report of the evaluation support study on Horizon Europe's contribution to a Resilient Europe. It is an input into the interim evaluation of Horizon Europe, covering the period 2021-2023. The scope of the study covers three Clusters of Horizon Europe Pillar II: 1) Health, 2) Culture, Creativity and Inclusive Society, 3) Civil Security for Society. Additionally, it includes the Cancer Mission and seven partnerships. The findings are evidence based and inform future adjustments or reorientations of the programme.

The assessment covers all five Better Regulation evaluation criteria, employing various methods, namely desk research, survey, interview programme, 6 quantitative methods, 15 case studies and 4 benchmark studies.

The analysis of the three Clusters demonstrates their alignment with EU priorities. Cluster 1 has shown adaptability, focusing on critical health areas, such as infectious diseases and leading significant efforts in COVID-19 and cancer research. Cluster 2 showcased promising potential in harmonising technological advancements with fundamental rights and civil liberties. Cluster 3 is enhancing the EU's cybersecurity framework, contributing to broader security objectives. The administrative efficiency of Horizon Europe is progressing and already showing positive shifts from Horizon 2020, especially in terms of higher project success rates and funding allocation.

Executive summary

Background of the programme:

Horizon Europe is the 9th EU Framework Programme for Research and Innovation. It is integrated into the Multiannual Financial Framework (MFF) and stands as a pivotal programme in social, economic, digital, and environmental transitions, aligning with EU policy priorities. Running from 2021 to 2027, it succeeds the Horizon 2020 programme with a budget of EUR 95.5 billion. Horizon Europe aims to produce scientific, technological, economic, and societal impacts from the EU's investments in research and innovation (R&I), thereby strengthening the EU's scientific and technological bases and fostering competitiveness across all EU Member States. Horizon Europe has introduced EU Missions, which provide funding to achieve concrete solutions to challenges with societal relevance through cross-sectoral and interdisciplinary cooperation. European Partnerships have been refocused on EU added value through strategic collaboration between public and private actors in critical areas such as health, food, clean energy, transport, and circularity.

Purpose and scope of the study:

This study serves as an evidence base for the interim evaluation of the Horizon Europe programme[1], which retrospectively assesses the performance of the first years to inform (work) programme design decisions. Its focus lies on the "Resilient Europe" aspects of the framework programme. This includes activities across three of the thematic clusters within Pillar 2 of Horizon Europe: Cluster 1 – Health, Cluster 2 – Culture, Creativity and Inclusive Society, and Cluster 3 – Civil Security for Society. Moreover, the study encompasses an evaluation of European and co-funded partnerships: The Second Innovative Medicines Initiative (IMI2), Innovative Health Initiative Joint Undertaking (IHI), EIT Health, The Second European and Developing Countries Clinical Trials Partnership Programme (EDCTP2),

1 See also Article 52 of the regulation establishing Horizon Europe (https://eur-lex.europa.eu/eli/reg/2021/695/oj.

Global Health EDCTP3 Joint Undertaking (GH EDCTP3 JU), European Partnership on Transforming Health and Care Systems (THCS), ERA4Health, and the Co-funded European Partnership "European Partnership on the Assessment of Risks from Chemicals" (PARC) and dedicated Case Study on Mission on Cancer. Delays in implementation in two partnerships, EDCTP3 and IHI, were noticed.

When it comes to the outcomes, the report focuses on three Key Impact Pathways (KIPs), specifically on the societal outputs: KIP 4: Addressing EU policy priorities & global challenges through R&I; KIP 5: Delivering benefits & impact via R&I missions; KIP 6: Strengthening the uptake of R&I in society. The analysis related to those KIPs found that ongoing health projects are vital for advancing short-term indicators in Cluster 1, with noticeable policy shaping, particularly in cancer research. External surveys indicate 59.0% agreement with the Mission's implementation plan. Co-creation is seen as essential for the engagement of Cluster 1 beneficiaries in research uptake. Cluster 2 aligns with EU policy priorities, addressing the social implications of COVID-19 and mobilising Social Sciences and Humanities research for evidence-based policies. Cluster 3 call topics link to key EU security policies. All clusters contribute to relevant SDGs: 3, 16, 11, and 9.

Methodology of the study:

The methodology of the study for the Horizon Europe evaluation report included a comprehensive approach utilising 6 primary methods: desk research, an extensive interview programme[2] (with 210 interviews involving relevant stakeholders, beneficiaries, and EC officials), 15 case studies, 4 benchmark studies, and 2 large-scale surveys of beneficiaries and unsuccessful applicants. The study also incorporated 5 additional quantitative methods: bibliometric analysis, network analysis, external synergies analysis, unstructured data analysis, and analysis of Sustainable Development Goals (SDG) data.

As for the quantitative data analysis, the data was extracted in June 2023, hence, the analysis considers monitoring data made available up to that date and does not include developments subsequent to this date. At that time, there were no closed projects for Cluster 1 and Cluster 3, and 1 closed project (2021) for Cluster 2. There were 484 signed projects and 78 projects under preparation. The delayed launch of the Horizon Europe programme resulted in the first calls for proposals being open in the second half of 2021, with closing dates in mid-late autumn. As a result, the analysis in this report cannot provide evidence on the scientific outcomes, and the technological/economic and societal outputs of the analysed programme parts when it comes to the contribution of individual EU-funded projects launched under Horizon Europe.

The organisation of the study:

The study was conducted in accordance with the EU's Better Regulation Guidelines. Its outcomes are structured around key evaluation questions that address five evaluation criteria: relevance, coherence, efficiency, effectiveness, and EU added value. Additionally, the study included specific criteria for partnerships: IMI2, IHI, EIT Health, EDCTP2, GH EDCTP3 JU, THCS, ERA4Health, and the PARC partnership.

- **Relevance** was assessed in terms of flexibility to cope with emerging needs, ability to meet stakeholder and target group needs, participation of international partners and Associated Countries, timeliness of research and relevance and flexibility of partnerships.

2 The detailed breakdown of the interview programme participant group is presented in Annex 3, Section 1.7.

- **Coherence** was assessed in terms of how well or not the different interventions and policies at the national, EU and international levels worked together and if there were synergies, complementarities and overlaps among them.

- **Efficiency** was assessed by looking at budgetary resources, application selections and project implementation processes, flexibility and openness, the attractiveness of the programme, proposal preparation costs, involvement of external consultants, cost-effectiveness, the efficiency of feedback to prepare for policy changes, and the efficiency of security-related research.

- **Effectiveness** was assessed in terms of the programme parts achieving their set objectives, main results and outcomes, dissemination, structuring effect and durability of networks, open access uptake, international cooperation, ethics in health research, matching investments, and impacts on building and reinforcing the EU autonomy.

- **EU added value** was assessed in the fields of health, social sciences and security research.

- **Partnerships** were assessed in terms of additionality[3] (i.e. financial, network and knowledge), directionality, international positioning and visibility, transparency and openness, and phasing out preparedness.

How relevant were the Horizon Europe programme parts assessed in the study?

The assessment of the Horizon Europe programme's relevance revealed that it demonstrated the necessary flexibility to respond to emerging and changing circumstances, stakeholder needs, timeliness in research and innovation, and the adaptability of partnerships, as evidenced across the three analysed clusters and partnerships within the scope of the study.

The relevance analysis confirms that the three **clusters remain highly relevant, addressing both ongoing and newly emerging challenges.** For instance, Cluster 1 has adapted to the current health crises by focusing on areas such as infectious diseases, with special emphasis on COVID-19 variant research and cancer, mirroring global funding trends like those of the National Institutes of Health of the United States. Cluster 2 topics and destinations (democracy and governance, cultural heritage, socioeconomic transformations) remain highly relevant and allow for the applicants and stakeholders to address the issues more systematically. Cluster 3 contributes to the EU's cybersecurity measures, aligning with the Union's digital and privacy policies and keeping the initial objectives relevant. Overall, in all Clusters, the objectives have proven to be foundational yet flexible, allowing each cluster to remain responsive to the shifting dynamics of global and European challenges.

The study found that **each of the assessed clusters displays adaptability to the changing needs**. Cluster 1 contributes to the Recovery Plan for Europe, addressing rapid technological and socio-economic changes. Cluster 2 has responded well to the mental health impacts of COVID-19, the effects of the Russian invasion of Ukraine, and technological developments. Cluster 3 shows evidence of being in line with the EU's Global Gateway Strategy, focusing on collaboration with developing countries in the thematic area of disaster-resilient societies, and contributes to strengthening the EU's security to face the increasing number of extreme

3 The additionality criterion is assessed from two angles: 1) additionality in terms of financial contributions and leverage effect, and 2) additionality in terms of network expansion, new collaborations and increased exploitation of knowledge.

weather events (flash floods, heat waves in 2022-2023) and against the surge of organised crime and cybercrime after the COVI-19 pandemic.

The study found that each cluster exhibits a tailored approach to **addressing stakeholder and target group needs**. Cluster 1 engages end users and SMEs in the health industry, ensuring diverse participation. Cluster 2 expanded its participant base by including more CSOs (including NGOs), practitioner groups (i.e. non-academic participants), and end users, emphasising citizen engagement in co-creating research and innovation. Cluster 3 highlights the importance of involving public bodies and security practitioners, mandating their involvement as a key eligibility criterion.

The **participation of international partners and Associated Countries** also varies across the three clusters. Although overall levels of participation of international partners and Associated Countries is an important area in all three clusters, the study found that international cooperation is an area for further reinforcement in the upcoming half period of the Horizon Europe programme, especially for the destination in Cluster 2 dealing with cultural heritage and cultural and creative industries.

Regarding the **timeliness of research and innovation activities**, all three clusters demonstrate responsiveness to emerging trends and challenges. Cluster 1 stands out in addressing new or fast-growing research areas, strongly contributing to the overall performance of Horizon Europe. Cluster 2 is proactive in mobilising social sciences and humanities to adapt quickly to societal needs. Cluster 3 maintains a focus on evolving security concerns, particularly in cybersecurity. The cluster is also dedicated to ensuring the security of the EU's critical infrastructures (energy infrastructures in 2023 as a consequence of the war in Ukraine). Additionally, Cluster 3 is working to combat the surge of organised crime that has occurred in the years following the COVID-19 pandemic. Finally, the cluster is working to prevent new forms of cybercrime relying on Artificial Intelligence and generative AI.

The study observed the sustained **relevance and flexibility of assessed partnerships**. Overall, the evidence demonstrates that partnerships play a crucial role in promoting innovative research and development, improving health outcomes, and strengthening Europe's competitiveness in various sectors, including digital health, chronic disease management, and healthcare system information.

How coherent were the Horizon Europe programme parts assessed in the study?

Clusters 1, 2, and 3 were found to demonstrate inter-cluster coherence, with each holding potential for synergies. Cluster 1 enhances its health initiatives by collaborating with Cluster 2 on social and cultural aspects and with Cluster 4 on digital integration. Cluster 1 strategically uses a variety of action types, primarily focusing on Research and Innovation Actions (RIAs), which align with its emphasis on exploring new technologies and innovations. This focus, combined with the distinct thematic coverage and participant groups of each action type, ensures a broad and diverse engagement across the health sector. There are little to no thematical overlaps between different Cluster 1 funding instruments, suggesting that so far, the Health Cluster instruments, for the most part, are covering different research grounds. Our findings are very similar to that of the predecessor SC1 – there is a greater thematic cohesion within the different action types than between them. Cluster 2 focuses on the role and contribution of social sciences and humanities in broader EU objectives, specifically regarding democracy and governance, cultural heritage, and socio-economic issues and policies. The innovative approach to funding and policy experimentation within this Cluster strengthened its internal coherence.

Meanwhile, Cluster 3 aims to integrate strategies addressing both security and societal well-being, benefiting from collaborations with Clusters 1 and 2, but ensuring as well a safe online environment in line with Cluster 4 and preparedness and response to extreme weather events complementing actions under Cluster 5. **Cluster 3 is aligned with evolving security threats and technological advancements**, focusing on enhancing European capabilities in areas like Artificial Intelligence and cybersecurity. The Community of European Research and Innovation for Security (CERIS) hosted by DG HOME acts as an important forum for coordinating collaboration within Cluster 3 and beyond.

The technology readiness level analysis performed to see the **inter-cluster coherence** showed that Cluster 1 maintains a strategic balance in project distribution, transitioning from early stages of technology readiness levels (TRLs 2-3) to more advanced ones (TRLs 6-8). This approach underlines Cluster's 1 dedication to technological development, aligning with the overarching goals of Horizon Europe by ensuring a balanced coverage across both lower and higher TRLs. As for Cluster 2, data on TRLs are currently unavailable, and is largely irrelevant to the SSH type of research conducted under Cluster 2. Cluster 3's TRLs vary from 4-8, suggesting a maintained balance of TRLs. However, it should be noted that these findings are based on preliminary analysis, and conclusions may shift as more data become available.

The **external coherence analysis** was carried out by looking at the Horizon Europe regulation that identified 21 EU funds/programmes where synergies were envisioned and desirable. Out of these**, the evaluation found evidence of (varying degrees) synergies with eight funds/programmes**. With the remaining 13 funds/programmes, the evaluation found no evidence of synergies, which may require more time to initiate.

The analysis of the **coherence among assessed partnerships** demonstrated that partnerships **are actively pursuing coherence and synergies to enhance their impacts on R&I.** Notably, while some partnerships have already made significant progress in achieving coherence and synergies, others are still in the early stages of development and implementation (particularly in communication, collaboration, integration). This finding shows a continued commitment to sustaining synergies, as was the case with their predecessors under Horizon 2020.

Regarding the **positioning within the European Research and Innovation (R&I) and policy landscape**, each Cluster plays a distinct role. Cluster 1 is pivotal in advancing health research, aligning with EU strategic initiatives (i.e. Europe's Beating Cancer Plan, Health Crisis Preparedness, Mental Health). Cluster 2 makes significant contributions in areas like migration, democracy, and culture, highlighting the importance of international cooperation. Cluster 3 reinforces the EU's commitment to security and a safe digital transformation, contributing to the EU's leadership in addressing contemporary security concerns and fostering digital advancements and, thus, addressing the fragmentation of the European security domain.

Horizon Europe also demonstrates a strategic approach to **fostering synergies and coherence with other initiatives at regional and national levels**. The programme enhanced its synergies with EU4Health (in Cluster 1) and was complementary to the Neighbourhood Development and International Cooperation Instrument (in Cluster 2). This approach ensured a holistic and impactful strategy in addressing not only European but also global challenges.

How efficient were the Horizon Europe programme parts assessed in the study?

Budgetary resources and programme competitiveness: The study compares the financial allocations and spending patterns in Horizon Europe with those in Horizon 2020, analysing how these affect the competitiveness of the programme. Notably, oversubscription issues have improved, and success rates in Cluster 1, Cluster 2, and Cluster 3 have almost doubled, indicating a higher likelihood of securing EU funding. This is likely related to increased funding to Horizon Europe, as compared to Horizon 2020, as well as a smaller number of applicants seeking HE funding as compared to H2020. Administrative costs incurred by the Executive agencies for Cluster 1, Cluster 2, and Cluster 3 were all close to the 5% benchmark of their operational budgets. The partnerships EDCTP3 and IMI2/IHI both use administrative resources under 5.0% of their operational budgets.

Proposal preparation costs: The study examines the efforts and resources required by coordinators and partners in the context of the programme's success rates at the programme level. The analysis reveals that proposal coordinators shoulder the primary burden of preparing comprehensive proposals and that this effort increases with the size of the consortium. The effort spent by consortium partners, on the other hand, exhibits uniformity irrespective of project characteristics. In Horizon Europe, the median coordinator spent 36 to 45 person-days specifically on proposal preparation, while the median partner dedicated 16 to 25 person-days to this phase. The coordinator's preparation effort responds to project size, as measured by the requested budget, project duration, and the number of consortium partners. Notably, coordinators of successful proposals spend more time (median response is 46-55 person-days) in preparation compared to unsuccessful ones (median response is 36-45 person-days). Applicants expressed varying degrees of satisfaction with the effort needed to prepare a Horizon Europe proposal in light of the chances of success. While similar shares of around a quarter of respondents found application costs proportionate to a small, moderate, or large extent respectively, very negative judgements were twice as common (18%) as very positive ones (9%).

Support available to applicants: The analysis of the types and sources of support available to applicants during their proposal preparation showed that a majority of applicants (around 70%) received some support, often from multiple sources. Around 50% of applicants received help from within their organisation, just under 20% received support from National Contact Points and 17% made use of consultancies. Applicants are estimated to have spent between EUR 39 and 55 million on consultancy fees in the first 2 years of Horizon Europe.

Selection and implementation process: The timeliness of project selection and implementation processes fell below Horizon 2020 standards and did not meet targets. The percentage of ineligible proposals in Horizon Europe exceeds the benchmark years of Horizon 2020. Monitoring data, shows that 6.1% of Cluster 1 proposals, 3.2% of Cluster 2 proposals and 7.9% of Cluster 3 proposals were ineligible.

Administrative costs of participation: The administrative costs of participation are examined, revealing that the median consortium-run project typically allocates 6.0% to 10.0% of its budget to administrative tasks, a proportion deemed appropriate by the beneficiaries surveyed. The study also explores the proportion of project budgets allocated to administrative tasks, offering insights into the perceived proportionality of these costs.

How effective were the Horizon Europe programme parts assessed in the study?

Effectiveness in achieving prescribed objectives: Clusters 1, 2, and 3 in Horizon Europe are aligned with their respective objectives and are making steady progress towards their realisation. At the time of writing (end of 2023), no Cluster 1 projects were closed, yet

anecdotal evidence suggests that Cluster 1 is realising its objectives. This is reaffirmed by surveyed beneficiaries who agree that the Cluster in on track to achieve its prescribed objectives. Cluster 2 evidence suggests positive early feedback, indicating progress in enhancing researchers' skills and knowledge advancement. Cluster 3 effectively organises its calls within Work Programmes to align with specific objectives, as surveys indicate that its projects are on track to achieve their objectives.

Dissemination, communication, and exploitation activities: According to the survey, Cluster 1 beneficiaries revealed that the primary utilisation of their projects is for academic purposes (53.8%). Additionally, participants in Cluster 1 expressed high satisfaction with tools like the Horizon Results Booster, indicating effective support in dissemination and exploitation efforts. In Cluster 2, there is an emphasis on early-stage dissemination and exploitation activities to advance research findings. Survey responses from Cluster 3 focused on service-oriented and standardisation activities within its exploitation strategy and emphasised the commitment to disseminate the research results to stakeholders and the broader society as a critical success factor.

Gender equality and integration in the R&I content: Gender equality is a fundamental principle across all clusters. Specific initiatives and strategies were implemented to ensure gender balance and integration of gender dimension in R&I content. This is reflected in the requirement for a Gender Equality Plan (GEP) as an eligibility criterion and the evaluation of the integration of gender dimension into R&I content, under the excellence criterion. At the same time, **more effort is needed concerning the implementation of GEP requirements** across organisations and the **integration of broader concepts** that go beyond gender, **such as intersectionality, namely the diversity and inclusion** of minorities and populations with multiple identities.

Structuring effect and durability of networks: All three clusters demonstrate evidence of creating a structuring effect, influencing research priorities, and fostering partnerships. However, the long-term impact and durability of these networks, essential for sustained collaboration and innovation, remain to be fully assessed once the programme ends. **The structuring effect of Horizon Europe's health-related partnerships and the Cancer Mission shapes collaboration, innovation, and strategic alignment in addressing major health challenges throughout Europe.** Notably, partnerships like GH EDCTP3 JU have a significant structuring effect on health research, particularly in **addressing infectious diseases and improving healthcare systems in developing countries**.

Main Results and Outcomes of Horizon Europe Programme Parts Clusters 1, 2, and 3. The main results and expected outcomes of all three Clusters are divided around scientific, societal, and technological outputs. This report focuses on three Key Impact Pathways (KIPs), specifically on the societal outputs: KIP 4: Addressing EU policy priorities & global challenges through R&I; KIP 5: Delivering benefits & impact via R&I missions; KIP 6: Strengthening the uptake of R&I in society.

***Short-term scientific outputs**:* Under scientific outputs, the study team assessed the extent to which the Clusters have advanced towards producing outputs in 3 areas: Creating high-quality new knowledge; Strengthening human capital in research and innovation; Fostering diffusion of knowledge and open source. In Cluster 1, the survey indicates an emphasis on producing outputs such as research publications, datasets, and tools and methodologies. The production of outputs indicates that the projects are well underway to generate knowledge and resources in the short term. Similarly, anticipated outputs for Cluster 2 include research publications, policy recommendations, and innovative methods. Cluster 3 typical projects aim to create knowledge-sharing platforms for resilient and secure societies, often involving sensitive data. Challenges in open access are addressed through clear guidelines and protocols for sharing sensitive data securely.

Short-term societal outputs: In Cluster 1, the KIP 4 on addressing EU policy priorities is highlighted in the ongoing health-related projects. The patterns of shaping policies are especially visible in cancer research. This also shows the progress of delivering the benefits and impact via Cancer Mission, which is the KIP 5 of the societal outputs. Cluster 2 remains consistent with EU and global priorities, such as UN SDGs, and also addresses the social implications of the COVID-19 pandemic. It contributes to building a resilient, inclusive, and democratic European society. Cluster 2 projects emphasise societal transformations, democratic values, and social and economic inclusivity. Cluster 3 focuses on security-related EU policies and priorities with strong stakeholder participation in the thematic areas of fight against crime and terrorism, border management, disaster-resilient society, resilient infrastructure, and increased cybersecurity. Cluster 3 contributions align with key EU security strategies, as well as SDG 16 (Peace, justice and strong institutions), by addressing pressing security challenges, including climate change adaptation and cybersecurity. Among all three clusters, the survey respondents emphasised the necessity of co-creation in their projects, linking to the KIP 6 on the strengthened uptake of R&I in society.

Short-term technological/innovation-related outputs: Cluster 1 was found to produce outputs linked to job creation, support for start-ups, and addressing the workforce shortage. EIT Health's proactive initiatives, such as the WorkInHealth Foundation, prove its proactive effort in identifying new talents to meet the growing demand for a digital and data-driven workforce. Meanwhile, Cluster 2 exhibits early signs of technological progress, particularly in digital solutions, with many beneficiaries planning commercialisation activities. Both clusters show promise in fostering innovation, although detailed data on patents generated or originating from the Innovation Radar have not yet emerged for Horizon Europe.

International cooperation: International cooperation is an integral feature across all clusters. Clusters demonstrate varied degrees of international collaboration, aligned with strategic agendas and global challenges, reflecting the programme's commitment to fostering global research and innovation networks. The participation of Third Countries in Cluster 1 demonstrates an increase (15.6%) compared to the predecessor (SC1, 6.8%). The same pattern was noticed in Cluster 2 (from 7.4% to 11.7%) and Cluster 3 (from 0.9% to 6.3%). This increase was mainly due to the temporary status of the United Kingdom as a Third Country.

Consideration of ethical aspects in health research: The Ethics Appraisal Process was reformed to focus on serious and/or complex ethics issues, thereby lightening the administrative burden for applicants and beneficiaries while ensuring compliance with fundamental ethics principles.

Consideration of security aspects in research under the programme: security aspects of research are integrated into Horizon Europe's regulation through Article 20 (security scrutiny), which, while it is applicable to the entire programme, is used extensively for projects under Cluster 3. Security scrutiny contributed to the protection of classified information within projects, in particular in the sensitive areas of Cluster 3.

Matching investments of Clusters 1, 2, and 3: All three clusters are attracting additional funds. At the time of evaluation, Cluster 1 matching investments amount to about 25.0% of total project costs, compared to 26.0% for Societal Challenge 1 at the end of the Horizon 2020 programme. Cluster 2 matching investments amount to 1.0% compared to 10.0% in Societal Challenge 6, and in Cluster 3, the share of matching investments amounts to 10.0%, the same as it was for Societal Challenge 7.

Impacts on building or reinforcing the EU autonomy: The three clusters contribute to reinforcing EU autonomy in key strategic areas such as health, social well-being, digital innovation and security. Initiatives like the European Pillar of Social Rights and collaborations with external entities demonstrate the EU's commitment to bolstering research and innovation in these important areas.

What was the European added value of the Horizon Europe programme parts assessed in the study?

Cluster's 1 EU added value lies in fostering collaborative health research and innovative technologies. The study found evidence of projects and actions where Cluster 1 is enabling transnational collaboration and focusing on critical health domains like disease prevention and treatment, which in some cases would not be possible without the EU's support. The Cluster's strategic R&D efforts extend beyond the EU and have impacted global health at the international level.

European partnerships: Institutional and co-funded partnerships, including THCS, ERA4Health, PARC, GH EDCTP3 JU, IHI, and EIT Health, demonstrate added value through cross-border collaborations, advanced clinical studies, capacity building, and public-private funding. They have been instrumental in addressing global health challenges and promoting health equity.

Cluster 2 is recognised for its cross-sectoral collaboration, multidisciplinary approach, and financial support. It particularly stands out in the field of Arts and Humanities, which often receives less funding compared to other fields. The Cluster has filled gaps by funding topics not covered by national or regional R&I funding schemes, emphasising the importance of EU financial aid in long-term project impacts.

Cluster 3 is bringing EU added value by opening possibilities for pan-European security solutions and collaborations, which would otherwise be challenging at the national level. EU funding in Cluster 3 is pivotal in aligning diverse consortia for common objectives, highlighting the benefits of European funding mechanisms. Based on the review of publicly available sources, dedicated national security research programmes exist in only five Member States, which underlines the importance of Cluster 3 for European security research.

Assessment of partnerships covered under the study

The additionality of the partnerships is assessed on the basis of two different aspects: (a) through their budget leverage factor and (b) through their level of success in bringing together relevant and competent actors from across Europe (and beyond, if applicable). The findings here are twofold. Firstly, the budget leverage factor varies considerably among different partnerships and cannot solely indicate their success. For example, EDCTP2 shows significantly higher leverage than IMI2, but this metric does not fully capture the latter's additionality as its Industrial partners provide mainly in-kind contributions. Secondly, all partnerships effectively bring together relevant and competent actors from across Europe and beyond, enhancing research and innovation networks and facilitating collaboration and knowledge sharing among diverse institutions.

Directionality: EDCTP2, IMI2, and EIT Health have shown progress towards their objectives, with EDCTP2 advancing in major health challenges, IMI2 contributing significantly to pharmaceutical research, and EIT Health exceeding goals in start-up development and education. Newer partnerships like GH EDCTP3 JU, IHI, and ERA4Health demonstrate clear strategic visions and promising directionality beyond traditional calls.

International positioning and visibility: EDCTP stands out for its strong international collaboration and visibility, particularly in health research between African and European countries, and involvement with global organisations like WHO and the Bill & Melinda Gates Foundation. While other partnerships in the evaluation show less emphasis on extra-EU collaboration, this aligns with their core objectives and is not considered a weakness.

Transparency and openness of partnerships: The study concludes that, generally, the partnerships appear to be open to new partners and beneficiaries, with mechanisms in place for expansion. For example, EDCTP partnerships have established procedures for engaging a broader set of stakeholders across Europe and Africa.

Phasing-out preparedness: The readiness for phasing out varies among partnerships. While some are considering strategies for post-programme sustainability, others, like EDCTP and IMI, transitioned into new partnerships without setting up immediate phasing-out measures for the future.

1. Introduction

This **final study report** provides an overview of the work involved and key findings derived as part of the supporting study titled "Resilient Europe" feeding into the European Commission's mid-term evaluation of the Horizon Europe Framework Programme (FP). Commissioned by the Directorate-General for Research and Innovation (DG RTD), the study was implemented from January 2023 to January 2024 by **PPMI in partnership with Prognos, VTT and Maastricht University.**

The report begins by describing the background of the Framework Programme and its state of implementation. The analysis is organised according to the Better Regulation Guidelines (BRG) criteria of relevance, coherence, efficiency, effectiveness, the EU added value and the partnership-specific criteria. In addition to the analysis of different programme parts, the report highlights key findings and conclusions from the overall assessment and, where relevant, identifies lessons learned from Horizon Europe. The report is structured as follows:

- **Chapter 1** – Introduction – provides the purpose and scope of the study;
- **Chapter 2** – Background to the initiative – provides baselines, evaluation questions and methodology;
- **Chapter 3** – Implementation State of Play – features an overview of the implementation status and an overview of Horizon Europe's implementation processes, inputs and activities;
- **Chapter 4** – Relevance – presents findings of relevance evaluation criteria;
- **Chapter 5** – Coherence – presents findings of coherence evaluation criteria;
- **Chapter 6** – Efficiency – presents findings of efficiency evaluation criteria;
- **Chapter 7** – Effectiveness – presents findings of effectiveness evaluation criteria;
- **Chapter 8** – EU added value – presents findings of EU added value evaluation criteria;
- **Chapter 9** – Partnership-specific criteria – presents findings of partnership-specific evaluation criteria;
- **Chapter 10** – Key findings, conclusions, and lessons learned – presents a key implication of each evaluation criterion.

1.1. Purpose of the study

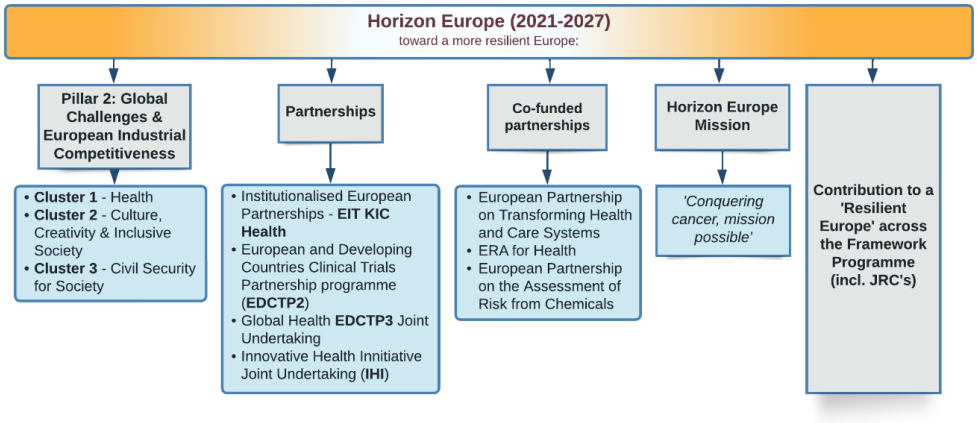
This supporting study is an input feeding into the European Commission's interim evaluation of the 9th EU Framework Programme for Research and Innovation Horizon Europe, running from 2021 to 2027. It aims to assess whether interventions and actions linked to Horizon Europe programme parts and partnerships assessed as part of this study are justified and whether Horizon Europe is working as expected towards achieving its objectives.

1.2. Scope of the study

All activities of Horizon Europe are expected to contribute to reinforcing European resilience by delivering scientific, economic, or societal impact in the areas of health, culture, creativity, Inclusive Society, and civil security for society. As such, this study strongly focuses on Clusters 1, 2 and 3 and specific co-programmed European partnerships, co-funded European partnerships, and institutionalised partnerships (see Figure 1). All clusters under Horizon

Europe have their specific destinations[4], which are the basis for the calls for proposals responding to the expected impacts and are listed in the Cluster Work Programmes. In addition to the specific clusters under Pillar 2 of the programme, the study includes the assessment of the Horizon Europe Mission as well as an assessment of contributions to the objective covered under the scope of this study across the Framework Programme (including Joint Research Centre (JRC)). The other parts of the framework programme are covered through parallel studies (currently ongoing)[5].

Figure 1. Scope of the Resilient Europe Study



Source: Compiled by the study team.

To allow for evaluation findings to feed into *ex ante* assessments (or impact assessments), the interim evaluation results are generally scheduled for delivery no later than around the fourth year of the programming period. The assessment of Horizon Europe programme parts included in **this study mainly covers the 2021-2022 period and, where possible, includes emerging findings from 2023.**

Strong attention is also paid to the three types of impacts tracked through the Key Impact Pathways (KIPs), namely **scientific impact, societal impact and technological/economic impact.** In particular, this study focuses on assessing societal impacts, namely KIP 4: Addressing EU policy priorities & global challenges through R&I, KIP 5: Delivering benefits & impact via R&I missions and KIP 6: Strengthening the uptake of R&I in society from the perspective of Clusters 1, 2 and 3.

4 Cluster 1 destinations: 1) staying healthy in a rapidly changing society, 2) living and working in a health-promoting environment, 3) tackling diseases and reducing disease burden, 4) ensuring access to innovative, sustainable, and high-quality health care, 5) unlocking the full potential of new tools, technologies, and digital solutions for a healthy society, 6) maintaining an innovative, sustainable, and globally competitive health industry. Cluster 2 destinations: 1) innovative research on democracy and governance, 2) innovative research on the European cultural heritage and the cultural and creative industries, 3) innovative research on social and economic transformations. Cluster 3 destinations: 1) better protect the EU and its citizens against crime and terrorism, 2) effective management of EU external borders, 3) resilient infrastructure, 4) increased cybersecurity, 5) disaster-resilient society for Europe, 6) strengthened security research and innovation.

5 Evaluation study on "Excellent Science", evaluation study on "Innovative Europe", evaluation study on "Digital and Industrial Transition", evaluation of the JRC actions funded under the Framework Programme, counterfactual analysis conducted by the JRC, macroeconomic modelling conducted by the Commission.

2. Background to the initiative

The 9th EU Framework Programme for Research and Innovation Horizon Europe[6] is part of the Multi-annual Financial Framework (MFF), and is one of the leading programmes in social, economic, digital and environmental transitions towards achieving EU policy priorities. Horizon Europe runs from 2021 to 2027 and is a successor of the Horizon 2020 programme. With a budget of EUR 95.5 billion[7], the programme aims to boost the EU's competitiveness and growth, tackle climate change, and contribute to achieving the United Nations' (UN's) Sustainable Development Goals (SDGs)[8].

Its general objective is to "deliver scientific, technological, economic and societal impact from the EU's investments in R&I to strengthen the EU's scientific and technological bases and foster the EU's competitiveness **in all Member States <…>**"[9]. While continuing the efforts to strengthen the scientific and technological bases of the EU and foster competitiveness, a more strategic and impact-based approach to R&I has been taken. For the first time, Horizon Europe has a co-created strategic plan. The aim is to be more impact-driven, to focus on delivering European added value, and be more effective and efficient in the implementation. **The Communication on the interim evaluation of Horizon 2020[10]** identified several areas for improvement. The following areas for improvement (see Box 1) have also been based on extensive stakeholder feedback and the strategic recommendations of the **independent High-Level Group on maximising the impact of EU R&I Programmes** (Lamy High-Level Group).

Box 1. Areas of improvement from the interim evaluation of Horizon 2020

- Continue simplification;
- Support breakthrough innovation;
- Create more impact through mission-orientation and citizen involvement;
- Increase synergies with other EU funding programmes and EU Policies;
- Strengthen international cooperation;
- Reinforce openness;
- Rationalise the funding landscape.

Source: As listed in the Impact assessment of Horizon Europe SWD (2018) 307 Part 1 of 3 English[11].

Horizon Europe is expected to address **4 key challenges in the area of R&I**[12] through its structure and design; these include:

6 https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme_en.

7 Including EUR 75.9 billion from the MFF and EUR 5 billion from the Next Generation Europe.

8 Horizon Europe, https://op.europa.eu/en/publication-detail/-/publication/1f107d76-acbe-11eb-9767-01aa75ed71a1.

9 Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013 (Text with EEA relevance) , https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0695.

10 https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/interim-evaluation-horizon-2020-key-documents_en.

11 https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/horizon-europe-impact-assessment-staff-working-document_en.

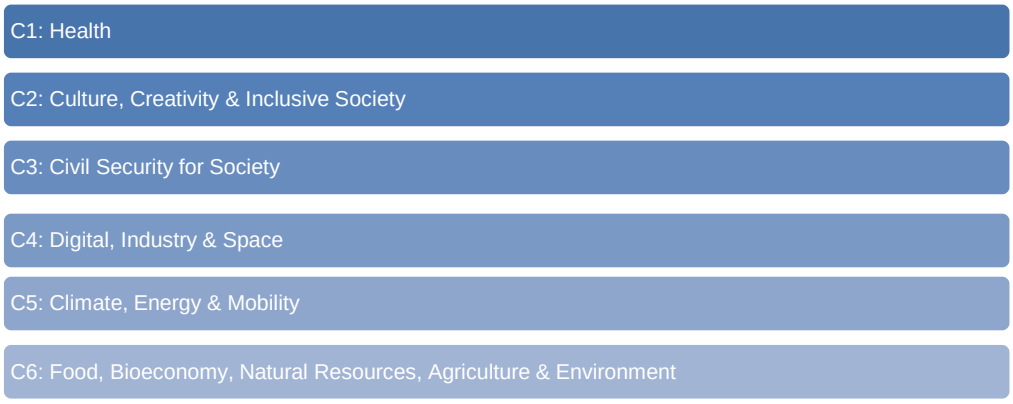
12 https://research-and-innovation.ec.europa.eu/system/files/2018-06/swd_2018_307_f1_impact_assesment_en_v7_p1_977548.pdf.

1. The need for improvement in the creation and diffusion of high-quality new knowledge and innovation in Europe.
2. The need to **reinforce the impact of R&I in policymaking.** R&I have to take a more prominent place in shaping EU policy priorities and delivering on policy commitments and EU priorities.
3. **The increased rapid uptake of innovative solutions in the EU.** Around two thirds of EU manufacturing companies have not recently used advanced technologies[13], and competition from the USA and Asia has intensified.
4. **The need to strengthen the European Research Area (ERA).** Knowledge flows, good working conditions, effective career development of researchers and other ERA priorities need to be more widely spread.

Structure of Horizon Europe

Horizon Europe is structured around three key reinforcing Pillars: 1) Excellent Science, 2) Global Challenges and European Industrial Competitiveness, and 3) Innovative Europe. Pillar 2, related to global challenges, comprises 6 clusters (see Figure 2) It also includes JRC, which supports EU and national policymakers with independent scientific evidence and technical support.

Figure 2. Clusters under Pillar 2 of Horizon Europe



Source: Compiled by the study team.

Cluster 1 – Health

The aims of Cluster 1 are related to the improvement and protection of the health and well-being of citizens of all ages. This requires generating new knowledge, developing innovative solutions, and, where appropriate, integrating a gender perspective to prevent, diagnose, monitor, treat and cure diseases[14]. Additionally, Cluster 1 aims to make public health more cost-effective, equitable and sustainable, preventing poverty-related diseases and enabling patients' participation and self-management. Finally, COVID-19 underlined the importance of

13 Flash Eurobarometer 433, Innobarometer 2016 – EU business innovation trends. This figure has increased by 14 percentage points between the last two releases of the Innobarometer (i.e. 2015 and 2016).

14 Cluster 1: Health. Policy, strategy, how to apply and work programmes. https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-1-health_en.

better cooperation and coordination between the Member States for the well-being of all citizens to quickly respond to and prevent the spread of epidemic outbreaks, strengthen immunisation against vaccine-preventable diseases and control cross-border health threats. To achieve its objectives, Cluster 1 has **six priority areas of intervention**: 1) **health throughout the life course**; 2) **environmental and social health determinants**; 3) **non-communicable and rare diseases**; 4) **infectious diseases**, including poverty-related and neglected diseases; 5) **tools, technologies and digital solutions for health and care**, including personalised medicine; 6) **healthcare systems**.

Cluster 2 – Creativity & Inclusive Society

Cluster 2 strengthens democratic values, including the rule of law and fundamental rights. It also aims to safeguard cultural heritage, explore the potential of cultural and creative sectors, and promote socio-economic transformations contributing to inclusion and growth (including migration management and integration of migrants). To achieve its objectives, Cluster 2 has **three priority areas of intervention**: 1) **democracy and governance**, 2**) culture, cultural heritage and creativity**, and 3) **social and economic transformations**.

Cluster 3 – Civil security for society

Cluster 3 "responds to the challenges arising from persistent security threats, including cybercrime, as well as natural and man-made disasters"[15]. It aims to ensure free movement and protect the integrity of the Schengen area by supporting the EU's response to various security challenges[16]. Physical and digital infrastructures need to be protected against and resilient to cyber and physical threats. EU borders should be managed to prevent illicit activities while facilitating legitimate travel. Additionally, man-made and natural disasters require better preparation and prevention. Cluster 3 will support the Commission policy priority "Promoting our European way of life", "European Green Deal" and "Europe fit for the digital age"[17]. Cluster 3 has three priority intervention areas to achieve its objectives: 1) **disaster-resilient societies**, 2) **protection and** security**,** and 3) **cybersecurity**.

Missions of Horizon Europe

The EU Missions are a novelty introduced in Horizon Europe. As well as being considered a new way to bring **concrete solutions to global challenges**, they have ambitious goals that they aim to achieve by 2030. They are expected to deliver impact by **putting R&I into a new role**, introducing **new forms of governance and collaboration**, and **engaging citizens**.

The EU Missions support the Commission's priorities, such as the European Green Deal, Beating Cancer and the New European Bauhaus. Under Horizon Europe, there are five mission areas programmed within the Global Challenges and European Industrial

15 Cluster 3: Civil security for society. Policy, strategy, how to apply and work programmes. https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-3-civil-security-society_en.

16 Tender Specifications, Evaluation study on Resilient Europe – RTD/2021/SC/021, Specific Contract under the Multiple Framework Contract 2018/RTD/A2/OP/PP-07001-2018.

17 Tender Specifications, Evaluation study on Resilient Europe – RTD/2021/SC/021, Specific Contract under the Multiple Framework Contract 2018/RTD/A2/OP/PP-07001-2018.

Competitiveness Pillar (Pillar 2), also benefiting from other parts of the Programme and complementary actions carried out under other EU programmes[18]:

- Adaptation to climate change, including societal transformation;
- Cancer;
- Health oceans, seas, costal & inland waters;
- Climate-neutral & smart cities;
- Soil health & food.

Only the Cancer Mission is within the scope of this study.

European and co-funded partnerships

The approach in reformed Horizon Europe partnerships was based on simplifying the EU R&I landscape by drastically reducing the number of R&I partnerships and making them more open and attractive for stakeholders across Europe. The following **two key changes** took place:

1. **A simple architecture and toolbox for partnerships** and a common umbrella brand, "European Partnerships". European Partnerships may only be set up using three forms: co-funded, co-programmed and institutional.
2. **Coherent life cycle criteria for all European Partnerships**, including exit strategies from Horizon Europe funding.

The scope of this study includes the following European and co-funded partnerships:

- **The Second Innovative Medicines Initiative** (**IMI2**) between 2014-2020 worked to improve health by speeding up the development of and patient access to innovative medicines, particularly in areas where there is an unmet medical or social need.
- **Innovative Health Initiative Joint Undertaking** (**IHI**) aims to enable the cross-sectoral integration of technologies, know-how, products, services and workflows for people-centred healthcare.
- Aims to enable people in Europe to live longer, healthier lives and create more sustainable healthcare systems.
- **The Second European and Developing Countries Clinical Trials Partnership Programme** (**EDCPT2**) launched in 2003 and renewed in 2014 with funding through to 2024, EDCTP has been the focal point for EU support for global health research in Africa and a visible sign of the EU's commitment to the SDGs.
- **Global Health EDCTP3 Joint Undertaking** (**GH EDCTP3 JU**) aims to reduce the socio-economic burden of infectious diseases in sub-Saharan Africa, promote the development of new or improved health technologies, and increase regional health security globally.
- **European Partnership on Transforming Health and Care Systems** (**THCS**) aims to build more sustainable, resilient, innovative, and high-quality, people-centred health and care systems that are equally accessible to all citizens.

18 Horizon Europe – Investing to shape our future, https://research-and-innovation.ec.europa.eu/document/9224c3b4-f529-4b48-b21b-879c442002a2_en.

- **ERA4Health** brings the opportunity to increase European transnational collaborative research funding by creating a funding body for joint programming in priority areas addressing European public health needs.
- **The Co-funded European Partnership 'European Partnership on the Assessment of Risks from Chemicals'** (**PARC**) aims to consolidate and strengthen European capacities for chemical risk assessment.

2.1. Baseline

This section features a summary of findings from the previous evaluation studies conducted as part of Phase 1. Where applicable, it serves as a baseline for Phase 2, where we can compare specific indicators of each programme part to that of their predecessors. In some cases, where values are strongly influenced by adaptation and learning processes, a comparison with findings reported in the Horizon 2020 Interim Evaluation of Horizon 2020 – performance of the first 2-3 years is considered.

- Cluster 1's predecessor is Horizon's 2020 Societal Challenge 1 (Health, demographic change and Well-being).
- Cluster 2's predecessor is Horizon's 2020 Societal Challenge 6 (Europe in a changing world – inclusive, innovative and reflective societies).
- Cluster 3's predecessor is Horizon's 2020 Societal Challenge 7 (Secure societies – protecting freedom and security of Europe and its citizens).

Horizon Europe represents an evolution of its predecessor, Horizon 2020 (2014-2020), to further increase openness and impact. Among the key changes and improvements, the most notable are the following:

- **Strategic planning** as a new way of setting research and innovation priorities. It is a multiannual strategy combined with flexibility to react to emerging needs.
- **Clusters under the Global Challenges & European Industrial Competitiveness Pillar (previously Societal Challenges Pillar)** aim to bring together different disciplines and policy areas to achieve bold, inspirational, and measurable goals within the set timeframe**.**
- **Co-designed EU Missions** Horizon Europe introduces a novel approach with co-designed EU Missions, representing an evolution from the focus areas under Horizon 2020 by setting directions to achieve objectives with societal relevance through cross-sectoral and interdisciplinary cooperation.
- **European Partnerships** refocused on providing clear EU added value through the strategic cooperation between public and private actors in critical areas such as health, food, clean energy, transport, and circularity.
- **Open Science** is expected to go beyond the open access policy of Horizon 2020 and require open access to publications, data, and research data management plans. Open science practices in Horizon Europe are assessed as part of the scientific methodology in the excellence criterion and under the "Quality and efficiency of implementation" (previously, it was part of the impact criterion).

- **A data management plan** for the research data/results must be provided and aligned with the FAIR[19] principles.
- **Gender equality** – a strengthened commitment in Horizon Europe. Integrating the gender dimension into research and innovation content is a requirement by default.
- **Joint Research Centre's (JRC's) participation in indirect actions** under Horizon Europe and Euratom Research and Training Programme.
- **Intervention Logic and monitoring system** – The underlying logic of Horizon Europe's interventions is structured by Key Impact Pathways (KIPs), which link funding through to its expected effects in the short-run, medium and long-run. Corresponding monitoring indicators along each of the pathways capture the programme's effectiveness, linking concrete project outcomes to wider impacts on EU society (in terms of economic, social, and scientific progress).
- **An overarching "Global Approach" to "Research and Innovation** – Europe's Strategy for international cooperation in a changing world"[20] also guides in implementing the international dimension of Horizon Europe.

Below, we list the baselines for Clusters 1, 2 and 3. The baselines are based on the results of the studies supporting the final evaluation of Horizon 2020 and, where applicable, the mid-term evaluation of Horizon 2020.

Societal Challenge 1 (Cluster 1 equivalent under Horizon 2020)

Relevance: The *Evaluation study of the European framework programmes for research and innovation for a Resilient Europe. Final report: phase 1* (further referred to as The Resilient Europe Phase 1 study)[21] concluded that SC1 considered stakeholder views extensively by facilitating stakeholder involvement in identifying new areas and setting priorities. Additionally, the EU budget allocation in SC1 was below that of overall Horizon 2020 and the previous framework programme. The EU budget allocations to Third Countries were above the overall share of Horizon 2020. In terms of participation patterns, the participation of Associated Countries in SC1 was also below the levels of Horizon 2020 and those in Framework Programme 7 (FP7). Regarding the flexibility of the programme, SC1 had demonstrated an overall high level of flexibility to cope with the changing circumstances and had tackled the right issues given the positioning of the EU. It has also shown an appropriate degree of timeliness and planning in its research activities compared to other leading research and innovation institutions in the rapidly evolving healthcare landscape.

Coherence: In terms of internal coherence and adequacy of SC1 instruments, the programme was found to be adequate and internally coherent. What concerns external coherence is that initiatives similar to EIT have been a useful tool for creating synergies in upskilling, although the majority of synergies have been unintended rather than the result of formal and institutionalised attempts to connect programmes. *An evaluation study on the external coherence and synergies of Horizon 2020 within the European research and*

19 Findability, Accessibility, Interoperability, and Reuse of digital assets, see https://www.go-fair.org/fair-principles/.

20 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A252%3AFIN.

21 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819, p. 23-30.

innovation support system[22] found that under SC1, the synergies between partnerships and other parts of Horizon 2020 had been coherent to a large extent.

Efficiency: Over 1 200 projects were funded under SC1, and they were implemented mainly through RIAs. Oversubscription was a major challenge for SC1, with an average of 7.5% of applications being successful. The administrative part of project selection was smooth, and the targets for average Time-to-inform (TTI), Time-to-sign (TTS) and Time-to-grant (TTG) were reached.

Effectiveness: No SC1 projects were completed at the time of the Interim Evaluation of Horizon 2020. However, anecdotal evidence suggests that SC1 was delivering on its objectives. Concerning international cooperation, participation patterns for Associated and Third Countries were 6.3% and 6.8%, respectively. The total sum of matching investment for SC1 projects was around EUR 2.2 billion (at the end of the programme). The ethics appraisal processes and procedures adopted under Horizon 2020 SC1 ensured that high ethical standards were adhered to in SC1 projects in all research areas. Further efforts may be beneficial in developing an approach to better identify those scientific research fields subject to clear legal/ethical regulation, standard practices, and areas where serious and complex ethical issues are likely to arise in the execution of projects. Putting more emphasis on demanding and complex issues could be more effective in risk reduction and more efficient in terms of resources and time allocation.

EU added value: The Resilient Europe Phase 1 study[23] concluded that SC1 interventions in Horizon 2020 had matched the EU added value of its predecessor, FP7 Health. SC1 strengthened the EU's positioning by enhancing scientific capabilities and fostering research networks as it addressed global health challenges (e.g. antimicrobial resistance and rare diseases). SC1 actions had demonstrated a strong EU added value by mobilising resources and enhancing preparedness for health emergencies (e.g. COVID-19, Zika). SC1 has brought added value at national, regional and global levels by strengthening healthcare systems through fostering international collaboration and partnerships (e.g. EDCT2, AAL2, IMI2, EIT Health).

Societal Challenge 6 (Cluster 2 equivalent under Horizon 2020)

Relevance: As regards pressing and difficult-to-anticipate societal development and crises, SC6 demonstrated relatively good flexibility and agility to respond to the newly emerging societal needs.

Coherence: No major overlaps were found between SC6 and other similar European programmes. On the contrary, SC6 interventions demonstrated complementarities with the Rights, Equality and Citizenship Programme and Europe for Citizens Programme. High levels of complementarities with the European Neighbourhood Instrument were also observed.

Efficiency: Over 459 projects were funded under SC6 with a budget of EUR 1.014 billion in EU contributions. Heavy oversubscription was an important challenge under SC6. The success rate in SC6 was 6.2%, which was significantly lower than the overall success rate for Pillar 3 projects (10.1 %) and overall Horizon 2020 projects (11.4%). The level of ineligible

22 https://op.europa.eu/en/publication-detail/-/publication/a11f6327-a695-11ed-b508-01aa75ed71a1/language-en.

23 https://op.europa.eu/en/publication-detail/-/publication/b387aa73-012e-11ee-87ec-01aa75ed71a1.

proposals was similar to SC1 and in line with H2020 – 1.0%. The time-related efficiency indicators (TTI, TTS and TTG) all came within targets.

Effectiveness: The total sum of matching investment projects was around EUR 118.4 million for SC6 (at the end of the programme). As regards international cooperation, participation patterns for Associated and Third Countries in SC6 were 7.9% and 7.4%, respectively (mid-term Horizon 2020 evaluation).

EU added value: SC6 actions addressed societal needs and challenges that individual Member States could not have otherwise implemented at the national level. Another prominent characteristic of the EU added value for SC6 actions stemmed from the interdisciplinary feature of scientific fields, which enabled the research consortia to broaden the scope of their research.

Societal Challenge 7 (Cluster 3 equivalent under Horizon 2020)

Relevance: The Resilient Europe Phase 1 study[24] concluded that SC7 had extensively considered stakeholders' needs compared to FP7, with close cooperation between the Commission, Member States and national practitioners during the design of the programme. Overall, stakeholders played a key role in the project activities of these actions both as project partners and external associates.

Coherence: The Resilient Europe Phase 1 study[25] concluded that SC7 security research had significant synergy with the Internal Security Fund (ISF), especially in terms of innovation uptake for operational use. The ISF actions were complementary to SC7 security research, particularly from the perspective of innovation uptake (i.e. funding the implementation of innovative solutions, technical or otherwise, into operational use). In the field of cybersecurity research, the focus had been on synergies between SC7's Digital Security (DS) actions and four pilot actions of ICT-LEIT for the European Cybersecurity Competence Centre (ECCC). While four large-scale ECCC pilot actions had helped to build synergies, horizontal collaboration with other Horizon 2020 actions, including SC7 cybersecurity research, suffered from structural limits, such as insufficient funding, resources and lack of common objectives.

Efficiency: SC7 funded 425 projects with a budget of EUR 1.595 billion. The projects were mainly implemented through RIA and IA actions. SC7 was oversubscribed, with a success rate of 9.9%, below Pillar 2 (10.1%) and Horizon 2020 overall (11.4%). The level of ineligible proposals under SC7 (3.5%) was substantially higher than for Horizon 2020 overall (1.0%). The time-based efficiency indicators also met their targets, with TTG (226 days) being slightly higher than the average for Pillar 3 (194 days).

Effectiveness: The total sum of matching investment for SC7 projects was over EUR 171 million. As regards international cooperation, participation patterns for Associated and Third Countries in SC7 were 7.9% and 0.9%, respectively (mid-term Horizon 2020 evaluation).

EU added value: The Resilient Europe Phase 1 study[26] concluded that SC7 actions had contributed to achieving a European-wide scope, relevance and collaborative networks. The EU security research has been both a contributor to and a user of the EU Open Strategic

24 https://op.europa.eu/en/publication-detail/-/publication/b387aa73-012e-11ee-87ec-01aa75ed71a1.

25 https://op.europa.eu/en/publication-detail/-/publication/b387aa73-012e-11ee-87ec-01aa75ed71a1.

26 https://op.europa.eu/en/publication-detail/-/publication/b387aa73-012e-11ee-87ec-01aa75ed71a1

Autonomy policy, identifying key areas in civil security for technological leadership and industrial presence in cybersecurity. Security-related R&I programmes had maintained an autonomous European knowledge base.

2.2. Evaluation questions and methodology

In line with the Better Regulation Guidelines (BRG), this supporting study addresses specific evaluation questions structured around the five evaluation criteria of **relevance**, **coherence**, **efficiency**, **effectiveness**, and **EU added value**.

Table **1** presents short descriptions of each of the criteria. In addition, the partnership-specific evaluation criteria – **additionality, directionality, international positioning and visibility, transparency and openness, and phasing out preparedness** – apply to the partnerships assessed in this study.

Table 1. Evaluation criteria and description

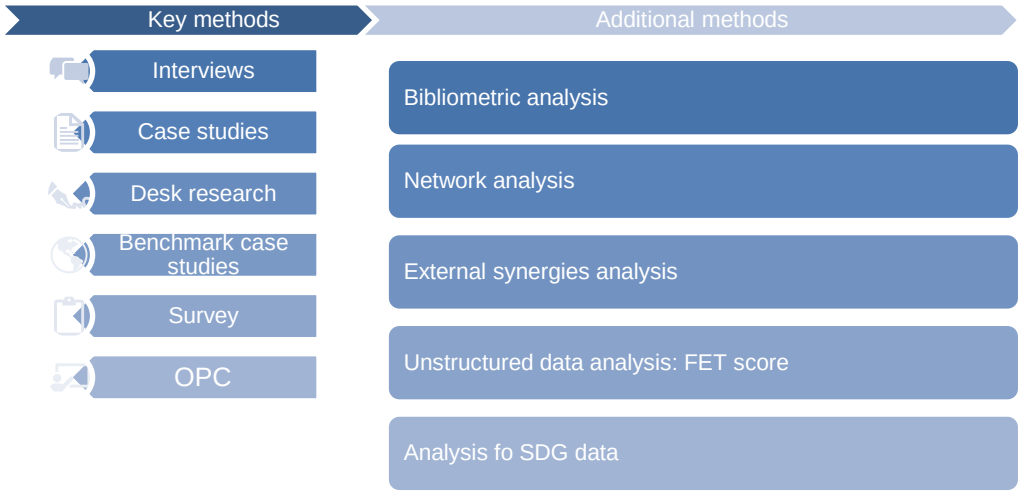
Criteria	Description
Criteria based on Batter Regulation Guidelines	
Relevance	Examines how EU interventions align with the identified societal needs and challenges of the current EU policy needs and priorities.
Coherence	Addresses how well or not the different – interventions and policies at the national, EU and international levels worked together and if there were synergies, complementarities, and overlaps among them.
Efficiency	Looks at the resources deployed by intervention for the given changes it brought about.
Effectiveness	Assesses the extent to which the EU interventions achieved or did not achieve their objectives and identifies if any unintended effects have occurred.
EU added value	Assesses any changes that occurred because of the EU intervention, over and above what could reasonably have been expected from national actions by the EU Member States.
Partnership-specific criteria	
Additionality	Evaluates the additional financial contributions and leverage attracted by the partnerships and supplementary network expansion, new collaborations, and increased knowledge exploitation, which may not have happened if partnerships did not exist.
Directionality	Assesses the progress towards the strategic vision of the European partnerships and whether the partnerships clearly demonstrate progress in the delivery of results for the EU and its citizens, notably global challenges and competitiveness, which cannot be achieved by traditional calls alone.
International positioning and visibility	Evaluates the extent to which partnerships act as global ambassadors for the European R&I system, establish global relevance, achieve scientific and technological reputation in the international context, and serve as hubs for international cooperation, where appropriate. Additionally, it looks into the level of international cooperation at the partnership and project level and how this results in visibility for the European Partnership.

Phasing out preparedness	Examines the foreseen measures and conditions set for the orderly phasing-out of the partnership from the Framework Programme funding and the extent to which these measures are appropriate regarding a possible phasing-out (or renewal) of the partnership.
Transparency and openness	Assesses the openness of Horizon Europe partnerships to new participants and evaluate the extent to which partnerships employed open and transparent processes in using research results and consulting all relevant stakeholders in identifying priorities.

Source: Compiled by the study team based on Tender Specifications and Better Regulation Guidelines.

Figure 3 presents the key methods and tools used in the supporting study. There were 6 key methods used in the study, including desk research and literature overview of publications such as previous evaluations and studies, EU institution reports, Work Programmes, guidelines, and relevant annual reports. An extensive interview programme consisting of 210 interviews with programme managers, relevant stakeholders, beneficiaries, and EC officials was conducted. In total, 15 case studies were completed, out of which 9 covered health topics at the EU and international levels; 3 case studies covered culture, creativity, and Inclusive Society; and 3 case studies covered the field of security. Furthermore, there were 4 benchmark case studies. Finally, 5 additional quantitative – methods supported the analysis (a full list is provided in the graphic below; for more details, see Annex 3).

Figure 3. Key and additional methods



Source: Compiled by the study team.

Table 2 presents case studies (CS) and benchmark studies (B) completed as part of the study. In preparing the case studies, various research methods were used (i.e. desk research, network, bibliometrics, interviews, surveys). Several case studies directly fed into the analysis of specific evaluation questions. *O*thers were part of the individual evaluation reports (i.e. GH EDCTP3 JU, EIT Health, ERA4Health). Benchmarks 1, 3 and 4 were linked to each cluster, CL1, CL2 and CL3, respectively, while benchmark 2 was linked to all clusters.

Table 2. List of case studies and benchmark studies

No.	Title of the case study and benchmark study
CS1	From Innovative Medicines Initiative to Innovative Health Initiative – the early experience
CS2	IMI2 and IHI: driving innovation in digital health
CS3	The Contributions of EIT Health in the Fight Against Chronic and Multi-Morbid Conditions
CS4	Contribution of EIT Health towards supporting the Venture Centre of Excellence (VCoE) and WorkInHealth Foundation
CS5	Transitioning from EDCTP2 to Global Health EDCTP3 Joint Undertaking: transition measures and lessons learned from the predecessor
CS6	Mission on Cancer: taking the EU's positioning in cancer research beyond what was done in the past while ensuring coherence and synergies with other EU programmes
CS7	Research on democracy, in practice
CS8	Cultural and creative industries
CS9	Well-being and tackling inequalities
CS10	Assessing the societal impacts of security research in addressing stakeholders' needs in the areas of Fighting Crime and Terrorism, Border Management, Resilient Infrastructure, and Disaster-Resilient Society
CS11	Assessing the societal impacts of security research on cross-border cooperation between security practitioners and relevant authorities
CS12	AI in cybersecurity: Building European competencies and synergies on AI and machine learning
CS13	The new Transforming Health and Care Systems partnership – Learnings from previous partnerships and early experience
CS14	ERA4Health: additionality and international positioning of the co-funded partnership
CS15	European Partnership for the Assessment of Risks from Chemicals – PARC
B1	National Institutes of Health (NIH) response to COVID-19
B2	Gender equality and inclusion practices
B3	Measuring the societal impact of social sciences and humanities research in the context of the Horizon Europe programme and the UK Research Excellence Framework
B4	Meeting stakeholder needs in Research for Civil Security Programme of Federal Ministry of Education and Research (BMBF), Germany

Source: Compiled by the study team.

3. Implementation state of play

This section provides an overview of the implementation state of play of the Horizon Europe Framework Programme (FP) in the area covered by the study, including the distribution of proposals and selected projects, EU contribution, type of funding, thematic areas of the work programme, geographical distribution, country performance, and share of newcomers. We used the last update from the European Commission on 20 June 2023, for the analysis of Projects and Proposals.

3.1.1. Overview of implementation status

Overview of Horizon Europe projects

Table 3 provides an overview of the amounts of EU contribution provided to the three analysed programme parts under the study. Cluster 1, titled Health, had funded a total of 315 projects amounting to EUR 2 372 million in EU contributions in 2021 and 2022. This programme part funded around 55.0% more projects in 2022 than in 2021 and had around

33.0% more funds allocated to the calls that ended in 2022 compared to 2021. The average size of a Cluster 1 project decreased from about EUR 8.7 million in 2021 to around EUR 6.8 million in 2022. This suggests that Cluster 1 funded a larger number of R&I activities with a smaller average budget size in 2022 compared to fewer but larger projects funded in its first year. Overall, 28.8% of the foreseen budget was spent in 2021 and 2022, constituting over a quarter of the budget in the first 2 years.

Cluster 2, titled Culture, Creativity, and Inclusive Society funded 151 projects with an EU contribution of around EUR 436.7 million in 2021 and 2022. This results in an average EU contribution of EUR 2.8 million per project throughout 2021 and 2.9 million in 2022, suggesting little difference between the average funding of the programme in the first 2 years. Overall, only 19.2% of the total allocated budget was spent in the first 2 years, suggesting a need to fund more projects in this cluster in the coming years.

A total of 97 projects were funded under Cluster 3 – Civil Security for Society, amounting to an EU contribution of EUR 417.9 million in 2021 and 2022. Projects funded in 2021 had an average of EUR 4.2 million, and projects funded in 2022 had an average of EUR 4.4 million. As a result, 26.2% of the total allocated budget has been spent in the initial years.

Table 3. Distribution of projects and EU contribution by call deadline year (in EUR million)[27]

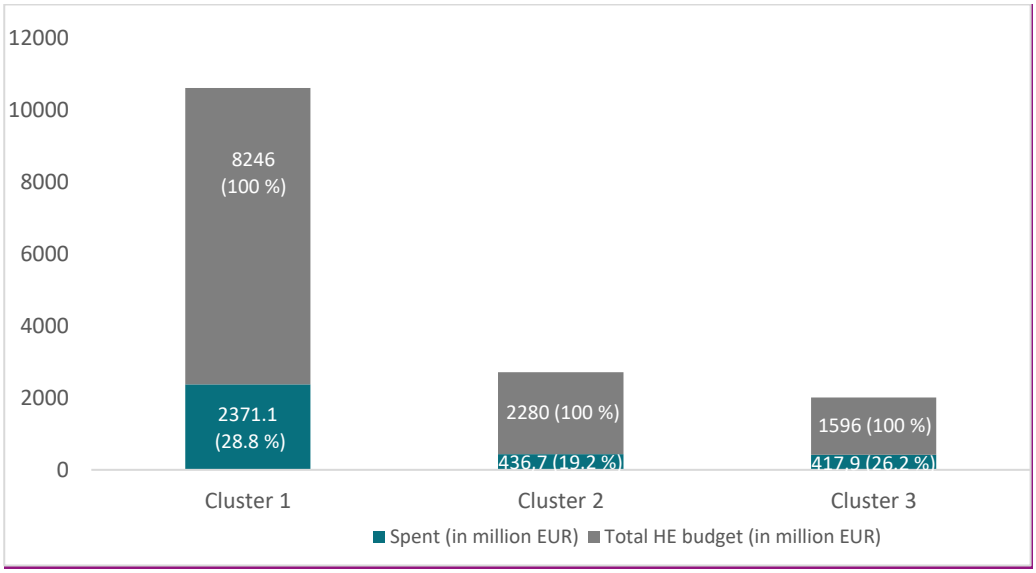
	Cluster 1 – Health		Cluster 2 – Culture, Creativity and Inclusive Society		Cluster 3 – Civil Security for Society	
	Number of Projects	EU contribution	Number of Projects	EU contribution	Number of Projects	EU contribution
2021	114 (36.2%)	989.9 (41.7%)	59 (39.1%)	166.8 (38.2%)	54 (55.7%)	229.2 (54.8%)
2022	201 (63.8%)	1 382.2 (58.2%)	92 (60.1%)	270.0 (61.8%)	43 (44.3%)	188.7 (45.2%)
Total for 2021 and 2022	315 (100%)	2 372.1 (100%)	151 (100%)	436.7 (100%)	97 (100%)	417.9 (100%)
Total HE budget	8 246		2 280		1 596	

Source: Compiled by the study team with eCORDA data. June 2023 data release[28].

27 The data excludes all of the Rejected, Suspended and Terminated projects.

28 The latest call closure date available in the dataset; CL 1 – 19/10/2022; CL2 – 21/09/2022; CL3 – 23/11/2022. . Applies to the rest of the report.

Figure 4. Total Horizon Europe contributions (In EUR Million) for Clusters 1, 2 And 3 and the percentage of it spent in 2021 and 2022



Source: Compiled by the study team with eCORDA data. June 2023 data release.

At the time of the analysis in June 2023, no Cluster 1 and 3 projects were closed, and only one project was closed in Cluster 2. There were 484 signed projects and 78 projects Under Preparation, 95.0% of which were in 2022. Several main factors that impact all of Horizon Europe need to be considered in addition to this:

The delayed launch of the Horizon Europe programme resulted in the first calls for proposals being launched in the second half of 2021, with the closing dates of mid-late autumn. Given that another 7-8 months are required to conclude grant agreements, the first R&I activities started in 2022.

The Framework Programme underwent several internal changes and had a new strategic plan. The global challenges were repackaged under various clusters, with funding agencies restructured and adapting to the new programme. This transition process consumed a significant amount of time and resources.

It has been approximately 2 years since the launch of Horizon Europe and at the start of this study, most projects are just starting, and closed projects are rare. The cut-off date for the data used in this study is June 2023. As a result, the analysis in this report cannot provide evidence on the scientific, technological/economic and societal outputs of the analysed programme parts when it comes to the contribution of individual EU-funded projects launched under Horizon Europe.

Table 4. The status of Cluster 1, Cluster 2 and Cluster 3 projects

	2021			2022		
	Closed	Signed	Under Preparation	Closed	Signed	Under Preparation
Cluster 1	-	114	-	-	174 (86.6%)	27 (13. 4%)
Cluster 2	1 (1.7%)	55 (93.2%)	3 (5.1%)	-	87 (94.6%)	5 (5.4%)
Cluster 3	-	54	-	-	-	43
Total	1 (0.4%)	223 (98.2%)	3 (1.3%)	-	261 (77.7%)	75 (22.3%)

Source: *Compiled by the study team with eCORDA data. The cut-off date is June 2023 data release; hence, figures in the table represent monitoring data made available up to that date.*

When looking at the EU contribution by action type, the majority of projects in all clusters (78.0%) were funded via Research and Innovation Actions (RIA), totalling EUR 2 355.1 million. A total of 17 projects in Cluster 1, 12 in Cluster 2 and 9 in Cluster 3 were successfully funded through Coordination and Support Actions (CSA). Cluster 1 used 7 actions to fund various projects, while Clusters 2 and 3 mostly relied on RIAs, CSAs and Innovation Actions (IAs).

Table 5. Distribution of projects and EU contribution by type of action (in EUR million)

	CLUSTER 1		CLUSTER 2		CLUSTER 3	
	Number of Projects	EU Contribution	Number of Projects	EU Contribution	Number of Projects	EU Contribution
RIA	258 (81.9%)	1 769.5 (74. 6%)	139 (92.0%)	411.2 (94.2%)	42 (43.3%)	174.4 (41.7%)
CSA	17 (5.4%)	47.9 (2.0%)	12 (8.0%)	25.4 (5.8%)	9 (9.3%)	19.2 (4.6%)
IA	3 (0.9%)	13.6 (0.6%)	-	-	46 (47.4%)	224.3 (53.7%)
Joint Undertakings CSA	8 (2.5%)	5.2 (0.2%)	-	-	-	-
Joint Undertakings RIA	24 (7.6%)	171.3 (7.2%)	-	-	-	
Pre-Commercial Procurement	1 (0.3%)	5.0 (0.2%)	-	-	-	-
COFUND	4 (1.3%)	359.6 (15.2%)	-	-	-	-

Source: Compiled by the study team using the eCORDA dataset. RIA – Research and Innovation Actions, CSA – Coordination and Support Actions, IA – Innovation Actions. June 2023 data release.

3.1.2. Overview of Horizon Europe implementation processes, inputs and activities

Overview of Horizon Europe Proposals

Table 6 shows the evolution of the proposals for 2021 and 2022 and the corresponding programme parts' success rates.

In Cluster 3, there were a total of 650 eligible and 56 ineligible proposals, demonstrating the highest rate of ineligible proposals (7.9%) out of the programme parts analysed, which can be explained by special eligibility conditions for Cluster 3 calls. Most of the ineligible proposals were submitted in 2022, making up 8.9% of all proposals submitted that year.

There were 1 930 eligible and 126 ineligible proposals under Cluster 1. Ineligible proposals represent about 6.1% of all proposals received in the programme. Between 2021 and 2022, the number of eligible proposals roughly doubled while the rate of ineligible proposals remained approximately the same; 6.4% in 2021 and 6% in 2022.

Under Cluster 2, there were 1 120 eligible and 37 ineligible proposals (i.e. about 3.2% of all proposals). The eligible submissions roughly doubled, while the ineligibility rate decreased from 3.9% in 2021 to 2.9% in 2022. Overall, for all three pillars, we see that the share of ineligible proposals was higher during the first two years of HE than during the first t2 years of H2020.

Table 6. Number and the percentage share of eligible[29] and ineligible proposals, by programme and call deadline year

Year	Cluster 1		Cluster 2		Cluster 3	
	Eligible	Ineligible	Eligible	Ineligible	Eligible	Ineligible
2021	612 (93.6%)	42 (6.4%)	371 (96.1%)	15 (3.9%)	313 (93.2%)	23 (6.8%)
2022	1 318 (94.0%)	84 (6.0%)	749 (97.1%)	22 (2.9%)	337 (91%)[30]	33 (8.9%)
Total in HE	1 930 (93.9%)	126 (6.1%)	1 120 (96.8%)	37 (3.2%)	650 (92%)	56 (7.9%)
2014*	4 466 (98.5%)	69 (1.5%)	474 (92.6%)	38 (7.4%)	582 (94.8%)	32 (5.2%)
2015*	2 488 (98.6%)	36 (1.4%)	1 874 (96.6%)	66 (3.4%)	723 (97.6%)	18 (2.4%)

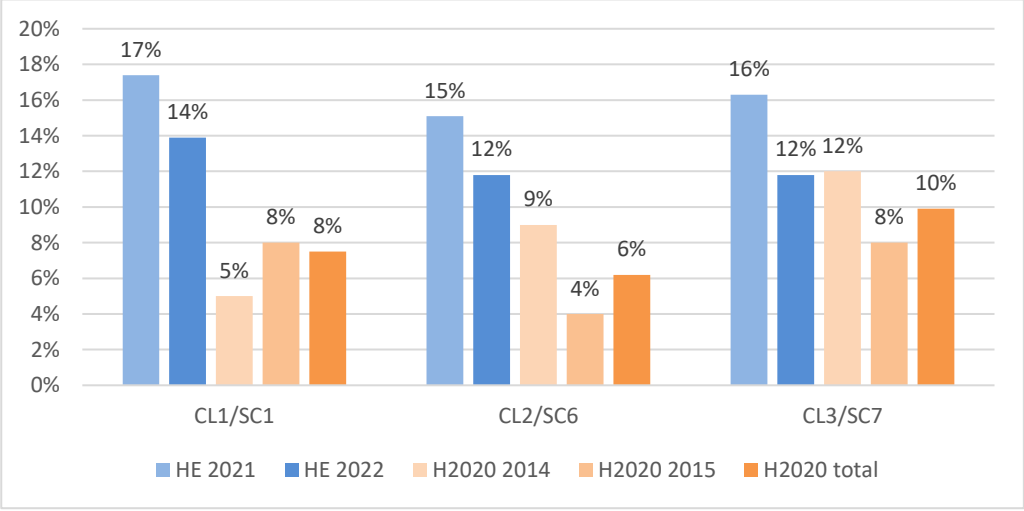
Source: Compiled by the study team using eCORDA data. June 2023 data release. Data for 2014 and 2015 is taken from the "Evaluation study of the European Framework Programmes for Research and Innovation for a Resilient Europe" Phase 1 study to support ex post evaluation of H2020. The figures for 2014 and 2015 correspond to the predecessor programme parts (SC1, SC6 and SC7).

29 Eligible proposals include proposals with the following evaluation statuses: main, no money, rejected, withdrawn and reserve.

30 At the time of this analysis, 218 proposals did not have a stage exit status, for the purpose of the presentation of more precise results, we considered these 2018 proposals as "eligible".

When looking at the application success rate[31], the initial 2 years of Horizon Europe demonstrate a higher percentage than the total averages for Horizon 2020 for all three clusters. Cluster 1 has the highest success rate in 2021 (17.4%), after which it dropped in 2022 (15.1%). A similar pattern can be observed in Cluster 2: 15.1% success rate in 2021 and 11.8% in 2022 as compared to Horizon 2020 equivalent (6.3%). Cluster 3 follows a similar pattern, with a 16.3% success rate in 2021 and 11.8% in 2022. Overall, it appears that success rates are higher than those of H2020.

Figure 5. Application success rate by programme and call deadline year; a comparison between Horizon 2020 Societal Challenges and Horizon Europe Clusters



*Source: Compiled by the study team using eCORDA data. *Success rate is calculated by dividing the number of accepted proposals (main) by the number of eligible proposals. June 2023 data release.*

Lastly, all funded eligible proposals in Clusters 1, 2, and 3 are Action Grants and LS action grants. There were 26 eligible proposals in Cluster 2 and 36 in Cluster 3 that used lump sums as a funding type, totalling EUR 650 million of EU contributions.

31 The share of proposals that are retained for funding out of the total number of eligible proposals.

Table 7. Distribution of proposals and requested grants by type of funding (in EUR million)[32]

		Action Grant	Lump Sum Action grants[33]	Total
Cluster 1	Number of Proposals	1 930	-	1 930
	Requested Grant	9 394.7	-	9 394.7
Cluster 2	Number of Proposals	1 094 (97.7%)	26 (2.3%)	1 120 (100%)
	Requested Grant	3 293.1 (97.7%)	77.9 (2.3%)	3 371.0 (100%)
Cluster 3	Number of Proposals	614 (94.5%)	36 (5.5%)	650 (100%)
	Requested Grant	2 860.9 (95.9%)	121.7 (4.1%)	2 982.7 (100%)
Total	Number of Proposals	3 638 (98.3%)	62 (1.7%)	3 700 (100%)
	Requested Grant	15 548.8 (98.7%)	199.6 (1.3%)	15 748.4 (100%)

Source: Compiled by the study team using the eCORDA dataset. June 2023 data release.

Overview of Horizon Europe Participants' data

This section provides a brief overview of Horizon Europe participants' data in the three analysed clusters. The beneficiary types were selected using the standard typology in the EC CORDA/CORDIS databases:

- HEI – Higher or Secondary Education Establishments;
- REC – Research Organisations;
- PRC – Private for-profit entities (excluding Higher or Secondary Education Establishments);
- PUB – Public bodies (excluding Research Organisations and Secondary or Higher Education Establishments);
- OTH – Other (e.g. non-governmental organisations, citizen and societal engagement projects)[34].

In Cluster 1, HEIs received most of the funding (35.0%), followed by RECs, 34.4%. However, most of the participants came from PRCs (31.0%) and received only 17.2% of EU contributions. This left OTH with 4.3% and PUBs with 9.0% of EU contributions.

In Cluster 2, over half of the funding (54.5%) went to HEIs, where most participants came from. OTHs had a relatively larger share of participants (21.0%) but received only 10.3% of EU contributions. RECs received 20.6% of EU contributions, followed by PRCs (11.5%).

In Cluster 3, most of the funding – 41.2% of EU contributions went to PRCs, which also had the largest share of participants. RECs (25.7%) received the rest of the funding, followed by HEIs (19.4%). PUBs and OTHs received 8.7% and 5.1% of the remaining EU contribution, respectively. The strong participation of industry and end users is critical to Cluster 3's efforts to create a more secure online and offline environment for EU society.

32 Includes Eligible proposals with the status main, no money, rejected, withdrawn and reserve.

33 Around half of the proposals marked as having Lump Sums in the dataset do not have a status. This means that there might be more selected proposals with Lump Sums.

34 Here is the breakdown of the number of unique hospitals in each legal entity type, HEI:6, OTH:7, PRC:3, PUB:16, REC:31.

Table 8. Distribution of beneficiaries and EU contribution by organisation type (in EUR million)

Beneficiary type	Cluster 1		Cluster 2		Cluster 3	
	Number of Participants	EU contribution	Number of Participants	EU contribution	Number of Participants	EU contribution
Higher or Secondary Education (HEI)	527 (22.8%)	829.7 (35.0%)	423 (35.7%)	238.1 (54.5%)	164 (16.5%)	80.8 (19.4%)
Other (OTH)	289 (12.5%)	103.2 (4.3%)	249 (21.0%)	45.0 (10.3%)	80 (8.1%)	21.3 (5.1%)
Private for-Profit (PRC)	715 (31.0%)	409.1 (17.2%)	212 (17.9%)	50.4 (11.5%)	417 (42.0%)	171.6 (41.2%)
Public Body (PUB)	233 (10.1%)	214.6 (9.0%)	92 (7.8%)	13.8 (3.2%)	176 (17.7%)	36.2 (8.7%)
Research Organisations (REC)	544 (23.6%)	815.7 (34.4%)	208 (17.6%)	89.9 (20.6%)	157 (15.8%)	107.0 (25.7%)
Total	2 308 (100%)	2 372.1 (100%)	1 184 (100%)	437.1 (100%)	994 (100%)	416.9 (100%)

*Source: Compiled by the study team with eCORDA data. *The computed data consist of unique participants with non-repeating PIC IDs, counted only once, irrespective of multiple applications. June 2023 data release.*

Table 9 ranks EU Member States according to the EU contribution under each part of the programme. Germany, Spain, Italy, France, Netherlands and Belgium were the largest beneficiaries for all three clusters. Greece also received a relatively high amount of funding in relation to its share of EU GDP. Some of the smallest beneficiaries were Croatia, Malta and Latvia. Europe received over 85.0% of the total funding for the 3 clusters. Specifically:

In Cluster 1, Germany was the largest beneficiary. It received 14.2% of Cluster 1 funding. The Netherlands received EUR 278.7 million in EU contributions (13.4%), followed by France (12.7%) and Spain (10.7%). These numbers are somewhat proportionate to the total share of the EU GDP, except for Belgium and the Netherlands, which had a relatively smaller share of the total EU GDP (3.4%) but received 8.3% of the funding – a trend recurring across all clusters. Croatia and Slovakia were the beneficiaries with the smallest EU contribution, with only EUR 2.8 million each.

In Cluster 2, Germany and Italy received the highest funding shares – 11.1% and 10.8% respectively. Belgium received 10.4% of the EU contribution for Cluster 2, followed by the Netherlands (10.2%) and Spain (8.6%). Northern and Southern Europe received more funding than Central and Eastern Europe – a recurring trend across the three clusters.

In Cluster 3, Greece received the most funding, totalling EUR 57.1 million or 14.5% of all funding in 2021 and 2022. In comparison to its GDP share, this is a relatively greater EU contribution. Spain and Italy followed Greece with EUR 49.1 million (12.5%) and EUR 48.5 million (12.3%) in EU contribution. Overall, a substantially higher proportion of funding went to the beneficiaries from Southern Europe in this cluster. This finding can be explained by the fact that security issues, particularly those linked to border management, remain relevant/acute in Southern Europe.

Table 9. The amount of EU contribution in EU Member States in Cluster 1, Cluster 2 and Cluster 3 relative to their GDP size

	% Share Of Total EU GDP In 2020	Share of EU Contribution in Cluster 1	Share of EU Contribution in Cluster 2	Share of EU Contribution in Cluster 3
Germany	25.1%	296.8 (14.3%)	45.7 (11.1%)	46.6 (11.8%)
France	17.2%	263.0 (12.7%)	28.9 (7.0%)	31.5 (8.0%)
Italy	12.3%	209.2 (10.1%)	44.3 (10.8%)	48.5 (12.3%)
Spain	8.4%	222.0 (10.7%)	35.1 (8.6%)	49.1 (12.5%)
Netherlands	6.0%	278.7 (13.4%)	42.0 (10.2%)	19.2 (4.9%)
Poland	3.9%	23.2 (1.1%)	11.5 (2.8%)	5.6 (1.4%)
Sweden	3.5%	90.6 (4.3%)	13.7 (3.3%)	7.0 (1.8%)
Belgium	3.4%	172.9 (8.3%)	42.6 (10.4%)	16.8 (4.3%)
Austria	2.8%	68.7 (3.3%)	18.6 (4.5%)	16.0 (4.1%)
Ireland	2.8%	46.1 (2.2%)	10.7 (2.6%)	14.5 (3.7%)
Denmark	2.3%	73.2 (3.5%)	15.4 (3.8%)	2.4 (0.6%)
Finland	1.8%	47.0 (2.3%)	14.7 (3.5%)	9.4 (2.4%)
Czechia	1.6%	19.6 (0.9%)	5.2 (1.3%)	5.8 (1.5%)
Romania	1.6%	18.5 (0.9%)	5.1 (1.3%)	7.0 (1.8%)
Portugal	1.5%	65.9 (3.2%)	12.9 (3.2%)	11.9 (3.0%)
Greece	1.2%	85.7 (4.31%)	27.2 (6.3%)	57.1 (14.5%)
Hungary	1.0%	10.4 (0.5%)	4.4 (1.1%)	5.8 (1.5%)
Slovakia	0.7%	2.8 (0.1%)	1.6 (0.4%)	2.0 (0.5%)
Bulgaria	0.5%	4.1 (0.2%)	2.2 (0.5%)	4.6 (1.2%)
Croatia	0.5%	2.8 (0.1%)	2.5 (0.6%)	1.3 (0.3%)
Luxembourg	0.5%	18.2 (0.9%)	2.9 (0.7%)	7.6 (1.9%)
Lithuania	0.4%	8.5 (0.4%)	1.8 (0.4%)	1.0 (0.3%)
Slovenia	0.4%	17.8 (0.9%)	5.6 (1.4%)	5.4 (1.4%)
Cyprus	0.2%	9.9 (0.5%)	6.1 (1.5%)	12.4 (3.1%)
Estonia	0.2%	11.0 (0.5%)	6.9 (1.7%)	4.6 (1.2%)
Latvia	0.2%	6.6 (0.3%)	1.5 (0.4%)	0.05 (0.01%)
Malta	0.1%	3.7 (0.2%)	1.0 (0.3%)	1.1 (0.3%)
TOTAL	100%	2 076.3 (100%)	410.1 (100%)	394.2 (100%)

Source: Compiled by the study team using eCORDA data. GDP data from Eurostat[35]. June 2023 data release.

Participants from Widening countries received 15.9% of the total Contributions for Clusters 1,2 and 3. Associated Countries received 5.7%, and Third Countries received 4.6% of the total Contributions for three clusters.

The share of EU contributions received by newcomers was relatively small in all clusters. Cluster 3 had the highest share of contributions received by newcomers, totalling 6.8% of its spent budget. Newcomers[36] in Cluster 1 received the smallest share of funding, adding to 3.9% of the Cluster's funding.

35 https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211220-1.

36 Newcomers are defined as applicants who did not submit an application in the previous Horizon FPs.

Table 10. Allocation of EU funding to selected entities Cluster 1, 2 and 3, EUR million

	Widening countries	Associated Countries	Third Countries	Newcomers	Total EU contribution per cluster
Cluster 1	290.5 (12.2%)	142.8 (6.0%)	140.1 (5.9%)	91.7 (3.9%)	2 372.1 (100%)
Cluster 2	95.7 (21.9%)	21.3 (4.9%)	4.3 (1.0%)	24.4 (5.6%)	437.1 (100%)
Cluster 3	125.6 (30.0%)	19.4 (4.6%)	2.9 (0.7%)	28.4 (6.8%)	416.9 (100%)
Total	511.8 (15.9%)	183.5 (5.7%)	147.3 (4.6%)	144.6 (4.5%)	3 226.4 (100%)

Source: Compiled by the study team using eCORDA data. June 2023 data release.

When looking at the share of the newcomer beneficiaries by organisation type, in Cluster 1, the largest share was in PRCs (46.8%), followed by OTHs (24.8%). Within Cluster 2, OTHs received the most share of newcomers, totalling 48.2%, followed by PRC with 35.2%. In Cluster 3, over half of the newcomers (63.5%) came from PRCs and only two newcomers from HES.

Table11. Share of newcomers in Horizon Europe by organisation type (in %)

Organisation Type	Cluster 1	Cluster 2	Cluster 3
Higher or Secondary Education (HES)	11 (4.4%)	4 (2.5%)	2 (1.9%)
Other (OTH)	62 (24.8%)	78 (48.2%)	10 (9.6%)
Private for-Profit (PRC)	117 (46.8%)	57 (35.2%)	66 (63.5%)
Public Body (PUB)	27 (10.8%)	9 (5.6%)	20 (19.2%)
Research Organisations (REC)	33 (13.2%)	14 (8.6%)	6 (5.8%)
Total	250 (100%)	162 (100%)	104 (100%)

*Source: Compiled by the study team with eCORDA data. * The computed data consists of unique participants. June 2023 data release.*

4. Relevance

Key findings on relevance:

Clusters 1, 2, and 3 have demonstrated ongoing relevance by focusing on EU policy priorities and tackling global challenges through their R&I activities, showcasing their sustained commitment to addressing critical and emerging societal needs.

- The **dialogue and coordination between CL1 stakeholders and policymakers to develop effective cross-sectoral solutions** for health promotion, disease prevention and evidence-based health for all were encouraged.
- **CL1 aims to foster a competitive health industry**, emphasising SMEs' role in breakthrough technologies for job creation and economic growth. CL1 attracts mostly small (45.4%) and micro (29.1%) SMEs.
- **CL1 plays a crucial role in fortifying the EU's position and competitiveness in R&I,** with a strong focus on advancing health, life sciences and biotechnologies.
- **CL2 has expanded the scope by increasing practice-oriented participants**. The share of 'others' (including NGOs) has increased from 9.2% under SC6 to 13.8 under CL2.
- **CL2 needs to address topics on academic and scientific freedom, intangible cultural heritage and cultural heritage landscapes.**
- The **high TRL target levels of CL3 calls have enforced stakeholder engagement**.
- **CL3** beneficiaries suggest **expanding the eligible stakeholder groups to include non-governmental organisations**.
- In **CL1,** the **participation of international partners and Associated Countries is increasing**, especially in areas such as tackling global challenges, promoting the digital transition of health, strengthening cooperation on global health, and mobilising the EU's global approach to R&I;
- In **CL2, international cooperation is reported as an area for further reinforcement in the upcoming half period of the Horizon Europe programme**, especially for cultural heritage destination.
- **CL1 actions address new or fast-growing R&I topics to a large extent** and outperform the average Pillar II score and the average Horizon Europe score.
- **European partnerships are recognised for their relevance** in addressing various health-related challenges and adaptability in responding to needs and opportunities in the field of health R&I.

This section presents the summary of findings on the relevance evaluation criteria. As per Better Regulation Guidelines[37]. Relevance assessment considers the relationship between the needs and problems at the time of the conception of Horizon Europe and during its implementation. This transfers into the following areas specific to the assessed programme parts under this study:

- Addressing stakeholder and target group needs[38];
- Flexibility to respond to emerging and changing circumstances[39];
- Participation of international partners and Associated Countries[40];
- Timeliness of the performed research and innovation activities[41];
- Relevance and flexibility of partnerships[42].

4.1. Addressing stakeholder and target group needs

An *"Evaluation study on the relevance and internal coherence of Horizon 2020 and its policy mix*[43]*"* concluded that Horizon 2020 intervention was relevant in light of the needs and priorities for R&I to be addressed at the European level. The evaluation concluded that the instruments, activities and type of action (the 'policy mix') of Horizon 2020 well matched its expected impacts and, thus, proved to be relevant.

Addressing stakeholder and target group needs in Cluster 1

Cluster 1 'Health' (CL1) introduced six destinations, each aligning with a major societal challenge (see intervention logic in Annex 2, Section 1.5). The expected impacts are set out by the Strategic Plan, which CL1 strives to contribute to the destinations.

According to the Horizon Europe Strategic Plan for Europe 2021-2024[44], CL1 aims to address **health disparities** by engaging end users in collaborative efforts involving various stakeholders to address specific **unmet healthcare needs.** In addition, it aims to develop **tailored health products and services**, particularly for underserved population groups, considering factors like sex/gender and other unique aspects. The analysis of the CL1 Work Programme (i.e. 2021-2022[45]) suggests that **the dialogue and coordination between stakeholders and policymakers to develop effective cross-sectoral solutions for health promotion**, **disease prevention** and **evidence-based health** for all was encouraged.

37 Better Regulation Guidelines (July 2023). Tool #47. Evaluation criteria and questions.

38 Evaluation questions: RV1, RV4, RV4.1, RV4.2.

39 Evaluation questions: RV2, RV2.1, RV3, RV5.

40 Evaluation questions: RV7, RV7.1.

41 Evaluation questions: RV8, RV8.1, RV9.

42 Evaluation questions: RV6, RV6.1.

43 https://op.europa.eu/en/publication-detail/-/publication/4ff8bc54-76ea-11ee-99ba-01aa75ed71a1/language-en.

44 European Commission, Directorate-General for Research and Innovation, Horizon Europe – Strategic plan 2021-2024, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2777/083753.

45 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-4-health_horizon-2021-2022_en.pdf.

As part of the analysis, the study launched a survey of Horizon Europe beneficiaries, which asked whether their Horizon Europe project responds to the needs of their organisation. Mirroring the results of the EC's public consultation, which were not exclusive to a particular Cluster, we found that most of **the CL1 respondents indicated that the Programme responds to their needs to a large or a very large extent**.

The beneficiaries were presented with several scenarios, asking about where they feel that the needs of their organisation are mostly met. The results suggest that **one of the main areas where the beneficiaries see value from the Programme is in creating collaboration with leading research organisations** (indicated by over 46.0% of CL1 respondents). Other areas of high value included:

- Enhancing international visibility (41.9% of Cluster 1 respondents that responded to the survey);
- Improving/developing new products/processes (35.4% of Cluster 1 respondents) and new tools (42.3% of Cluster 1 respondents);
- Enhancing competitiveness (37.5%);
- Enhancing R&D capabilities (37.1%);
- Strengthening knowledge (37.6%);
- Pursuing individual research agenda (38.1%).

CL1 aims to foster a competitive health industry, emphasising SMEs' role in breakthrough technologies for job creation and economic growth. Analysis reveals that Cluster 1 attracts mostly small (45.4%) and micro (29.1%) SMEs, echoing the general trend of SME involvement across Horizon Europe, indicating diverse SME participation in Cluster 1 initiatives.

Addressing stakeholder and target group needs in Cluster 2

Cluster 2, "Culture, creativity and Inclusive Society", **introduced three destinations** (see intervention logic in Annex 2, Section 1.5)**,** each aligned with a major societal challenge:

- Destination 1 on 'democracy and governance';
- Destination 2 on 'cultural heritage and the Cultural and Creative Industries' and
- Destination 3 on 'social and economic transformations'.

This shift is especially relevant as it **enables** both **applicants** and relevant **stakeholders to engage with dedicated destinations** in their field of expertise and interest, and to address these issues more systematically and in a less fragmentedly way compared to Horizon 2020 'Societal Challenge 'Europe in a changing world – Inclusive, innovative and reflective societies' (SC6) (interviews with CL2 officials).

The evaluation indicates that **the Custer 2 co-chairing process is critical as it includes key stakeholders in identifying topics.** Those involved in the co-chairing process include relevant Directorate-Generals (DGs), representatives from Member States and a broader range of stakeholders who participate through Open Public Consultations (OPC). Additionally, the input of policy officers and project officers is also important in suggesting ideas and shaping topics for calls. The outcome of this process is a list of proposed topics

that reflect both policy and research perspectives. **This process is appreciated** both by beneficiaries and CL2 officials **for its transparency and inclusivity**, as it considers a diverse range of interests (CS8; interview programme with CL2 officials).

Evaluation findings also suggest that matters such as democracy and governance, geopolitical developments, migration, arts and culture, along with socio-economic inequalities, often seek immediate or short-term research needs. These needs may not always align with the timeframes of the Horizon Europe programming process, which typically yields results at least 3-4 years after the initial topic drafting. As was suggested by CL2 officials, **results from the previous Framework Programme** (i.e. projects from Horizon 2020, SC6)[46] could prove to be **of great benefit to policymakers.** That said, the interview programme with CL2 officials indicates that there remains **some room for improvement in understanding target groups' needs and the extent to which project results effectively reach target groups**.

CL2 has expanded the scope of participants by increasing the number of practice-oriented participants such as trade unions, Vocational and Educational Training (VET) organisations and other participants from NGOs (CS7; CS8; CS9). This increase is well illustrated by the analysis conducted for CS9. According to case study findings, **the share of "others" (including NGOs) has increased** from **9.2% under SC6 to 13.8% under CL2.** Further, **civil society actors are considered highly relevant**. Several calls directly referred to the exploitation of results and the involvement of stakeholders from civil society (WP 2021-2022; WP 2023-2024; CS9)**.** In line with this finding, **70.8% of CL2 projects plan to engage citizens and end users in their** R&I co-creation **activities** (Horizon Europe survey conducted between May and July 2023).

The evidence suggests that the **relevance and engagement** of target groups **differ not only based on the different topics but also based on geographical considerations.** For all contexts, **political parties** are **the least relevant** target groups in Cluster 2 research activities due to concerns about their potential introduction of highly polarised agendas into such projects. Similar to Horizon 2020 SC6 findings[47], **policymakers,** although highly relevant for Cluster 2 research areas, are cited as **the most challenging stakeholders to be actively involved** (CS7; interviews with Cluster 2 officers).

Regarding CL2 beneficiaries, the programme is in line with their needs. As depicted in Table 12, the composition of participant organisations varies among the three destinations. Notably, the destination focused on cultural heritage, and incorporated the highest number of participants categorised as "other" and "private for-profit entities" within its consortia. While private for-profit organisations are important actors within this destination, the interview programme with CL2 officials highlighted the need for **more community-based actions under destination cultural heritage**.

46 European Commission, Directorate-General for Research and Innovation, Ingelgom, V., Research on deliberative and participatory practices in the EU, Publications Office of the European Union, 2023.

47 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

Table12. Breakdown of participants by action type in Cluster 2

Participant type	Destination 1	Destination 2	Destination 3
Higher or Secondary Education (HES)	206 (51.9%)	161 (29.3%)	214 (49.1%)
Other (OTH)	67 (16.9%)	111 (20.2%)	74 (17.0%)
Private for-profit entities (PRC)	42 (10.6%)	137 (25.0%)	42 (9.6%)
Public bodies (PUB)	12 (3.0%)	59 (10.7%)	20 (4.6%)
Research Organisations (REC)	70 (17.6%)	81 (14.8%)	86 (19.7%)

Source: Compiled by the study team with the eCORDA dataset.

Also, based on data derived from the survey of Horizon Europe beneficiaries conducted in May-July 2023, 72.0% indicated that the programme effectively **addresses their individual or institutional research priorities to either a very large or large extent**. For many beneficiaries, participating in Cluster 2, this is an opportunity for them and their organisations to enhance their **international visibility** (as evidenced by 46.5% indicating a very large extent and 35.3% a large extent), especially for smaller organisations (NGOs or SMEs). It is also worth noting that the same finding is consistent across all three case studies (CS7, CS8, CS9), where beneficiaries have emphasised the programme's value in terms of its transnational features. Furthermore, the programme addresses other strategic needs, varying from the **advancement of R&D** within participant organisations and **collaborations** with prominent experts in their respective fields to the development of **innovative tools** and methodologies.

Several academic institutions that participated in the OPC stressed the importance of CL2, especially in enhancing democratic governance, transparency, equality, **and the role of culture and arts**. Furthermore, the interviews carried out with EC officials and project beneficiaries highlighted the **need to also address democratic deficits and fragile democracy trends inside the European Union** (also CS7). In addition, findings from the survey suggest that Cluster 2 addresses needs such as green transition and environmental impacts to a small extent (23.0%) or not at all (27.5%). **One third** of respondents stated that they **are unsure whether their projects are responsive to green transition** (32.0%) and **environmental impacts** (37.0%).

Addressing stakeholder and target group needs in Cluster 3

Similar to its Horizon 2020 predecessor, Societal Challenge 7 – Secure societies – Protecting freedom and security of Europe and its citizens (SC7), **Cluster 3 is divided into six destinations** (see intervention logic in Annex 2, Section 1.5):

- Destination 1 on ‘better protection of the EU and its citizens against crime and terrorism’ (FCT);
- Destination 2 on ‘effective management of EU external borders’ (BM);
- Destination 3 on ‘resilient infrastructure’ (INFRA);
- Destination 4 on ‘increased cybersecurity’ (CS);
- Destination 5 on ‘disaster-resilient society for Europe’ (DRS;) and
- Destination 6 on ‘strengthened security research and innovation (SSRI).

Destinations 1-5 are thematic and address different domains of security, such as law enforcement (Destination 1) and border management (destination 2). Destination 6, on the

other hand, represents a horizontal approach designed to serve all expected impacts of Cluster 3 equally.

Following the procedure already established in SC7 of Horizon 2020, **the mandatory eligibility criteria of including security practitioners or other relevant stakeholders as partners in consortia were maintained in the FCT, BM, INFRA and DRS calls** of Cluster 3 Work Programme 2021-2022[48]. Furthermore, the high TRL target levels of the calls of Cluster 3 Work Programme 2021-2022 (typically 6-8 for the FCT, BM, INFRA and DRS calls) have enforced stakeholder engagement since **the high TRL targets indicate the necessity of user involvement in testing and demonstrating activities that take place in a relevant or operational environment**.

Based on data derived from the online survey of Horizon Europe beneficiaries, conducted in May-July 2023, **stakeholders not only participate in the Cluster 3 actions as partners but also play a role in the governance structures of actions** (e.g. acting as work package leaders). This is particularly common in the FCT actions funded in 2021.

Public bodies represent the public sector practitioners and end users in the security domain either directly or indirectly (e.g. ministries). In the following section, the shares of public bodies in the Cluster 3 actions of Horizon Europe funded in 2021-2022 are compared to the SC7 actions of H2020 (based on CORDA data and our calculations in CS10):

- **FCT actions**: The share of public bodies has remained at the same level in terms of numbers and assigned EC contributions;
- **BM actions**: the share of public bodies has remained at the same level in terms of numbers, but their share of assigned EC contribution has slightly decreased;
- **INFRA actions**: The share of public bodies has slightly decreased in terms of numbers and assigned EC contributions;
- **DRS actions**: The share of public bodies has slightly decreased in terms of numbers and assigned EC contributions.

The FCT, BM, INFRA and DRS beneficiaries interviewed (CS10) saw that relevant stakeholder groups and their needs were addressed adequately in the 2021 call topics of the Cluster 3 Work Programme. Similarly, the eligibility criteria for compulsory participation of end users from different Member States was seen as beneficial for stakeholder engagement in general. However, the beneficiaries suggested **expanding the eligible stakeholder groups** to include, for instance, non-governmental organisations. Furthermore, it was suggested that a closer involvement of EU institutions, such as Frontex and Europol, in project activities could help achieve more ambitious project objectives.

According to beneficiaries, the end user representatives often change during the lifecycle of action since persons move into other positions inside the public bodies. This creates **difficulties in ensuring professional end user contributions supporting innovation uptake throughout the action lifecycle**. Beneficiaries' views regarding the impact of project size (amount of funding) or duration on stakeholder involvement were mixed: some saw no

48 Horizon Europe Work Programme 2021-2022: 6. Civil Security for Society. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf.

impact, while others considered that a large-scale project (both resource- and timewise) is necessary for stakeholder involvement and commitment.

The CS calls (cybersecurity research) of Cluster 3 Work Programme 2021-2022 did not establish the mandatory eligibility criteria of including security practitioners or other relevant stakeholders in project consortia[49]. However, **the CS beneficiaries interviewed (CS12) reported on multiple measures of stakeholder involvement taking place in the project activities**. These measures included analysis of use cases and co-creation meetings with users, for instance. The user groups addressed by the CS actions represent multiple sectors, including healthcare, telecommunications, energy, transport, banking and law enforcement agencies.

According to **the OPC**, Cluster 3 is expected to address – in particular – the social challenges of migration flows (agreed by 76.0% of the OPC respondents), social justice (agreed by 62.0% of the OPC respondents), global instability and EU societal preparedness for large-scale disruptions (agreed by 75.0% of the OPC respondents)[50]. The public bodies and research organisations that participated in the OPC emphasised the importance of Cluster 3 for **demonstrating security solutions in real environments and integrating security practitioners and citizens within the FP**. It should be noted that **the role of citizens as an important stakeholder group** in Cluster 3 actions is also confirmed by the online survey of Horizon Europe beneficiaries, in which more than half of the respondents (n=150) planned to engage citizens/citizen representatives/end users in the co-creation of the R&I content of the Cluster 3 action.

As for industrial participation, our findings indicate that Cluster 3, similar to Cluster 1, has attracted mostly small SMEs 41.1% (124), which is followed by micro-SMEs 30.1% (91) and last, medium-sized SMEs 28.8% (87). The CL3 results, similar to CL1 results, are very similar to the overall SME involvement in Horizon Europe (see Figure in relevance Section 1.1.1. in the Annex). This suggests that SMEs of various sizes are included in Cluster 3 actions.

4.2. Flexibility to respond to emerging and changing circumstances

Cluster 1

In assessing CL1's flexibility to respond to emerging and changing circumstances, findings suggest that CL**1-supported thematic areas take into account the latest technological, scientific and/or socio-economic developments at the national, European and international levels to a large extent**.

The latter is especially notable from CL1's contributions towards the Recovery Plan for Europe and the stakeholders' perceptions of the overall programme, which effectively contribute to the potential of new tools, technologies, and digital solutions for a healthy society.

The Recovery Plan for Europe[51], agreed by the European Commission, the European Parliament, and EU Member States' leaders, entails efforts towards innovation for digitised

49 Horizon Europe Work Programme 2021-2022: 6. Civil Security for Society. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf.

50 Synopsis Report. Looking into the R&I future priorities 2025-2027. Available: https://op.europa.eu/en/publication-detail/-/publication/e8f722ec-dff7-11ed-a05c-01aa75ed71a1/language-en/format-PDF/source-284554549.

51 https://commission.europa.eu/strategy-and-policy/recovery-plan-europe_en.

health systems and a competitive and secure data economy, the basis of European Electronic Health Records as well as the establishment of the European Health Data Space. According to the Synopsis Report[52] of the public consultation published by the EC, more than 50.0% of participants consider **EU support as "extremely" effective for "unlocking the full potential of new tools, technologies and digital solutions for a healthy society"** (54.0%; 413). This is in line with the priorities and aims of the Recovery Plan for Europe.

Similarly to the Recovery Plan for Europe, **CL1 Work Programmes (2021-2022[53], 2023-2024[54]) show an increasing shift towards 'resilience building'** in terms of resilience and mental well-being of the health and care workforce, pre-commercial research and innovation procurement (PCP) and public procurement of innovative solutions (PPI) for building the resilience of healthcare systems in the context of recovery.

Contributions to health-related EU policies and priorities

Since Horizon Europe's launch in 2021, its primary health-related challenges revolve around non-communicable diseases such as cardiovascular conditions, cancer, respiratory issues, and diabetes, leading to disability and premature mortality in the Union. The EU health strategy[55], with its focus on better health, strong health systems, and combating health threats, seeks to ensure universal coverage. However, diverse treatments for these challenges drive up costs, risking unequal healthcare access across the EU. The COVID-19 pandemic emphasised the critical need for coordinated health research and innovation among European nations.**Horizon Europe's Cluster 1 (like its predecessor SC1) showcases adaptability in responding to changing circumstances, notably seen in research concerning infectious diseases, poverty-related neglected diseases, and cancer**. As found in (B1) on NIH response to COVID-19, HE is investing EUR 123 million in COVID-19 variant research, aligning with European bio-defence plans and HERA Incubator efforts. It offers specialised calls addressing COVID-19, such as open data sharing, rapid research responses, clinical trials, and studies on emerging variants, mirroring approaches by the NIH. However, while infectious diseases are a major concern, cancer is also a significant issue globally. In Europe the impact of cancer is particularly high, leading to significant funding efforts by Horizon Europe, NIH, and other major funders to reduce cases and prioritise thematic areas that are aligned across the years. For more information on this analysis, please see the benchmark 1 report in Annex 5.

Cluster 2

The programme is relevant as it can adapt and respond rapidly to changes in the external environment. Examples of this adaptability include Cluster 2 Work Programmes (i.e.

52 European Commission, Directorate-General for Research and Innovation, Synopsis report – Looking into the R&I future priorities 2025-2027, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/93927.

53 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-4-health_horizon-2021-2022_en.pdf.

54 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-4-health_horizon-2023-2024_en.pdf.

55 https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7153.

2021-2022[56], 2023-2024[57]) addressing new needs such as **COVID-19 implications** on mental health and well-being, the **rising inequalities in housing** along with the **Russian invasion in Ukraine** in the topic's calls addressing in that way urgent needs and priorities for various stakeholders. Also, the dedicated destination on democracy closely aligns with the concerns raised in the **European Democracy action plan** (EDAP)[58] and addresses EU priorities that give **a new push to European democracy.**

In a similar vein, the **evaluation emphasises relevance over time, including Cluster's 2 adaptability to changing circumstances both during proposal writing and implementation**. During the project implementation, the vast majority of projects under destination democracy have included Russia's war in Ukraine in their R&I activities from the first call (2021) (CS7). Likewise, beneficiaries of the cultural heritage destination projects find the relevant calls to have a broad scope, allowing for nuanced approaches during the preparation of their proposals. In this case, the call topic has influenced their research direction, leading to thematic shifts in their work (e.g. by including sustainability-related aspects in their work). These responses indicate that the programme acted as a catalyst, encouraging beneficiaries to harmonise and align their research with the EU's thematic priorities (CS8).

In terms of **further improvement**, CL2 needs to place more focus on R&I activities addressing**, intangible cultural heritage** and **cultural heritage landscapes** (OPC position papers; interview programme with CL2 officials and CL2 project coordinators).

4.3. Participation of international partners and Associated Countries

The study assessed the participation of international partners and Associated Countries in Horizon Europe. International cooperation has been recognised as a core driver of world-class R&I; it is also among the key priorities of the Union. The strategy for international cooperation is set out in the Global Approach to Research and Innovation Communication. Furthermore, Horizon Europe is one of the main tools for implementing this strategy, hence the enhanced focus on boosting international cooperation. According to the regulation establishing Horizon Europe:

> *In accordance with the objectives of international cooperation as set out in Articles 180 and 186 TFEU, the participation of legal entities established in Third Countries and of international organisations should be promoted based on mutual benefits and the Union's interests.*

56 Horizon Europe Work Programme 2021-2022. Culture, creativity and inclusive society (Cluster 2). (European Commission Decision C(2022)2975 of 10 May 2022). https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-5-culture-creativity-and-inclusive-society_horizon-2021-2022_en.pdf .

57 Horizon Europe Work Programme 2023-2024. Culture, Creativity and Inclusive Society (Cluster 2). (European Commission Decision C(2022)7550 of 6 December 2022). https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-5-culture-creativity-and-inclusive-society_horizon-2023-2024_en.pdf .

58 https://commission.europa.eu/document/63918142-7e4c-41ac-b880-6386df1c4f6c_en.

The participation of international partners and Associated Countries under Horizon Europe is critical for several reasons:		
Knowledge and Expertise Exchange: International collaboration allows for the exchange of knowledge, expertise, and best practices. It provides fresh perspectives and approaches that can contribute to the development of innovative solutions.	**Leveraging Resources**: By engaging international partners, Horizon Europe can leverage additional financial resources, expanding the funding available for research and innovation activities.	**Global Problem Solving**: Many of today's challenges, such as climate change, pandemics, and cybersecurity, are global. International participation enhances the EU's ability to address these challenges effectively.
Enhanced Competitiveness: Collaborating with international partners fosters competitiveness. It encourages the sharing of research infrastructure and resources, promoting a more vibrant research and innovation ecosystem.	**Attracting Talent**: International participation makes the EU a more attractive destination for talented researchers and innovators from around the world. This bolsters the EU's capacity to attract and retain top talent.	**Market Access**: It offers opportunities for European businesses and organisations to access global markets and establish international partnerships, fostering economic growth and competitiveness.

The study team looked into the participation patterns of Associated Countries and Third Countries in Clusters 1, 2 and 3 as well as overall Horizon Europe using EC administrative and monitoring data to assess how the programme parts are performing during the mid-term. The results demonstrate that the participation patterns of Associated and Third Countries in Cluster 1 are above the levels of Horizon Europe overall**.** The positive increase in the participation patterns for Associated and Third Countries is also notable when compared with the predecessor SC1. The latter is applicable for **Cluster 2** as well; although the participation pattern for Associated Countries is not higher than overall Horizon Europe patterns, it is higher than for Third Countries and is significantly **above the levels when compared with the predecessor SC6.** For **Cluster 3**, participation patterns for Associated and Third Countries are not higher than overall Horizon Europe patterns. However, similar to Cluster 1 and 2, **it significantly outperforms its predecessor SC7.** This indicates that the strategy to boost international cooperation is being followed through. We comment more on the effectiveness of international cooperation in Section 7.7.

Cluster 1

For **CL1, participation of international partners and Associated Countries is increasing, especially in areas such as tackling global challenges (e.g. COVID-19), promoting the digital transition of health and care systems, strengthening cooperation on global health and mobilising EU's global approach to research and innovation**[59]**.** As demonstrated by the online Survey of Horizon Europe beneficiaries, conducted in May-July 2023, 41.9% of respondents acknowledge that one of the programme's strengths is its capacity to enhance their international visibility beyond their borders.

Cluster 2

For CL2, **international cooperation plays a key role in the field of SSH**, particularly in issues such as global societal challenges that require citizen science to address and mitigate such matters. This is especially pertinent in the sector of **heritage science, global**

59 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A252%3AFIN.

governance, migration, gender and socio-economic inequalities where the EU is not the sole actor. The case study on democracy (CS7) exemplifies the importance and relevance that international partners and Associated Countries play in addressing democratic governance in non-democratic settings. The **international dimension of Cluster 2 is** also **positively valued by beneficiaries**. As demonstrated by the Horizon Europe beneficiaries survey conducted in May-July 2023, 46.5% of respondents acknowledged that one of the programme's strengths is its capacity to enhance its international visibility beyond its borders. According to interviews with Cluster 2 officials, **international cooperation is reported as an area for further reinforcement in the upcoming** half period of the Horizon Europe **programme**, especially for cultural heritage destination.

Cluster 3

Finally, in **CL3, the Work Programmes 2021-2022 and 2023-2024 encourage collaboration with Third Countries, especially developing countries, in many call topics (including FCT, DRS, and INFRA calls).** This aligns with the EU's Global Gateway Strategy[60] and the Global Approach to Research and Innovation[61], with the latter emphasising the international openness of Horizon Europe's research and innovation programme to the world. The Work Programme 2023-2024 has a mandatory requirement for the inclusion of non-associated Third Countries as partners in one call topic (i.e. HORIZON-CL3-2023-DRS-01-04). Cluster 3 Work Programmes also take note of the potential limitations to international cooperation as referred to in the above-mentioned EU global policies and also in Article 22 (Section 5) of the Horizon Europe Regulation[62]. The exchanges with international partners must be balanced by guaranteeing the protection of the EU's security interests and respecting the need for open strategic autonomy in critical sectors. For example, the Work Programme 2023-2024 explicitly rules out legal entities established in China from participating in Cluster 3 Innovation Actions in any capacity. It should also be noted that Cluster 3 is the cluster with the most projects that are subject to security scrutiny (Article 20 of the Regulation), showing its importance when it comes to the protection of EU and national security interests and classified deliverables.

4.4. Timeliness of the performed research and innovation activities

Cluster 1

The analysis of the timeliness of the performed research and innovation activities suggests that **CL1 actions address new or fast-growing R&I topics to a large extent** and outperform the average Pillar 2 score and the average Horizon Europe programme score. According to the unstructured data analysis, the average **Future Emerging Technologies (FET) score** for **Cluster 1 is 13.71,** which is a higher average than for Pillar 2 and for the overall framework programme (for further details about FET score, please see Section 1.1.3 in the Annex).

60 Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank. The Global Gateway. Available: https://data.consilium.europa.eu/doc/document/ST-14675-2021-INIT/en/pdf.

61 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Global Approach to Research and Innovation. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0252.

62 Regulation (EU) 2021/695 on the Horizon Europe. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0695.

This finding corresponds to the 2023 European Innovation Scoreboard[63], which found that, as measured by the Summary Innovation Index, **the EU has increased its innovation performance by 8.5%** since 2016. While the scope is not directly linked to Cluster 1 actions, it is important to consider that Horizon Europe, in general, is designed to promote excellence-based research and innovation and support top-quality researchers and innovators to realise the EU's objectives, cross-border cooperation on technology development in European Partnerships (esp. Innovative Health Initiative).

Additionally, analysis of the examples of contributions to innovative solutions from the European Partnership for EIT Health and Cancer Mission **demonstrates a significant contribution when it comes to the digital transition and developing various digital tools in order to meet the objectives, underlining the emergence of innovation under Horizon Europe.** For example, EIT Health developed Science4Pandemics, which is a citizen engagement digital platform for collective intelligence in pandemics and had around 5 000 participants in 2022. This programme targeted European adolescents using gamification and Artificial Intelligence to further enhance public understanding of preventing and managing pandemics (for further details, please see individual partnership report on EIT Health).

Cluster 2

The evaluation shows that **Cluster 2 is reactive and has addressed in a timely manner** new **emerging research needs and trends** in the field of Social Sciences and Humanities. On **destination** "**democracy** and governance", several **calls are in line with the technological developments in the realm of digital technologies and tools**. Calls from WPs 2021-2022 and 2023-2024 support research proposals regarding the protection of fundamental human rights and European values from Artificial Intelligence (AI) and big data, the impact of inequalities on the quality of democracy along with the effects on democratic processes by new technologies. Also, challenges addressed by the European Democracy action plan[64] are well reflected in calls addressing the rise in populism, nationalism and polarised politics, as well as the importance of media and social media for democracies, elections and citizens' engagement.

Regarding **destination** "**cultural heritage** and the cultural and creative industries", the **topics have contributed to the objectives of the European Green Deal** and the preservation and restoration of cultural heritage objects and buildings in a sustainable way by deploying **green digital technologies**. Destination heritage encourages academic and non-academic applicants to explore digital tools, ranging from 3D/4D simulations and virtual to augmented reality, to ensure preservation and wide access to cultural heritage and arts.

On **destination** "**social and economic transformations**", calls have addressed topics on new forms of work on the European welfare systems. These themes are set against the backdrop of **demographic shifts, globalisation, digitalisation and a transition toward sustainability**. In particular, the topic from WP 2023-2024 on "Assessing and strengthening the complementarity between new technologies and human skills" has invited project proposals to enhance understanding of the potential and **impact of new technologies, such as AI technologies and robotics,** to replace or complement **human labour** and job tasks.

63 https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en.

64 European Democracy Action Plan https://ec.europa.eu/info/strategy/priorities -2019-2024 /new-push-european-democracy/european-democracy-action-plan_en.

In addition, call topics have included themes that require research and policy action to address the lack of basic and digital skills in schools and the integration of emerging new technologies into the education and training of teachers. Lastly, the evolving landscapes of e-learning and remote work, triggered by COVID-19, are also explored across the WPs.

Cluster 3

R&I within this cluster is often driven by the ever-evolving landscape of security threats, technological advancements, and societal needs.

For example, with the growing reliance on digital infrastructure, there is an increasing emphasis on cybersecurity research. This involves developing resilient systems, securing critical infrastructure, and addressing cyber threats and vulnerabilities. In this instance, the actions under the destination of increased cybersecurity contribute to the implementation of the digital and privacy policy of the EU**, the EU Cybersecurity Act, and the EU Cybersecurity Strategy.** The Work Programme (2023-2024)[65] targets its efforts toward calls such as Secure Computing Continuum (IoT, Edge, Cloud, Dataspaces), Security of robust AI systems, and Post-quantum cryptography transition.

According to the findings in CS11: on the societal impacts of security research on cross-border cooperation between security practitioners and relevant authorities found that **cross-border collaboration activities have enabled CL3 actions to establish a common culture for disaster preparedness and security**. For instance, SAFE-CITIES[66]developed an interactive platform enabling the simulation of complex scenarios. Simulations support the achievement of a common preparedness culture through regular revision of business continuity plans by testing.

4.5. Relevance and flexibility of partnerships

The analysis of the relevance and flexibility of partnerships found that overall, European **partnerships are recognised for their relevance in addressing various health-related challenges and adaptability in responding to needs and opportunities in the field of health R&I.**

Overall, the evidence demonstrates that **partnerships established under Horizon Europe play a crucial role in promoting innovative research and development, improving health outcomes, and strengthening Europe's competitiveness** in various sectors, including digital health, chronic disease management, and healthcare system information.
The evidence presented below relies on several sources, including the individual partnership reports concluded in parallel with this study report (i.e. ERA4Health, GH EDCTP3 JU, EIT Health).

For example, the ERA4Health co-funded partnership report found that the objectives of ERA4Health remain **relevant regarding the challenges and needs** addressed in the health area by Horizon Europe. ERA4Health addresses Horizon Europe's intervention areas of **health throughout the life course,** as well as **non-communicable and rare diseases**[67]**.** The most recent ERA4Health activities include the launch of two JTCs, namely **CARDINNOV**

65 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-6-civil-security-for-society_horizon-2023-2024_en.pdf.

66 grant agreement No 101073945.

67 European Commission (2023). Horizon Europe Strategic Plan 2025-2027 Analysis.

and **HealthEquity** as well as the launch of **NANOTECMEC** and **NutriBrain.** These calls are relevant to their respective health areas due to the high burden of diseases. The interviewed stakeholders also confirmed the relevance of ERA4Health objectives and highlighted the **relevance of multinational investigator-initiated clinical studies (IICS) in Europe,** as clinical studies have never been conducted on such a broad scale in Europe. This could also potentially increase the relevance of ERA4Health in the field of clinical studies on the European scale as well as beyond. The evidence suggests that to maintain the relevance of these objectives, **ERA4Health foresees flexible mechanisms in updating the Strategic Research Innovation Agenda (SRIA)** and adjusting objectives, activities and resources to changing market and policy needs. For example, open and inclusive processes were set up in the development of ERA4Health's SRIA 2022. They have involved a broad set of stakeholders and relevant experts and have been designed to be open and participatory, using methods that emphasise co-creation and collaboration[68]. The upcoming ERA4Health SRIA will **continue consulting a variety of stakeholders and internal mechanisms** to remain open and flexible. ERA4Health's Strategic Advisory Board (STAB)[69] and Ethics and RRI Advisory Board (ERAB)[70] will provide advice on SRIA updates. ERA4Health documents[71], as well as the interviewed stakeholders, confirmed that the updates on SRIA will be provided by a variety of workshops involving different stakeholder groups (for further partnership analysis, see Section 1.1.4 in the Annex).

5. Coherence

Key findings on coherence:

The three clusters, CL1, CL2, and CL3, exhibit coherence and complementarity with other programmes, with no significant overlaps. While partnerships actively have pursued coherence and synergies, there is a need for continuous monitoring once those are established.

Internal coherence

- The Innovative Health Initiative (**IHI) plays a crucial role in fostering collaboration across various initiatives** within Horizon Europe.
- **Cluster 2 represents a more innovative approach by funding pilots** and enabling policy experimentations with innovative solutions.
- Horizon Europe beneficiary CL3 respondents have suggested more active cross-cluster collaborations, synergies and pilot cross-cluster calls.
- When looking at the thematic relations between projects, we found that there are **little to no thematic overlaps between different Cluster 1 funding instruments**, suggesting that, so far, the Health Cluster instruments, for the most part, are covering different research grounds.
- Overall, the findings demonstrate that **the assessed partnerships are actively pursuing coherence and synergies to enhance their impacts on R&I.** That said, once the partnership is established, there is no continuous monitoring of their coherence.
- By supporting R&I research on themes such as **migration flows, AI, education and culture, corruption, democracy and poverty, CL2 remains consistent with prevailing societal challenges**.

68 ERA4Health Strategic Research and Innovation Agenda. p. 4.

69 ERA4Health. Deliverable 6.1/1.1.1: Establishment of the Strategic Advisory Board. WP6. p. 18.

70 ERA4Health Partnerships. D18.5 Working Group RRI Established. WP18. p. 18.

71 ERA4Health Partnership. D8.1-D1.3.2 Synergies Working Group Establishment WP8. p. 8.

- **CL3 has contributed** to building European competencies and **synergies on Artificial Intelligence (AI) and machine learning.**

External coherence

- Across all programme parts, the evaluation found evidence of varying degrees of synergies with 8 programmes/funds out of the 21 listed in Annex IV of the Horizon Europe Regulation. With the remaining 13 programmes/funds, no evidence of synergies was found based on the available data.
- **Cluster 1 projects foster synergies with public health policies at the national and regional level, with other EU programmes and policies**, as well as with health-related European infrastructures.
- **CL2 shows satisfactory complementarity with the Creative Europe Programme,** notably in culture, and with Citizens, Equality, Rights and Values, particularly in democracy. It also has strong complementarity with the Neighbourhood, Development and International Cooperation Instrument, which mainly engages with non-EU countries.
- For **CL3, there are currently 12 ISF actions (Union Actions[72]) with EUR 5.9 million of EU funding and nine DIGITAL actions with EUR 13.0 million** of EU funding, which are connected to unsuccessful Cluster 3 proposals[73].

This section presents a summary of the findings on the coherence evaluation criteria.

For Cluster 1, the study team assessed coherence from several perspectives, namely:

- The internal coherence of Cluster 1, with a specific focus on the adequacy of its instruments, including Joint Programming Initiatives, ERANETS and partnerships[74];
- Coherence among EDCTP2, GH EDCTP3 JU, IHI/IMI2, EIT Health, THCS, PARC and ERA4Health partnerships and the extent to which partnerships were more effective in achieving synergies compared to other modalities of the programme[75];
- Usefulness and impact of the development of and participation in international programme-level cooperation multilateral initiatives[76].

5.1. Coherence of Cluster 1, 2 and 3 between Framework Programme parts covered by this study

Cluster 1

Cluster 1 is expected to build complementarities with other clusters under Pillar II: Global Challenges and European Industrial Competitiveness[77]. Feedback from the Open Public Consultation suggests that **Cluster 1 holds untapped opportunities for synergies with Cluster 2**, as indicated by 30.5% of respondents. CL1 could expand its impact by collaborating with CL2 on culture, creativity and Inclusive Society. The collaboration could

72 Only Union Actions are addressed here due to methodological limitations, making up about 10-15% of the whole ISF.

73 A connection means that the project consortia share at least two same participants and project topics are related. See Annex 3 for the details of the synergies analysis.

74 Evaluation questions CH6; CH6.1; CH6.2.

75 Evaluation questions CH4-CH4.1.

76 Evaluation question CH5.

77 Horizon Europe Strategic Plan 2021-2024

benefit CL1 toward more comprehensive and inclusive health initiatives that consider social and cultural dimensions, fostering innovation and community engagement in health-related activities. Additionally, **18.1% of respondents highlighted untapped potential for synergies between Cluster 1 and Cluster 4.** For CL1, exploring collaborations with CL4 involves integrating digital industry-related advancements into health-related research and innovation, with a potential for transformative outcomes and solutions in health research, health and care.

Finally, the study team assessed whether Cluster 1 maintains internal coherence with other modalities of the programme (i.e. European partnerships). In particular, we looked into relations between partnerships an Cluster 1 activities. Below, we present an example of the Innovative Health Initiative (IHI).

The Innovative Health Initiative (IHI) plays a crucial role in fostering collaboration across various initiatives within Horizon Europe. It directly contributes to key EU policies, such as Europe's Beating Cancer Plan, Pharmaceutical Strategy, and Industrial Strategy. Specifically highlighted in the Cancer Plan, IHI drives health innovation, with ongoing projects addressing unmet needs in cancer research. Its alignment with the Pharmaceutical Strategy emphasises competitiveness and regulatory standards. At the same time, its support of the Industrial Strategy encourages cross-sectoral collaborations, ultimately strengthening Europe's research ecosystem in pharmaceuticals and health technology.

Cluster 2

Cluster 2 is expected to build complementarities with other clusters under Pillar II: Global Challenges and European Industrial Competitiveness[78]. Feedback from the Open Public Consultation suggests that **Cluster 2 holds untapped opportunities for synergies with Cluster 1**, as indicated by 41.0% of respondents. The SSH dimension of Cluster 1 is important to improve human-centred prevention and care, gender inequalities aspects of healthcare, and the role of arts and culture as a source of health and well-being. Additionally, **19.0% of respondents highlighted untapped potential for synergies between Cluster 2 and Cluster 3**. During the interview programme conducted with project beneficiaries and Cluster 2 officers, it was suggested that Cluster 3 is one of the most pertinent clusters that would benefit from synergies and collaboration with the perspectives of Cluster 2. Specifically, topics like online disinformation and digital democratisation were identified as areas where such collaboration could be highly impactful. Similar **unexploited opportunities are also evident between Cluster 2 and 4** (17.0%). Human-centric research could prove beneficial for the interaction of key digital technologies (i.e. AI, robotics, big data) with citizens and other socio-economic aspects during the digital transition, hence cluster 4 has Destination 6: A human-centred and ethical development of digital and industrial technologies. It is interesting to note that 14.5% of the Open Public Consultation respondents seek more synergies among destinations and projects within Cluster 2.

According to the Horizon Europe survey conducted in May-July 2023, **16.6%** (60 projects in total) of respondents reported to have planned **joint activities with other CL2 projects**. Regarding joint **activities with other Horizon Europe programmes, 80.4%** of CL2 respondents indicate that **their projects either do not involve joint activities or that such activities are not applicable** to them (43.3% and 39.1%, respectively). Despite the common practice of EC project officers grouping Cluster 2 projects and encouraging beneficiaries to interact with each other through mutual events, meetings and knowledge sessions, project

78 Horizon Europe Strategic Plan 2021-2024.

beneficiaries and Cluster 2 officers emphasise the **necessity for more active cross-cluster collaborations**, synergies and pilot cross-cluster calls.

The evaluation of Cluster 2 also examined synergies and complementarities between Cluster 2 and SC6 under Horizon 2020. **Compared to** its predecessor, **Cluster 2 represents a more innovative approach by funding pilots and enabling policy experimentations with innovative solutions**. In Cluster 2 WP 2023-2024, a call under destination democracy features and invites project proposals to delve into and look at the take-up of results from previous SC6 research projects and explore their application in different contexts[79]. By doing so, projects from the previous FP would establish synergies with ongoing ones and address the same areas of policy interventions in a more coherent and coordinated manner.

Further, **evidence stemming from the case studies and DG RTD internal mapping showcases coherence with the previous FP**. It is common for many partners participating in ongoing projects to have previously collaborated with other partners and consortia from SC6 (CS7; CS8; CS9). CS7 indicated that Cluster 2 projects often deploy results from the previous FP, particularly the Societal Challenge 6 under Horizon 2020. In addition, according to internal mapping conducted by DG RTD in spring 2023, a group of six Digital Cultural Heritage (DCH) projects funded through CL2 calls (i.e. 2021, 2022, 2023) has been identified and is encouraged to collaborate closely. This collaborative effort is built upon the findings of numerous Horizon 2020 projects on DCH, along with community and network activities during that funding period. In this way, project teams, policy officers, and project officers are gathered to develop policy recommendations collectively.

SC6, CL2, CL3 and ISF joint workshop (2023)
DG HOME, DG RTD, and REA jointly organised a workshop on radicalisation and extremism under DG HOME's CERIS. The workshop brought together policymakers and project representatives from SC6, CL2 and CL3, along with a project funded under the Internal Security Fund. This initiative provided the opportunity for projects that address common areas to exchange their policy insights and recommendations directly with policymakers from DG HOME, INTPA, JUSTICE, NEAR, EEAS, and RTD. The event helped projects connect to each other and ensure that their research activities would be exploited by ongoing or newer projects. The workshop brought together more than 100 practitioners, local authorities, policymakers and researchers.

The evaluation indicates that at this stage of project implementation, only a few CL2 projects (11 in total) have planned joint activities with the European Research Council (ERC) and Marie Skłodowska-Curie Actions (MSCA). At the same time, the interview programme with CL2 officials suggests that **CL2 should seek and enhance synergies and collaborations with** Pillar I, particularly **the ERC and MSCA**. The rationale behind this recommendation lies in the fact that these programmes also address topics related to Social Sciences and Humanities. As proposed, the enhancement of synergies between these programmes could be achieved through the organisation of exchange sessions where beneficiaries can share information about the research topics they are engaged in. This would facilitate mutual awareness of the areas of focus within each programme and exchange of knowledge, methodologies and data.

79 See HORIZON-CL2-2024-DEMOCRACY-01-12: Testing and implementation of research results fostering democracy and governance https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-5-culture-creativity-and-inclusive-society_horizon-2023-2024_en.pdf pg. 54.

Cluster 3

Cluster 3 is expected to build complementarities with other clusters under Pillar II: Global Challenges and European Industrial Competitiveness[80]. Feedback from the Open Public Consultation suggests that **Cluster 3 holds untapped opportunities for synergies with Cluster 2**, as indicated by 31.2% of respondents. CL3 could benefit from collaboration and lead to more integrated strategies to address both security concerns and societal well-being. Additionally, **28.3% of respondents highlighted untapped potential for synergies between Cluster 3 and Cluster 1.** For CL3, exploring collaborations with CL1 involves addressing not only security concerns but also health-related aspects that can impact overall societal well-being and resilience. According to the Horizon Europe survey conducted in May-July 2023, **25.9%** of respondents reported having planned **joint activities with other CL3 projects**. Regarding **joint activities with other Horizon Europe programmes, 61.8%** of CL3 respondents indicate that **their projects either do not involve joint activities or that such activities do not apply** to them (24.1% and 37.7%, respectively). Despite the encouragement of beneficiaries by the project officers to interact with each other through mutual events, meetings and knowledge sessions**, the results of the survey emphasise the need for more active cross-cluster collaborations, synergies and pilot cross-cluster calls.**

CERIS (Community for European Research and Innovation for Security, managed by DG HOME)

DG HOME, DG RTD and REA jointly organised a workshop under DG HOME's CERIS on security topics that also have links with other Clusters (e.g. consequences of extreme weather events, AI, radicalisation and extremism, corruption, disinformation, etc.). This and similar workshops have brought together policymakers and project representatives along with projects funded under other EU funds (such as the Internal Security Fund or the Border Management and Visa Instrument). They provide the opportunity for projects that address common areas to exchange their policy insights and recommendations directly to policymakers. The events help projects connect to each other and ensure that their research activities could be exploited by ongoing or newer projects. The workshops typically bring together more than 100 practitioners, local authorities, policymakers, security practitioners and researchers. DG HOME has organised many such workshops on cross-cutting issues under the CERIS umbrella that are at the core of Cluster 3.

Table 13 presents the main aspects of internal coherence across the three clusters established under the Horizon Europe framework in 2021. The table provides comparative data on each cluster's budget, TRLs covered, and the target groups they aim to support (i.e. start-ups, SMEs, research institutions, higher education, and national/regional authorities).
CL1, with the largest budget of EUR 8.25 billion, covers TRLs 2-8, followed by CL2, with a budget of EUR 2.28 billion, and CL3, with a budget of EUR 1.6 billion, covers TRLs from 4-8.

80 Horizon Europe Strategic Plan 2021-2024.

Table 13. Main aspects of internal coherence

	CL1	CL2	CL3
Years of establishment*	2021	2021	2021
Budget	EUR 8.25 billion	EUR 2.28 billion	EUR 1.6 billion
TRLs covered	2-8	No data available	4-8
Selected target groups	Start-ups SMEs Research Higher Education National/regional authorities		

** Clusters were created under Horizon Europe, however, the predecessors of those thematic divisions were already apparent in previous Framework Programmes. For example, Societal Challenges in Horizon 2020.*

Source: Compiled by the study team.

Contributions of the Joint Research Centre (JRC) to CL1, 2 and 3

According to the analysis of peer-reviewed publications 2021-2022 and bibliometric indicators, in 2021-2022, 706 peer-reviewed scholarly publications authored/co-authored by the JRC and related to the programme parts assessed in this study (referred to in the report as the 'Resilient Europe theme'). This is 35.0% of all JRC publications in 2021-2022. This suggests **a significant and active involvement of the JRC in contributing to research and knowledge within the thematic areas assessed in this study**. This high volume of publications indicates a robust engagement and collaboration with the Horizon Europe programme, potentially leading to advancements, insights, and contributions in the specific areas covered by Clusters 1, 2, and 3.

5.2. The internal coherence of Cluster 1 instruments and partnerships

In this study, the evaluators assessed the internal coherence of Cluster 1 in terms of the adequacy of the instrument (e.g. grants funded under Cluster 1 or institutional partnerships). The term 'adequacy of Cluster 1 instruments' is understood as the suitability of the instruments to cover different innovation cycles, cater to specific participants' needs and cover different research grounds.

Under Horizon Europe, Cluster 1 relies on seven types of actions (i.e. RIA, CSA, IA, Joint Undertakings CSA, Joint Undertakings RIA, Pre-Commercial Procurement, COFUND). Table 14 presents the different action types used by Cluster 1 and their distribution according to the number of projects covered and the amount of EU contributions received. Considering that the current programme has fewer instruments, compared to the predecessor Societal Challenge 1, Cluster 1 has a higher focus on RIA actions that constitute 81.9% of all projects (under SC1, it was 57.5%). This is not surprising, as RIAs aim to explore new technology, processes, innovative tools, and solutions that are in line with the priorities and objectives of the Health Cluster.

Table 14. Distributions of projects and EU contribution by type of action (in EUR million)

Type of action	Cluster 1	
	Number of Projects	**EU Contribution**
RIA (Research and Innovation Actions)[81]	258 (81.9%)	1 769.5 (74.6%)
Joint Undertakings RIA[82]	24 (7.6%)	171.3 (7.2%)
CSA (Coordination and Support Actions)[83]	17 (5.4%)	47.9 (2.0%)
Joint Undertakings CSA[84]	8 (2.5%)	5.2 (0.2%)
COFUND[85]	4 (1.3%)	359.6 (15.2%)
IA (Innovation Actions)[86]	3 (0.9%)	13.6 (0.6%)
Pre-Commercial Procurement[87]	1 (0.3%)	5.0 (0.2%)

Source: Compiled by the study team using the eCORDA dataset.

According to the analysis of EC administrative and monitoring data, Cluster 1 funded 315 projects amounting to EUR 2.3 billion in EU contributions in 2021 and 2022. Overall, we find that **Cluster 1 appears to be internally coherent to date**. We assessed this by looking at several factors:

- Using the EC administrative and monitoring data, the study team assessed whether there were any **cross-overs in terms of the participants attracted by each Cluster 1 action type**; the study team looked at the participant data;
- Additionally, we looked at **thematical relations between projects to see whether different actions cover different research grounds**. The thematic relationships between projects were calculated using the keywords extracted from project reports, monitoring data and publications using a specialised ontology. The study team assigned up to 50 of the most frequent keywords from the ontology to each project. If two projects share five keywords or more, we consider them to be related[88];
- We looked at the **Technology Readiness Level (TRL)** in the context of coherence analysis. While TRLs are not typically a primary focus in the coherence analysis, they can indirectly play a role in assessing the alignment of the programme's objectives and actions as they compare different technologies and monitor the progress of one technology over time.

81 Establishes new knowledge and explores new technology, products, services, or solutions.

82 Efficiently executes EU research, technological development, and demonstration programmes.

83 Improves cooperation among EU and Associated Countries strengthens the ERA (e.g., standardisation, dissemination, policy dialogues).

84 Efficiently executes EU research, technological development, and demonstration programmes.

85 Provides multi-annual co-funding for European partnerships (e.g., bringing together public and private partners).

86 Designs plans for improved products, processes or services (e.g., prototyping, testing, piloting).

87 Stimulates innovation and enables the public sector to steer the development of innovative solutions (e.g., approach to public procurement of R&D services).

88 The study team has also looked at how the similarity relationships between project pairs were distributed between the different action types. This was calculated "by dividing the number of pairs linking action type 'X' with action type 'Y' by the number of distinct similar project pairs", but by dividing the number of similar pairs, linking action type 'X' with action type 'Y' by the number of total number of pairs linking action type 'X' with action type 'Y'.

To assess whether there have been any cross-overs in terms of the participants attracted by each Cluster 1 instrument, the study team looked at the participant data (the table can be seen in Section 1.2.2 in the Annex). The study team found that each Cluster 1 instrument type attracted a specific group of participants. For example, while the majority (24.8%) of the participants attracted by the RIA-funded actions were from the higher or secondary education (HES) sector, the instrument attracts every single type of participant included in our analysis. The type of participants attracted by each instrument appeared diversely distributed, thus confirming that CL1 actions cater for different needs and types of beneficiary groups.

When looking at the thematic relations between projects, we found that there are **few to no thematic overlaps between different Cluster 1 funding instruments**, suggesting that, so far, the Health Cluster instruments, for the most part, are covering different research grounds. Our findings are very similar to that of the predecessor SC1, which suggests that there continues to be a greater thematic cohesion within the different action types than between them.

The Horizon Europe regulation stipulates that "the collaborative parts of the Programme shall ensure a balance between lower and higher TRLs, thereby covering the whole value chain" (Art. 7). Its Annex I further states that "Pillar II shall cover activities from a broad range of TRLs, including lower TRLs". The analysis of TRL[89] found that CL1 RIAs predominantly involve projects starting at a relatively early TRL of 2-3 and advancing them to a mid-level of 5-6. Conversely, IAs tend to focus on projects that begin at a slightly higher TRL of 4-5, aiming to advance these initiatives to an upper-level TRL of 6-8. This allocation strategy within CL1 underscores a deliberate emphasis on progressing technology development, innovation, and research across a broad spectrum of readiness levels, ensuring a holistic approach to technological advancement and deployment within CL1 activities. As for this stage of the programme, the low TRL coverage is sufficient and on the right track to ensure the balance between the low and higher TRLs.

5.3. Coherence among assessed partnerships

Coherence among partnerships covered under this study (i.e. GH EDCTP3 JU, IHI, EIT Health, THCS, PARC, ERA4Health) was assessed with regard to the extent to which different partnerships foster collaboration and avoid overlapping or duplication between their activities. When assessing coherence among partnerships, it is important to consider that several substantial changes were implemented under Horizon Europe when compared to the predecessor Horizon 2020; these include:

- **Public-private collaboration:** Horizon Europe continues to promote public-private partnerships (PPPs) but with an increased emphasis on leveraging private sector investments and expertise;

89 TRL 1 — Basic principles observed; TRL 2 — Technology concept formulated; TRL 3 — Experimental proof of concept; TRL 4 Technology validated in a lab; TRL 5 — Technology validated in a relevant environment (industrially relevant environment in the case of key enabling technologies); TRL 6 — Technology demonstrated in a relevant environment (industrially relevant environment in the case of key enabling technologies); TRL 7 — System prototype demonstration in an operational environment; TRL 8 — System complete and qualified; TRL 9 — Actual system proven in an operational environment (competitive manufacturing in the case of key enabling technologies, or in space).

- **Cross-sectoral collaboration**: Horizon Europe encourages partnerships that span across sectors and disciplines. This approach fosters interdisciplinary collaboration, enabling innovative solutions to complex challenges that require diverse expertise;
- **Simplification and flexibility:** Horizon Europe aims to simplify the administrative processes related to partnerships, making it easier for stakeholders to engage in collaborative projects. Additionally, there is increased flexibility in the structure and types of partnerships allowed, accommodating different sizes and scopes of collaborations;
- **Enhanced co-creation:** There is an emphasis on co-creating partnerships involving various stakeholders in their design and implementation. This approach encourages broader participation, fosters ownership among stakeholders, and ensures that partnerships reflect diverse perspectives and expertise.

The evidence presented below relies on several sources, including the individual partnership reports concluded in parallel to this study report (i.e. GH EDCTP3 JU, IHI/IMI2, EIT Health). Additionally, three case studies and 6-pagers were produced in an early assessment of the co-funded partnerships (i.e. THCS, ERA4Health, PARC). For more details, see Annex 6, which features the 6-pagers. The findings were triangulated with inputs captured through the interview programme with stakeholders and beneficiaries, as well as additional desk research.

Overall, the findings demonstrate that the assessed **partnerships are actively pursuing coherence and synergies to enhance their impacts on R&I.** Notably, while some partnerships have already made significant progress in achieving coherence and synergies, others are still in the early stages of development and implementation (esp. in communication, collaboration, integration).

According to the interview with EC officials, while there are not many internal processes in place for systematically monitoring the coherence and synergies of partnerships, **there is a significant emphasis on ensuring coherence and synergies during the selection of partnership candidates.** Each candidate is required to show a strong commitment to establishing coherent synergies, particularly with other partnerships. After the initial selection of candidates, dedicated reports focus on coherence and synergies. These reports outline intentions, such as the establishment of mechanisms and methodologies for ensuring coherence and synergies among the partnerships. Essentially, **once the partnership is established, the programme will not be continuously monitored.** Interview insights suggest that this could be an important area to monitor. However, the current resources do not allow to keep active monitoring.

5.3.1. Are partnerships more effective in achieving synergies compared to other modalities of the programme?

The study extensively examined the coherence among partnerships and their efficacy in generating synergies compared to other programme modalities. This analysis aligns with the Biennial Monitoring Report's emphasis on an impact-oriented approach for European Partnerships, stressing the need for a systemic, goal-oriented, and collaborative strategy to avoid duplication and work more effectively within the wider landscape of research and innovation (R&I) and sectoral policies. Interviews with EC officials corroborate this shift, highlighting partnerships' increased visibility, clear objectives, and targeted focus, simplifying identity establishment and fostering outreach efforts. **Partnerships are viewed as instrumental tools in steering Horizon Europe towards focused, purposeful collaborative initiatives aiming to cultivate future synergies.**

The findings from the EC's April 2023 public consultation underscore positive impacts, with respondents acknowledging streamlined European Partnerships for attracting additional R&I investments and generating more solutions beneficial to society, the environment, and the economy.

At the national level, **Member States play a pivotal role in partnership setup, closely collaborating with the Commission and significantly influencing governance structures and implementation.** However, recent changes aimed at enhancing synergy and systemic approaches faced resistance, particularly from Member States, leading to implementation challenges, contrasting with the relatively untroubled response from the private sector. Notably, as observed in transformative changes, initial negative reactions tend to evolve positively over time, as discussions with the EC have indicated.

5.4. International programme-level cooperation multilateral initiatives[90]

This study assesses the usefulness and impact of international programme-level cooperation multilateral initiatives. For this assessment, the study team relied on the desk research, in particular, analysis of the health-related Cluster 1 Work Programmes to see the contribution activities with international programme-level cooperation multilateral initiatives. The findings were then triangulated by assessing the Global Alliance for Chronic Diseases (GACD) in particular.

The Work Programme 2023-2024[91] illustrates that the European Commission is expected to contribute towards the activities of the **GACD. Proposals should set out a credible pathway to contributing to one or several expected impacts of destination** "tackling diseases and reducing disease burden". Project results are expected to contribute to enabling the European Commission to take part in **GACD, which brings together leading health research funding agencies of key countries** (currently Argentina, Australia, Brazil, Canada, China, India, Japan, New Zealand, South Africa, Thailand, the UK and the US) to coordinate research activities addressing on a global scale the prevention and treatment of chronic, non-communicable diseases such as cardiovascular diseases, diabetes, mental and neurological diseases, lung diseases and cancer.

An interview with an EC official provided valuable insights into the role and impact of international programme-level cooperation in health research. Emphasising multilateral initiatives over bilateral country-to-country collaboration, the interviewee highlighted the importance of collective efforts like the Global Alliance on Chronic Diseases (GACD). This initiative unites 12 funding agencies from around the world to focus jointly on funding research in chronic diseases. The interviewee also highlighted the GloPID-R[92], a network with over 33 member organisations dedicated to preparedness research funding. The evidence highlights that international collaboration is sought where the added value to collaborate is identified,

90 Evaluation question CH5: What was the usefulness and impact of the development of -or participation to international programme-level cooperation multilateral initiatives, e.g., European or International consortia of health research funding agencies, such as the International Human Epigenome Consortium (IHEC), the Global Alliance for Chronic Diseases (GACD), the preparedness research funders network (GlopID-R), the International Traumatic Brain Injury Research consortium (InTBIR), the International Rare Disease Research Consortium (IRDiRC), HIRO (Heads of International Biomedical Research Organisations), the International Consortium for Personalised Medicine (IC-PERMED), the Coalition for Epidemic Preparedness Innovations (CEPI)?

91 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-4-health_horizon-2023-2024_en.pdf.

92 https://www.glopid-r.org/.

for example, a better understanding of the development of paediatric cancers or conducting pragmatic trials for poorly understood cancers (discussions with the US). Another example is the European and developing countries' clinical trial partnership – EDCTP3. This approach underlines the importance of multilateral initiatives in fostering international cooperation and enhancing research capabilities.

The evidence from EC's Horizon Europe Online Performance report[93] concludes that the general **openness of the Horizon Europe programme for international programme-level cooperation is combined with more targeted actions presented in the Work Programmes**, demonstrating the programme's continuous efforts toward international programme-level cooperation.

5.5. Positioning of Cluster 1, 2 and 3 within the overall European R&I landscape

This section consolidates evidence concerning the role and positioning of Horizon Europe Clusters 1, 2, and 3 within the broader European Research and Innovation (R&I) support framework. It delves into how these programme segments address policy gaps and fulfil roles not covered by other European, national, or regional initiatives in the R&I landscape.

To date, **Horizon Europe stands as the primary programme supporting transnational Research and Innovation (R&I) endeavours and networks**. It achieves this by fostering partnerships with Member States, businesses, and foundations, primarily guided by the fundamental criterion of excellence.

Cluster 1

CL1 plays a crucial role in fortifying the EU's position and competitiveness in R&I, with a strong focus on advancing health, life sciences and biotechnologies. This strategic emphasis, outlined in the Horizon Europe Strategic Plan 2021-24, **aims to elevate the EU's global standing by addressing societal challenges, promoting health equity, and driving economic growth through cutting-edge advancements in health technologies and treatments.**

Specifically, the Cancer Mission within CL1 serves as a testament to the EU's strategic alignment and collaborative synergy with Europe's Beating Cancer Plan (EBCP). Their joint efforts, spanning research endeavours and policy implementation, underscore a cohesive partnership aimed at addressing the entirety of the cancer pathway. Through coordinated actions, shared initiatives, and mutual support, the Cancer Mission and the EBCP ensure thematic coherence, avoid duplicative efforts, and enhance visibility, showcasing CL1's pivotal role in **positioning the EU as a leader in tackling complex health challenges through integrated R&I and policy strategies**.

93 https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/programme-performance-statements/horizon-europe-performance_en#:~:text=In%20total%2C%2022%25%20of%20the,non%2Dassociated%20non%2DEU%20country.

Cluster 2

The interview programme with Cluster 2 officials suggests that Social Sciences and Humanities hold a strong role within Horizon Europe. At the EU level this derives from the fact that SSH is mainstreamed across all Horizon clusters and CL2 focuses on specific fields of SSH research, namely democracy and governance, socio-economic transitions and cultural heritage. Cluster 2 officials underscored the need for **more intense international cooperation so the EU can ensure its positioning in the international arena in global challenges** such as democracy, human rights, culture and heritage, demographics, migration and area studies. The findings obtained from the OPC indicate that migration flows, social justice, AI, education, culture, corruption, democracy and poverty emerged as critical focal points for EU investments in R&I, underscoring the pivotal role that the EU should assume in these domains for the forthcoming decade.

Cluster 3

CL3's **emphasis on civil security reinforces the EU's commitment to ensuring security resilience and the welfare of society**. Through research initiatives addressing security threats, disaster management, and crisis response, CL3 contributes to positioning the EU as a leader in safeguarding its citizens and infrastructure against various risks.

Moreover, CL3's attention to digitalisation underscores the EU's dedication to fostering digital transformation across sectors. By supporting innovative digital technologies, promoting connectivity, and advancing digital skills, CL3 contributes to the EU's efforts to drive economic growth, competitiveness, and societal progress in the digital era.

As noted in CS12 on AI in cybersecurity: Building European competencies and synergies on AI and machine learning, the cybersecurity research funded under **CL3 has contributed to building European competencies and synergies on Artificial Intelligence (AI) and machine learning**. However, while the EU is a major funder of AI and cybersecurity R&D, the collaboration between different actions and initiatives remains limited despite efforts for more cooperation.

5.6. Horizon Europe approach to fostering synergies and coherence with other initiatives including at the regional and national level

According to the Regulation Establishing Horizon Europe:[94] *"<...**special attention needs to be paid to coordination and complementarity between different Union policies, the Programme should seek synergies with other Union programmes**, from their design and strategic planning to project selection, management, communication, dissemination and exploitation of results, monitoring, auditing and governance. Regarding funding for R&I activities, synergies should allow for the harmonisation of rules, including cost eligibility rules, as much as possible."*

Below, the study overviews different approaches and mechanisms of CL 1, 2 and 3 to foster synergies with other initiatives and programmes (e.g. EBCP, EU4Health, GH EDCTP3 JU). The extensive analysis of the coherence of the national programmes with all Member States was beyond the scope of this study.

94 https://eur-lex.europa.eu/eli/reg/2021/695/oj.

Cluster 1

The Horizon Europe regulation identified a list of 21 funds/programmes where health-related synergies are envisioned. In the evaluation study at hand, the assessment of external synergies of Cluster 1 and Mission Cancer and other similar EU programmes (EU4Health, EBCP) relied on several sources of evidence:

1. In a survey of Horizon Europe beneficiaries conducted in May-July 2023, we asked Cluster 1 beneficiaries whether their Horizon Europe project is a continuation of research activities carried out under previous Framework programmes/other funding schemes.
2. We assessed coherence and complementarities between the Cancer Mission and other similar programmes and initiatives, such as EU4Health and Europe's Beating Cancer Plan (EBCP). The case study included over 10 interviews with various stakeholders, namely National Contact Points, EC Officials, and Cancer Mission Board members.
3. We also considered the extent to which the assessed JUs work in synergy with other programmes/initiatives.
4. We assessed synergies using the CORDA dataset by looking at synergies with programmes outside of Horizon Europe (e.g. EU4Health). We also took into consideration the examples of synergies that are ongoing or planned, provided by DG RTD.

Fostering synergies with other EU programmes and policies, including at the national and regional level

In the Horizon Europe beneficiaries survey, conducted from May to July 2023, over a quarter (26.2%) of Cluster 1 beneficiaries indicated that their Horizon Europe project is a continuation of previous programmes/other funding schemes. Similarly, about a quarter (23.5%) of Cluster 1 beneficiaries noted that their project is implemented in collaboration with other projects funded under other Horizon Europe programmes or clusters. This could include mutual conferences, joint dissemination activities, workshops, joint publications, etc. The results further indicated that these collaborations primarily happen between other Cluster 1 projects and, to a lesser extent, with Widening Participation & Spreading Excellence, MSCA, and Cluster 4. This suggests that **Cluster 1 actions have some complementarities within and outside Cluster 1 actions, which may further enhance the benefits of EU investments and support Cluster 1** (and the EU in general) activities.

Maximising synergies and complementarities through Cancer Mission

According to the findings of CS6: Mission on Cancer, **Cancer Mission seeks synergies and complementarities with EBCP and EU4Health** programmes.

The case study found that the Cancer Mission and European Beating Cancer Plan (EBCP) are working in close coordination and proposing activities that facilitate the implementation of the initiatives, for example, the network of the Comprehensive Cancer Infrastructures and the Cancer Patient Digital Centre. These two initiatives (Cancer Mission and EBSCP) ensure complementarities and avoid duplication of efforts by dividing their roles between the research and policy fields. EBCP focuses on policy development, while the Cancer Mission contributes by having calls for research activities. This collaboration involves joint projects, with the Cancer Mission undertaking research to inform and support the policymaking initiatives led by the EBCP. The expert group on monitoring of missions recently also concluded that "in cases where the Mission's objectives are closely aligned to pre-existing

European and national policy strategies, and when the introduction of EU Missions has overlapped with national policy planning cycles – faster and deeper integration of missions with national systems and processes has occurred (e.g. the Europe Beating Cancer Plan)"[95].

The interview programme as part of CS6 allowed us to understand the synergies between the Cancer Mission and EU4Health programmes. The synergies between **the Cancer Mission and EU4Health were identified in terms of their close collaboration and communication, as well as thematic-related calls and actions.** More specifically, all EU4Health Annual Work Programmes have cancer-related topics (WP2021 4 calls, WP2022 11 calls, WP2023 9 calls). The analysis of the case study showed that complementarities and synergies between the EU4Health and the Cancer Mission are ensured. For instance, during the interviews, EC officials from DG RTD and DG SANTE acknowledged the regular communication and regular bi-weekly meetings with the heads of units working with the Cancer Mission (DG RTD), Europe's Beating Cancer Plan and EU4Health (DG SANTE). In addition to that, the cancer sub-group under the Expert Group on Public Health (involving Member States), the Stakeholder Contract Group on the Health Policy Platform (involving stakeholders) and the Implementation Group (involving all concerned Commission services beyond SANTE and RTD) facilitates as a way to ensure synergies while avoiding overlaps.

An interview with the EC provided insights regarding the synergies between the Cancer Mission and EU4Health programmes. With the aim of avoiding overlaps, the Cancer Mission under the Horizon Europe Mission work programme focuses on **research**, while the EBCP under EU4Health is aimed at **joint actions and policy aspects.** For example, to develop comprehensive cancer care infrastructure across Europe, the EU4Health finances joint action with the Member States. Under the Missions' work programme, DG RTD focuses on building the research dimension capacity part, while DG SANTE focuses on more policy-related caregiving.

Another example is the network of young cancer survivors. The EU4Health Programme has financed the network; however, DG RTD invites colleagues and representatives of the network for discussion in order to address the needs of young cancer survivors through research. While another interviewee noted that having two different Work Programmes between the Cancer Mission and EU4Health on the same topics drafted separately could create overlaps, it was underlined that the teams of both sides are increasingly collaborating to avoid such instances. The synergistic collaboration between the Cancer Mission, EBCP and EU4Health, with different focuses on research and policy, enhances cancer care without duplicating efforts. Regular communication and coordinated activities between these programmes ensure the effective implementation of initiatives and the avoidance of overlap in their activities.

Joint Undertakings play an important role in achieving external coherence with other EU initiatives and partnerships

As already noted in the analyses of coherence *among* partnerships, the GH EDCTP3 JU is still in the early stage of implementation to assess the level of coherence and synergies between the GH EDCTP3 JU and other partnerships under Horizon Europe. However, the partnership evaluation found that **it is in the GH EDCTP3 JU's design to achieve a high level of external coherence with other EU initiatives and partnerships, including those linked to development assistance**. This is part of the GH EDCTP3's wider goal to achieve

95 Karo, E., Barajas, A., Sarvaranta, L. et al., Commission Expert Group to support the monitoring of EU missions – Final report of the EG, Publications Office of the European Union, 2024, p. 7, https://data.europa.eu/doi/10.2777/076494.

synergies and greater impact than they would by working independently[96]. The GH EDCTP3 JU shows **efforts to anticipate the potential external synergies with Horizon Europe and other major global health actors** such as the Africa CDC (Africa Centres for Disease Control and Prevention), the ECDC (European Centre for Disease Prevention and Control), and other international organisations.

Synergies with other programmes outside of Horizon Europe

Analysis of synergies with programmes outside of Horizon Europe concluded that for **Cluster 1, the EU4Health Programme stands out as the primary contributor to health-related projects, complementing those under CL1.** Specifically, the projects that demonstrated synergies were related to the management of outbreaks and pandemic preparedness, as well as cancer-related initiatives aimed at understanding and treating cancer (e.g. UNCAN.eu and Can.Heal). They also addressed disparities in cancer screening, diagnosis, treatment, and quality of life. Furthermore, following the Russian invasion of Ukraine, there have been specific projects focused on the health of refugees, with particular attention to mental health aspects. A total of 16 projects under EU4Health have been identified as complementary to CL1 projects, receiving a combined funding of EUR 36.1 million. Of this amount, EUR 5.4 million was allocated to Widening countries. This is not surprising as both Horizon Europe and the EU4Health Programme aim to foster maximum synergies, especially in the realm of health research, innovation, and healthcare system strengthening, to ensure a more comprehensive and impactful approach to addressing health challenges. According to the latest EU4Health performance update[97], **synergies with the Horizon Europe programme are sought to maximise outputs and reduce duplication.**

During the analysis of synergies with programmes outside of Horizon Europe, we looked at complementary funding across the CL1 topics and specific actions, such as Cancer Mission and EDCTP3; the analysis shows that non-communicable diseases and cancer-related topics are the health areas to which complementary funding was primarily allocated.

In the Interservice Network on Synergies (ISN) mapping exercise 2023, no synergies were reported[98] between CL1 and other programmes under various executive agencies (i.e. DG AGRI, CINEA, DG EMPL, DG MOVE, etc.). While there may be some areas of overlap or indirect connections between Horizon Europe's health cluster activities, the study team found no concrete evidence of synergies. This could be due to the distinct objectives of CL1, highlighting CL1's focus on health challenges, including disease prevention, diagnosis, treatment, and public health systems, aiming for impactful outcomes in the health sector. For more information on the synergies analysis, please see Section 1.8, Annex 3.

Notably, there are synergies foreseen between CL1 and the Digital Europe Programme (DEP). The DEP is specifically designed to support the EU's digital transformation and financing projects that are focused on finding innovative methods of diagnosis. These synergies aim to enhance European health outcomes through digital and innovative technologies. For example, the European Cancer Imaging Initiative, which is one of the

96 The Global Health EDCTP3 Joint Undertaking (2022). Strategic Research and Innovation Agenda. Page 8.

97 https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/programme-performance-statements/eu4health-performance_en.

98 This mapping exercise aimed to gather examples of synergies for inspiration based on information shared by DGs. However, it is important to note that no case studies were submitted by DG CNECT, which does not imply that there are no synergies with Digital Europe Programme (DEP).

flagships of EBCP, is financed by the DEP[99]. Particularly, this initiative focuses on developing cancer treatment and care through innovative, data-driven solutions.

Cluster 2

In Work Programmes 2021-2022 and 2023-2024, complementarities and synergies with the Creative Europe Programme, Citizens, Equality, Rights and Values Programme and the Neighbourhood, Development and International Cooperation Instrument are sought on the adoption and exploitation of research outcomes and innovative solutions generated under Cluster 2.

Cluster 2 and Creative Europe Programme

Cluster 2 and the **Creative Europe** Programme **present a satisfactory level of complementarities** in the actions and activities, especially **in destination culture** under Cluster 2. According to the Horizon Europe Regulation, synergies with the Creative Europe Programme shall be fostered to identify R&I needs in the sectors of cultural and creative policies in the programme's strategic planning[100]. In the same vein, actions supported by Creative Europe are designed to complement other measures, including research and innovation supported by Horizon Europe[101]. During the interview with Cluster 2 officials, emphasis was placed on the need for the current cultural heritage destination to take on a more active role in addressing the preservation of cultural heritage landscapes in regions affected by conflicts, such as Ukraine. The Creative Europe Programme, in alignment with one of its key priorities, is committed to supporting Ukrainian professionals engaged in cultural heritage and facilitating training on cutting-edge techniques for safeguarding and documenting cultural heritage, as well as the preparation for its restoration. In this context, **the Creative Europe** Programme serves as an essential **complement to address** this **requirement** within the **European cultural heritage landscape**.

Cluster 2 encourages synergies and collaborations between the two programmes for particular calls in WPs 2021-2022 and 2023-2024. For instance, the call topic titled "The New European Bauhaus[102] – shaping a greener and fairer way of life in creative and inclusive societies through Architecture, Design and Arts" (WP 2021-2022) seeks the New European Bauhaus solutions to enhance recognition and visibility of European artists from Creative Europe platforms. Additionally, the call on "Cultural and creative approaches for gender-responsive STEAM education" welcomes proposals from destination culture to harness outcomes and results from previous projects, including Creative Europe projects (WP 2023-2024). Examples of cooperation between the two programmes were also cited during interviews with Cluster 2 destination culture beneficiaries (CS8). Such synergies are enabling Cluster 2 beneficiaries to translate research outcomes into more tangible results through the Creative Europe Programme (CS8).

Complementarities are also observed, although **to a lesser extent, with the destination of democracy**. The Creative Europe Programme is in line with the objectives of the

99 https://euraxess.ec.europa.eu/worldwide/south-korea/news/europes-beating-cancer-plan-launch-european-cancer-imaging-initiative.

100 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0695&qid=1694675923228.

101 https://culture.ec.europa.eu/sites/default/files/2022-08/creative-europe-work-programme-amendment-2122_C2022_6138.pdf.

102 The New European Bauhaus is a new cultural initiative launched in 2020 by European Commission President von der Leyen to link the European Green Deal with a cultural and creative dimension. For more, see https://new-european-bauhaus.europa.eu/about/about-initiative_en.

European Democracy action plan, as regards strengthening media freedom, pluralism and media literacy and therefore has a complementary role regarding destination democracy of Cluster 2.

The evaluation also suggests that **complementarity between the two programmes exists in terms of the type of their activities.** For instance, the Creative Europe Programme has introduced a mobility scheme designed for artists and professionals, offering residencies and location-based cultural initiatives in line with the goals of the New European Bauhaus. This feature distinguishes it from Cluster 2, which does not offer a similar mobility programme for its beneficiaries.

Cluster 2 and Citizens, Equality, Rights and Values Programme (CERV)

The objective of CERV is to protect and promote rights and values as enshrined in the EU Treaties and the Charter of Fundamental Rights. **Cluster 2 and CERV demonstrate a good level of complementarity,** especially with **destination democracy**[103], thanks to the explicit focus of CERV on the protection of human rights in the EU.

Despite the evidence indicating growth in civil society organisations within Cluster 2 (see CS7 and CS9), the research community remains the primary stakeholder who is mostly involved in HE projects. Against this background, **CERV plays a complementary role due to its emphasis on civil society organisations** that are active at various levels, including local, regional, national and transnational.

In a similar vein, a notable level of **complementarity is also observed in CERV's activities**, which significantly differ from the R&I activities supported by Cluster 2. CERV primarily focuses on activities such as raising awareness, providing training, capacity building and promoting rights and values to empower the broader civic space.

Although CERV actively contributes to the development of knowledge-based EU policies and legislation through surveys, studies, and analyses[104], it remains uncertain to what extent these valuable insights are exchanged and shared between the two programmes.

Synergies between Cluster 2 and Neighbourhood, Development and International Cooperation Instrument (NDICI)

The Neighbourhood, Development and International Cooperation Instrument (NDICI) is the EU's main instrument for EU international cooperation with partner countries. Synergies with NDICI serve two key purposes: firstly, identifying R&I needs in alignment with SDGs through the programme's strategic planning in NDICI areas, and secondly, ensuring that R&I activities, including international cooperation with Third Countries, align with market uptake and capacity building actions under NDICI[105].

103 Cluster 2 destination democracy and CERV target similar EU policy initiatives such as EDAP, Gender Equality Strategy, EU antiracism action plan, EU Roma strategic framework on equality, inclusion and participation, LGBTIQ Equality Strategy, Strategy for the rights of persons with disabilities, EU Strategy on the rights of the child, EU strategy on combating antisemitism and fostering Jewish life, etc. https://commission.europa.eu/system/files/2022-12/c_2022_8588_1_en_annexe_acte_autonome_cp_part1_v2.pdf.

104 https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/programme-performance-statements/citizens-equality-rights-and-values-programme-performance_en.

105 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0695&qid=1694675923228.

The evaluation found a **strong complementarity between Cluster 2 and the NDICI programme as the latter primarily engages with countries beyond the EU borders,** such as Armenia, Ukraine, Moldova, Lebanon, Algeria, Palestine, Egypt, Jordan, etc.[106], serving as the EU's primary instrument for international cooperation with these partner nations. As indicated by the two Cluster 2 WPs (2021-2022 and 2023-2024), NDICI can leverage the outcomes of Horizon 2020 and Horizon Europe projects to address issues related to trust in governance, combating disinformation and promoting active citizenship within its initiatives.

In addition to the distinct geographic scopes of each programme, **NDICI** primarily **prioritises civil society** as its main beneficiary group. This emphasis is particularly directed towards **women, youth organisations, and individuals from marginalised communities.** Unlike Cluster 2, **NDICI does not operate as a research-oriented programme.** Rather, its focus lies in supporting and advancing human rights, democracy, the rule of law, security, stability and peace, and gender equality through activities such as capacity building, skills development, public administration and judiciary reforms. NDICI adopts a customised approach in developing its Work Programmes, ensuring that they are developed to align with and address the unique and specific needs of each country covered by the programme.

Although there is evident complementarity between the two programmes, **it remains unclear** whether **Cluster 2 and the NDICI programme have established** direct **synergies** or actively shared knowledge.

Cluster 3

Regarding Societal Challenge 7 (SC7) of Horizon 2020, the analysis of the external coherence of the security-related R&I activities revealed that concerning other EU funding instruments, the most important was **the Internal Security Fund[107]** (ISF 2014-2020). The ISF ran parallel with Horizon 2020, with the objectives of promoting the implementation of the Internal Security Strategy, law enforcement cooperation, and management of the EU's external borders. The ISF consisted of two separate components: ISF Police and ISF Borders and Visa. The ISF actions of both components were complementary to SC7 security research, particularly from the perspective of innovation uptake (i.e. funding the implementation of innovative solutions, technical or otherwise, into operational use)[108].

According to internal mapping conducted by DG RTD in spring 2023[109], there is an ongoing collaboration (e.g. joint design of calls, evaluation of proposals and workshops) between CL3 and the Internal Security Fund (ISF), **the Digital Europe programme (DIGITAL), the European Maritime and Fisheries Fund (EMFF)** and **The Integrated Border Management Fund (IBMF)**. The purpose of this collaboration is to further the uptake of innovations and solutions developed by security research funded under CL3 and its predecessors. Based on the detailed answers given to the Interservice Network on Synergies mapping exercise 2023, there is synergy between CL3 and **the Digital Europe programme (DIGITAL)** in terms of calls for proposals that support DIGITAL actions to take up results from CL3 and its

106 https://eufundingoverview.be/funding/neighbourhood-development-and-international-cooperation-instrument-ndici#:~:text=The%20NDICI%2DGlobal%20Europe%20instrument%20unifies%20grants%2C%20blending%20and%20guarantees,support%20to%20sustainable%20development%20through.

107 https://home-affairs.ec.europa.eu/funding/internal-security-funds/internal-security-fund-police-2014-2020_en..

108 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

109 The Interservice Network on Synergies mapping exercise 2023.

predecessors. To achieve this, DG HOME and DG CNECT collaborate on the joint design of calls and evaluation of proposals. The synergy between CL3 and **the European Maritime and Fisheries Fund (EMFF)** takes place in EMFF actions on maritime security and maritime situational awareness that build on technologies and solutions developed by CL3 and its predecessors in the area of border management. In this respect, coordination is searched for between DG HOME, DG MOVE, DG MARE, the Joint Research Centre (JRC), and the European Maritime Safety Agency (EMSA).

Regarding **the European Defence Fund (EDF)**, the detailed answers given to the Interservice Network on Synergies mapping exercise 2023 emphasise that civil security capabilities addressed by CL3 are largely different from defence capabilities, which limits potential synergies. In the area of disaster-resilient society (DRS), the results of CL3 concerning chemical, biological, radiological and nuclear (CBRN) solutions and technologies are further developed in the actions funded by **the Internal Security Fund (ISF)**. Participation in joint sessions on CBRN in the framework of the Community of European Research and Innovation for Security (CERIS) has proven to be important for enforcing synergy in this regard. **The Integrated Border Management Fund** consists of two components: the Border Management and Visa Instrument (BMVI), managed by DG HOME, and the Customs Control Equipment Instrument (CCEI), managed by DG TAXUD. Regarding the former, BMVI, synergy is searched for through a joint review of national programmes, design of EU calls, and evaluation of proposals to advance use of the results of CL3 actions. In the case of the latter, CCEI, DG Home and DG TAXUD collaborate in the evaluation committees of CCEI proposals in order to advance innovation uptake of customs control equipment solutions and technologies developed in CL3.

The study team analysed alternative funding sources in the case of Cluster 3, meaning unsuccessful Cluster 3 proposals that are funded under other EU programmes. The analysis revealed **that there are currently** 12 **ISF actions (Union Actions) with EUR 5.9 million of EU funding and 9 DIGITAL actions with EUR 13.0 million of EU funding, which are connected to unsuccessful Cluster 3 proposals**. A connection means that there are at least two participants in project consortia, and project topics share similarities (see Annex 3). This does not imply overlapping activities since the focus of the ISF and DIGITAL is on innovation uptake, which is complementary to the research funded under CL3. Regarding the ISF actions in question, the unsuccessful proposals were mainly submitted to the calls of Destination on “better protection of the EU and its citizens against crime and terrorism” (FCT). Correspondingly, the DIGITAL actions in question mainly build on unsuccessful proposals submitted to the calls of Destination 4 on ‘increased cybersecurity’ (CS). Further analysis revealed that public bodies, which represent end users in the case of FCT actions, received a significant share of ISF funding, EUR 1.2 million.

Furthermore, the study team analysed complementary funding sources regarding Cluster 3, meaning funding received from HE and other EU funding programmes for thematically related research projects. Based on the analysis, **there are at present 6 ISF actions (Union Actions) with EUR 2.4 million of EU funding and 6 DIGITAL actions with EUR 5.4 million of EU funding, which are complementary to Cluster 3 actions**. The parallel ISF actions are mainly complementary to the FCT actions of Cluster 3. The parallel DIGITAL actions, on the other hand, are complementary to both the FCT and CS actions of Cluster 3. These examples show that these programmes are seen as complementary in scope, which points to the fact that better structuring of the interactions between these funding programmes could result in further synergies being exploited.

Most Cluster 3 beneficiaries interviewed see synergies between different EU funding instruments. However, as the actions are in their early phases, concrete exploitation plans regarding other funding instruments are still in the forming stage. In the case of FCT actions,

the ISF is seen as key to further exploitation of research results, and the beneficiaries interviewed report on active collaboration taking place between Horizon Europe's actions and ISF's actions. Thus, **the exploitation of the research results of the Framework Programme's actions in follow-up or complementary ISF actions is likely to continue in Horizon Europe**. Also, security-related EU agencies, especially **eu-LISA** (European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice), are closely followed by the beneficiaries (e.g. the Entry-Exit System or the European Travel Information and Authorisation System).

According to the interview data, the beneficiaries of actions funded under the calls of Destination on "effective management of EU external borders" (BM) see the connection with the ISF as indirect and see more opportunities in **the Border Management and Visa Instrument (BMVI).** There are also expectations regarding collaboration with relevant EU agencies, such as **Frontex** (*the European Border and Coast Guard Agency*), **Europol** (*European Union Agency for Law Enforcement Cooperation*) and **CEPOL** (*European Union Agency for Law Enforcement Training*). Additionally, **the Innovation Lab of Europol**[110] is considered to provide opportunities for beneficiaries to have their solutions tested by law enforcement authorities. On the other hand, the beneficiaries of actions funded under Destination on 'disaster-resilient society for Europe' (DRS) follow and monitor the **EU Civil Protection Mechanism**[111] and **Interreg Central Europe**[112] in terms of collaboration and alignment of objectives.

In Table 15 we present a summary of the interrelations of the key EU funding instruments to the Cluster 3 Destinations as indicated in the Cluster 3 Work Programmes for 2021-2022 and 2023-2024.

110 https://www.europol.europa.eu/operations-services-and-innovation/innovation-lab.

111 https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism_en.

112 https://www.interreg-central.eu/.

Table 15. Synergies between other EU funding instruments and CL3 Destinations

EU funding instrument	Cluster 3 Destination
Internal Security Fund (ISF)	Destination on 'better protection of the EU and its citizens against crime and terrorism' (FCT)
Digital Europe Programme (DIGITAL)	Destination on 'better protection of the EU and its citizens against crime and terrorism' (FCT) Destination on 'increased cybersecurity' (CS)
Integrated Border Management Fund (IBMF), consisting of the Border Management and Visa Instrument (BMVI) and the Customs Control Equipment Instrument	Destination on 'effective management of EU external borders' (BM)
European Defence Fund (EDF) and its precursor programmes (e.g. Preparatory Action on Defence Research)	Destination on 'effective management of EU external borders' (BM)
Cohesion policy, particularly through the European Regional Development Fund (ERDF)	Destination on 'resilient infrastructure' (INFRA) Destination on 'disaster-resilient society for Europe' (DRS)
Union Civil Protection Mechanism (UCPM)	Destination on 'disaster-resilient society for Europe' (DRS)

Source: Compiled by the study team based on CL3 WP 2021-2022 and WP 2023-2024[113].

The online survey of Horizon Europe beneficiaries, conducted in May-July 2023, addressed the internal coherence of Cluster 3 actions. According to the survey results (n=189), c. 26.0% of Cluster 3 respondents are planning to implement collaboration with other Cluster 3 actions, while c. 9.0% are planning to collaborate with Cluster 4 (Digital, Industry and Space) actions and c. 7.0% with Cluster 5 (Climate, Energy and Mobility) actions.

Regarding internal coherence, the beneficiaries interviewed highlight the importance of **the Community of European Research and Innovation for Security** (**CERIS)** as a forum for coordinating collaboration between Cluster 3 actions. Beneficiaries report on active participation in different CERIS events since the launch of their actions. It is, however, noted that **for newcomers in civil security research, a significant effort is required to build connections into and integrate with relevant stakeholder communities, networks, and EU agencies**, such as CERIS or Europol. A concrete example of a joint event mentioned by several beneficiaries is the Projects to Policy Seminar[114] organised by the EC in June 2023. Overall, beneficiaries see collaboration in Horizon Europe as being more intense than in earlier funding programmes.

According to the beneficiary interviews, several cybersecurity actions of Cluster 3 participate in **cluster organisations that bring together industry and actions of different EU programmes related to cybersecurity**. The most notable cluster organisation is **the European Cybersecurity Network and Cybersecurity Competence Centre[115] (ECCC**) under the Digital Europe Programme. Another example is **the Cybersecurity Innovation Cluster for Electrical Power and Energy Systems**[116] **(CyberEPES),** which has participated in several cybersecurity actions of Cluster 3. CyberEPES is supervised by the EC and acts

113 Horizon Europe Work Programme 2021-2022: 6. Civil Security for Society. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf. Horizon Europe Work Programme 2023-2024: 6. Civil Security for Society, Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-6-civil-security-for-society_horizon-2023-2024_en.pdf.

114 https://home-affairs.ec.europa.eu/whats-new/events/projects-policy-seminar-2023-06-14_en.

115 https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-competence-centre.

116 https://cyberseas.eu/cyberepes/.

as a think tank and information exchange ecosystem to guide and coordinate cybersecurity research and innovation results.

6. Efficiency

Key findings on efficiency:

- Based on survey responses, the median consortium coordinator spent between 36 and 45 **person-days preparing** a Horizon Europe **proposal**. Consortia partners were found to play more of a supporting role, as the median partner contributed around 16 to 25 person-days. This was seen as relatively proportionate by respondents.
- 233 HE responding beneficiaries participated in **lump sum grants**. Their survey responses suggest that the simplification measure has generally been positively received; however, it is premature to draw conclusions on the effects of lump sum funding based on the survey results, as only 758 Horizon Europe LS projects have reached grant signature so far and only 75 of them participated in the survey.
- The majority (70.0% in CL1, 73.0% in CL2, 54.0% in CL3, and 70.7% HE) of applicants to the analysed clusters received some kind of **support to prepare their application**. Applicants often sought help from multiple sources. For Horizon Europe overall, around 50.0% of applicants received support from a dedicated department in their organisation, around 30.0% did not draw upon any application support, around 20.0% received support from a National Contact Point and 17.0% used a consultancy firm/expert (inside or outside the consortium). Combined data from Horizon 2020 and Horizon Europe suggests that proposals for RIA and IAs have, on average, a consistently higher rate of involvement of consultancies in the application process than those for actions funded by CSAs.
- The administrative data show that the timeliness of project selection and implementation processes have lagged behind H2020's performance in the benchmark year. HE has met the targets for a lower share of grants **TTG**, as only 41.3% of all the grants were concluded within the target of 8 months.
- **The success rates** of above the threshold proposals are higher for Clusters 1, 2, and 3 than their predecessors in H2020 (CL1 by 2 percentage points, CL2 by 6 percentage points, and CL3 by 4 percentage points).
- The beneficiaries survey suggests that the median consortium-run project under Horizon Europe allocates around 6.0-10.0% of the project budget to **administrative tasks** (10.0-15.0% in CL1 and 2, 6.0-10.0% in CL3). This is considered to be proportionate by 57.0% of the responding beneficiaries.

This section evaluates the efficiency criterion of Horizon Europe (HE) programme parts covered under the study, namely Cluster 1 (CL1), Cluster 2 (CL2), and Cluster 3(CL3), as well as EDCTP3 and IMI2 and IHI partnerships. The analysis below focuses on the efficiency of the programme implementation and estimates the costs of administration and participation in the projects funded under Horizon Europe. Where possible, comparisons are drawn between Horizon 2020 (H2020) and Horizon Europe FPs. The insights are gathered through the literature review, analysis of the administrative data and the Survey of Horizon Europe beneficiaries and unsuccessful applicants, conducted in May-July 2023. As per the Tender Specifications, all evaluation questions have been covered. The following themes are covered in the analysis of efficiency:

- Budgetary resources and programme competitiveness;[117]
- Proposal preparation costs;[118]

117 Evaluation question covered: EFF1.

118 Evaluation question covered: EFF6, EFF7.

- Lump sum funding;
- Support available to the applicants;[119]
- Efficiency of the selection and implementation process;[120]
- Programme's attractiveness;[121]
- Administrative costs of participation; [122]
- Efficiency of feedback to policy[123].

6.1 Budgetary resources and programme competitiveness

More EU contributions have already been allocated to CL1, CL2, and CL3 in 2021 and 2022 compared to its predecessor programmes in the benchmark years of H2020. As this is directly linked to the available funds, it should be noted that the total allocated EU contribution in CL1 grew moderately, but in CL2, it increased by 74.0% and in CL3, it decreased by 5.8%.

Table 16. Differences in allocated EU contributions between HE and H2020

Programme	% of EU contribution allocated in 2021 and 2022 in HE	% of contribution allocated in 2014 and 2015 in H2020	% change of the total budget allocated from H2020 to HE
CL1/SC1	28.8%	19.0%	10.4%
CL2/SC6	19.2%	16.7%	74.0%
CL3/SC7	26.6%	21.9%	5.8%

Source: *Compiled by the study team with eCORDA data and desk research. June 2023 data release.*

With the budget increase, there has been a notable improvement in the oversubscription issue compared to the Horizon 2020 (H2020) period. The success rates of CL1, CL2 and CL3 almost doubled compared to the benchmark years of H2020, indicating that the likelihood of securing EU funding has nearly doubled. Looking at the overall FP level, we also see a change between a 16% success rate so far compared with an 11% success rate at the end of H2020.

119 Evaluation question covered: EFF4, EFF3.

120 Evaluation question covered: EFF1, EFF3.

121 Evaluation question covered: EFF1, EFF3.

122 Evaluation question covered: EFF6, EFF7.

123 Evaluation question covered: EFF8.

Table 17. Comparison of success rates and allocated contribution between the benchmark years of H2020 and HE

Programme part	Number of eligible proposals		Success rate		EC contribution allocated	
FP	HE (2021 and 2022)	H2020 (2014 and 2015)	HE (2021 and 2022)	H2020 (2014 and 2015)	HE (2021 and 2022)	H2020 (2014 and 2015)
CL1 / SC 1	1 930	4 348	15.0%	9.6%	2 372.1	1 420.2
CL2 / SC6	1 120	2 364	12.9%	5.1%	436.7	218.7
CL3 / SC 7	432	1 321	15.0%	9.7%	417.9	374.8

*Source: Compiled by the study team using eCORDA data * Success rate is calculated by dividing the number of accepted proposals (main) by the number of eligible proposals. June 2023 data release.*

Looking at the percentage breakdown of high-quality proposals, there is also a discernible positive shift from H2020 to HE, suggesting that relatively more excellent proposals are being funded under HE. It is important to note that the increased success rate is also related to Brexit, which has reduced the pool of proposals above the threshold. While this is a shift in a positive direction, it is important to note that in addition to the funded high-quality proposals, CL1 received 630 proposals above the threshold that were not funded despite their calibre. Similarly, CL2 had 507, and CL3 had 202 unfunded high-quality proposals. **To fund all proposals above the threshold (quality proposals) submitted in 2021 and 2022 for the three clusters, an estimated additional EUR 6.5 billion EU contribution would have been needed.**

The improved success rates are also reflected in the high satisfaction levels with application effort among the beneficiaries. A significant majority, over 76.0%, of those who secured funding felt satisfied (to a very large, large and moderate extent) that "efforts needed were in proportion with the chances of securing a HE funding." Conversely, satisfaction was notably lower among the unsuccessful applicants. Nearly half felt their efforts were 'not at all' or 'to a small extent' proportional to their chances of securing HE funding, highlighting an ongoing challenge. Even with increased success rates in HE, a segment of the participant base still perceives that the efforts were not proportionate to the chances of success.

The management of CL1, CL2, and CL3 was efficient, maintaining administrative costs in close alignment with the target of 5.0% of their operational budgets[124]. In 2021, REA, in charge of CL2 and CL3, used around 4.7% of its annual operating budget on the programme administration of CL2[125]. This figure rose to 5.5% in 2022[126]. For the administration of CL3 in 2021, REA used 3.9% of its annual operating budget, and in 2022, it used 4.2%. The corresponding figures were not available for CL1 (as the programme was managed by HaDEA, which uses different reporting). Nevertheless, the study team did not find any evidence indicating the inefficient overall administration of CL1. Partnerships such

124 5% is a target set for each Executive agency, as one of the measurements to monitor agency's efficiency in implementing the programme parts.

125 REA Annual Activity Report 2021.

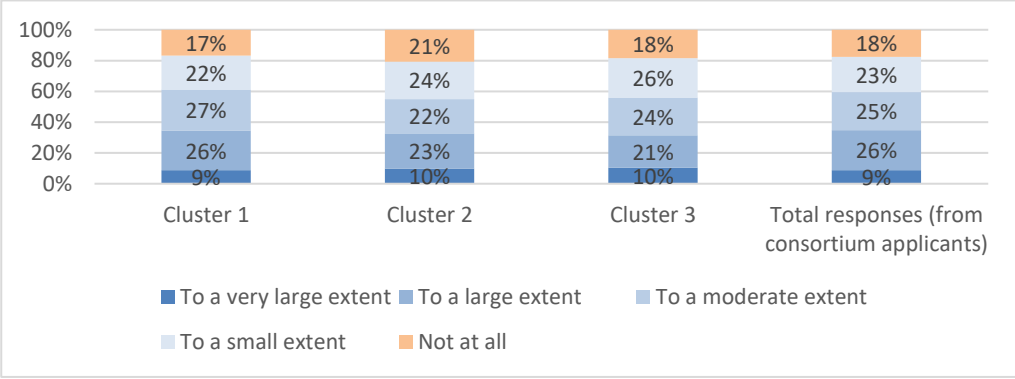
126 REA Annual Activity Report 2022.

as EDCTP3 and IMI2/IHI also showed efficiency in terms of administrative resource use, both falling under 5.0% of their operational budgets.

6.2 Proposal preparation costs

Despite the positive steps towards addressing the oversubscription problem (a widely discussed challenge in Horizon 2020), **applicants expressed varying degrees of satisfaction with the effort that was needed to prepare a Horizon Europe proposal in light of the chances of success**. While similar shares of respondents found the costs proportionate to a small (23%), moderate (25%) or large extent (26%) respectively, very negative judgements (18%) were twice as high as very positive ones. The distribution of Clusters 1-3 closely matches that for Horizon Europe overall (see Figure 6). [127]

Figure 6. Perceived proportionality of proposal preparation efforts and the chances of success



Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. Question: "The efforts needed were in proportion with the chances of securing Horizon Europe funding: To what extent do you agree with the following statements about the effort needed to prepare and submit your Horizon Europe project?" The combined number of responses: 11 381 (corresponds to the total number of responses from all consortium applicants in Horizon Europe).

For consortium-based programme parts, we have estimated that **the median coordinator in HE spends between 36 to 45 person-days on preparing an application. The median time cost for contributing partners is between 16 to 25 person-days in addition to the coordinators**[128] It is important to note that these findings are based on the survey responses where respondents were asked to choose one of the intervals from a given list of options[129]. This suggests that given the data limitations, we formulated the analysis below based on the values provided by a median respondent. For a very detailed analysis, please refer to Annex 1, Section 1.3.

127 "To a very large extent", "to a large extent" and "to a moderate extent, see annex 1 for more details.

128 These estimated figures apply to all consortium-based programmes of Horizon Europe.The analysis of proposal costs for monobenefiary programme parts was beyonf the scope of this analysis, but can be found in the parallel studies of Excellent Science (MSCA PF and ERC) and Innovative Europe (EIC Accelerator).

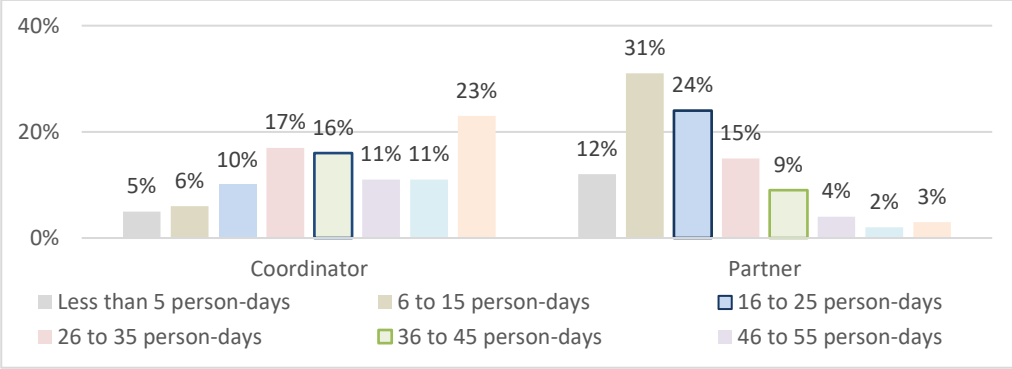
129 Less than 5 person-days; 6 to 15 person-days; 16 to 25 person-days; 26 to 35 person-days; 36 to 45 person-days; 46 to 55 person-days; 56 to 65 person days; More than 65 person days.

Table 18. Number of person-days spent preparing Horizon Europe proposal, as reported by successful and unsuccessful applicants (all consortium-based programme parts in HE)[130]

Person-days	Coordinator (Count of survey responses)	Partner (Count of survey responses)
Less than 5 person-days	102	929
6 to 15 person-days	121	2 476
16 to 25 person-days	200	1 936 (median response)
26 to 35 person-days	322	1 205
36 to 45 person-days	310 (median response)	714
46 to 55 person-days	203	295
56 to 65 person-days	215	162
More than 65 person-days	443	248
Total number of responses	1 916	7 965

Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. Question: "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?" The combined number of responses: 9 881[131].

Figure 7. Share of responses on person-days spent preparing Horizon Europe proposal, as reported by successful and unsuccessful applicants (all consortium-based programme parts in HE)



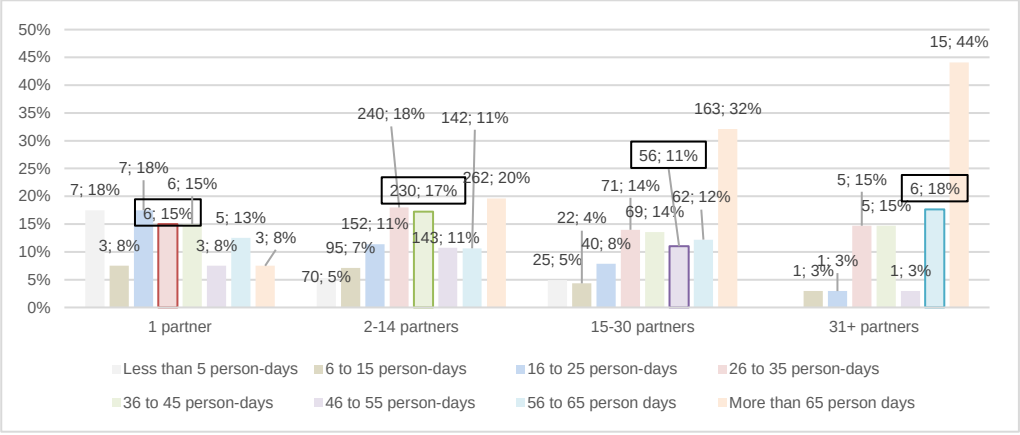
Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. Question: "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?" The combined number of responses: 9 881. Median value highlighted.

130 The findings presented in the table (and overall the person-day costs analysis in this report) reflect survey answers of the applicants from the following HE programme parts: MSCA (DN, COFUND, SE), INFRA, WIDERA, All cluster 2 programme parts, EIE, and EIC (Pathfinder, Transition).

131 These responses were taken from the survey responses with the following question "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?* and combined with other survey questions helping us identify the size of the consortia and the role of the respondents. We took the median numbers within 2 standard deviations. More details about the methodology can be found in Annex 1.

The proposal preparation effort that is required from coordinators seems to increase with the size of the potential project: the requested budget level, the length of the project and the number of consortium partners[132] (for more details, please refer to Annex 1, Section 1.3). Our analysis showed that **consortium size is very much related to the effort** required from the coordinators. **Larger consortia require more time from coordinators in the proposal preparation process**. Further analysis indicated that the **effort needed increases by about 10 person-days for every 15 additional partners[133]**. Proposals that included only one partner (i.e. only the coordinator) required somewhat less time (median response being between 26 and 35 days) than proposals from larger consortia (for example, consortia with 31+ partners require between 56 and 65 days as a median). The consortia for this analysis were grouped based on their size and their responses. Therefore, when looking at the median response in these groups, we see that the reported burden increases by increments, a continuous linear correlation was not observed. Nevertheless, while we observe an incremental "growth" in the value of a median response as the consortium size increases by approximately 15 partners, it is also important to note that such a breakdown also captures the high percentage of > 65 person-day value in larger consortia.

Figure 8. Number of person-days spent preparing Horizon Europe proposal, as reported by the coordinators of successful and unsuccessful applications, by consortium size. The number of responses reported (all consortium-based programme parts in HE)



Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. Question: "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?" The combined number of responses: 1 916. Median value highlighted.

On the other hand, no such variation was observed when it comes to partners' contribution to the proposal preparation effort.

Our analysis also shows that it takes coordinators longer to prepare successful proposals than unsuccessful proposals. This is particularly the case for successful proposals that foresee a **project length of at least 3 years or longer**. Such an observation

132 For more details refer to the Annex, section 1.3.2.1.

133 The increase in effort due to additional partners shows discontinuities and steps up approximately every 15 partners.

potentially means that the coordinator's proposal preparation effort matters and that the proposal evaluation process rewards the effort, even in a context of high competition[134].

Table 19. Number of person-days spent preparing Horizon Europe proposal, as reported by the coordinators (successful and unsuccessful applications). The number of responses reported (all consortium-based programme parts in HE)

Horizon Europe	Coordinator's effort		Partner's effort	
Person-days	Successful (% from total)	Unsuccessful (% from total)	Successful (% from total)	Unsuccessful (% from total)
Less than 5 person-days	24 (3.0%)	78 (6.0%)	358 (11.0%)	571 (13.0%)
6 to 15 person-days	34 (5.0%)	87 (7.0%)	991 (29.0%)	1 485 (33.0%)
16 to 25 person-days	50 (7.0%)	150 (12.0%)	847 (25.0%) Median response	1 089 (24.0%) Median response
26 to 35 person-days	117 (17.0%)	205 (17.0%)	572 (17.0%)	633 (14.0%)
36 to 45 person-days	115 (16.0%)	195 (16.0%) Median response	328 (10.0%)	386 (8.0%)
46 to 55 person-days	90 (13.0%) Median response	113 (9.0%)	138 (4.0%)	157 (3.0%)
56 to 65 person-days	76 (11.0%)	139 (11.0%)	71 (2.0%)	91 (2.0%)
More than 65 person-days	197 (28.0%)	246 (20.0%)	100 (3.0%)	148 (3.0%)
Total number of responses	703 (100%)	1 213 (100%)	3 405 (100%)	4 560 (100%)

Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. Question: "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?" The combined number of responses: 9 881.

To summarise all the findings above, please refer to Table 20. All in all, the analysis shows that proposal coordinators are responsible for most of the preparation effort. The time needed to prepare the proposal increases with the size of the consortium. The proposal preparation effort needed from the partners does not seem to vary due to the characteristics of the project/proposal.

134 For more details, please refer to Annex 1, Section 1.3.2.2.

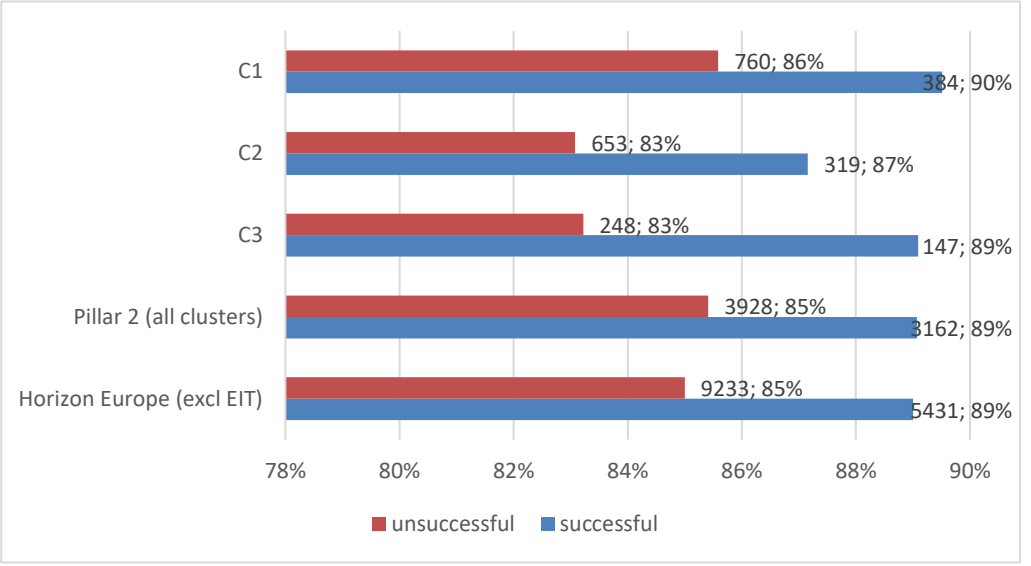
Table 20. Summary of survey findings regarding costs of the application, presented as median values reported by size of entity

Size of entity incurring the cost	Person-days (median response)
Consortium-based programme parts: MSCA (DN, COFUND, SE), INFRA, WIDERA, whole Cluster 2 EIE, EIC (Pathfinder and Transitions)	
One beneficiary	16 to 25 person-days
Small consortium coordinators (2-14 partners)	36 to 45 person-days
Large consortium coordinators (15-30 partners)	46 to 55 person-days
Very large consortium coordinators (31+ partners)	56 to 65 person-days
Partners in small and large consortia (2-30 partners), incl. EIC	16 to 25 person-days
Partners in very large consortia (31+ partners)	6 to 15 person-days
EIC proposal coordinators	26 to 35 person-days

Source: Compiled by the evaluation team based on results from the Survey of Horizon Europe beneficiaries, conducted in May-July 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July 2023. Question: "In your estimation, how many person-days did your organisation spend in preparing your Horizon Europe proposal?" and administrative data from the Corda database.

Looking at the survey, we find that 82.0% of both successful and unsuccessful applicants in the three clusters expressed satisfaction (to a very large, large and moderate degree) with the statement that "The application costs (total time and resources needed) are proportionate to the volume of funding requested in the proposal." There was a slight difference among the responses of successful applicants, 83.0% of whom agreed, and the unsuccessful applicants, 81.0% of whom agreed. In addition, although the majority of applicants agreed (to a large, very large, or moderate extent) with the statement, "The efforts needed were proportionate to the complexity of the proposed project," successful applicants across all Clusters were more likely to agree (see Figure 9).

Figure 9. To what extent do you agree with the following question: "The efforts needed were proportionate to the complexity of the proposed project?"



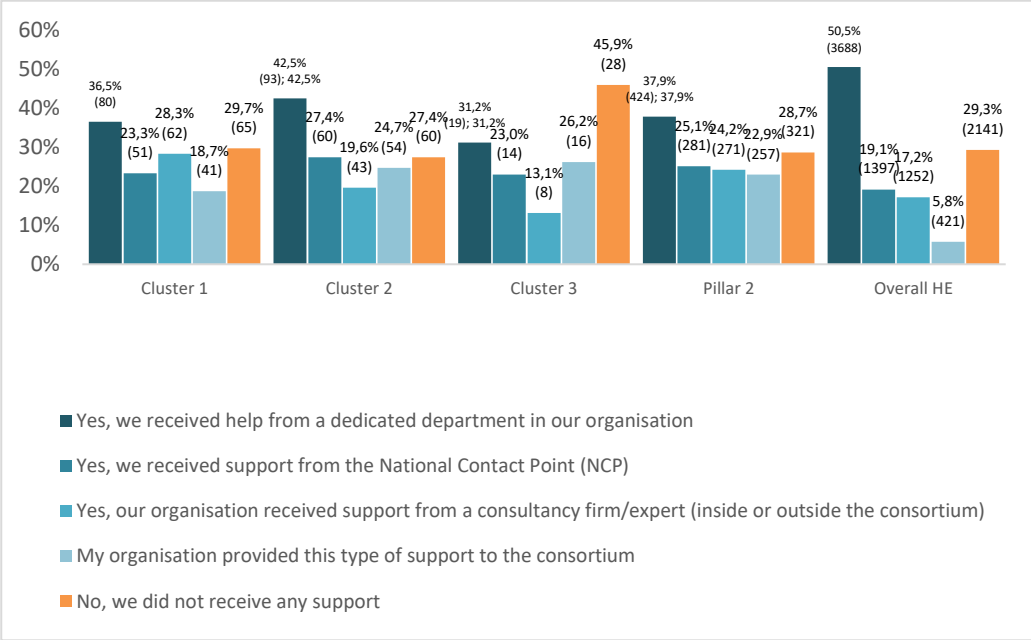
Source: Survey of Horizon Europe beneficiaries, conducted in May-July 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July 2023. The combined number of responses: 16 960.

When comparing the efforts needed to apply for Horizon Europe with its predecessor, Horizon 2020, the applicants express no noteworthy distinction. When queried about whether "Proposal preparation and submission in Horizon Europe is simpler than those in Horizon 2020", the feedback showed no significant difference between the two FPs. This suggests that while the majority of respondents (81.0%) find the application costs proportionate, simplification efforts introduced in HE had a limited impact in reducing the application burden for applicants.

6.4 Support available to applicants

According to our survey, the majority (71.0%) of applicants to the analysed clusters received some kind of support to prepare their application, often from more than one source (a finding consistent with the HE figures (70%). CL3 respondents reported the least amount of help received as compared to the rest of the clusters (see Figure 10 for details). This is likely due to the sensitive nature of the topics in CL3. A little over a third of Pillar 2 respondents cited 'receiving help from a dedicated department in their organisation,' around the fifth reported that 'their organisation provides this type of support to the consortium', and around a quarter of respondents said that they relied on help from the National Contact Points (NCPs).

Figure 10. "Did you receive any support for your Horizon Europe project application/preparation?"



Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023 and Survey of Horizon Europe unsuccessful applicants, conducted in May-July, 2023. The combined number of responses: 2 144.

We looked at the overlap between those survey respondents who used NCPs and those who used or acted as consultants in order to test the theory that consultants use the help of NCPs more than regular applicants. **Based on the survey data, we found that, overall, about half (53.0%) of applicants who used or were consultants also used the help of NCPs, compared with just 19.0% of overall applicants.**

To investigate the involvement of external consultants in high-quality proposals, we combined data from CORDA and the Surveys. We calculated **that only around a quarter of high-quality proposals used external consultants in HE (27.2%) and Pillar 2 (26.0 %),** indicating that the overwhelming majority of consortia produce high-quality proposals without external help or that the help available internally was sufficient.

We also examined the length of time that those who are consultants or who use consultants need to prepare a proposal using the same methodology as outlined in the proposal cost section above. **We found that those who used consultants typically required more time to prepare a proposal than the general population did**, although the link may not be causal. The median length of time needed for a coordinator who used a consultant was 46-55 person-days, compared with 36-45 person-days among the entire survey population.

A small number of responses to the survey's open questions shed some light on the possible reasons for involving external consultants[135]: The main reason given was to increase the

135 8 free responses mentioned external consultants.

chances of success. When looking at the success rates of our survey respondents, we did find that success rates among those who used help for proposals were higher. Those who used consultants were 10 percentage points higher than those who did not (32.0% compared to 22.0%). In Pillar 2, the difference was 15 percentage points (44.0% compared to 29.0%). Even higher differences in success rates were found between those who used the help of NCPs versus those who did not: success rates were 14 percentage points higher among applicants who used NCPs versus those who did not across Horizon Europe (34 compared to 21.0%). While it is plausible that applicants would benefit from help preparing their applications, whether that help comes from external consultants or National Contact Points, the observed relationship does not allow us to attribute all (or some) of the difference in success rates to the help of NCPs or consultancies. Other factors may cause the observed patterns, and those who seek out support may systematically differ from those who do not.

Using the survey data as a basis for our extrapolation, we used confidence intervals to estimate that between 75.0 and 79.0 % of applicants to HE programmes may not have used external consultants to prepare their proposals[136]. For those who have used consultants, we estimate the median fee paid to be EUR 7 500 for consortia, EUR 2 000 for single-beneficiaries, and EUR 12 000 for EIC Accelerator. This means that, in total, applicants may have spent between EUR 39 and 55 million on consultancy fees across HE, or around 0.2% of the total budget committed so far[137]. From responses to the survey's open questions, we also discovered that some external consultants charge a so-called "success fee", which can drive up the application costs for successful applicants in particular.

Horizon Europe introduced a number of simplification measures to the proposal process to ease the burden on participants. One of them is lump sum-based project funding. Due to the timing of the survey, there was only a very limited number (233 in total) of successful (75 responses) and unsuccessful applicants (158 responses) to lump sum grants among the survey respondents. Survey responses are, therefore, not informative about their experience with lump sums under Horizon Europe. It may be noteworthy that 41 out of 80 (and 4 out of 8 in CL2) respondents who received LS funding indicated their believe that lump sum increases the financial risks for project participants. The sample size was too limited to carry out any further meaningful analysis on these responses.

6.5 Efficiency of the selection and implementation process

The beneficiaries showed satisfaction with the time the processes took to sign the grant agreement. The majority (68% in HE) of beneficiary respondents strongly agreed or rather agreed that "The time the processes took up to the signature of the grant agreement was adequate."[138] This was also the case for over 66.0% of Cluster 1,2 and 3 respondents, respectively. This reflects a similar level of satisfaction as compared to the previous framework programme[139].

In contrast to the beneficiaries' positive perception of the timeliness of the funding decision, the administrative data show that the time-to-grant processes have been lagging behind those under Horizon 2020 and did not always meet the targets (see Table 21). For example,

136 A detailed breakdown of the methodology can be found in Annex 1, section 5.2., table 53.

137 For more details refer to the Annex, section 4.3.3.

138 For more details refer to the Annex, section 4.3.4.

139 In the survey conducted for REA evaluation (forthcoming) respondents were asked the same question and the answer options varied on a scale from 1 to 9 (9 = strongly agree, 1 = strongly disagree). 65% of respondents from SC6 and SC7 chose 8 or 9 as their answer options.

when compared to the first 2 years of Horizon 2020 SC1, Horizon Europe Cluster 1 took on average 46 days longer to finalise the granting procedure. The difference is slightly smaller for Cluster 2 (about 31 days) and Cluster 3 (about 36 days) when compared to their predecessor programmes. In addition, the average TTG process of Cluster 3 (262 days) so far is 19 days above its target of 243 days.

Table 21. TTG comparison between Horizon Europe and Horizon 2020 and the percentage share within the target

Programme	Number of projects granted	Average TTG Horizon Europe (number of days & pct. share within target)	TTG Horizon 2020 (for 2014 and 2015) (number of days & pct. share within target)	The difference in days between H2020 (first two years) and HE (first two years)
CL1 / SC1	315	232.3 (65.8%)	186.0 (92.1%)	46.3
CL2 / SC6	151	239.8 (74.8%)	209.1 (78.0%)	30.7
CL3 / SC7	97	262.2 (33.0%)	226.3 (69.4%)	35.9
Pillar 2 / Pillar 3	2 211	237.5 (63.4%)	194.1 (87.7%)	43.4
Total FP	7 998	273.0 (41.3%)	249.9 (79.6%)	23.1

Source: Compiled by the study team using eCORDA data. June 2023 data release.

Several factors could have contributed to the delays in time-based efficiency indicators. According to REA[140], for both project officers and beneficiaries, the **Grant Agreement Preparation (GAP) used under Horizon Europe is more complex and time-consuming than under Horizon 2020 due to innovations and additional elements in the Work Programme**. For example, the Two-Step GAP Procedure, introduced to manage delays in the signing of some Association Agreements to HE, added a layer of complexity as projects have to adjust budgets and tasks based on the association status at the time of signing the grant agreement. The Gender Equality Plans, introduced to champion inclusivity, also require additional steps to ensure clarity and consensus among participants, adding to the workload of the executive agency, which translates to longer procedures. Lastly, the delayed introduction of the HE FP, the residual effects of COVID-19 on legacy projects managed by the executive agencies, and delays and issues with consortium partners from the UK (and Switzerland) due to post-Brexit procedures have added to the hurdles faced by the executive agencies in the initial years of HE.

Looking at IMI2 and IHI, all the time-based efficiency indicators were well within the target, with TTI for 2021 being 75 days, TTG being 223 days, and TTP being 10 days.

The survey reveals substantial satisfaction among the beneficiaries and unsuccessful applicants with the "clarity of the calls" and the "overall effort to prepare a HE proposal"[141]. Monitoring data, in contrast, find that the share of ineligible proposals under Horizon Europe has been comparatively high so far. Custer1 had 6.1% ineligible

140 REA Annual Activity Report 2022.

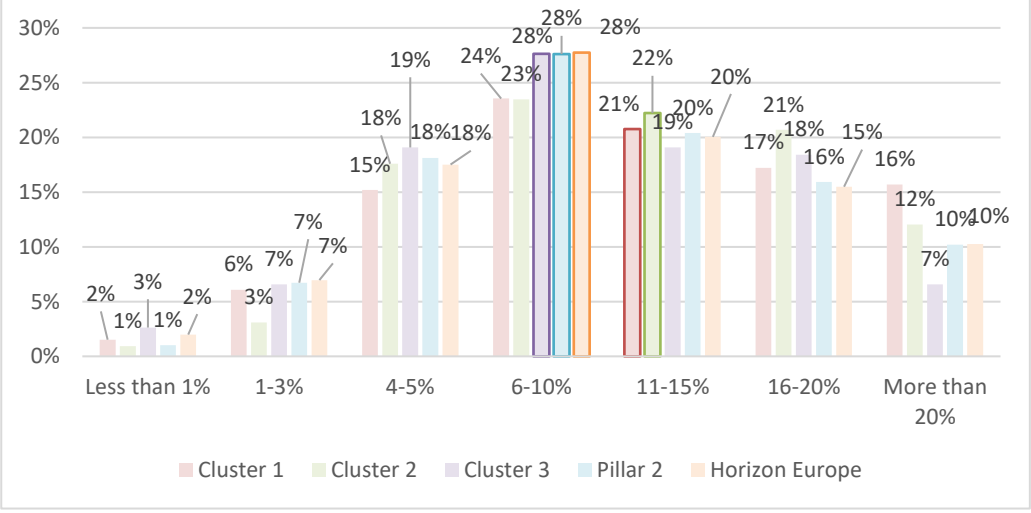
141 The survey shows that the vast majority of respondents (over 95%) felt satisfied (to a very large, large and moderate extent) with the "clarity of the aims and objectives of the project calls" and with the "clarity of the 'General Conditions' and eligibility and funding rules."[Please refer here to where exactly in Annex , e.g. Figure xx there is more information (if applicable).]

proposals, Cluster 2 had 3.2%, and Cluster 3 had 7.9% so far. The overall proportion of ineligible proposals in Horizon Europe (HE) is markedly higher (at 3.5%) than in the benchmark years of Horizon 2020 (in 2014, the ineligible rate was 1.2%, and in 2015 it was 1%).

6.6 Administrative costs of participation

Once the proposal is won and the funding secured, participants in HE must manage the administrative costs of project implementation, which include reporting, monitoring, and financial management. To measure the efficiency of this part of the process, our survey asked beneficiaries to estimate the share of their budgets allocated to administrative costs. The respondents chose between seven pooled options142. Similar to the proposal costs, we took the median value reported by respondents in each category to be most typical of that category[143]. **We found that, across all Horizon Europe pillars, partners in a median consortium-run project (of any size or duration) allocate around 6.0 – 10.0% of the project budget to implement administrative tasks.** The median project coordinator spends slightly more, 11.0-15.0%, of the project budget on administrative tasks. Both the median and the mode of the survey responses suggest the same finding. In addition, there was no variation observed for different sizes of project teams, different lengths of the projects or a programme part (see Figure 11).

Figure 11. Distribution of responses to the survey question asking what percentage of the Horizon Europe project budget was spent on administrative tasks – Pillar 2 and HE



Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023. Question: "In your estimation, what is the percentage share of your Horizon Europe project budget that is spent on administrative tasks (e.g. project reporting, project financial management, and similar)". Number of responses: 4 380. Median value highlighted.

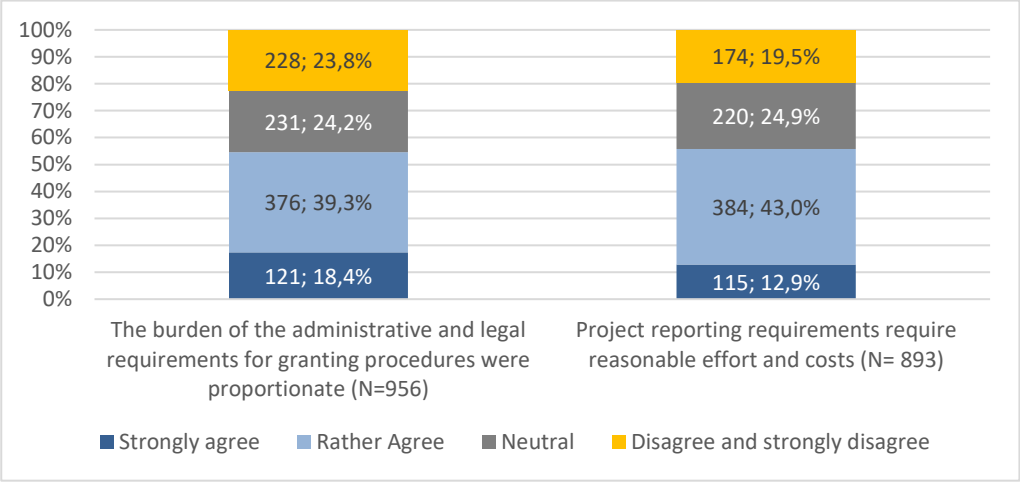
The majority of beneficiaries (over 57.0% who rather agreed and strongly agreed) found "the burden of the administrative and legal requirements for granting procedures" in the current framework "proportionate". Over half of the beneficiaries (55.9%) also strongly agreed or

142 Answer options were the following: Less than 1%; 1-3%; 4-5%; 6-10%; 11-15%; 16-20%; More than 20%.

143 For more details refer to the Annex, section 1.3.2.4

rather agreed that the “project reporting requirements required reasonable effort and costs.” On the other hand, only 20.0 % (reporting requirements) and 24.0 % (admin. and legal requirements) of beneficiaries respectively disagreed with these statements. While both figures do not represent a very large share, this indicates that at least a fifth of beneficiaries raise concerns about the administrative burden. These findings are more or less consistent across the three clusters, with CL3 showing more positive responses than others[144]. The lack of an updated Annotated Grant Agreement may have contributed to the less positive feedback.

Figure 12. “Would you agree or disagree with the following statements about the administrative and management processes in your Horizon Europe project:”



Source: Survey of Horizon Europe beneficiaries, conducted in May-July, 2023. Data applies to all three clusters combined.

According to beneficiaries who participated in both programmes, the costs associated with project management and financial management of the HE projects are comparable to those of H2020. Over half of the respondents expressed neither agreement nor disagreement with the following two questions; “Project management and implementation (amendments, reporting, etc.) is simpler in Horizon Europe than in H2020” (50.1%) and “Financial management (financial rules and reporting) is simpler in Horizon Europe than in Horizon 2020” (55.5%)[145].

144 For more details refer to the Annex, section 1.3.2.4.

145 Please refer to figures 28, 29 and 30 in the Annex 1.

7. Effectiveness

Key findings on effectiveness:

CL1, CL2 and CL3 are on track to meet their anticipated objectives, while all of the assessed clusters are performing positively in leveraging additional funds.

- None of the projects in the assessed programme parts were closed at the time of writing, yet **anecdotal evidence suggests that the projects are on track to achieve their set objectives.**
- Overall, the participants are expected to actively engage in the dissemination activities across the three Clusters. Findings also suggest that **CL2 dissemination activities should also prioritise SC6 projects that have already been completed**.
- Although **gender equality is perceived positively by many OPC participants, they also suggest that gender equality should be integrated under an umbrella term that encompasses** wider meanings, such as **diversity and inclusion of minorities and population groups with multiple social identities.**
- **CL1 actions and related initiatives play a pivotal role in shaping the health research landscape** and fostering impactful transformations.
- **CL3** holds the potential for structuring effects in areas like **fighting crime** and **terrorism**, **border management, resilient infrastructure, and disaster-resilient society**.
- **CL2 is in a unique position to generate knowledge and experience** in addressing issues on democracy and governance, culture and arts, tangible and intangible cultural heritage along with historic landscapes and sites, socio-economic inequalities, gender and migration.
- The **re-admission of the UK as an Associate member of Horizon Europe has been a necessary step** for both sides.
- A notable reform in the ethical dimensions of health research within Horizon Europe is the transition towards concentrating on serious and complex ethical matters. This shift adopts a trust-based and risk-based methodology, which has considerably reduced the administrative load for both applicants and beneficiaries.
- Research into **coronavirus remains a significant strategic focus for the EU**, a commitment continuing from Horizon 2020 to Horizon Europe.
- CL3 induced collaboration between European actors to **create pathways towards EU autonomy and technological sovereignty in cybersecurity from the global perspective.**

The effectiveness analysis presented in this section assesses the extent to which (vertical or horizontal) the set objectives and intended results have been achieved. It also relates to the extent to which the target groups were reached or what types of participants were attracted by the programme. The below-presented synthesis covers all evaluation questions as per Tender Specifications, with the findings organised in the following themes:

- Flexibility and openness of the programme implementation[146];
- Effectiveness in achieving prescribed objectives[147];
- Dissemination, exploitation and communication measures[148];

146 Evaluation questions covered EFF2. EFF3

147 Evaluation questions covered EFC1.1-EFC1.5 & EFC5.

148 Evaluation questions covered: EFC1.6-EFC1.8 & EFC8.

- Gender equality and integration in the R&I content[149];
- Structuring effect and durability of networks[150];
- Main results and outcomes of Horizon Europe programme parts Clusters 1, 2, and 3[151];
- International cooperation[152];
- Consideration of ethical aspects in health research[153];
- The matching investments of Clusters 1, 2 and 3[154];
- Impacts on building or reinforcing the EU autonomy from the perspective of SC1[155].
- Feedback to policy[156].

7.1. Flexibility and openness of the programme implementation (Clusters 1, 2 and 3)

This section looks into the flexibility and openness of Horizon Europe implementation, specifically the extent to which it is perceived as effective from the beneficiary's point of view. The European Commission's Participant Portal is a valuable resource for applicants interested in Horizon Europe's calls. Through the Participant Portal, applicants can access various benefits and support, including i**nformation on funding opportunities, guides and manuals, proposal submission tools, partner search tools, helpdesk services, project management resources**, **training and events,** and the ability to **receive updates**, newsletters, and notifications about new funding opportunities, changes in guidelines, or upcoming events.

Cluster 1

CL1 beneficiaries were asked about the effort needed to prepare and submit their Horizon Europe proposal. Overall, the **beneficiaries indicated their satisfaction with the number of consortium partners involved, the efforts being proportionate to the complexity of the proposed project and application costs and proportionality of the volume of funding requested in the proposal**. It must be mentioned that many of the respondents (almost 65.0%) have previously applied for other FP funding (e.g. Horizon 2020).

The Draft General Budget of the European Union (the financial year 2022) working document[157] noted that the late adoption of the legal base postponed the adoption of the work programmes 2021-2022 and the launching of calls for proposals, and thus impacted the implementation of the programme.

149 Evaluation questions covered: EFC3.

150 Evaluation question covered: EFC7.1 & EFC7.

151 Evaluation questions covered: EFC1, EFC2, EFC8, EFC8.1 & EFC 9.

152 Evaluation questions covered: EFC4 & EFC4.1.

153 Evaluation questions covered: EFC10.

154 Evaluation questions covered: EFC11 & EFC11.1-11.2.

155 Evaluation question covered: EFC16.

156 Evaluation question covered: EFF8.

157 https://commission.europa.eu/system/files/2022-06/wd_ix_final_web.pdf.

Beneficiaries also suggested that in order to maximise the projects' benefits, **efforts should focus on alleviating workload burdens by bolstering administrative support, streamlining processes, and implementing effective resource allocation strategies.** Adaptive funding mechanisms capable of swift responses to emerging health priorities could also significantly enhance the CL1's agility.

Cluster 2

Up to this point, **no severe obstacles have been encountered during the implementation** of Cluster 2 projects. The analysis indicates that adopting a broader approach to call topics in WPs has proven advantageous for Cluster 2 projects to achieve their objectives (CS8). Another significant factor contributing to the successful implementation of projects is the **engagement of a broader range of stakeholders**, including those with a practical orientation, such as trade unions and vocational education and training (VET) organisations. **Cluster 2 has witnessed an increase in the involvement of 'other' types of participants**, which, among others, encompasses non-governmental organisations (CS7, CS8, CS9).

While no major barriers have been reported at this stage, **there is still room for improvement** in some aspects of the programme. CL2 survey respondents conducted in May-June 2023 indicate that over one third of Horizon Europe survey, CL2 participants (39.0% in total) are encountering challenges to a large or some extent regarding the **diverse practices involved in the management of research projects**. Likewise, this finding remains consistent across the three case studies developed for CL2, namely CS7, CS8 and CS9.

Certain challenges have arisen due to external circumstances. As such, the interview programme with project beneficiaries from **destination democracy** highlighted that the **geopolitical developments stemming directly from Russia's war in Ukraine** had prompted consortia to **adjust the course of certain project activities**, although to a minor extent (CS7). Specifically, projects within the ENP region that involve Ukrainian organisations have encountered challenges in involving the intended stakeholders and target groups as initially envisioned in their R&I activities. Consortia have addressed this issue by deploying digital tools and involving intermediaries who can reach out to such stakeholders.

Other challenges during implementation were reported regarding **the ethics and freedom of research**, especially in non-democratic settings or societies at war or armed conflicts, potential risks originating from **anti-gender movements** in Europe and the role of researchers and the recent changes in some **social media** regarding **access to free data** (i.e. Twitter) (CS7).

Meanwhile, the Horizon Europe survey revealed that challenges related to language and cultural barriers were the least frequently mentioned issues. A minority of respondents (17.0% in total) reported experiencing them to a limited extent, while more than half of the respondents (54.7% in total) have not encountered these challenges at all.

Cluster 3

As with other clusters, the **consultation activities with beneficiaries suggest that there is overall satisfaction with CL3 project application processes**, although some uncertainties exist regarding the involvement of partners from Associated and Third Countries.

Still, when asked about encountering any difficulties when preparing their proposals, the survey responses from CL3 beneficiaries shed light on the **uncertainties, particularly surrounding the involvement of the UK partners within Horizon Europe projects**. For

example, according to some beneficiaries, this led to legal complexities, where lawyers working with coordinator-imposed conditions not aligned with the grant agreements, insisting on English documentation, creating hurdles for project execution. Furthermore, financial risks loomed due to uncertainties surrounding UK and Swiss partners, posing potential budget constraints and administrative issues.

These uncertainties affected project dynamics, forcing some projects to remove or resolve involvement with UK partners, potentially altering project compositions and objectives. The survey responses suggest a need for clearer guidelines on handling UK partners within Horizon Europe projects to mitigate uncertainties and streamline participation processes. However, it must be noted that the survey was conducted in May 2023, and the legal status of the UK under Horizon Europe was finally settled only on 7 September 2023[158].

7.1.1. Enablers/barriers for security-related projects

In the case of Societal Challenge 7 (SC7) of Horizon 2020, the pre-established Technology Readiness Level (TRL) target per topic or sub-topic was perceived by most beneficiaries interviewed (17 in total) as an enabling factor to improve further innovation uptake after the completion of the action. Together with this, the involvement of practitioners at an early stage of the action and throughout its complete lifecycle was considered important. Having a formal requirement to include practitioners as partners in consortia was seen as critical in ensuring this[159]. In a similar vein, 9 project coordinators of Cluster 3 interviewed (CS10) have observed that **the compulsory participation of end users from different Member States leads to a significant exchange of information between them and will be an enabling factor to improve innovation uptake**. However, more flexibility is called for regarding eligibility criteria so that the end user requirement can be met in multiple ways, e.g. by restricting the share of EU-14 countries[160] in the consortia.

Beneficiaries also see that **achieving a shared understanding of developed solutions across different beneficiary organisations is critical** for envisioned post-project activities. A large consortium size could complicate the creation of shared understanding as multiple partner organisations and their representatives may have differing expectations towards the solution proposed by the action. The shared understanding can be developed at the early stages of project activities by focusing on questions on the specific scope and functionalities of the solution. Finding a common language between the so-called technical partners (i.e.industry and research organisations developing specific technologies) and the security practitioners is important, as well.

158 https://www.consilium.europa.eu/en/press/press-releases/2023/11/15/eu-uk-relations-council-gives-the-go-ahead-to-uk-participation-in-the-horizon-europe-and-copernicus-programmes/#:~:text=The%20Council%20today%20gave%20its,government%20on%207%20September%202023.

159 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1. Annexes. Available: https://op.europa.eu/o/opportal-service/download-handler?identifier=e3f2a4e0-012d-11ee-87ec-01aa75ed71a1&format=pdf&language=en&productionSystem=cellar&part=.

160 EU-14 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and Sweden.

Based on their prior experience, beneficiaries note that **more support and guidance are needed to find new funding opportunities for taking the project results to a higher TRL level (from TRL 5-6 to TRL 9,** for example). Although there are EU initiatives in this regard, such as the EIC Accelerator or Horizon Results Booster, their eligibility requirements may be too strict for many actions to benefit from them (e.g. an applicant must be an SME).

7.2. Effectiveness in achieving prescribed objectives

Cluster 1

As mentioned in the State of Play, Section 3.1, at the time of writing (end of 2023), no Cluster 1 projects are closed. However, below, the study team presents anecdotal evidence that **Cluster 1 is realising its objectives.**

According to the Horizon Europe Strategic Plan[161], Cluster 1 is expected to impact 6 main areas until the end of the framework programme:

1. Staying healthy in a rapidly changing society
2. Living and working in a health-promoting environment
   - Partnership on Risk Assessment of Chemicals
3. Tackling diseases and reducing their burden
   - EDCTP3
   - ERA4Health
   - One Health AMR
4. Ensuring access to innovative, sustainable & high-quality health care
   - Transformation of Health Care systems
   - Pandemic Preparedness
5. Unlocking the full potential of new tools, technologies and digital solutions for a healthy society
   - Personalised medicine
6. Maintaining an innovative, sustainable and globally competitive health-related industry
   - IHI

Since the beginning of the programme, **Cluster 1 has structured its calls around the main impacts/objectives by publishing the proposals in the Work Programmes (WPs).** In both WP 2021-2022 and WP 2022-2023, all objectives are addressed by dedicating specific calls.

In addition to the WPs, the Horizon Europe beneficiaries survey – conducted in May-July 2023 – results, also suggests that the **delivery of the Cluster 1 project results, including those of the Cancer Mission, are well on tracck to achieving their objectives in health.** Over half of the Cluster 1 respondents indicated that their projects are on track to achieve the prescribed results, demonstrating the potential of R&I developments (for more details on this question, please see Annex 1, Section 1.4.1). Similar patterns were indicated in the

161 Horizon Europe Strategic Plan 2021-2024, https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/3c6ffd74-8ac3-11eb-b85c-01aa75ed71a1.

interim evaluation of Horizon 2020, where the survey results for Societal Challenge 1 indicated the strong expected impact within the next 10 years in its specific challenges.

Furthermore, the Cancer Mission's collaborative efforts across the EU Member States have notably advanced in achieving its objectives. The EU's commitment to cancer R&I through the Cancer Mission is crucial for effectively executing the Cancer Plan[162] and its pivotal actions, contributing to the establishment of a robust European Health Union. A dedicated case study (CS6: on Cancer Mission) found **evidence that the Mission's specific and operational objectives are already being implemented**, **at least to some extent**[163]. The ongoing projects for each objective are presented in Annex 1, Section 1.4.1. Between 2021 and 2023, a total of EUR 365 million has been made available through Cancer Mission WPs to support R&I projects; this is 4.4% of the total Cluster 1 budget.

According to the recent evaluation of the EU Missions[164]:

> *"At EU level, the Cancer Mission and the Cancer Plan have fostered a new dialogue with Member States on cancer and brought together health and research ministries to work together in a joint cancer sub-group of the Expert Group on Public Health. This creates the right environment for research evidence to inform policy development systematically. The Cancer Mission facilitated the early involvement of the Expert Group on Public Health which helped shaping the updated Council Recommendation on cancer screening, <…>. <…> the recently launched National Cancer Mission Hubs will foster cross-policy dialogues with national stakeholders on cancer prevention and control."*

Partnerships achieving their objectives

The parallel evaluations of the European Partnership for the Global Health EDCTP3 Joint Undertaking, IHI, EIT Health, ERA4Health, Assessment of Risks from Chemicals – PARC partnership, and Transforming Health and Care Systems -–THCS provide valuable insights into the achievements and challenges of these partnerships. While **it is too early to assess the effectiveness of the prescribed objectives, all of the assessed partnerships are on the right track towards achieving them.**

According to the interim evaluation of the GH EDCTP3 JU, funded with EUR 1.6 billion, the JU has laid a strong foundation with an extensive monitoring framework, yet it faces challenges related to the prolonged timelines for medical intervention development. EIT Health has proven highly effective in supporting healthcare start-ups and scale-ups, contributing to job creation, though challenges persist in supporting innovation and education-based entrepreneurship. The ERA4Health co-funded partnership, initiated in late 2022, is actively launching Joint Transnational thematic calls and investigator-initiated clinical studies to enhance international positioning and visibility. The PARC co-funded partnership has succeeded in integrating domains related to chemical risk assessment, fostering collaboration across regulatory entities and creating a platform for information sharing. Meanwhile, THCS is in the early stages of assessment, with results yet to emerge. The areas

162 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/promoting-our-european-way-life/european-health-union/cancer-plan-europe_en.

163 EU Missions two years on: An assessment of progress in shaping the future we want and reporting on the review of Mission Areas and areas for institutionalised partnerships based on Articles 185 and 187 TFEU, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2023:457:FIN, page 40.

164 EU Missions two years on: An assessment of progress in shaping the future we want and reporting on the review of Mission Areas and areas for institutionalised partnerships based on Articles 185 and 187 TFEU.

for improvement regarding THCS are mostly related to financial arrangements. The Innovative Health Initiative (IHI) within the IMI2 framework shows promise, with a comprehensive set of Key Performance Indicators (KPIs) emphasising collaboration, regulatory acceptance, and accessibility. While IMI2 has made significant strides in achieving its objectives, IHI started its work in November 2021, so we still need more time to see how well it is doing and if it is meeting its goals.

Overall, these partnerships show varying degrees of progress, with each facing distinct challenges on their path to achieving the objectives outlined in the Framework Programme.

Cluster 2

R&I activities in Cluster 2 are centred on addressing issues related to democratic governance (destination 1), cultural heritage and the creative economy (destination 2) and social and economic transformations (destination 3). CL2 impacts are summarised below:

1. Democratic governance is reinvigorated by improving the accountability, transparency, effectiveness and trustworthiness of rule-of-law based institutions and policies.

2.The full potential of cultural heritage, arts and cultural and creative sectors as a driver of sustainable innovation and a European sense of belonging.

3. Social and economic resilience and sustainability are strengthened through a better understanding of the social, ethical, political and economic impacts of drivers of change.

4. Inclusive growth is boosted and vulnerabilities are reduced effectively through evidence-based policies.

Due to the early stage of CL2 project implementation, it is not feasible to extrapolate any robust findings about the extent to which programme objectives have been met. That said, the Horizon Europe beneficiaries survey, conducted from May to July 2023, provides initial insights regarding the expectations of beneficiaries with regard to achieving CL2 prescribed results. **Overall,** the online survey demonstrates that the **majority of CL2 respondents consider their projects to be on a good track and could yield the desired results.** Specifically, the majority of CL2 respondents perceive their projects to have the potential to achieve results in terms of enhancing the skills and knowledge of researchers (82.0% in total), fostering stronger partnerships with key European counterparts (77.0% in total), enhancing international recognition through collaborations with leading global partners (71.0% in total) and pushing the frontiers of knowledge (69.0% in total).

Cluster 3

As for CL1, at the time of writing (end of 2023), no CL3 projects have been closed yet. Thus, the evidence of CL3 realising its objectives is available only by looking at the results from the beneficiaries' survey conducted in May-July 2023.

According to the Horizon Europe Strategic Plan[165], CL3 is expected to impact 4 main areas until the end of the framework programme:

1. Enhanced disaster risk reduction
2. Improved air/land/sea border management & maritime security
3. Tackling crime and terrorism, and threats to infrastructure
4. Increased cybersecurity and a more secure online environment

Since the beginning of the programme, **CL3 has organised its calls to align with the primary impacts and objectives**, outlining these proposals in the Work Programmes (WPs). As with other clusters, in both CL3 WP 2021-2022 and WP 2022-2023, all objectives are covered through the allocation of dedicated calls.

The Horizon Europe beneficiaries survey results, conducted from May to July 2023, also suggest that the delivery of the CL3 project results is well on track to **achieving their objectives in the Civil Security for Society.** *Enhancing the capacity to test, demonstrate and prototype new technological developments, Strengthening relationships with leading partners in Europe,* as well as *Improving the skills, knowledge and competences of researchers* were selected by 80.0% or more respondents as the results which will be achieved to a large or very large extent. For more information on this question, please see Annex 1, Section 1.4.1.

7.3. Dissemination, communication and exploitation activities

Dissemination, communication, and exploitation are **integral parts of all Horizon Europe projects**. According to the Impact Assessment of Horizon Europe[166], project participants must include a project summary in their technical reports for publication, promoting EU-funded results. The Grant Agreement mandates using the Horizon Results Platform to find interested parties to exploit Key Results within a year after project completion, with continued efforts for up to 4 years. Mandatory reports require listing dissemination and communication activities undertaken during the project, extending beyond initial proposal plans.

Still, according to **62.0% of respondents, public consultation, dissemination, and exploitation are some of the areas where the 2025-2027 Strategic Plan should be further elaborated[167].**

As for the exploitation activities, the interview on the dissemination and exploitation with EC officials indicated that **the Commission has two main tools to support beneficiaries to further disseminate and exploit results**:

- **Horizon Results Booster -** a framework contract aiming to bring the continual stream of innovation to the market and maximise the impact of public funded research within the

165 Horizon Europe Strategic Plan 2021-2024, https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/3c6ffd74-8ac3-11eb-b85c-01aa75ed71a1.

166 European Commission, Directorate-General for Research and Innovation, A new horizon for Europe – Impact assessment of the 9th EU framework programme for research and innovation, Publications Office, 2018, https://data.europa.eu/doi/10.2777/194210.

167 The results are not explicit to a particular cluster and are considered applicable for the entire programme.

EU. Beneficiaries are incentivised to use this tool (e.g. through webinars and policy officers), but it is based on their own needs.

- **Horizon Results Platform.** This tool focuses on the exploitation of results. Beneficiaries can upload their results and express their needs (e.g. support from investors). Out of 2 722 published results, 759 (27.8%) are related to the health sector and 2.1% to cancer research specifically.
- The **Innovation Radar** allows the external contractor working with the project beneficiaries to understand whether there are innovations. It is linked to KIP on the **uptake of innovations**. The data related to Innovation Radar for Horizon Europe is not available at the time of reporting.

Cluster 1

At the time of the analysis, the data on dissemination of communication activities is not available yet. Thus, the question is based on the perspectives gathered from the Horizon Europe beneficiaries survey conducted in May-July 2023 and is supported by the information gathered during the interview programme. Similar to the predecessor SC1, dissemination activities are an invaluable part of the project in raising awareness of the research activities and ensuring the realisation of a project's objectives.

The exploitation activities were discussed in the Horizon Europe beneficiaries survey conducted in May-July 2023. CL1 respondents were asked to identify **activities foreseen as part of their project** (for an extended overview of the results, see Annex 1, Section 1.4.3). **Over half of respondents** (53.8%) identified the **use of the results for academic purposes**[168], **over 30.0% developing, creating, manufacturing and marketing a product or process**, **or creating and providing a service** and **about a quarter indicated the standardisation activities as exploitation activities**.

Remote assessment of disease and relapse – Alzheimer's Disease[169]
Approximately 50 million people worldwide live with dementia, a figure the World Health Organization predicts will triple to 152 million by 2050. To improve the lives of those patients and reduce the associated costs, an EU- and industry-funded project is working on using detailed information about the health of each patient to transition from a 'diagnose and treat' to a 'predict and pre-empt' model of care. The project team, therefore, works closely with patients and carers on both platform development and trials design. The EU-funded RADAR-AD project will develop a digital platform to discover minuscule functional deficits in early AD patients.

As for the Horizon Results Booster (HRB) tool, the EC monitoring data reveal that out of 14 Cluster 1 projects that requested support from HRB, the average satisfaction with the service received was 4.6 (1-5 scale score). This suggests that those who used the HRB-suggested services had a high satisfaction rate, meaning that the tool is working as it is

168 Survey respondents were not asked to specify the academic purposes. Overall, academic purposes can include but is not limited to: generating research publications, contributing to academic papers and conferences, creating educational materials, integrating findings into theses and dissertations, disseminating knowledge in academic forums, engaging in collaborative research initiatives, influencing curriculum development, applying insights to advanced academic studies, contributing to policy recommendations, and building on the outcomes for future academic investigations.

169 Grant agreement ID: 806999.

intended to help researchers with the dissemination and exploitation activities. Of those projects that requested support related to identifying and creating the portfolio of R&I project results, 13 were suitable for joint dissemination. The success story using this tool is ADLIFE[170]. The ADLIFE research team, recognising the potential for scaling their findings but facing the challenge of integrating them into diverse healthcare systems, sought the support of Horizon Results Booster for guidance on research exploitation and business plan development. With Horizon's specialised support, they addressed the complexities of adapting their toolbox to varied markets and healthcare needs across different countries. The service proved beneficial in refining their business approach, aiding in the identification of key results, target groups, and revenue strategies, thereby facilitating the effective exploitation of their digital platforms. This collaborative effort, coupled with strategic planning, was essential for navigating the challenges of market entry and implementation, particularly in a landscape marked by varying regulations and healthcare practices.

ADLIFE[171] – An innovative care approach to improving the quality of life for people living with chronic conditions

The ADLIFE project was initiated in response to the growing need for integrated healthcare systems catering to Europe's ageing population and the corresponding rise in chronic diseases such as cancer, diabetes, and cardiovascular diseases. ADLIFE aims to enhance the quality of life for elderly individuals with chronic conditions by shifting from traditional acute-focused care to a model of continuous, integrated care. This approach is facilitated through the development of a digital toolbox comprising three platforms designed to empower patients and caregivers, enable active self-management, and ensure coordinated care across multidisciplinary teams. The project introduces a personalised care management platform for developing dynamic care plans, a clinical decision support system to provide timely recommendations, and a patient empowerment platform for greater patient involvement in care processes. By fostering efficient collaboration and communication among healthcare providers and patients, ADLIFE seeks to provide a more seamless, effective, and patient-centred healthcare experience. This innovative care model is being tested in seven pilot sites across Europe to demonstrate its effectiveness and scalability in improving outcomes for individuals with chronic diseases.

Cluster 2

In comparison to SC6[172], **CL2** demonstrates a **more proactive** approach by **initiating communication and dissemination activities at the early stages of project implementation**. Dissemination activities and dissemination platforms (i.e. CORDIS, Horizon Dashboard, etc.) are essential in promoting the adoption and acceptance of research findings and innovation. This is illustrated by the feedback received from CL2 respondents of the Horizon Europe survey, where **44.3% agree** to a very large or large extent **about the key role** of both **dissemination activities and EU dissemination platforms**. In parallel, **more support from the EC on dissemination would be instrumental in enhancing the project's** outreach to wider audiences (CS7).

170https://www.horizonresultsbooster.eu/SuccessStories/Details?title=ADLIFE%253a%2BAn%2Binnovative%2Bapproach%2Bto%2Bimproving%2Bthe%2Bquality%2Bof%2Blife%2Bfor%2Bchronic%2Bpatients%2B.

171 Grant agreement ID: 875209.

172 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

In socio-political contexts beyond the EU, such as in some European Neighbourhood Instrument (ENI) countries[173], an alternative R&I terminology is proposed **during the project dissemination and communication activities**. Project coordinators propose a shift in the terminology applied to R&I activities in regions beyond the EU, transitioning from "promoting democracy" to actively "supporting democracies" by taking into account their local characteristics across regions.

Dissemination and communication activities should not be seen only through the lens of the current FP. **CL2 dissemination activities should also prioritise SC6 projects that have already been completed and,** although they have generated evidence-based findings, have not yet been adequately shared (interview with CL2 officials). These evidence-based results from SC6 hold value for relevant stakeholders, particularly policymakers, who could make meaningful use of them.

MEMEX: MEMories and EXperiences for inclusive digital storytelling[174]
MEMEX project helped communities at risk of sociocultural exclusion tell their stories through augmented reality. MEMEX worked with fragile communities across Europe (including citizens in the 19th district of Paris, migrant women in Barcelona and three generations of migrants living in Lisbon) to bring these hidden stories into the world. MEMEX created an app that uses AI and augmented reality to offer the possibility of sharing stories. The MEMEX platform will be used in the New European Bauhaus project, and it has already been used in museums, including the Caserta Royal Palace in Naples, allowing elderly patrons of the museum to tell stories of their visits there.

Mingei: Representation and Preservation of Heritage Crafts[175]
The Mingei project preserved Heritage Crafts (HC) and their cultural history through the digitisation of crafts and their creation processes. The project created a range of digital assets, incorporating historical aspects along with each artefact. The team made 3D recordings of crafts being created and followed this with 3D digitisation of the tools themselves. The project developed a base of knowledge so that all the practical and cultural information of each craft could be stored – and combined with anthropological information. In another forthcoming EU-funded project, Craeft[176] **,** the Mingei platform will be used to explore some of the cognitive aspects of creativity, how a design is conceived, and the plan creators execute.

inDemand: Demand-driven co-creation for public entities[177]
inDemand created a process in which healthcare organisations and IT companies collaborated closely to develop new, innovative digital solutions. The companies got access to end users and got to fully understand their problems and needs. Meanwhile, healthcare personnel actively participated in a development and co-creation process that eventually made their daily work easier while improving patient care and services. The new process was extensively tested in three pilot regions – Murcia in Spain, Paris in France, and Oulu in Finland – and implemented in another 12 regions. The project has resulted in 22 innovative solutions. Although completed in November 2020, the inDemand project is still very much alive. The three pilot regions continue to use the co-creation model, and several EU projects

173 The 16 ENI countries are: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine, Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, the Palestinian territories, Syria and Tunisia.

174 Grant agreement ID: 870743.

175 Grant agreement ID: 822336.

176 Grant agreement ID: 101094349.

177 Grant agreement ID: 763735.

are implementing the new methodology. In Paris, a follow-up initiative called InnovUp was recently launched to dynamise the deployment of innovation in health organisations across the Ile-de-France region.

Cluster 3

The data regarding dissemination activities within CL3 are currently unavailable. Consequently, the findings on dissemination and exploitation activities primarily rely on the survey of CL3 beneficiaries conducted between May and July 2023 and are supported by the Horizon Results Booster success story. The findings from the CS10 and CS11 further supplement the analysis.

Respondents were asked to identify **activities foreseen as part of their project** (for an extended overview of the results, see Annex 1, Section 1.4.3). **Around 50.0% of respondents selected the following 3 exploitation activities foreseen as part of their projects: the *use of the results for academic purposes* (50.7%)*; creating and providing a service* (48.7%); and *standardisation activities* (46.0%).**

As for the Horizon Results Booster, there was only one participant so far related to Cluster 3 (the COPKIT project), and they rated the tool satisfactory (5 out of 5). This could be explained by the fact that the programme is still ongoing, and other participants have not yet rated the tool. The person responsible for dissemination and exploitation from the COPKIT team indicated that having the facilitator at the workshops available to answer questions and to give examples was extremely useful – *"We were very happy with the service, and I am sure the other partners found it useful as well. I think they weren't sure what to expect in the beginning but I think that they were pretty impressed by how it all was organised and how it all worked. I keep recommending these services to others in case they need it."*

Building cybercrime tools for law enforcement with COPKIT[178]
The rate of cybercrime has increased in the wake of COVID-19. Cybercriminals are developing and boosting their attacks at "an alarming pace", according to INTERPOL. Cybercrime is also evolving, and as COVID-19 continues to persist, a further increase in cybercrime is highly likely in the near future. EU-funded projects like COPKIT are supporting law enforcement agencies by developing technologies designed to take down cybercrime. The project, which closed in September 2021, developed a range of prototype tools that do everything from scraping the dark web for people selling weapons and illegal services to analysing crime hotspots based on open data.

The dissemination of research results to the stakeholders and broader society was indicated as an important success factor in Case Study 10. It was concluded that "Having ambitious goals can help to produce high-quality research and visibility for the project activities." In addition to that, Case Study 11 mentions one of the projects -TRUMPET[179], which aims to collaborate with other actions from the same call to develop better synergies for the dissemination phase.

178 Grant agreement ID: 786687.

179 Grant agreement ID: 101070038.

7.4. Gender equality and integration in the R&I content

Gender equality is a fundamental EU principle, and it has a positive impact on research funding by increasing the quality, relevance, uptake, and sustainability of results stemming from R&I activities. Gender equality under Horizon Europe is addressed as follows:

- Having a Gender Equality Plan (GEP) has become an eligibility criterion for legal entities from Member States and Associated Countries that are public bodies, research organisations or higher education establishments wishing to participate in Horizon Europe;
- The integration of a gender dimension into R&I content is a requirement by default and is evaluated under the excellence criterion[180];
- Increasing gender balance throughout the programme is another objective, with a target of 50.0% women in Horizon Europe boards, expert groups and evaluation committees. Gender balance within research teams is also established as a proposal ranking criterion for those with equal scores.

Gender equality and integration in the R&I content in CL1, CL2 and CL3

The Framework Programme dedicates specific funding for gender studies and intersectional research, in particular **under CL2** (WP 2021-2022; WP 2023-2024), with explicit call topics. **Gender integration in the R&I content** is also **highlighted across the CL1** WPs (2021-2022 and 2023-2024), underscoring the high relevance of gender in health research. Especially under Cancer Mission, for instance, two projects on female breast cancer were approved for funding. Likewise, **CL3 has also launched gender-equality dedicated topics** under two Work Programmes: the topic "Domestic and sexual violence are prevented and combated" (WP 2021-2022)[181] and the topic "Radicalisation and gender" (WP 2023-2024)[182]. In terms of the share of women and men in the three **Clusters**' consortia, **women make up 33.0% of the project coordinators** (see Table 22). **This share is slightly less than the overall percentage in all of Horizon Europe, which is 39.0%.** While women's share as project coordinators is lower than men's for all three clusters, their percentage increases when they take on the role of researchers. In particular, **for CL1 and CL2**, **the percentage of women researchers surpasses the Horizon Europe average**. Figures indicate that women researchers constitute nearly half of the researchers engaged in health and SSH-related research (48.0% and 49.0%, respectively).

180 Unless the topic description explicitly specifies otherwise.

181 Call: Fighting crime and terrorism (Cluster 3 Work Programme 2021-2022). https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf.

182 Call: Fighting crime and terrorism (Cluster 3 Work Programme 2023-2024). https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-6-civil-security-for-society_horizon-2023-2024_en.pdf.

Table 22. Share of project coordinators and researchers by gender

	Project coordinators		Researchers	
	Women	Men	Women	Men
Cluster 1	35.0%	64.0%	48.0%	52.0%
Cluster 2	45.0%	55.0%	49.0%	51.0%
Cluster 3	19.0%	19.0%	32.0%	68.0%
Horizon Europe	39.0%	60.0%	37.0%	63.0%

Source: EC monitoring and administrative data (January 2023).

Regarding the GEP, OPC results[183] indicate that over half of respondents claimed that the **GEP instructions have been clear either to a very large or to a large extent**. In parallel, stakeholders who participated in the OPC suggest **that more effort is needed to implement GEP requirements across organisations and establish** a **transparent monitoring system** (BN2).

The introduction of the **GEP requirement** is also seen **as an incentive for universities to systematise their policies and strategic planning by considering gender dimensions**[184]. Unsuccessful applicants from Associated Third Countries also expressed similar considerations. The GEP presents an opportunity for institutions to enhance their awareness and commitment to gender equality matters. Interestingly, **having a GEP for a non-EU beneficiary was considered even more valuable than the grant itself**, as it was viewed as leverage for the institution to raise its standards and improve gender-related practices (BN2).

Even though gender equality is perceived positively by many OPC participants, they also suggest that **gender equality should be integrated under an umbrella term** which encompasses wider meanings, such as **diversity and inclusion** of minorities and population groups with multiple social identities (age, gender, class, disability, ethnicity, LGBTQI+., etc.). This trend echoes similar practices that are followed by other research-funding organisations at the international and EU levels, such as the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council, as well as the Swedish Research Council (SRC) (BN2).

7.5. Structuring effect and durability of networks

Below, we present the analysis of the structuring effect and its durability of networks:

- The **structuring effect of each cluster refers to its influence on organising, shaping, and enhancing collaboration and innovation**. This effect extends beyond individual projects, impacting the broader landscape by fostering partnerships, aligning research priorities, and driving advancements;

183 Input to the public consultation on the past, present and future of the European research and innovation Framework Programmes 2014-2027. Ministry of Research and Innovation. Government of Catalonia (February 2023).

184 Position Paper Past, Present, and future of the European Research & Innovation Framework programmes 2014-2027 (February 2023).

- The **durability of networks within each cluster pertains to the sustainability and longevity of the connections, collaborations, and partnerships** formed.

Structuring effect

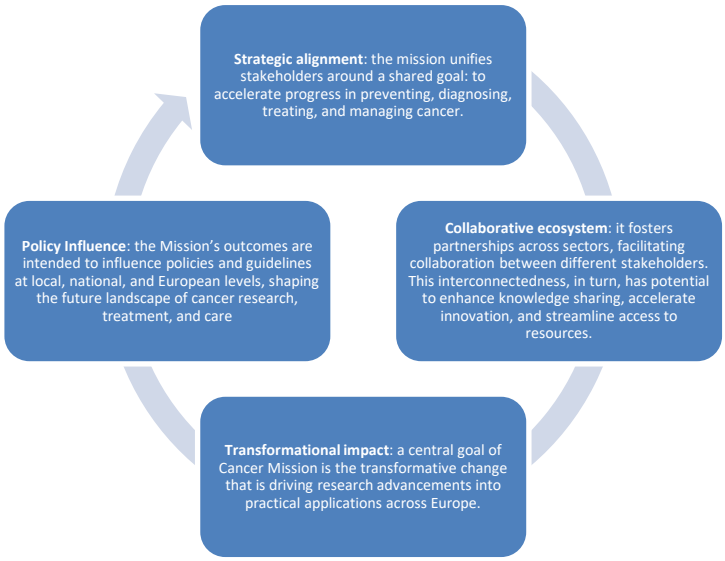
Cluster 1

As CL1 actions are still in the early implementation stages, it might be premature to assess the cluster's structuring effect. However, the evidence from case studies and the assessed partnerships shed light on **CL1 action and related initiatives that play a pivotal role in shaping the health research landscape and fostering impactful transformations.**

The structuring effect of Horizon Europe's health-related partnerships and missions (e.g. Cancer Mission) is substantial, influencing collaboration, innovation, and strategic alignment in addressing major health challenges across Europe.

Cancer Mission **has a profound structuring effect on cancer research, treatment, and care across Europe** through its design to catalyse a concerted effort (e.g. with Europe's Beating Cancer Plan and the EU4Health's objectives) towards tackling cancer comprehensively and innovatively. As discussed in CS6, this is done through the following actions described in Figure 13.

Figure 13. Cancer Mission



Source: Compiled by the study team based on findings from CS6 on Cancer Mission.

Partnerships, like GH EDCTP3 JU, have a significant structuring effect on health research, particularly in **addressing infectious diseases and improving healthcare systems in developing countries**. GH EDCTP3 JU fosters partnerships between European countries and developing nations, creating a network of collaboration among researchers, healthcare professionals, policymakers, and funders. This, in turn, strengthens research capacities and promotes knowledge exchange.

Cluster 2

CL2 is in a unique position to generate knowledge and experience in addressing issues on democracy and governance, culture and arts, tangible and intangible cultural heritage along with historic landscapes and sites, socio-economic inequalities, gender and migration. The participation of **civil society actors** (CS7), both as members of consortia and as target groups, in tandem with the increase in the share of **non-academic participants** (CS8; CS9), can create **structuring effects in bringing R&I results closer to citizens, steer up participatory democratic spaces and patterns in citizen science**.

Cluster 3

As discussed in CS10 on the societal impacts of security research, **CL3 holds the potential for structuring effects in areas like fighting crime and terrorism, border management, resilient infrastructure, and disaster-resilient society.** Mandating stakeholder involvement, CL3 ensures practitioners' inclusion in research and high readiness for practical testing. Public bodies' participation varies, influencing engagement. Stakeholders actively engage in governance, particularly in fighting crime and terrorism actions. Ensuring stakeholder needs, expanding groups, and factors like transparency, effective communication, diverse decision-making, and visible benefits contribute to impactful solutions. The potential lies in CL3's ability to create collaborative, practical security solutions that align with stakeholders' needs and enhance Europe's resilience and security.

Durability of networks of Clusters 1, 2 and 3

To assess the durability of networks, the study team relied on the results of a network analysis, which is featured in Annex 3, Section 1.2. While evaluating the durability of networks forged under Clusters 1, 2, and 3 might be premature, **the analysis highlights the preliminary indications of sustained engagement and collaboration within these 3 clusters under Horizon Europe.**

For instance, among those who previously published under FP7 Health, 1 064 researchers are now actively engaged in CL1 actions, representing approximately 16.0% of CL1 participants. In contrast, about 5.0% of active contributors in CL2 have backgrounds in SC6 of Horizon 2020. In the case of CL3, roughly 16.0% of its researchers have a history of publications under H2020-LEITs-ICT.

When looking at collaborative networks for each cluster, we measured the closeness centrality scores. The more central the nodes (i.e. greater closeness centrality measure), the faster and easier these nodes (or, in this instance, countries) communicate with each other. We found that **CL1 is highly collaborative with researchers from Germany and the Netherlands**. **CL2 mostly collaborates with researchers from Germany and Italy, while CL3 collaborates with Italy and Spain**. Closeness centrality scores for countries indicate their relative accessibility, influence, or importance within the network of collaborative research or initiatives related to a particular cluster.

The Cancer Mission exhibits established networks within Member States and some collaboration with Associated Countries, primarily with research organisations. Notably, Lithuania plays a prominent role in unique collaborations, engaging with multiple Member States, including Hungary, Finland, Estonia, Poland and Sweden, across higher education and research institutions.

7.6. Main results and outcomes of Horizon Europe programme parts Clusters 1, 2, and 3

The main results and expected outcomes of all three Clusters are divided around scientific, societal, and technological outputs. For the societal outputs, this report focuses on three KIPs – 4, 5, and 6. The overview of the short-term indicators of the remaining KIPs (i.e. KIPs 1-3 and KIPs 7-9) is presented in Annex 1, Section 1.4.2.

7.6.1. Short-term scientific outputs

Cluster 1

The assessment of short-term scientific outputs of Cluster 1 considers the extent to which the programme part has advanced towards producing or is expected to produce outputs in the following areas:

- Creating high-quality new knowledge;
- Strengthening human capital in research and innovation;
- Fostering diffusion of knowledge and open source.

The outputs were assessed by looking at the EC administrative and monitoring data (including performance towards short-term KIPs), results from case studies, and the evidence collected through the Horizon Europe beneficiaries survey conducted from May to July 2023.

<u>On creating high-quality new knowledge through Cluster 1 actions</u>

The study team considered the following outputs: research publications (e.g. scientific papers and articles presenting discoveries, findings, or advancements), the creation of comprehensive datasets that contribute to understanding health, and the development of new tools, methodologies, or techniques aiding in diagnostics, treatment, or prevention of diseases, novel research methodologies and innovative inventions or discoveries resulting in patents.

At the time of the analysis, data regarding the number of peer-reviewed scientific publications or patents resulting from Cluster 1 projects were unavailable. However, insights gathered from the Horizon Europe beneficiaries survey, conducted in May-July 2023, suggest some of the anticipated results. **Over 90.0% of CL1 respondents highlighted research publications as their primary output or an anticipated result from their Horizon Europe project.** Some 65.0% indicated their anticipation of producing new large-scale datasets/data, while over 56.0% focused on the development of **new or enhanced tools, methods, or techniques**. Additionally, 45.0% of respondents indicated that their projects are expected to **create novel research methodologies**, with nearly 20.0% of respondents **aiming to generate patents.**

According to the published interim assessment of the Missions'[185], while **it is still difficult to say what the exploitable outcomes of the Horizon Europe Missions' projects will be, the right steps have already been taken for most of the objectives**[186].

On strengthening human capital in research and innovation through Cluster 1 projects

Strengthening human capital is one of the KIPs of Horizon Europe, and it is a crucial output of the programme for several reasons, including emphasising the development and nurturing of talent, skills, and expertise among researchers and innovators across Europe. The study team had no access to data relating to upskilling activities and cannot present a conclusion on this KIP yet. The information provided below presents the importance of and examples related to upskilling activities under CL1.

For the Health Cluster, it is particularly relevant in the context of:

Advancing medical research: Skilled professionals are essential for conducting high-quality medical research, exploring disease mechanisms, developing treatments, and improving healthcare delivery systems.

Innovation in healthcare: Human capital drives innovation in healthcare by developing new medical technologies, diagnostics, treatments, and preventive measures, leading to better patient outcomes.

Improving public health policies: Skilled professionals contribute to the formulation and implementation of evidence-based public health policies, addressing pressing health issues and promoting disease prevention strategies.

Enhancing healthcare systems: Trained personnel play a vital role in optimising healthcare systems, ensuring efficient resource allocation, and improving the accessibility and affordability of healthcare services.

Responding to emerging health challenges: A skilled workforce enables swift responses to emerging health challenges, such as pandemics, by conducting rapid research, developing vaccines, and implementing effective public health measures.

Translating research to practice: A skilled workforce helps bridge the gap between research and practice, ensuring that scientific advancements are effectively translated into clinical applications for the benefit of patients.

Building collaborative networks: Human capital fosters collaborations among researchers, healthcare professionals, and institutions, facilitating interdisciplinary approaches to complex health issues.

185 EU Missions 2 years on: An assessment of progress in shaping the future we want and reporting on the review of Mission Areas and areas for institutionalised partnerships based on Articles 185 and 187 TFEU, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2023:457:FIN.

186 EU Missions 2 years on: An assessment of progress in shaping the future we want and reporting on the review of Mission Areas and areas for institutionalised partnerships based on Articles 185 and 187 TFEU, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2023:457:FIN, page 40.

In light of the emerging political conflicts (e.g. the Russian invasion of Ukraine), CL1 is mobilising efforts to strengthen human capital in R&I. For example, in 2022, the EC boosted the Horizon Europe budget to support green, health and digital innovations and displaced researchers of Ukraine. Below, we present a case example for the "Scientists help Scientists initiative".

Scientists help scientists – As part of the amendment to the Horizon Europe Work Programme 2021-2022, the EC contributed an additional EUR 1 million to actions to support researchers previously active in Ukraine. This was done through the Human Frontier Science Programme for the initiative of "scientists help scientists" as part of Horizon Europe's Cluster 1 'Health'. A blanket provision was also added encouraging all applicants to offer opportunities to researchers and innovators of Ukraine, where possible[187].

Fostering diffusion of knowledge and open source through Cluster 1 projects

CL1 actively promotes the diffusion of knowledge and open access through its projects. In the CL1 Work Programme 2023-2024, open access is highlighted in research calls concerning healthcare interventions and brain disorder biomarkers. These calls aim **to integrate new open access databases widely with existing infrastructures following FAIR principles**[188]. Horizon Europe mandates open access for publications, ensuring research findings are easily available to all, leading CL1 to have all its 79 (as of current data) publications openly accessible.

However, the Horizon Europe beneficiaries survey conducted between May and July 2023 indicates certain **challenges.** These included challenges such as **securing adequate funds to cover journal fees** (28.1%), **ensuring compliance with data protection regulations** like the General Data Protection Regulation (GDPR) (15.2%), encountering **difficulties in pinpointing relevant open repositories or archives** (12.0%), **lacking the necessary knowledge and resources to share data and metadata openly** (11.5%), and **facing a shortage of guidance regarding the implementation of data management plans** (11.0%).

The Cancer Mission also emphasises open access, with strategic projects like UNCAN.eu promoting open science practices and commitment to FAIR principles for scientific data.

Cluster 2

On creating high-quality new knowledge through Cluster 2 actions

With projects still being at an early phase of project implementation, there is not yet clear evidence of the results stemming from **CL2 projects**. However, the Horizon Europe beneficiaries survey conducted between May and July 2023 provides preliminary evidence of the anticipated results by CL2 consortia. Most survey participants reported that their projects are expected to **yield outcomes** such as research **publications** (including academic articles and books), policy recommendations, **large-scale datasets**, innovative research methods, training and **collaboration platforms**, educational resources and results related to **social innovations**.

187 https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2843.

188 FAIR data are data which meet principles of findability, accessibility, interoperability, and reusability.

GREAT[189] project will generate new knowledge of the actual and potential impact of games on European society and new understandings of the innovative uses of games to support the social engagement of citizens. Leveraging the central role of games in contemporary culture, it combines academic studies and practical experimentation with novel applications of games. Using collaborative design and citizen science methods, it brings together researchers with expertise in the areas of games, data analytics, and policy in an integrated investigation articulated by case studies of the use of games in facilitating dialogue between citizens and policy stakeholders.

SPES[190] project aims to generate new knowledge and evidence about the nexus between economic growth, human flourishing, and sustainability, contributing to the creation and uptake of a novel integrated framework that fosters the transition towards sustainable human development in European countries and regions. The newly produced policy and measurement framework will give further strengths to the transition towards sustainable human development by informing both the public debate and the implementation of existing policy frameworks, with a particular focus on the 2030 Agenda, the European Green Deal and the Just Transition Mechanisms, and the NextGeneration EU.

On strengthening human capital in research and innovation through Cluster 2 projects

The study team had no access to data relating to upskilling activities and could not present a conclusion on this KIP.

Fostering diffusion of knowledge and open source through Cluster 2 projects

CL2 promotes the dissemination of knowledge and open access via its initiatives, with its WPs supporting open access in research domains like **AI, big data and democracy**. The Horizon Europe beneficiary survey gathered insights from CL2 participants on obstacles they encountered related to open access. A significant portion of respondents reported challenges, such as lack of sufficient funding to cover fees required by some journals or data repositories (84 respondents), issues stemming from GDPR compliance (42 respondents), concerns about the impact of open access publishing on career advancement (31 respondents), limited knowledge and resources for sharing data and metadata openly (30 respondents) and difficulties in finding appropriate open repositories (29 respondents). Despite these challenges, **the majority of CL2 consortia have not faced issues concerning the openness of their project results** (69 respondents). Yet, many noted that their **projects are in the early stages**, making it **premature to offer detailed feedback on open-source matters.**

Cluster 3

On creating high-quality new knowledge through Cluster 3 actions

Several Cluster 3 projects are aimed at creating knowledge-sharing platforms to build resilience in society, support different stakeholders of critical sectors, help increase their situational awareness, and ensure critical risk assessment. Some examples include the DYNAMO and CS-AWARE-NEXT.

189 Grant agreement ID: 101094766.

190 Grant Agreement ID: 101094551.

DYNAMO[191] project is aimed at combining the two fields of business continuity management (BCM) and cyber threat intelligence (CTI) to **generate a situational awareness picture for decision support across all stages of the resilience cycle (prepare, prevent, protect, response, recover).** Professionals of different backgrounds will work together with end users to develop, refine and combine selected tools into a single platform.

CS-AWARE-NEXT[192] aims to **provide improved cybersecurity management capabilities to organisations and local/regional supply networks**. Such organisations and networks operate in a highly dynamic cybersecurity environment and are required to comply with prevailing European legislation, such as the network and information security (NIS) directive.

On strengthening human capital in research and innovation through Cluster 3 projects

The study team had no access to data relating to upskilling activities and could not present a conclusion on this KIP.

Fostering diffusion of knowledge and open source through Cluster 3 projects

A significant part of research data generated, shared, and processed within Cluster 3 actions are **sensitive by design,** which limits the open access to research data. Most call topics of Cluster 3 Work Programme 2021-2022 indicate that actions will use classified background information and/or produce security-sensitive results (EUCI - EU classified information and SEN – Sensitive, limited under the conditions of the Grant Agreement). Destination 5 on "disaster-resilient society for Europe'"(DRS) is an exemption as only one DRS call topic (i.e. HORIZON-CL3-2022-DRS-01-08) refers to data sensitivity in eligibility conditions[193].

The specific characteristics of Cluster 3 actions regarding open access are reflected in the answers given in the online survey of Horizon Europe beneficiaries conducted in May-July 2023. Almost one third (26.8%) of Cluster 3 respondents **indicated that there were *no specific difficulties* related to open access to the project results.** In beneficiary interviews of Cluster 3 actions (CS11), the following **good practices on data sharing** were identified for enhancing data sharing within and outside project activities while considering the data sensitivity issues:

- Ensure data openness and accessibility through open access publications or appropriate data-sharing platforms;

- Establish clear guidelines, protocols, and agreements among project partners for sharing sensitive data securely, including:
  - Rules on how datasets are characterised and documented;
  - Creation of a catalogue of datasets;
  - Rules on data sharing and data storage in shared workspaces and
  - Definition of criteria for identifying who has access to the data and promotion of collaboration and knowledge exchange among stakeholders to enhance data-sharing practices.

191 Grant agreement: 101069601.

192 Grant agreement: 101069543.

193 Horizon Europe Work Programme 2021-2022: 6. Civil Security for Society. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf.

The contributions of the Joint Research Centre to Clusters 1, 2 and 3 are provided under the coherence section.

7.6.2. Short-term societal outputs

This study assesses the short-term societal outputs through the lens of three KIPs:

- KIP 4: Addressing EU policy priorities & global challenges through R&I;
- KIP 5: Delivering benefits & impact via R&I missions;
- KIP 6: Strengthening the uptake of R&I in society.

7.6.2.0. KIP 4: Addressing EU policy priorities & global challenges through R&I

The short-term indicators of this KIP are related to the outputs aimed at addressing identified EU policy priorities and global challenges (including SDGs). **Although there are currently no completed projects within Cluster 1 during this reporting period, ongoing health-related projects play a crucial role in advancing these short-term indicators.**

While impacts on public policies resulting from CL1 will be more visible after the end of Horizon Europe, the patterns of shaping the policies are already visible, especially in cancer research. CL1 aims to improve and protect the health and well-being of citizens of all ages[194]. The contributions to the health-related policy priorities will be presented in Cluster 1, six destinations[195].

Destination 1 – staying healthy in a rapidly changing society within Cluster 1 work packages (covering 2021-2022 and 2023-2024) primarily centres on mental health, personalised healthcare, and preventive measures. This cluster specifically targets societal challenges aligned with the European Commission's political priorities, encompassing aspects like diet and health, ageing, demographic shifts, mental health literacy, and personalised prevention. Below, a success story tied to mental health is outlined:

COCA[196] - Comorbid Conditions of Attention deficit/hyperactivity disorder
Attention deficit hyperactivity disorder (ADHD) is a behavioural and emotional disorder that starts in children and persists into adulthood in half of the diagnosed cases. And crucially, ADHD seems to be the entry point for a range of other linked disorders. The EU-funded COCA project aims to find therapies for young ADHD patients that also prevent them from developing linked disorders. Bright light therapy is an established treatment for major depression in adolescents and adults that regulates circadian rhythm, or the sleep/wake cycle. Exercise is proven to prevent and reduce obesity and depressive symptoms through the modulation of the dopamine pathway.

Destination 2 – living and working in a health-promoting environment addresses the impacts of environmental and climatic determinants on health and health policies In its Work Programmes (2021-2022 and 2023-2024) destination 2 was overall focused on the impacts of

194 https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-1-health_en.

195 Strategic Plan 2021-2024, https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/3c6ffd74-8ac3-11eb-b85c-01aa75ed71a1.

196 https://ec.europa.eu/research-and-innovation/en/projects/success-stories/all/stopping-spiral-adhd-depression-and-obesity.

pollution, exposure to electromagnetic fields and climate change-related stressors on health. The European Partnership for the assessment of risks from chemicals (PARC) was funded under destination's 2 WP of 2021. Destination 2 aims to ensure that environmental, occupational, social, economic, and health policies are sustainable and based on solid scientific evidence (including overarching policy frameworks, e.g. the European Green Deal, the Chemical Strategy for Sustainability, the EU climate policies and the EU Strategic Framework on Health and Safety at Work).

Destination 3 – tapping diseases and reducing disease burden contributes to the better management of diseases (infectious, non-communicable, and rare diseases) and the reduction of the burden on patients. For instance, the Cancer Mission is directly contributing towards achieving the SDG3 of reducing deaths from non-communicable diseases. Cancer Mission, working together with other initiatives such as Europe's Beating Cancer Plan, is working on various impact areas with successful ongoing projects, one of which is presented in the box below:

UNCAN[197] – An EU Commitment towards understanding cancer - UNCAN.eu initiative aims to achieve the next breakthrough needed to advance the understanding of cancer mechanisms in order to improve cancer prevention, early diagnosis and treatment, providing a basis for saving millions of European citizens' lives. A key expected outcome is that the new understanding gained from the analysis of this wealth of data could be applied to other diseases beyond cancer.

The EU has also stepped up the fight against antimicrobial resistance and adopted the proposal to strengthen EU action against AMR in 2023. The European Centre for Disease Prevention and Control (ECDC) set the targets for 2030[198]:

- A 20.0% reduction in the total consumption of antibiotics in humans;
- At least 65.0% of the total consumption of antibiotics in humans should be effective (use of the right antibiotic);
- A reduction of infections of three key antibiotic-resistant bacteria will apply mainly to hospitals.

AMR is also systematically included in Cluster 1 WPs (2021-2022 and 2023-2024).

Destination 4 – ensuring access to innovative, sustainable and high-quality healthcare – seeks to address the limitations and challenges exacerbated by the COVID-19 crisis. This crisis has brought disparities in access to high-quality healthcare services to light. As indicated in WP 2021-2022, destination 4 will impact the EU policies in collaboration with EU4Health by contributing to the general objective of "protecting people in the Union from serious cross-border threats to health and strengthening the responsiveness of health systems and coordination among the Member States to cope with those threats"[199].

The Draft General Budget of the European Union (the financial year 2022) working document indicates that the **EU budget will power the EU's response to the COVID-19 pandemic,**

197 Grant agreement ID: 101069496.

198 https://ec.europa.eu/commission/presscorner/detail/en/IP_23_3187.

199 Cluster 1 Work Programme 2021-2022, p. 107 https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-4-health_horizon-2021-2022_en.pdf.

helping to address the ongoing health emergency, kick-start the recovery, as well as steer economics and societies towards more sustainable, digital and resilient future, and strengthened EU's geopolitical role. Together with NextGenerationEU – the EUR 750 billion recovery instrument – the 2021-2027 multiannual financial framework amounts to more than EUR 1.8 trillion. This is close to double the size of the budget for 2014-2020 and is the largest investment package ever financed through the EU budget[200]. Horizon Europe Strategic Plan 2025-2027 analysis indicates that R&I played a key role throughout the COVID-19 pandemic, with the outcomes linked to better management and curing diseases and effectively reducing the disease burden on patients. In addition, the EU investments and cooperation across countries and beyond Europe provide citizens with equal access to vaccines.

Destination 5 – unlocking the full potential of new tools, technologies and digital solutions aims to advance the development and application of health innovations in an ethical, secure, and inclusive manner. It focuses on enhancing biomedical research, diagnosis, prevention, therapy, and monitoring, ensuring these innovations are safe, effective, and accessible. The initiative encourages multidisciplinary collaboration among stakeholders to meet diverse health needs and integrate these technologies responsibly into health policies and systems. Additionally, it highlights the role of Artificial Intelligence in analysing extensive health data to improve research, personalised medicine, and healthcare system efficiency, dependent on the availability of quality data. In addition to that, the destination addresses the EU policies related to the European Research Infrastructures and the European Health Data Space (EHDS). EHDS is expected to promote health data exchange and facilitate cross-border research activities.

Destination 6 – Maintaining an innovative, sustainable, and globally competitive health-related industry that is mainly focused on green and digital transitions and the proper supply of health technologies and products. It aims to produce pharmaceuticals in compliance with the objectives of the European Green Deal, achieve unmet medical needs in the context of market failures, ad research digital solutions and interventions for GDPR-compliant translation into healthcare practice. In addition, it is expected that Cancer Mission, together with Europe's Beating Cancer Plan, will go far beyond research and innovation to develop new solutions and improve the lives of Europeans[201].

Cluster 2

As defined by the Horizon Europe Strategic Plan 2021-2024[202], one of the key strategic orientations of the EU research and innovation is **to establish a European society that is resilient, inclusive, and democratic**. The objectives of Cluster 2 remain highly relevant and **consistent with EU and global priorities,** such as UN SDGs. Cluster 2 aims to tackle various EU priorities such as:

- Promoting European democracy;
- Ensuring an economy that benefits people;

200 Draft general budget of the European Union, Working Document Part I, financial year 2022.

201 https://ec.europa.eu/research-and-innovation/en/horizon-magazine/europes-beating-cancer-plan-and-eu-mission-cancer-add-real-momentum-tackle-entire-disease-pathway.

202 Horizon Europe Strategic Plan 2021-2024 https://www.eeas.europa.eu/sites/default/files/horizon_europe_strategic_plan_2021-2024.pdf.

- Implementing the European Green Deal;
- Adapting Europe to the digital age;
- Safeguarding the European way of life;
- Strengthening Europe's position in the world;
- Improving migration and mobility management;
- Preserving cultural heritage and fostering creativity.

In addition, Cluster 2 addresses the **social implications of the COVID-19** pandemic by mobilising research in Social Sciences and Humanities to provide evidence-based policies that will contribute to recovery, enhance resilience and improve responsiveness in future crises. Through its three destinations, it strengthens European democratic values, including the rule of law and fundamental rights, safeguarding the EU's cultural heritage and identity[203], and promoting socio-economic transformations that contribute to inclusion and growth.

Destination democracy and **governance contribute to the objectives of the European Democracy action plan** (EDAP) to **empower citizens** and **foster** the resilience of European **democracies**[204]. As highlighted by EDAP, '*a healthy democracy relies on citizen engagement and an active civil society'*. Participation and active involvement of citizens and civil society is central to Cluster 2 R&I activities.

Destination cultural heritage and creative and cultural industries address research and **scientific activities related to culture and cultural heritage** by deploying cutting-edge **technologies**; establishing **sustainable engagement with stakeholders**, social innovators, and citizens and promoting their active participation in research outcomes; and contributing to the **objectives of the European Green Deal**, the New European Bauhaus and UN SDGs.

R&I activities under **destination social and economic transformations** contribute to the **European strategy for inclusive growth**, including socio-economic, environmental and other historical dimensions. The fight against inequalities is enshrined in the EU Treaties in the European Pillar of Social Rights. Reducing inequality is rooted in the EU's commitments to promote and protect human rights, as the principles of non-discrimination and equality complement the principles of international human rights law. In addition, activities address EU migration policies.

Cluster 3

Contributions to security-related EU policies and priorities

Based on the analysis of Work Programmes 2021-2022 and 2023-2024 of Cluster 3 and Policy Officer interviews, **the call topics of Cluster 3 create multiple links to key EU**

203 European Commission, Directorate-General for Research and Innovation, Brunet, P., De Luca, L., Hyvönen, E.et al., Report on a European collaborative cloud for cultural heritage – Ex – ante impact assessment, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2777/64014.

204 European Democracy Action https://commission.europa.eu/system/files/2020-12/edap_factsheet8.pdf.

security policies[205]. Next, the contributions of Cluster 3 to implementing relevant EU policies as stated in the Work Programmes are considered by destinations that address different thematic areas of security.

Destination "Fighting Crime and Terrorism" (FCT) contributes to the overarching Security Union Strategy[206] by supporting the development of law enforcement tools and measures for countering, investigating and mitigating the impacts of new and emerging forms of crime, criminal networks, terrorism and violent extremism. More specifically, FCT supports the aims of the EU Strategy to tackle organised crime[207], the EU strategy on combating trafficking in human beings[208], the EU strategy for a more effective fight against child sexual abuse[209], and the EU action plan on firearms[210].

Destination "Border Management" (BM) contributes to the objectives regarding border security and external security as identified by the Security Union Strategy and the border management and security dimensions of the New Pact on Migration and Asylum[211]. Additionally, BM contributes to the Strategy towards a fully functioning and resilient Schengen area[212] by supporting the enhancement of modern and effective management of the EU's external borders. BM also supports the implementation of the EU Maritime Security Strategy[213] and associated action plan[214] by developing security and management of EU maritime borders, maritime critical infrastructures, maritime transport, and coast guard functions.

Aligned with the Security Union Strategy, ***Destination "Disaster-Resilient Societies" (DRS)*** addresses the EU Strategy on Adaptation to Climate Change[215] and EU disaster risk reduction policies (e.g. Union Civil Protection Mechanism[216]) by emphasising the increasing interdependencies of disruptions affecting multiple critical infrastructures simultaneously or in cascade. As stressed within the EU Adaptation Strategy[217], there is an urgent need to develop societal resilience and disaster preparedness against various climate change impacts caused by more frequent and more severe weather extremes.

Destination "Resilient Infrastructure" (INFRA) creates links to the Security Union Strategy by aiming to support the protection of European infrastructures to face the challenges of growing interconnectivity and emerging and complex threats. Finally, destination ***"Increased***

205 Horizon Europe Work Programme 2021-2022: 6. Civil Security for Society. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-6-civil-security-for-society_horizon-2021-2022_en.pdf. Horizon Europe Work Programme 2023-2024: 6. Civil Security for Society, Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-6-civil-security-for-society_horizon-2023-2024_en.pdf.

206 https://commission.europa.eu/document/download/90968327-092e-41f2-a7e1-73ec5acf9e71_en.

207 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0170&qid=1632306192409.

208 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0171.

209 https://home-affairs.ec.europa.eu/policies/internal-security/child-sexual-abuse/eu-strategy-more-effective-fight-against-child-sexual-abuse_en.

210 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0608.

211 https://home-affairs.ec.europa.eu/policies/migration-and-asylum/new-pact-migration-and-asylum_en.

212 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0277.

213 https://oceans-and-fisheries.ec.europa.eu/ocean/blue-economy/other-sectors/maritime-security-strategy_en

214 https://oceans-and-fisheries.ec.europa.eu/document/download/57c32475-1dea-47d7-8bcb-92d8a2d0f056_en?filename=2018-06-26-eumss-revised-action-plan_en.pdf.

215 https://climate.ec.europa.eu/eu-action/adaptation-climate-change/eu-adaptation-strategy_en.

216 https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism_en.

217 https://climate.ec.europa.eu/eu-action/adaptation-climate-change/eu-adaptation-strategy_en.

Cybersecurity" (CS) contributes to the implementation of the digital and privacy policies of the Union, the EU Cybersecurity Act[218], and the EU Cybersecurity Strategy[219] by supporting digital innovation while preserving privacy, security, safety, and ethical standards.

Contributions to the United Nation's Sustainable Development Goals

An explanation of the methodological part of assigning SDGs to each Cluster's projects is provided in Annex 3.

Across the analysed clusters, SDG contributions vary but reflect common emphases. As regards CL1, we see that its actions prioritise and reflect global health (SDG3), CL2 focused on peace and justice (SDG16) and sustainable cities (SDG11), while Cluster 3 emphasises peace, justice, and infrastructure (SDG16, SDG9). Our analysis shows that SDG16 consistently garners significant attention across all three clusters, highlighting a **shared commitment to promoting peace and strong institutions.**

In terms of contributions attributed to each SDG, we found that for CL1, the largest share of contributions was dedicated to SDG3 (85.8%), compared to 76.0% of contributions in SC1. SDG16 received the largest share of EU contributions (35.7%) under CL2, while SDG16 received the largest share of EU contributions (37.7%) under CL3.

7.6.2.1. KIP 5: Delivering benefits & impact via R&I missions

The progress towards KIP 5 focuses on programme-level monitoring that aggregates key achievements across R&I missions. As noted in the Commission Staff Working Document on Evidence Framework on monitoring and evaluation of Horizon Europe, the indicator is currently under development following the launch of the EU Missions at the end of 2021. The short-term indicator focuses on **outputs in Cancer Mission** – *"Cancer: working with Europe's Beating Cancer Plan to improve the lives of more than 3 million people by 2030 through prevention, cure and solutions to live longer and better".*

Overall, the results of the Cancer Mission are on the way to producing the outputs. As noted in the previous section, *Effectiveness in achieving prescribed objectives*, Cancer Mission has ongoing projects for all of its specific and operational objectives. The expected outcomes of Cancer Mission bring value to the societal impacts[220]:

- **Prevent what is preventable through screening and early detection;**
- **Optimise diagnostics and treatment** with the result of Comprehensive Cancer Centres;
- **Support quality of life**, where the blueprint development of the European Cancer Patient Digital Centre (EDCPC) was launched.

The external survey performed as part of this Missions' assessment revealed that **59.0% of respondents strongly agree or agree that the Mission is progressing in line with its**

218 https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-act.

219 https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-strategy.

220 EU Missions two years on: An assessment of progress in shaping the future we want and reporting on the review of Mission Areas and areas for institutionalised partnerships based on Articles 185 and 187 TFEU, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2023:457:FIN, page 40.

implementation plan. Furthermore, there is a strong belief (by 47.0% of respondents) that the mission's main objective[221] to improve the lives of 3 million people is achievable by 2030, and 87.0% of respondents also think it is likely to create added value compared to existing initiatives or instruments (81.0%). The main **obstacles for beneficiaries were the timing of the calls** and **the rush to submit the proposals** (the first call was too late, and the second call was too close to the first one). In addition, the respondents to the external survey mentioned that the engagement of **national players could be improved.**

7.6.2.2. KIP 6: Strengthening the uptake of R&I in society

The strengthening of the uptake of R&I society aims to involve the citizens and civil society in the research process, contributing to building a society based on knowledge and education and deepening the relationship between science/innovation and society. The short-term indicator for KIP 6 is related to co-creation: the number and share of projects funded by the Programme where Union citizens and end users contribute to the co-creation of R&I content.

Cluster 1

Overall, the co-creation is not measured at this stage of the study as data for that is not available yet; however, **the co-creation in Cluster 1 is most visible in Cancer Mission,** and its importance is underlined in Horizon Europe beneficiaries survey conducted in May-July 2023.

As indicated in the interview with EU Officials for the Case Study on Cancer Mission, the **creation of a mission was a novelty not only due to its cross-thematic aspect with other EU Missions but also due to its structure.** Cancer Mission **closely collaborates with Member States' governments and engages with citizens, allowing good collaboration in public health questions across all EU countries.** In addition, the Cancer Mission mobilises all actors, including Member States, to create an impact. For instance, Horizon Europe Missions Work Programme 2021-2022 indicated a call for influence, including establishing national cancer mission hubs and creating a network to support the Mission on Cancer. Cancer Mission includes cancer patients, survivors, their families, and caregivers through dialogue and provides citizens with feedback on proposed initiatives by placing citizens at the centre of R&I and policy.

Moreover, the **beneficiaries survey conducted in May-July 2023 emphasised the importance of co-creation[222]**. The respondents listed that the **networking opportunities**, **open science**, **industry-academia collaborative research**, joint laboratories and mixed teams, and **collaboration with international (non-EU country) partners** would uptake their research. A **significant proportion of projects under Cluster 1 are also actively considering involving citizens and end users in developing their research and innovation initiatives.** As many as 62.3% of survey respondents plan to engage citizens/citizen representatives/end users in the co-creation of the R&I content of their project. The activities that they are planning to engage citizens/end users in their project include co-

221 by 2030, the lives of 3 million people should be improved through prevention, cure and for those affected by cancer including their families, to live longer and better.

222 Co-creation: activities involving citizens and/or end users directly in the development of new knowledge or innovation, for instance through citizen science and user-led innovation.

design[223], co-creation[224], and co-assessment[225]. **The project's engagement of citizens and end users through co-design, co-creation, and co-assessment activities reflects a commitment to inclusivity, transparency, and responsiveness to societal needs and expectations.**

The success story related to cancer is the EU-TOPIA project presented in the box below.

EU-TOPIA*, towards improved screening for breast, cervical and colorectal cancer in all of Europe*[226] project, has given all EU Member States the capacity to evaluate the performance of public breast, cervical and colorectal cancer-screening programmes. The EU-TOPIA partners have been able to identify ways to optimise screening approaches, taking into account country-specific differences, challenges and stakeholders. The EU-TOPIA partners now plan to expand their approach to address screening programmes for other diseases, including lung, prostate and gastric cancers.

Cluster 2

CL2 plays a key role in addressing some of the most pressing societal challenges of our time. Through its focus on democracy, culture, creativity, and an Inclusive Society, it plays a crucial role in promoting social inclusion, sustainable development, and democratic governance.

Compared to the Horizon 2020 – SC6 programme, we observe **a shift in the R&I activities deployed by projects to engage** non-academic stakeholders and target groups, **especially civil society.** This shift is observed in two different trends (CS7).

- First, non-academic target groups and stakeholders are involved in R&I activities from the early stage of the project implementation, not at the finalisation stage, as was often reported in SC6 actions[227];
- Secondly, projects under Destination democracy have introduced inclusive and diverse ways and tools with the overarching goal of reaching out to relevant stakeholders. In this case, they are participating as direct recipients of project activities (such as summer schools, online courses, citizen juries, and fellowships). They also provide feedback to consortia (via interviews and on-site and online public events) that, later on, will feed into project results and concrete policy recommendations.

Cluster 3

In the case of Societal Challenge 7 (SC7) of Horizon 2020, beneficiaries considered that it takes a significant time for the research results to reach real-life implementation in the security domain, and the impact of European security research depends on the level of

223 Co-design: activities such as workshops, focus groups or other means to develop R&I agendas, roadmaps and policies, including deep discussion on the implications, the ethics, the benefits and the challenges related to R&I courses of action or technology development.

224 Co-creation: activities involving citizens and/or end-users directly in the development of new knowledge or innovation, for instance through citizen science and user-led innovation.

225 Co-assessment: activities, such as assisting in the monitoring, evaluation and feedback to governance of a project.

226 https://cordis.europa.eu/project/id/634753.

227 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K., et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe: final report: phase 1, Denham, S. (editor), Publications Office of the European Union, 2023.

technological sophistication of practitioners or the set of tools available within their organisations. Beneficiaries also considered that the scalability of research outputs to other industries and use cases promoted innovation uptake, as well as the length of European research actions. Regarding the fulfilment of project KPIs, defining and measuring them were considered difficult by the SC7 beneficiaries, particularly concerning quantitative KPIs. The KPIs defined at the proposal stage often were not applicable once the action commenced[228]. Due to the early phase of Cluster 3 actions under analysis, beneficiaries interviewed (CS10, CS11 and CS12) did not report issues or concerns related to achievement of project KPIs. The Cluster 3 actions have, however, faced some challenges regarding end user engagement. End user representatives often change during the lifecycle of action since persons move into other positions within the public bodies. This creates **difficulties in ensuring professional end user contributions supporting innovation uptake throughout the action lifecycle.** A personnel change in an end user organisation can decrease the level of professionalism in project work as the new replacements can be junior and less experienced colleagues.

Depending on the thematic area addressed, Cluster 3 actions aim to increase the impact of security research in multiple ways in terms of capability requirements being met and new solutions being used by security practitioners. In Destination on "disaster-resilient society for Europe" (DRS), actions aim at meeting the practitioners' capability requirements by developing, for example, climate change adaptation models and more systematic and comprehensive risk management solutions to improve societal planning, societal resilience, and business continuity. Together with these, the actions enhance practitioners' awareness of expected extreme events and enable them to use advanced intelligence systems without having a strong technical background in natural sciences. In Destination on "better protection of the EU and its citizens against crime and terrorism" (FCT), actions enhance practitioner capabilities in detecting and identifying criminal activities and reducing the reaction time to them. In Destination on "increased cybersecurity" (CS), end user needs are derived from document analysis and meetings with the stakeholders, among others. The end users and cybersecurity experts participate together in the extraction of system requirements and evaluation and validation of solutions and components developed.

In the box below, we describe Cluster 3 actions that excel in stakeholder engagement, contributing to security solutions that serve the needs of end users and practitioners, as well as fulfilling their capability requirements.

SUNRISE[1] facilitates collaboration between European critical infrastructure providers to share best practices towards the development of societal resilience against future pandemic scenarios. The action engages numerous critical infrastructure providers, critical infrastructure operators, social sciences and humanities experts, epidemiology experts, climate extremes experts, security researchers and software developers, forming a novel resilience-focused working group with at least 100 members.
C2IMPRESS[1] implements a novel "place and people"-centred integrated multi-hazard risk and resilience assessment framework. The action applies a suite of citizen engagement technologies and tools, as well as novel co-design and co-creation approaches, to provide a better understanding and public awareness of multi-hazard risks, associated multidimensional impacts, vulnerabilities, and resilience of extreme weather events.
SAFE-CITIES[1] aims to protect public spaces through the development of a security and vulnerability assessment framework supported by an interactive platform that enables the

228 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

simulation of complex scenarios. The platform considers crowd behaviour and different attack types in any space in realistic 3D virtual environments, facilitating the performance of comprehensive and dynamic risk and vulnerability assessments. The platform is tested by practitioners in four use cases within five EU Member States.

7.6.3. Short-term technological/innovation-related outputs

The patent analysis for all three clusters is not available at this stage of the study. Patent analysis is presented in the Innovative Europe study final report, Annex 6, Section 1.5; however, the data are only presented at the Pillar level. The patent analysis involved mapping Horizon Europe beneficiaries and non-funded applicants to PATSTAT, identifying the number and types of patents held by each group. Innovation Radar data are also not available at this early stage of the study. Thus, the analysis of the technological/innovation-related outputs remains limited.

Cluster 1

The main results and expected outcomes towards technological and economic impacts are visible in Cluster 1, including the results coming from the EIT Health evaluation, which indicated the **increasing number of new jobs created and the support of start-ups and scale-ups.** The data for the patents are not available at the time of reporting.

EIT Health is anticipated to play a crucial role in providing the basis for further job creation. Specifically, it is urging major technology companies and corporations to support a novel initiative aimed at alleviating the shortage of skilled professionals in the healthcare sector[229]. The establishment of the *WorkInHealth Foundation* by EIT Health signifies a proactive effort to identify new talent to meet the growing demand for a digital and data-driven workforce over the next decade. With the pandemic accelerating the shift towards Artificial Intelligence, it is estimated that over 120 000 new positions could emerge solely in the pharmaceutical and medical manufacturing sectors. Consequently, EIT Health is actively seeking sponsors for a EUR 2 million fund intended to facilitate the attraction of new hires, the upskilling of existing personnel, and the enhancement of the healthcare sector's appeal to recent graduates.

Furthermore, EIT Health has been **highly effective in supporting start-ups and scale-ups operating in the healthcare sector.** The EIT Health Business Plan 2021-2022 noted that the future focus will be on attracting considerable investment (EUR 1.3 billion in 2021-2027) with fewer start-ups[230]. EIT Health's final report of activities in 2021-2022 indicates that EIT Health is the most effective in the area of start-up and scale-up support. It continuously improves in terms of support for start-ups and scale-ups and investments attracted by EIT Health-supported start-ups and scale-ups. In total, EIT Health-supported 1 933 start-ups and scale-ups, which attracted EUR 1 411 million in investments between 2017 and 2022. As stated in Case Study 3 on EIT Health's contributions to the fight against chronic and multi-morbid conditions, “Over 25.0% of EIT Health-supported start-ups and scale-ups indicated

229 https://eithealth.eu/news-article/eit-health-calls-on-tech-giants-and-corporates-to-back-new-initiative-to-address-talent-crunch-in-healthcare/.

230 Business Plan EIT Health 2021-2022, https://eithealth.eu/wp-content/uploads/2022/03/EIT_Health_Business_Plan_per_se_2021-2022.pdf.

that citizens and patients seeking solutions for multi-morbid and chronic conditions greatly impacted their outputs[231]."
Regarding innovations, the interviews conducted in CS3: on EIT Health Contributions in the Fight Against Chronic and Multi-Morbid Conditions revealed that a majority of project leaders believe that they address a void in the European healthcare market. They do so by providing support to both start-ups and promising innovation projects at a stage often overlooked by investors. Various reasons were cited for this perspective, including the unique characteristics of the healthcare sector, the comparatively less advanced state of healthcare innovation in Europe compared to other developed nations, and challenges associated with translating groundbreaking research into marketable healthcare innovations.

With regard to patents, the Horizon 2020 interim report noted that 14 patents were filed at the time of reporting (3 years into the programme). However, in Horizon Europe, the patent data are not available at this stage of the study. This could be explained by the delayed start of the Horizon Europe programme, which was noted in several interviews with the EC officials. The beneficiaries survey conducted in May-July 2023 revealed that 19.0% of respondents selected patents as the outputs that will be created due to Horizon Europe projects within Cluster 1.

In addition to these findings, the success achieved by investing in research and innovation, which drives growth through new ideas, is highlighted in a success story. This story began with Horizon 2020 and is continuing into Horizon Europe[232]: **INTENS[233] – A revolutionary way of treating Short Bowel Syndrome**

The story is about a pioneering approach to treating Short Bowel Syndrome (SBS), developed by the EU-funded INTENS project, which aims to create a functional small bowel using the patient's own cells or tissue. SBS, a rare disorder affecting about 13 000 people in the European Union, results from an inadequately functioning small intestine and lacks effective treatment options. The INTENS project, led by Professor Paolo De Coppi, seeks to overcome the challenges of current SBS treatments, such as the high risk and low availability of organ transplants, by using autologous tissue engineering. This method uses biomaterials from patients to engineer living tissue that could replace the damaged parts of the small intestine. Remarkably, the project has shown promising results, including the successful development of autologous jejunal mucosal grafts and the potential use of the colon as scaffolding for intestinal engineering. These innovations represent a significant advancement in SBS treatment, offering hope for improved survival rates and quality of life for sufferers. The success of this research has been recognised in significant medical journals, highlighting its impact on the field and paving the way for more accessible and effective treatments for SBS patients. The project's outcomes are now moving towards commercialisation and clinical application.

Cluster 2

The Evaluation study of the European framework programmes for research and innovation for a Resilient Europe (phase 1) found that '*several SC6 projects have produced important*

231 Deloitte. 7-Year Review of 2nd Wave of KICs: EIT Health. Final Report. March 2022. https://eit.europa.eu/library/7-year-review-2nd-wave-kics-eit-health-final-report.

232 https://projects.research-and-innovation.ec.europa.eu/en/projects/success-stories/all/revolutionary-way-treating-short-bowel-syndrome.

233 Grant agreement ID: 668294.

technology-related results and offered innovative solutions'[234]. For CL2, **it is still too premature to draw any robust conclusions** for two reasons. First, projects have recently started and are currently generating outputs, and second, it will take time to assess any final results produced by CL2 projects. **That said**, feedback received from the survey provides preliminary insights regarding technology and innovation outputs. According to the survey, **20.0% of the CL2 respondents** (equivalent to 67 CL2 projects in total (2021 and 2022 calls), plan **their R&I activities to include commercialisation activities** (i.e. standardisation and patents, spin-offs or start-up companies and open licensing practices).

This finding could lead us to two considerations. The first one is that **the increase in the share of non-academic participants** in CL2 consortia (CS8; CS9) **is prompting a positive trend towards projects' results for commercial purposes.** The second consideration is also related to the fact that the **two CL2 WPs** (namely 2021-2022 and 2023-2024) **have integrated** several **call topics that seek,** among others, **digital solutions and cutting-edge technologies**.

Table 23 indicates CL2 call topics that required proposals to include digital solutions and innovative technologies. Besides the call topics in Table 23, the majority of the calls have invited CL2 consortia to integrate digital solutions and skills in their proposals, such as digitalisation of political participation, government and society; digital tools for civic participation; new digital media; digital literacy and skills; as well as exploring the applications of big data, algorithms, and AI-based technologies, among others.

234 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

Table 23. CL2 call topics in the field of digital technologies

	WP 2021-2022	WP 2023-2024
Destination 1 Democracy and governance	Artificial Intelligence, big data and democracy	Multilevel governance in times of digital and climate transition
	Media for democracy – democratic media	Computational Social Science approaches in research on democracy
	Politics and the impact of online social networks and new media	Digital democracy
		Culture, the arts and cultural spaces for democratic participation and political expression, online and offline
Destination 2 Cultural heritage and cultural and creative industries	Preserving and enhancing cultural heritage with advanced digital technologies	Advanced technologies for remote monitoring of heritage monuments and artefacts
	Traditional crafts for the future: a new approach	Re-visiting the digitisation of cultural heritage: What, how and why?
	Increase the potential of the international competitiveness of the European filmmaking industry	A world-leading European video game innovation system
	Protection of artefacts and cultural goods from anthropogenic threats	Leverage the digital transition for competitive European cultural and creative industries
	Games and culture shaping our society	
Destination 3 Social and economic transformations	Conditions for the successful development of skills matched to needs	Tackling inequalities in the green and digital transitions
	Addressing poor learning outcomes in basic skills and early school leaving at national, regional and local level in Europe	Beyond the horizon: A human-friendly deployment of Artificial Intelligence and related technologies
	Integration of emerging new technologies into education and training	Assessing and strengthening the complementarity between new technologies and human skills
	Conditions for the successful development of skills matched to needs	

Source: Compiled by the study team based on call topics of CL2 WPs 2021-2022 and 2023-2024.

Cluster 3

While the patent analysis data and Innovation Radar data are not available for reporting, the innovations, reflecting the short-term outputs of leveraging investments in R&I and generating innovation-based growth, could be reflected in the success stories. While those success stories started in Horizon 2020, they continue to Horizon Europe.

RESPONDRONE[235] – Drone-based platform delivers critical support to first responders
In disaster situations, emergency teams can be hampered by confusion and a lack of communication. To address this, EU-funded researchers have developed new drone-based technology that provides situational awareness in real-time. This will give first responders valuable information that can save lives. Unmanned aircraft systems (UAS) technology can aid emergency management in complementing existing systems used in first-response

235 Grant agreement ID: 833717.

missions. The fleet of UAS will provide enhanced capabilities to support assessment missions, search and rescue operations, and forest firefighting by simplifying operations for first responders and thus making first-response operations more efficient. The platform will be designed to provide relevant information in real-time to all involved stakeholders using a cloud-based system, supporting on-time decision-making and operations management.

SUCCESS[236] – Securing Critical Energy Infrastructures
The SUCCESS project is a remarkable success story, addressing the essential human need for security by safeguarding critical infrastructures like power and water supplies. Focused on the transformation of modern infrastructures into Cyber-Physical Infrastructures, the project employs a security-by-design approach. It introduces innovative elements, including the New-generation Open Real-time smart Meter (NORM) and a cloud-based, double virtualisation system. SUCCESS provides clear guidelines for designing energy systems and networks, incorporating countermeasures and open-source software for Next Generation open Real-time smart Meters and Security Monitoring Centres. By conducting trials in Ireland, Italy, and Romania, the project not only enhances security but also opens new economic opportunities in the energy and ICT sectors. SUCCESS is a testament to successful collaboration between research and commercial organisations, playing a pivotal role in securing Europe's critical infrastructures and contributing to the ongoing transformation of the power sector.

7.7. International cooperation

This section presents the international cooperation analysis. It is important to know that in all Clusters, decreased participation in Associated Countries is largely impacted by changes in the UK's legal status post-Brexit negotiations. In the Horizon 2020 programme, the UK was an Associated Country, but as of November 2023, it is classified as a Third Country under Horizon Europe.

As highlighted in the bibliometric analysis (see Annex 3), the participation of the UK in Horizon Europe's actions is important not only for openness but also for the analysis clearly showing the effect of Brexit on the funded topics under Horizon 2020. **The UK has been an integral part of the European research area and environment, both strengthening topics that are of importance to the EU-27 and the EC and relying on EU research to fill in domestic gaps**. Therefore, the re-admission of the UK as an Associate member of Horizon Europe has been a necessary step for both sides.

Cluster 1

International cooperation plays a significant role in CL1, as reflected in the findings of EC administrative and monitoring data. **The participation of Third Countries in CL1 demonstrates an increase (15.6%) compared to the predecessor (SC1, 6.8%), according to the results of the Horizon 2020 interim report.** The growth is also noticed in the EU contributions to Third Countries, which increased from 2.8% in SC1 (mid-term) to 5.8% in CL1. This growth aligns with CL1's strategic agenda, actively seeking synergies with regions such as Africa. The African Union – European Union Agenda emphasises Public Health as a priority, aiming to leverage emerging technologies for resilient public health systems. Notably, the AU-EU partnership focuses on technology transfer, vaccine development, and innovative methods for antimicrobial resistance (AMR) pathogens, showcasing a commitment to global health challenges. However, the increase in the participation of Third Countries and EU contributions should be interpreted cautiously.

236 Grant agreement ID: 700416.

Additionally, the growth could be explained by the alterations in the UK's legal status following the Brexit negotiations.

For detailed information on international cooperation figures, please refer to Annex 1, effectiveness Section 1.4.5, which provides comprehensive data on participation and budget allocations for Associated and Third Countries in CL1 actions.

Cluster 2

Cooperation with international partners under CL2 is highly relevant on issues pertaining to multilateral governance, employment and social aspects of changing trade patterns and value chains, migration drivers and governance, democratic governance concerning cultural diversity, as well as crisis management and democracy promotion within the EU's neighbouring regions[237]. Cluster's 2 Work Programmes remain open to non-Associated Third Countries for all Research and Innovation Action (RIA) and Innovation Action (IA) topics. **In many call topics, international cooperation is encouraged in CL2 to achieve the expected outcomes** from projects. The destination Democracy, for instance, has a significant participation rate of presence in Third Countries, while in many topics, international cooperation is strongly encouraged. In this way, the EU's role in supporting democracy, human rights and the rule of law beyond its borders is crucial. According to the insights gathered from the Horizon Europe survey, nearly half of CL2 respondents (47.6%) believe that collaborating with international partners significantly contributes to the adoption of research and innovation outcomes originating from their projects.

A detailed analysis of the involvement and financial allocation for Associated and Third Countries within CL2 is presented in the Annex. Significantly, **there was an increase in the participation of Third Countries from 7.4% in the SC6 mid-term evaluation of Horizon 2020 to 11.7% in CL2**. This shift can also be attributed to the change in the UK's legal status post-Brexit, as discussed in the Annex regarding international cooperation.

Cluster 3

Engaging in security research within CL3 requires a nuanced approach to international collaboration, carefully balancing the sharing of information with global allies while safeguarding the EU's security interests and strategic independence. This is particularly emphasised in the Destination 'A Disaster-Resilient Society for Europe,' where extensive collaboration with Third Countries is highly encouraged, recognising the cross-border nature of various threats, including those linked to climate change. The focus on advancing technologies for first responders underscores the importance of international cooperation in addressing complex challenges.

In other thematic areas of CL3, such as protecting against crime and terrorism, border management, infrastructure resilience, and cybersecurity, international cooperation is approached cautiously due to its sensitive nature. Collaboration is explicitly encouraged only where appropriate and in support of ongoing collaborative activities. From the first Work Programme (2021-2022), 16 topics promoting international cooperation have been identified, resulting in a total contribution of EUR 91 million.

Refer to Annex 1, Section 1.4.4 for detailed information on participation and budget allocations for Associated and Third Countries in CL3 actions. In comparing CL3 to the SC7

237 https://www.eeas.europa.eu/sites/default/files/horizon_europe_strategic_plan_2021-2024.pdf.

mid-term results, both Associated Countries and Third Countries witnessed increased participation. The increase for Associated Countries was marginal (from 7.9% to 8.2%), while Third Countries experienced a substantial increase (from 0.9% to 6.3%). This significant change is primarily attributed, once again, to the shift in the UK's status, as explained more extensively in CL1. Regarding EU contributions, contributions to Associated Countries decreased in CL3 (from 6.3% in SC7 to 4.8% in CL3), while EU contributions to Third Countries increased by 0.5%.

7.8. Consideration of ethical aspects in health research

Cluster 1

Under Horizon Europe, ethical aspects of health research are embedded in the EU regulations (Horizon Europe Framework Programme). Article 19 states that actions carried out under the Programme shall comply with ethical principles and relevant Union, national and international law, including the Charter and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols[238].

The **Ethics Appraisal Procedure assesses and addresses the ethical dimension of activities funded under Horizon Europe, ensuring compliance with fundamental ethics principles**.

In terms of effectiveness, one significant change in the ethical aspects of health research in Horizon Europe was the shift towards risk-based and trust-based approaches. The Ethics Appraisal Process was reformed to focus on serious and/or complex ethics issues, leading to lightening the administrative burden for applicants and beneficiaries. A more comprehensive answer on the move towards the risk-based approach is elaborated in the Annex.

Moreover, another change was the delegation of Ethics Appraisal Processes from the Health directorate of DG RTD to the executive agency HaDEA. The unit HaDEA.A3 'Health Research' now handles the entire life cycle of projects funded under the Health Programme, from evaluation to grant management. This separation of implementation from the policy has allowed for more focused discussions within the HaDEA health unit, resulting in a clearer temporal split of the two Ethics Appraisal Process phases (screening and assessment) and improved consistency and communication.

The delegation **provided project officers with more opportunities to build expertise in ethics-related areas.** Notable differences from Horizon 2020 include the addition of “Artificial Intelligence” as an ethics issue, the removal of dual-use from the Ethics Issues Table, and a risk-based approach focusing on serious and complex cases. There is an increased focus on Artificial Intelligence in the latest Work Programmes, and progress has been made in guidance documents, including Ethics by Design and Ethics of Use Approaches for AI.

Provided data interpretation is based on a “snapshot” of active ethics information, and ongoing monitoring allows integration of new information. The data analysis part is provided in the Annex.

238 Horizon Europe Framework Programme Regulation 2021/695, https://eur-lex.europa.eu/eli/reg/2021/695/oj.

7.9. The matching investments of Clusters 1, 2, and 3

The assessment of financial leverage through matching investments unveils that all three Clusters are attracting leveraged funds. **In CL1, interim analysis reveals around EUR 791.9 million in matching investments, constituting about 25.0% of total project costs**. Compared with the predecessor SC1 at the end of Horizon 2020, positive alignment is noted in the direction of matching investments. **CL2 saw EUR 4.8 million (1.0% of total matching investments)** during the interim stage, differing from SC6, which displayed a higher share at 10.0% at the end of Horizon 2020. **CL3's matching investments have now reached EUR 42.1 million**, aligning with SC7's matching investments at the end of Horizon 2020. Detailed figures are outlined in Annex 1, Section 1.4.6 for a comprehensive comparison between Horizon Europe and its predecessors.

7.10. Impacts on building or reinforcing the EU autonomy from the perspective of Cluster 1,2 and 3

This question is understood as the EU's ability to lead the outstanding uptake in key strategic areas. Our analysis drew upon insights garnered from desk research, case studies, and interviews.

It is crucial to underscore that Horizon Europe does not have the primary goal of establishing or bolstering EU autonomy in specific strategic sectors. Nonetheless, the study team uncovered instances where the EU made noteworthy contributions to fortify, augment, harness, or enhance research and innovation through the assessed clusters' actions.

Cluster 1

CL1 contributes to reinforcing EU autonomy through various key areas focused on enhancing health and social well-being. As noted in the Horizon Europe Strategic Plan 2021-2024, the EU prioritises social cohesion, inclusiveness, and health improvement through initiatives like the European Pillar of Social Rights. It emphasises accessible and sustainable healthcare systems, including digital transformations, enabling citizens to access effective healthcare and participate in their well-being. Programmes like EU4Health aim to maintain the EU's status as the world's healthiest region and **leverage knowledge from Horizon Europe for the benefit of citizens and health systems**. Another example is the Digital Europe Programme and the European Cancer Imaging Initiative (EUCAIM) project. EUCAIM aims to advance cancer treatment and care by enhancing the innovation and deployment of digital technologies, enabling faster and more accurate clinical decisions, diagnostics, treatments, and predictive medicine for cancer patients. It seeks to centralise and make large datasets of cancer images and related clinical data across Europe accessible, improving research and innovation accessibility while adhering to high ethical, security, and data protection standards.

The initiative will create a user-friendly European infrastructure, linking diverse cancer image databases and resources for clinicians, researchers, and innovators. This will be accomplished through the EUCAIM project, which aims to establish a federated network of cancer image data across multiple countries, enhancing the interoperability and security of cancer data analysis. The project will support the development and deployment of Artificial Intelligence tools and clinical prediction models, significantly advancing personalised medicine and cancer diagnostics. Additionally, the initiative will facilitate real-life testing environments for AI solutions in cancer care, supported by European Digital Innovation Hubs, which will also offer services to digital solution users and providers.

As noted in the benchmark study on coronavirus research, **research into coronavirus remains a significant strategic focus for the EU, a commitment continuing from Horizon 2020 to Horizon Europe**. This includes investments in various areas such as open data sharing, dedicated research infrastructures for pandemic response, vaccine and therapeutics development, and ongoing data collection on COVID-19 and its evolving variants. The global experience with COVID-19 highlights the critical need for enhanced regional and worldwide surveillance and data exchange. This is vital not only for managing the current pandemic but also for monitoring new coronavirus strains and potential future pandemic-causing agents. Addressing the challenges associated with global data sharing suggests that facilitating open data sharing and surveillance for new coronavirus variants and other potential pathogens could be a strategic priority for the EU.

In the interview with an EC official, the concept of a “pipeline perspective” was highlighted as a key element in fostering a more self-reliant Europe. This perspective is particularly relevant in the context of product development. Taking antimicrobial resistance as an example, the process involves identifying new antimicrobials, conducting trials, and ultimately bringing them to market; a similar approach is applicable to diagnostics. The aim is to thoroughly understand and integrate this pipeline perspective to identify existing gaps. Consequently, when calls are launched, they are strategically designed to address these specific gaps, thereby streamlining the development process and reinforcing Europe's autonomy in these critical areas.

This approach is also being effectively applied in collaborations with external entities. Specifically, there is a close working relationship with colleagues from DG INTPA. For example, several projects are being developed under the Global Health EDCTP3 Joint Undertaking. This includes the Team Europe initiative focusing on vaccine production, which exemplifies the pipeline perspective in action. The goal here is to directly link the products being developed under the EDCTP, such as vaccines, with production facilities in sub-Saharan Africa. This strategy ensures a smooth transition of products through the development pipeline right up to their eventual uptake and use.

Furthermore, identifying appropriate financial instruments is critical in this process. Initiatives like the Innovative Health Initiative, which is a partnership with the industry, and the InvestEU Initiative, in collaboration with the European Investment Bank (EIB), play a pivotal role. These instruments support the pipeline perspective by providing necessary funding and investment, thereby facilitating the development and dissemination of health products like vaccines, especially in regions like sub-Saharan Africa. This integrated approach, combining product development with strategic partnerships and financial tools, is indicative of the comprehensive strategy being pursued to enhance Europe's autonomy and global health impact. Additionally, as highlighted in the Horizon Europe Strategic Plan 2021-2024, there is **an emphasis on digital innovation, research, and personalised healthcare services to improve health outcomes and industry sustainability**. CL1 underscores the significance of research and innovation while engaging various stakeholders such as researchers, healthcare providers, patients, and regulatory bodies to implement innovative solutions effectively. Furthermore, it promotes synergies between EU health policies, programmes, infrastructures, and other regional health initiatives to maximise EU investments and attain health-related goals.

Cluster 2

CL2 is fully in line with the European Democracy action plan, seeking to **empower citizens and build more resilient democracies across the EU**. The EU continues to be perceived as a strong democracy supporter beyond its borders.

Europe has the potential to position itself as a protector of human rights in the digital era. CL2 research and innovation activities can play a pivotal role in Europe's digital landscape. Social Sciences and Humanities have the potential **to place the EU at the forefront of harmonising digital technologies and to align with fundamental rights and civil liberties.** Research undertaken under CL2 can serve as a powerful instrument in addressing and mitigating gender and racial biases in AI.

In addition, CL2 supports the transformative potential of R&I initiatives in driving sustainable innovation, **preserving cultural heritage, and cultivating a sense of European identity**. Through digital technologies, the cutting-edge digitisation of digital heritage assets of CL2 makes the cultural and creative sector more sustainable and inclusive to citizens.

Cluster 3

In Europe, the cybersecurity domain is diverse and fragmented in terms of markets, regulation and research initiatives. Based on the interviews with policy officers and beneficiaries (CS12), the cybersecurity research funded under the Cluster 3 Work Programmes plays a key role in the domain as it facilitates **collaboration between European actors to create pathways towards EU autonomy and technological sovereignty in cybersecurity in the global perspective**. In this respect, the beneficiaries emphasise that the project design guided by the requirements of end users and the selection of partners based on their expertise and capability are critical success factors for Cluster 3 cybersecurity actions. Moreover, the increasing size and diversity of research consortia call for high-quality communication skills for productive interactions between partners and other projects within Horizon Europe and beyond.

7.11. Feedback to policy

Feedback to policy (F2P) is the pipeline by which the Executive Agencies of the Commission (REA and HaDEA in Pillar 2) connect project results to policymaking goals. The pursuit of an efficient F2P framework is currently ongoing, and due to the strategies evolving from year to year, comprehensive and comparable quantitative data are not yet available. As a result, this section focuses on discussing the principal findings. It covers the major changes from 2020-2022 and progress in F2P processes, their actual impact observed on policy formulation, and the significant factors that either facilitated or hindered these developments and impacts.
Prior to 2021, F2P activities were dispersed across different task forces within the Executive Agencies. REA's Policy Feedback plans in H2020 were specific to each programme part, and although most of the goals were on track by the end of 2019[239], the major drawback of this approach was that it was not streamlined. In 2021, REA initiated a unified Feedback Policy Framework for the Research and Innovation sector, refining it in 2022 to align policy feedback more directly with contemporary policy demands such as climate change, sustainability, and food security. After CHAFEA's dissolution, HaDEA adopted this framework in late 2021, leading to the creation of specific annual plans in March 2022. Altogether 70.0% of the plan was already implemented by the release of the 2022 Annual Activity Report. The new efforts mark a notable improvement from Horizon 2020's F2P strategies. Recognising this, the EC

239 Annual Activity report 2019. REA. For example, all 23 goals in the Policy Feedback plan for Safeguarding Secure Society (Cluster 3's predecessor) were indicated as "on track".

is set to bolster the F2P efforts with a 3.0% staff increase for EAs over the 2021-2027 period, emphasising a strategic shift towards a more comprehensive F2P methodology[240].

As a result of the efforts of the last 2 years, several key F2P activities have taken place: in 2022, REA held its third Projects to Policy Seminar, highlighting 45 newly funded projects from 2020 proposals for Cluster 3, thereby providing policymakers with a direct line to the latest advancements in civil security. In November 2021, REA introduced the Knowledge Network to streamline dissemination activities for its projects' results, which includes the Horizon Results Booster and the Cordis Results Pack.

Much like REA, HaDEA also implemented project clustering by working with DG RTD on CL1 projects. In 2022, HaDEA introduced a thematic cluster on the health implications of climate change[241], promoting inter-project collaboration, joint workshops, and efficient F2P sharing. This clustering approach, which packages information about the results of projects with similar topics under one umbrella, streamlines the flow of knowledge from the EA into the Commission. In some grant agreements, cluster-specific deliverables, such as participation in joint workshops and best-practice guidelines, have been introduced, signalling a promising shift towards enhancing F2P's efficiency and efficacy.

The effectiveness of the F2P process strongly depends on whether existing or newly established communication channels between the involved DG and EA employees are of sufficient quality to foster an informed, collaborative environment. Existing informal work relationships between the DG and EA employees and the secondment of staff from parent DGs to agencies are key drivers. Dialogue between DGs and EAs, which takes place earlier in the development of the Work Programmes, further enhances mutual understanding and the goals of Policy Feedback activities. The main hindering factors include the high coordination effort due to the many stakeholders involved in F2P and the allocation of insufficient resources. Additionally, prioritising projects and outputs for improved policy proposals requires consistent and reliable communication between EAs and DGs. The HE FP has amplified its F2P focus, with both REA and HaDEA actively engaging in numerous F2P initiatives. Yet, constraints like limited resources and varying beneficiary engagement levels can obstruct optimal collaboration. While the F2P approach under Horizon Europe shows promise, its full impact on policymaking awaits a more extensive assessment.

240 "Delegation of EU Programmes to Executive Agencies for 2021 – 2027", (2021) https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/BUDG/DV/2021/02-01/Point10-Presentation-DelegationPackage_EN.pdf.

241 Annual Activity report 2022. HaDEA.

8. EU added value

Key findings on EU added value:

The EU added value of CL1, CL2, and CL3 lies in collaborative research, breakthrough technologies, multidisciplinary approaches and financial support that frequently surpasses other national and EU programmes.

- **CL1 primary EU added value lies in collaborative research**, **breakthrough health-related** technologies and **treatments**, improvements in the health and **well-being of citizens**, transnational collaboration among various actors and **frontier health research** in areas including disease prevention, treatment and public health research.
- The **health partnerships**, namely THCS, ERA4Health, PARC, GH EDCTP3 JU, IHI, and EIT Health, h**ave brought added value to the EU's health and research sectors**. This added value has been achieved through cross-border collaborations, advanced clinical studies, capacity building in Africa, and the bridging of public and private funding.
- **CL2** is widely **acknowledged** by its beneficiaries thanks to its **cross-sectoral collaboration, multidisciplinary approach, and geographic diversity, while its financial support often exceeds that of other programmes** at national and EU levels. Another explicit EU added value stems from the fact that SSH research outside of Horizon Europe often lacks in terms of consortium size, project scope and duration.
- The **EU added value in CL3** is demonstrated by **platforms** (i.e. CERIS), where **facilitated collaboration and knowledge exchange are much broader than under national funding mechanisms.** In addition, the **EU added value of (cyber-) security research funded under CL3 is essential in Europe's fragmented (cyber-) security landscape**, as it promotes collaboration among European actors, paving the way for EU Open Strategic Autonomy in global (cyber-)security.

European added value denotes the imperative for Europe's intervention, **signifying value beyond what individual Member States generate**. This added value can arise from various factors, such as improved coordination, enhanced legal certainty, increased efficiency, or synergistic effects. It signifies the action's relevance and importance across all of Europe, presenting models and mechanisms applicable not only on a regional or national scale but also at the European Union level. The findings are categorised into the following themes: health research (incl. EU added value of Cluster 1 and the assessed partnerships), social science research and security research.

8.1. EU added value to health research

8.1.1. EU added value of Cluster 1

CL1's primary EU added value lies in its **concerted efforts to foster innovation, research, and collaboration in the health sector across Europe**.

- **Promotion of collaborative research**: CL1 acts as a catalyst for fostering collaboration among researchers, institutions, and industries throughout the EU. By pooling expertise and resources from various countries, it facilitates cross-border cooperation in tackling health challenges. As discussed in the effectiveness section on international cooperation, the efforts to collaborate with and involve Third Countries have seen a positive shift in making CL1 more open.

- **Advancements in health R&I:** CL1 plays a pivotal role in advancing R&I in health-related fields, supporting cutting-edge advancements in health technologies, treatments, and methodologies. The cluster's focus on strategic R&D aims to drive scientific excellence and societal impact within the EU and globally.
- **Addressing global challenges:** CL1 prioritises addressing global health challenges, promoting health equity, and contributing to economic growth through its research endeavours. This approach aligns with the EU's objective of improving the health and well-being of its citizens while fostering a competitive and innovative health industry.
- **Transnational collaboration**: By supporting transnational collaboration among Member States, businesses, foundations, and researchers, CL1 encourages joint efforts in tackling health-related issues that span beyond national boundaries.
- **Strategic focus on key health domains:** The CL1's strategic approach targets fundamental health areas such as disease prevention, treatment, health systems, and public health research. This targeted approach ensures that EU resources are allocated efficiently to make a significant impact on critical health challenges.

8.1.2. EU added value of the assessed partnerships

The assessed partnerships, namely, Transforming Health and Care Systems (THCS), ERA4Health, Partnership for the Assessment of Risks from Chemicals (PARC), Global Health EDCTP3 Joint Undertaking (GH EDCTP3 JU), Innovative Health Initiative (IHI), and EIT Health, offer **distinct EU added value in fostering collaborative innovation across health and research domains.**

THCS facilitates cross-border R&I networks, serving as a nexus for health and care system researchers and enhancing regional collaborations. For ERA4Health, its strategic resource pooling and focus on multinational clinical studies elevate Europe's health research stature, which is evident in initiatives like **CARDINNOV** targeting cardiovascular disease and HealthEquity addressing disadvantaged groups.

PARC embodies EU added value through efficient resource utilisation and knowledge transfer among national public organisations, bolstered by National Hubs fostering alignment with national activities. However, funding limitations present challenges for some countries, especially those lacking infrastructure for chemical risk assessment.

GH EDCTP3 JU stands out for advancing African-European partnerships, emphasising capacity building, vaccine development, and addressing neglected diseases in sub-Saharan Africa. It aims to generate high-quality data, inform policy, and prepare African nations for emerging infections and health policy implementation.

IHI extends health research by collaborating with influential life science associations, enhancing interdisciplinary R&D across Europe. Similarly, **EIT Health excels in cross-sector collaborations.** For example, the Venture Center of Excellence (VCoE) notably bridges public and private funding, exemplified by initiatives such as the Health Emergency Response Authority (HERA). This collaboration strengthens the EU's response to health emergencies, aligning closely with the EU objectives.

Although it is too early to specify any specific success stories, the examples below of European Partnership projects and initiatives propose promising results that could demonstrate the added value of partnerships for the EU.

- **CARDINNOV**[242] – aims to provide significant EU added value through its focus on identifying integrative approaches at molecular and cellular levels, particularly targeting poorly understood mechanisms like inflammatory reactions, amyloid accumulation, endogenous repair mechanisms, thromboembolism, macrovascular compartmental issues, and the autonomous nervous system.
- **Co-designing new solutions to transform health and care systems**[243] **–** this THCS project will bring together stakeholders and create synergies by coordinating research and innovation actions. The project will facilitate the digitisation of health and care services, support the transformation of health and care systems, and generate new knowledge and scientific evidence.
- **Venture Center of Excellence (VCoE)**[244] – EIT Health, in partnership with the European Investment Fund (EIF), operates the VCoE, a public-private co-investment programme to empower finance for European health SMEs.

Overall, these partnerships collectively amplify Europe's health research landscape, fostering innovation, addressing critical health challenges, and positioning the EU as a leader in interdisciplinary and sustainable health R&D. For more information on each partnership, please refer to their forthcoming individual evaluation reports, the co-funded partnerships are covered in Annex 6.

8.2. EU added value to culture, creativity and Inclusive Society

Projects founded under Cluster 2 promote numerous benefits and opportunities for its beneficiaries (CS8; CS9). Based on results received from the online survey of Horizon Europe beneficiaries (May-July 2023), **85.0% of respondents** either strongly agree or rather agree that Cluster 2 reinforces **diversity** by fostering **transnational and cross-sectoral collaboration, multidisciplinary approaches** and encouraging **geographical diversity**.

Societal challenges are global challenges that are not restricted to individual nations but rather transcend national borders, making collaborative and cross-border approaches essential. Altogether,**65.0%** of Horizon Europe online survey respondents strongly agreed or rather agreed that the programme **fills gaps by funding topics or fields not covered by national or regional R&I funding schemes**. Nevertheless, **national/ regional R&D** public funding **schemes are** ranked as **the first alternative option for resubmitted proposals**. Based on results from the Horizon Europe online survey conducted in May-July 2023 for unsuccessful applicants, **67.7% of applicants resubmitted their rejected proposals to national regional funding agencies**.

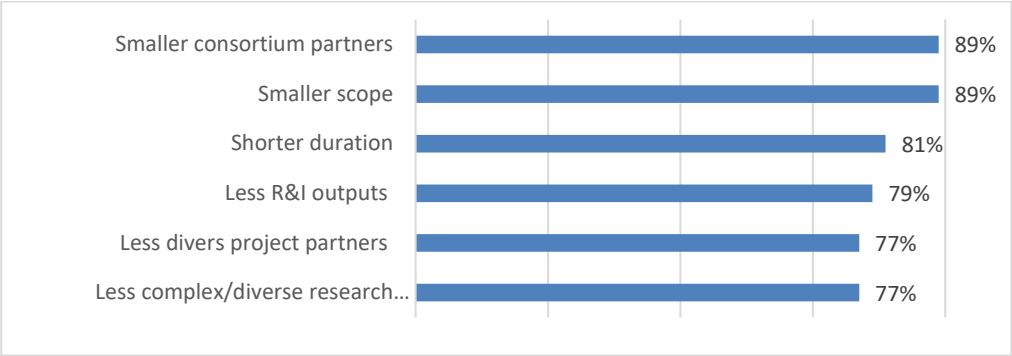
That said, Cluster 2 unsuccessful **proposals** that were **resubmitted** through different funding schemes **underwent significant modifications**. Major changes were observed in terms of the consortium size, projects' scope and duration.

242 Grant Agreement No: 101095426.

243 Grant agreement ID: 101095654.

244 https://eithealth.eu/programmes/venture-centre-of-excellence/.

Figure 14. % of modifications in Cluster 2 unsuccessful proposals when resubmitted under other funding schemes



Source: Survey of Horizon Europe unsuccessful applicants, conducted in May-July 2023.

Another key **EU added value stems from the financial support granted under the CL2 programme**. The field of Arts and Humanities often receives less funding for research compared to other fields (BN3). This finding is consistent both with the survey results and the synergies analysis. According to the Horizon Europe beneficiaries survey, nearly **75.0% of respondents** strongly agreed or rather agreed that **EU financial aid offers higher financial support compared** to their **national/regional schemes**. At the same time, **the synergy analysis** indicates that **out of 1006 unsuccessful CL2 applications, 17 projects were flagged as receiving alternative funding to Horizon Europe** from other EU programmes outside of Horizon Europe (i.e. mainly Erasmus+). For those projects that were able to secure alternative funding, this **amount was a bit more than half – specifically, 64.0% - of what they had originally requested under CL2**. Therefore, financial funding under CL2 plays a key role in ensuring the successful implementation of long-term impacts, effectively surmounting the limitations of short-term funding options available at the national/regional level (CS8; CS9).

8.3. EU added value to security research

In the case of Societal Challenge 7 (SC7) of Horizon 2020, beneficiaries benefited significantly from the EU funding since it opened the possibility to search for pan-European solutions and collaboration instead of national arrangements. The SC7 beneficiaries considered that without EU funding, the networking efforts between practitioners and end users would not have materialised between multiple Member States. However, it was still considered that, despite EU funding, the practitioners had organisational resources that were too thin to be fully committed to research projects in some cases. Many beneficiaries saw that achieving a European-wide scope, relevance or collaborative networks with projects funded through national or regional instruments was not possible[245].

245 European Commission, Directorate-General for Research and Innovation, Stančiauskas, V., Kazlauskaitė, D., Zharkalliu, K. et al., Evaluation study of the European framework programmes for research and innovation for a resilient Europe – Final report – Phase 1, Denham, S.(editor), Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2777/60819.

In the online survey of Horizon Europe beneficiaries, conducted in May-July 2023, Cluster 3 beneficiaries were asked about the added value of Horizon Europe in comparison to national/regional funding instruments. More than 70.0% of the respondents (n=145) agreed (chose answer option 'strongly agree' or 'rather agree') with the following statements:

- Horizon Europe provides a higher amount of funding compared to the national/regional schemes;
- Horizon Europe provides funding for research topic(s) or field(s) not covered nationally or regionally;
- Horizon Europe provides more international mobility opportunities for researchers;
- Horizon Europe provides more diversity in the partners' profiles.

A clear minority, less than 20.0% of the Cluster 3 respondents, agreed with the statement that there are no additional benefits in Horizon Europe compared to national/regional support. As a side note, more than 80.0% of the respondents agreed with the statement that Horizon Europe involves a higher level of competition for research funding.

Based on the review of publicly available sources, **dedicated national security research programmes exist only in Germany, Austria, Bulgaria, Czechia, and Italy among the Member States.** In terms of research content, the Cluster 3 beneficiaries interviewed (CS11) see major importance in EU-funded research in comparison to nationally funded initiatives. EU-funded actions are especially important as their research topics address the entire EU with various directives, policies, and so forth. Beneficiaries consider that **resource limitations in the Member States would limit national projects in terms of their findings and outcomes.** Overall, EU-funded actions bring in valuable academic partnerships, industry, public authorities, and practitioners while aligning them with the same objectives, which illustrates the benefits of European funding mechanisms. Thus, **EU funding positively contributes to creating diverse consortia**, and similar cooperation would not be possible in national settings.

According to beneficiaries, collaboration between European projects, facilitated through forums hosted by the Commission, such as the Community of European Research and Innovation for Security (CERIS), supports a broad exchange of experiences, information, and scientific knowledge within the security research community. Achieving a similar level and scope of cross-border cooperation and networking between stakeholders would be challenging via national mechanisms alone.

Beneficiaries see that if their projects had not received EU funding, alternative funding sources would have been sought. However, national funding sources do not often serve as the most preferred alternative as they are considered less efficient and even dysfunctional. Additionally, making a proposal to another funding instrument might affect the project's approach or concept so that only a part of the originally proposed solution could be included in a new proposal. Overall, **the European dimension would be lost in a national project**, and any partnerships, targets, and ways to reach them would have to be completely restructured. Beneficiaries value EU-funded projects as they open doors in terms of trust. A project receiving European funding is perceived as trustworthy and relevant among the security stakeholders.

In economic terms, the respondents considered that it is more effective for the EU to fund civil security research than to wait for **industry to develop new technologies with its resources**. Regarding public tenders related to Cluster 3 topics, beneficiaries state that it

would be impossible to create similar consortia for submitting joint offers to open calls for tenders.

Given the fragmentation of the European cybersecurity domain in terms of markets, regulation and research initiatives, the EU added value of the cybersecurity research funded under the Cluster 3 Work Programmes is particularly considerable as it enforces collaboration between European actors to create pathways towards the EU Open Strategic Autonomy in cybersecurity globally.

9. Partnership-specific criteria

The following section presents emerging findings in response to specific partnership-related questions. These questions focus on the following evaluation criteria: additionality, directionality, international positioning and visibility, transparency and openness, and phasing out preparedness (except institutionalised partnerships) as they relate to each partnership. Partnerships include both institutionalised and co-funded partnerships and include:

- The European and Developing Countries Clinical Trials Partnership (EDCTP);
- The Innovative Health Initiative (IHI) and its predecessor the Innovative Medicines Initiative (IMI);
- The European Institute of Innovation and Technology (EIT) Knowledge and Innovation Community (KIC) for Health (EIT Health);
- The European Research Area for Health Research (ERA4Health);
- The European Partnership on Transforming Health and Care Systems (THCS);
- The Partnership for the Assessment of Risks from Chemicals (PARC).

For this purpose, this section brings together findings from a range of deliverables, namely the evaluation report for each partnership and respective case studies. Evaluation reports include the updated second interim evaluation of EDCTP, the first interim evaluation of EDCTP3, the final evaluation of IMI and interim evaluation of IHI, the interim evaluation of EIT Health, as well as three six-page interim evaluation reports (ERA4Health, THCS, PARC). Sources also include six case studies associated with the evaluation of EDCTP (1), IMI/IHI (2), EIT Health (2) and THCS (1).

In what follows, each question addresses a specific evaluation criterion applied to each partnership. Note that the findings reported are based on partnership evaluation reports written in mid-2023.

9.1.1. Additionality of partnerships

The additionality of the partnerships is assessed on the basis of two different aspects: (a) through their budget leverage factor and (b) through their level of success in bringing together relevant and competent actors from across Europe (and beyond, if applicable).

The budget leverage factor, in the strict sense, is defined as the ratio between direct leverage and the EU contribution[246]. The partnerships' leverage factor varied strongly according to the specific partnership type. It should be noted that the ratios were large and pre-defined by the respective underlying logic and agreements. In other words, they cannot be used as an indicator of the partnerships' success.

Furthermore, it should be noted that, by definition, the budget leverage factor excludes in-kind contributions. However, some of the partnerships, in particular EDCTP, actually constitute the vast majority of leveraged investments.

- For EDCTP2, the EU contributions amounted to EUR 621 million, and project costs amounted to EUR 813 million[247]. This resulted in a budget leverage factor of 0.31. (The leverage factor for EDCTP2 will be updated at the end of the programme period. Regarding the successor EDCTP3, the direct leverage factor cannot be calculated yet, as the first projects have started only recently.) As mentioned above, however, it should be stressed that the EDCTP leverages a large amount of additional in-kind contributions. According to the EDCTP2 Annual Progress Report 2022, these amounted to EUR 1 330 million, i.e. more than twice the amount of EU contributions.
- For IMI2, EU contributions amounted to EUR 1 452 million, total project costs were EUR 3 005 million and net total costs of EUR 2 955 million. This resulted in a budget leverage factor of 1.04. In-kind contributions totalled EUR 1 322 million from EFPIA and Associated Partners (Regarding IHI, the direct leverage factor cannot be calculated yet.)
- For EIT Health, EIT contributions to "KIC Added Value Activities "(KAVA) amounted to EUR 112 million. As regards contributions from partners, EUR 152 million were directed to KAVA activities. This implies a budget leverage factor of 0.36.

  For ERA4Health, the expected direct leverage factor is 2.33, given that the overall preliminary budget for ERA4Health is approximately EUR 110 million, while the share of the EC´s funding is approximately EUR 33 million.
- For the European Partnership for Transforming Health and Care Systems (THCS) as well as the European Partnership for the Assessment of Risks from Chemicals (PARC), the budget leverage factor cannot be calculated yet.

Based on the individual partnership evaluations, it can be confirmed that all partnerships demonstrate additionality in terms of bringing together relevant and competent actors from across Europe (and beyond, if applicable).

- The second interim evaluation of EDCTP2 confirmed the partnership's capacity to create and expand R&I networks. This concerns both "South-South" (i. e. inner-African) and "North-South" (i.e. European-African) links and collaborations. It was postiively noted in the first interim evaluation that these collaborations were also forged across historically rooted and language-based links. The first interim evaluation of EDCTP3 confirms that the new partnership continues that path.

246 Direct leverage factor is calculated following the formula (1/funding rate)-1. The funding rate is calculated as ratio between EU contribution given to a project, and the project's total eligible costs. Guidance on calculating leverage effects in phase 2 evaluation studies (v. 1, 9 June 2023).

247 EDCTP2 Annual Progress Report 2022, Version 1, p. 67.

- The IMI2 final evaluation finds that the partnership is effective in bringing together a large number of organisations relevant to pharmaceutical research, development and innovation, including pharmaceutical companies, academic organisations, non-profit research organisations, patient organisations and others both from within the EU and beyond. The interim evaluation of IHI suggests that the mix of organisations participating in IHI projects is similarly promising, with a larger range of industry partners joining under the new partnership.
- The evaluation of EIT Health finds that the partnership is effective at bringing together relevant actors from different fields, and often, the created collaborations become long-lasting. This is the case even if the collaboration is informal and based on mentorship. The evaluation also points to the specific relevance of the partnership for the opening up of R&I networks in countries with developing healthcare systems in Central, Eastern and Southern Europe.
- The evaluation of ERA4Health confirms that the partnership contributes to the realisation of ERA mainly by widening its efforts, particularly by focusing on the involvement of underrepresented countries in ERA via JTCs as well as the planned IICS for Phase 2.
- THCS facilitates knowledge and expertise sharing among diverse institutions, enabling learning from different organisations, including those focused on social care systems. By collaborating at the EU level, THCS addresses similar healthcare system challenges, saving time and resources through shared knowledge. For countries involved in THCS, another added value is that they can actively shape the work and be co-creators of strategies/new ideas that are being developed.
- PARC facilitates the integration of less advanced countries by providing them with training and experience exchange, e.g. in developing laboratory capacities and implementing standardisation approaches.

9.1.2. Directionality

For EDCTP2, IMI2 and EIT Health, it can be confirmed that they demonstrate progress with respect to their objectives:

- EDCTP2 has shown clear progress towards achieving its targets. This occurred, among others, by delivering results related to COVID-19, antimicrobial resistance, malaria, TB and HIV.
- As regards IMI2, case study analysis and related interviews provide many examples of projects that have made significant contributions to their respective field of research and develop innovations that promise to have a lasting impact (e.g. digital endpoints that are end route to recognition by the European medicines regulator, the European Medicines Agency).
- EIT Health has exceeded its goals in terms of the number of start-ups and scale-ups and in terms of participants in non-degree education and training programmes. While it has not reached its goal in terms of innovations launched on the market and in terms of graduates from EIT labelled MSc/MhD programmes, the results can be considered promising. In more qualitative terms, the majority of interviewees find that EIT Health provides services that cannot be met with traditional calls. At the same time, interviews also revealed that in specific cases (e.g. specific medical fields or smaller ventures), national and regional funding sources were equally relevant.

For the remaining (only recently launched) partnerships, it is too early to assess progress. The evaluation must, therefore, limit itself to an assessment of the suitability of their strategic documents to provide clear direction in order to measure progress and to allow for results that cannot be achieved by traditional calls alone. This can mostly be confirmed, with some questions remaining in the case of THCS:

- The GH EDCP3 JU presents a clearly defined vision as well as goals that cannot be met by the traditional calls alone. The issues addressed are of a nature and magnitude that EU-level and concerted action will be more appropriate than individual Member States developing their own initiatives. This will enable more coherent and coordinated efforts and avoid duplication.
- The IHI's SRIA sets out a clear vision for the programme, and these are supported by relevant and specific objectives. Its set of KPIs is clearly focused on achieving the objectives set out for IHI.
- With respect to ERA4Health, what can be confirmed is that the partnership has a clearly defined strategic vision that feeds into its overall objectives, outcomes, and expected impacts, which can then help to assess the progress towards its strategic vision in the upcoming evaluations.
- For THCS, the SRIA is considered well-suited to bring concrete results for the transformation of health and care systems across Europe. However, measuring the concrete impact of the SRIA and determining how goals will be measured remain open questions.
- With respect to PARC, it can only be noted at this point that the partnership applies the Partnership-Specific Impact Pathways (PSIPs) approach and Key Performance Indicators (KPIs) for directional monitoring in terms of fulfilling PARC's mission and vision statement. As PARC covers a broader range of activities than its precursor partnership, HBM4EU, gathering information for the KPIs is a challenging and time-consuming process requiring close collaboration with the WP and Task leaders.

9.1.3. International positioning and visibility

EDCPT2 and EDCTP3 have been and continue to be very successful in terms of international (in the sense of "extra-EU") collaboration and visibility. As regards the other partnerships included in this evaluation, extra-EU collaboration is less strong. However, given that this is also not among the core objectives of these partnerships, this should not be seen as a weakness.

- A very strong international visibility can be confirmed for EDCTP2, which, according to a DG RTD publication, is "the most cited joint programme strengthening health research and health systems in Africa and the flagship EU-Africa partnership in health R&D cooperation, with large successful, long-lasting research networks"[248]. It serves as a hub for international cooperation, particularly between African and European countries, while also enabling South-South collaborations. In the international context, EDCTP2 establishes its relevance by collaborating with other international or global organisations, institutions, and partnerships, such as WHO, Bill & Melinda Gates Foundation, and the Global Fund, among others. The second interim evaluation of

248 European Commission, Directorate-General for Research and Innovation, Temmerman, M., Ndaka, N., Hamdi, Y., et al., Recommendations on how to make R&I a driver for sustainable development in AU-EU relations, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2777/619331.

EDCTP showed that EDCTP2 has a strategic focus on building collaborations with industry, like-minded organisations, product development partnerships (PDPs), research funders and development cooperation agencies and that these collaborations can provide high visibility to EDCTP in the global health landscape. By involving even more participating countries, the EDCTP2's successor, EDCTP3, further increases the level of international collaboration. Regarding EDCTP3's visibility, while it is already high, some of the interviewed stakeholders emphasised the need to develop and implement an internal and external communication strategy.

- While IMI2 has attracted a significant number of participants from countries outside the EU, it must also be noted that the vast majority of these international participants are from two countries: the US and Switzerland. Independently of the direct collaboration, the large reach of the programme can be confirmed: Bibliometric analysis of IMI1 and IMI2 project outputs suggests that authors of publications resulting from IMI projects were based in 126 countries[249]. There are also numerous examples of projects that reach beyond the EU borders in terms of impact, such as projects supporting several stages of clinical trials of the Ebola vaccine in Western Africa (EBOVAC 1-3, EBODAC), resulting in the vaccine receiving authorisation from regulators. Under Horizon Europe, Switzerland is classified as a Third Country as it is no longer associated with the framework agreement. The EC Corporate Approach has created a disincentive for companies based in these countries to participate unless an exception is granted by the IHI Executive Director, which will be considered on a case-by-case basis. In addition, there are new financial rules that may hinder participation from organisations making contributions if they are based in Third Countries (e.g. reducing the maximum level of in-kind contribution from those organisations from 30.0% under IMI2 to 20.0% under IHI). The stakeholders interviewed noted the respective novelty of IMI2 and IHI. IMI was regarded as a world-first public-private partnership in the field of health research and innovation, while IHI is seen as leading in terms of its cross-sectoral approach to health innovation. However, it was also noted that other countries/regions have begun to emulate the approach of IMI2 and that the international prestige of the programme depended on its ability to target resources on the most relevant and most promising topic areas.
- With respect to EIT Health, while international (i.e. extra-European) visibility is not a key focus of the partnership, some successes should nonetheless be stated, such as the ability of 16.0% of EIT Health -supported companies to also attract additional investments from North America. The partnership has also set up a Global outreach hub in Israel with the aim of creating synergies between EIT Health and the Israeli innovation ecosystem. In addition, EIT Health had active partners in six Horizon Europe Associated Countries (Israel, Montenegro, Norway, Serbia, Turkey, and Ukraine).
- ERA4Health includes three Associated Countries (Israel, Norway, and Turkey) and two Third Countries (Egypt and Taiwan). The partnership continues to expand its international network with the potential involvement of the United Kingdom and Canada as external funders and presents intentions to involve more European and Third Countries in IICS, which will further increase ERA4Health´s international positioning and global relevance.
- THCS includes three Horizon Europe Associated Countries (Iceland, Israel, and Turkey) and three Third Countries (Switzerland, the United Kingdom, and the United States). As outlined in its SRIA, the Partnership will establish strong collaborations with various

249 IHI (2023): Bibliometric Analysis of Ongoing Projects. 14th Report, p. 19.
https://www.ihi.europa.eu/sites/default/files/uploads/Documents/About/Reports/IHI_Bibliometrics_Report_2023_Final.pdf.

international organisations involved in the transformation of health and care systems, including WHO, OECD, the European Observatory on Health Systems and Policies, as well as non-governmental organisations such as the European Public Health Association and the European Health Management Association. By working closely with these entities, the Partnership aims to leverage their expertise and foster collaboration in advancing the goals of health and care system transformation. So far, it could not be assessed if and in what way further international collaborations could already manifest.

- While it is too early to assess the international positioning and visibility of PARC, credible efforts are being made to achieve such positioning and visibility. The International Board of PARC, consisting of 15 international experts, provides a venue for PARC's international positioning through board discussions and interactions. In addition, the PARC participants are enrolled in several international working groups, such as OECD and WHO working groups, thus bridging PARC activities to global relevance. Monitoring of international policy interactions is included in the indicator framework of PARC.

9.1.4. Transparency and openness of partnerships

The evaluation reports and case studies indicate that the partnerships are generally open to new partners, and new beneficiaries will be able to join the programmes. There are mechanisms in place to ensure that the partnerships can grow both at the partnership and beneficiary level, although different rules and constraints apply.

Findings from the **EDCTP2** second interim evaluation and the **EDCTP3** first interim evaluation show that there are procedures and mechanisms in place to expand the partnership to involve new members at partnership and project levels and to engage a broader set of stakeholders across Europe. Interviewed stakeholders highlighted the importance of high representatives for Africa and Europe in promoting the partnership to potential new members. For legal entities to be eligible for funding under the open calls for proposals, their respective country must be a member of the EDCTP Association by the time of grant signature (typically 6-8 months post-call closure). At the project level, a change in rules under Horizon Europe has created a new obstacle to the participation of project beneficiaries from countries outside the EU/Associated with Horizon Europe. While a solution has been suggested, it is not yet clear whether this will be sufficient to attract beneficiaries from these countries to the programme.

The **IMI2/IHI** evaluation found that including new partners from sectors other than the pharmaceutical industry has been the most significant adaptation of IHI compared to IMI2. In interviews, new partners noted that the Governing Board heard their voices and that they were able to contribute freely to discussions. While companies from non-pharmaceutical industries have already been involved in IMI2 projects, IHI is expected to build on this experience and further expand into novel areas of cross-sectoral research (as suggested by the case study on Digital Health). At project levels, both IMI2 and IHI involve new beneficiaries, and mechanisms are in place to allow all stakeholders to contribute to the programme. Changes to participation rules under Horizon Europe initially created a barrier to participation for organisations outside the EU/countries associated with Horizon Europe.

EIT Health has consistently expanded its partnership network and brought in new, relevant stakeholders. Its network is now comprised of 560 active partners and 167 affiliated entities. While EIT Health is open to new participants and industry players, as confirmed in interviews, some suggest that the requirements in terms of membership fees and equity stakes can be considered as a barrier. Under Horizon Europe, EIT Health seeks to make it easier for partners to participate in its activities. However, stakeholder interviews suggest that the

requirement to become a member if entities apply for grants over EUR 50 000 could be an obstacle, as some partnership roles have added financial responsibilities.

The **ERA4Health** partnership has mechanisms and procedures in place to involve new members in the partnership and projects. The partnership is open to public research and innovation funders based in the EU, in countries associated with Horizon Europe, and in Third Countries. It can also be joined by other funders sharing the ERA4Health objectives, such as philanthropic organisations and industry. New partners can be integrated into the ERA4Health consortium through amendments. In addition, national funders and institutions (such as the European Medicines Agency) participate in and fund ERA4Health activities as external partners.

The **THCS** partnership is, in principle, open to new partners. However, stakeholders noted that budgetary constraints limit funding opportunities for new partners or reduce funding for existing members if new members join. It was also suggested that potential partners may not yet be aware of the new partnership.

PARC is generally open to joining new countries, with Ireland joining the partnership after one year. However, most partners in the current partnership have already been partners before. New beneficiaries will also be able to join the partnership.

Transparency of processes for consulting all relevant stakeholders and constituent entities in the identification of priorities

Most partnerships have mechanisms in place to consult all relevant stakeholders and constituent entities when identifying priorities. However, these processes are not yet fully formed with some of the new co-funded partnerships.

The second interim evaluation of **EDCTP2** and the first interim evaluation of **EDCTP3** showed that the programme established open and transparent processes for consulting relevant experts and entities regarding the key priorities and that these mechanisms have been carried forward to EDCTP3. Interviewed stakeholders agreed that all relevant actors are consulted and that their views about the identification of research priorities are considered. Under EDCTP3, the process of developing the SRIA 2022 also involved a wide set of stakeholders, including the participating states, research communities, partners represented by European and African universities and global health institutes, product development partnerships, the World Health Organization (WHO), and (other) EDCTP constituencies.

Under IHI, as under IMI2, programme objectives are set out in the respective Council Regulation and strategic documents, with the SRIA having involved stakeholders in multiple stages, including in a public consultation. Responsibility for priority setting lies with the Governing Board as per Council Regulation. Industry partners and the EC have developed processes to consolidate their priorities while consulting the Science and Innovation Panel (representing a wide set of stakeholders) and the States Representatives Group. The possibility of submitting topic ideas for new calls via a web portal, established under IMI2, has been institutionalised under IHI. IHI also continues to expand efforts to engage patients and informal carers in various aspects of the programme.

EIT Health has established a consultation process involving relevant stakeholders in individual programmes. It also periodically uses mechanisms to reassess its goals and objectives and collect stakeholders' annual input to assess EIT Health's state and scope of future trends and needs. EIT Health makes active efforts to engage citizens and increase awareness of the programme among stakeholders.

Stakeholders interviewed confirmed that **ERA4Health** has open and transparent processes for consulting all relevant stakeholders and constituent entities in place. At the governance level, ERA4Health involves key stakeholders, including representatives of the research community, patients and citizens, health and care professionals, formal and informal care organisations, innovation owners, policymakers, experts on research and health ethics and representatives from other partnerships. Its Strategic Advisory Board (STAB) is composed of representatives from various research and public interest communities, reflecting the priorities identified in the SRIA. The upcoming updates of the SRIA will include consultation workshops for different stakeholder groups.

As a new partnership, **THCS** has limited experience in consultation processes. In interviews, the internal transparency of the partnership was highly rated among interviewed stakeholders, with open meetings and opportunities for active engagement. Care is taken to devise separate roles for research funding agencies and research organisations so that research organisations can participate in calls. Interviews suggest that the avoidance of conflict of interest is handled with transparency.

PARC has a dedicated work package to involve stakeholders, i.e. regulators and researchers, in identifying priorities. The work package will establish a cross-disciplinary network to set priorities for research and innovation in chemical risk assessment and develop a common agenda at the science-policy interface. In addition, PARC organises a stakeholder forum for sharing information and expertise, collecting recommendations, and developing synergies at the EU and international levels.

Openness in the use of research results

There are substantial efforts among existing partnerships to improve the level of openness in the use of research results, although, in some instances, the evaluation findings suggest that more could be done. For new partnerships, it is too early to assess the openness of results, although some have reported setting up relevant structures.

EDCTP2 and its successor EDCTP3 have undertaken active efforts to improve the openness of research results. **EDCTP2** joined Europe PMC (PubMed Central) and partnered with The Global Health Network to support researchers to undertake high-quality research to increase the accessibility of its research results. EDCTP3 secured funding from the UK Government to support the development of a toolkit for knowledge translation. There are plans for EDCTP3 to improve data sharing across sub-Saharan Africa while leveraging the experience of the national data hubs established under the European COVID-19 Data Platform. Project proposals are required to comply with the FAIR principles (findability, accessibility, interoperability, and reusability).

According to the Consolidated Annual Activity Report 2022, the number of publications attributed to **IMI2** projects at the end of the programme was 2 167, well above the target of 1 500 set out in the programme's key performance indicators. Bibliometric analysis has shown that 86.7% of papers resulting from IMI projects published in 2022 were open access. Between 2010 and 2022, 78.3% of papers resulting from IMI were open access[250]. The Programme Office also supports the dissemination of research findings with several activities, such as publishing project spotlights and organising dissemination events (e.g. a Scientific Symposium in 2018 and public webinars on individual project results).

250 IHI (2023): Bibliometric analysis of ongoing projects. 14th report. March 2023, p. 147.

Under **EIT Health,** open access publications are encouraged, but beneficiaries do not need to publish open access. In interviews, stakeholders suggest that there is no mechanism in place to ensure research results are publicly available, although efforts are made to support the dissemination and communication of findings.

ERA4Health has recently funded CARDINNOV and HealthEquity calls, but no project publications or extensive findings have been published yet. However, ERA4Health is committed to promoting open access publications, data sharing and adherence to the FAIR principles, as well as supporting the development of adequate data governance structures. Implementing and developing Responsible Research and Innovation (RRI) practices is a key action in the ERA4Health partnership's objectives.

No findings have been reported for **THCS** as the partnership has only recently become operational, and no research findings have been produced yet.

PARC has a dedicated work package to ensure accessibility of its results. PARC uses the FAIRication framework, which includes FAIR implementation profiles, Metadata for Machines workshops and FAIR data points as the building blocks of FAIR data.

Accessibility for SMEs

The extent to which the partnerships involve SMEs is variable. Some partnerships explicitly do not aim to involve industry partners generally or SMEs specifically, as this is not part of their programme design. Institutionalised partnerships have made substantial efforts to increase the accessibility of their programme to SMEs, and there are strategies in place to increase their involvement under Horizon Europe. However, increasing the share of SMEs involved remains a challenge for those partnerships that involve SMEs and aim to increase their participation.

The second interim evaluation showed that **EDCTP2** was generally accessible to small and medium-sized enterprises (SMEs) as they can participate in the programme through various funding mechanisms (e.g. RIAs) or via partnerships (e.g. offering fellowship placements). As reported in the 2021 Annual Progress Report, the success rate for SMEs that were invited to the full proposal stage was 30.0% (somewhat below the general average of 37.0%). However, SMEs are most often involved in clinical trials as parties responsible for testing products. The Annual Progress Report 2022 stated that the involvement of SMEs remains infrequent, with 54 organisations (95 participants) receiving 6.0% of the grant value of EDCTP2 projects. Under EDCTP3, efforts to involve SMEs are strengthened by transforming EDCTP into a private-private partnership under Article 187. The programme is expected to make it easier for private funders to contribute; however, this area of activity is still evolving. As **IMI2 and now IHI** involve industry partners, stakeholders noted that including SMEs was not part of its programme design. However, the IMI2 Interim Evaluation noted that the programme should “create a better ecosystem to attract more SMEs”. IMI2 undertook a series of activities to attract SMEs, including pointing SMEs to topics that were particularly suited for SMEs. These activities are being continued under IHI. It is also expected that the expansion of the partnership to include non-pharmaceutical industry partners will increase the number of participating SMEs, as national associations that have now joined IHI as partners include large numbers of SMEs among their members. While the number of SMEs has increased under IMI2 compared to IMI1, this also reflects the larger number of projects funded under IMI2. Under IMI2, the share of SME participation was 16.1%, and the share of SMEs among project participants was 22.0%.

According to the Biennial Monitoring Report on Partnerships under Horizon Europe, 6.5% of **EIT Health** members are SMEs, while 31.0% are other industrial or for-profit private organisations. However, an analysis of grant agreement data showed that in 2021-22, at 24.0%, the share of SMEs had increased among active partners. EIT Health also has an evolving strategy to support SMEs. One area of support is the creation of the Venture Centre of Excellence (VCoE), whose role is to connect life science investors with SMEs in Europe's health field.

There are no industry partners involved in **ERA4Health, THCS, and PARC, and therefore, there is** no role for SMEs (as private sector organisations) foreseen in the current version of the partnership.

Procedures/mechanisms in place to expand the EDCTP2 partnership and EDCTP3 Joint Undertaking to involve new members at the partnership and project level, as well as to gradually engage a broader set of stakeholders across Africa

As stated above, there are procedures and mechanisms to expand the EDCTP partnership by involving new partners and stakeholders in Africa. Such mechanisms include the work of high representatives in Africa to raise the visibility of EDCTP through partnerships with stakeholders in Africa. EDCTP also closely coordinates its work with the World Health Organization (WHO) and the WHO Regional Office for Africa (WHO AFRO). Currently 21 sub-Saharan African countries are members of EDCTP, of which 5 countries only recently joined the EDCTP Association: Côte d'Ivoire, Democratic Republic of the Congo, Guinea-Conakry, Kenya and Rwanda.

While these efforts continue under EDCTP3, there are now obstacles resulting from the transition of the partnership to a partnership under Article 187 TFEU and the new set of requirements for the GH EDCTP3 JU. Council Regulation 2021/2085 provides that a coordinator for a research project funded by EDCTP3 needs to be based in an EU Member State, Associated Country or a non-EU country that has a Science and Technology agreement with the EU[251]. However, within the region, this criterion only applies to South Africa, thus excluding potential project coordinators from all other African countries from receiving funding. The EDCTP3 Governing Board has proposed a workaround solution by establishing the new role of "Scientific Project Leader" within each consortium, which could be based in any country and have a leadership role alongside the coordinator. While stakeholders interviewed welcomed the proposal, there is scepticism as to whether this solution will be sufficient to attract new partners to the partnership.

9.1.5. Phasing-out preparedness

Given the varied arrangements under which the partnerships operate, this criterion is difficult to assess. However, given the limitations of the information identified, it is also possible that for some partnerships, phasing-out preparedness is still lacking and needs to be considered during the next stage of their implementation.

Both EDCTP and IMI/IHI have transitioned to a new partnership, with no measures of phasing out planned at this stage yet. It is noted that evaluations were not required to assess this criterion, given the institutionalised nature of the partnerships.

251 https://data.consilium.europa.eu/doc/document/ST-12156-2021-INIT/en/pdf.

EIT Health is considering several options to ensure the continuation of the partnership beyond the programme period. Options considered are funding the partnership through membership fees, sourcing external grants, offering services in exchange for payments, and increasing revenue from start-ups and other sources (e.g. products and services developed and sold). Stakeholders interviewed noted that a fee-for-service model would be most promising and is supported by pharmaceutical manufacturers and health service providers. However, they are sceptical as to whether this will be sufficient to secure the financial survival of the partnership.

Both THCS and PARC partnerships are based on grant agreements of limited duration. For THCS, there is an expectation that there needs to be a long-term strategy to ensure that efforts to transform health and care systems will continue beyond the end of the programme. However, these partnerships have only become operational recently, and no exit strategies have been reported.

10. Key findings, conclusions and lessons learned

This section presents a summary of key findings and lessons learned in the assessed Horizon Europe programme parts (i.e. CL1, CL2 and CL3) and partnerships (IMI2/IHI, EDCTP3, EIT Health, THCS, ERA4Health and PARC).

Conclusions

Were the assessed programme parts relevant?

Overall, the analysed programme parts and partnerships demonstrated relevance and flexibility in responding to the needs of EU society and reacting to emerging challenges. For example, **CL1, like its predecessor SC1, demonstrates adaptability by focusing on infectious diseases, including poverty-related and neglected diseases and cancer research.** The benchmark study on NIH's response to COVID-19 shows that Horizon Europe is investing in COVID-19 variant research. This research aligns with European defence strategies and offers specialised calls addressing COVID-19. Additionally, Horizon Europe is prioritising cancer research due to its disproportionate impact on Europeans. These efforts demonstrate substantial funding efforts alongside major funders like the US's NIH. In the realm of security research, the actions under the CL3's Destination of Increased Cybersecurity contribute to the implementation of the digital and privacy policy of the Union, the EU Cybersecurity Act, and the EU Cybersecurity Strategy.

Were the assessed programme parts coherent?

The analysis revealed that the assessed programme parts (CL1, CL2, CL3) are internally and externally coherent. Overall, the findings demonstrate that the **assessed partnerships are actively pursuing coherence and synergies to enhance their impacts on R&I.** For instance, the Innovative Health Initiative (IHI) plays a crucial role in fostering collaboration across various initiatives within Horizon Europe. That said, once the partnership is established, there is no continuous monitoring of their coherence.

When analysing CL1 project themes, we observed little to no thematic overlaps among various funding instruments within CL1, indicating that, until now, **the health cluster instruments largely address distinct research areas without significant overlap.**

Cluster 1 projects foster synergies with public health policies **at the national and regional level, with other EU programmes and policies**, as well as with health-related European

infrastructures. An extensive analysis of the coherence of the national programmes with all Member States was beyond the scope of this study.

The Horizon Europe regulation identified 21 EU funds/programmes where synergies were envisioned and desirable – out of these, the evaluation found evidence of (varying degrees) of synergies with 8 funds/programmes *(the European Maritime, Fisheries and Aquaculture Fund (EMFAF), the European Regional Development Fund (ERDF), the EU4Health Programme, the Digital Europe Programme (DEP), the Neighbourhood, Development and International Cooperation Instrument (NDICI), the Internal Security Fund (ISF) and the instrument for border management as part of the Integrated Border Management Fund (IBMF), the European Defence Fund (EDF), the Creative Europe Programme.* **For the remaining 13 funds/programmes** *(the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD), the European Social Fund Plus (ESF+), the Connecting Europe Facility (CEF), the Single Market Programme, the LIFE - Programme for Environment and Climate Action (LIFE), Erasmus+, the Union Space Programme, the InvestEU Programme, the Innovation Fund under the Emission Trading Scheme (the 'Innovation Fund'), the Just Transition Mechanism, the Recovery and Resilience Facility),* **the evaluation found no evidence of synergies, which may require more time to initiate.**

The internal coherence analysis of CL1, regarding TLRs, shows that CL1 maintains a strategic balance in project distribution, transitioning from early stages (TRLs 2-3) to more advanced ones (TRLs 6-8). This approach underlines CL1's dedication to technological development, aligning with the overarching goals of Horizon Europe by ensuring a balanced coverage across both lower and higher TRLs. As for CL2, data on TRLs are currently unavailable, hindering any definitive conclusions at this stage of the programme. CL3's TRLs vary from 4-8, suggesting a maintained balance of TRLs. However, it should be noted that these findings are based on preliminary analysis and that conclusions may shift as more data become available.

Were the assessed programme parts efficient?

Overall, the administrative management of the HE is efficient, yet there is potential for further improvement, in light of the performance demonstrated during the early years of H2020. The efficiency of the evaluation and Grant Preparation (GAP) processes (measured by time-to-indicators) is lagging behind the benchmark years of H2020. All time-to-sign (TTS) indicators, some time-to-pay (TTP) and some time-to-grant (TTG) indicators exceeded their legal targets. For example, the overall HE (2021 and 2022 combined) TTG was 273 days on average, which is 30 days more than the target and 42 days more than TTG in the first two years of H2020. The timeliness is expected to improve over time, as was the case between 2021 and 2022.

When comparing the project's lifecycle processes of Horizon Europe to Horizon 2020, the feedback from applicants expresses no noteworthy change thus far. The programme is still in its infancy, making it difficult to assess the impacts of simplifications fully. Due to the timing of this analysis (only 484 projects have been signed; 1 finalised at the time of the survey) only a limited sample of applicants were able to provide fully informed answers to the survey, especially when it comes to project implementation. It is reasonable to expect that as more applicants have the opportunity to collect more experience with some implementation processes we will be able to see a clearer picture of the simplifications achieved. The survey

already indicates that only around a fifth of respondents think that procedures[252], in HE are not simpler than in a predecessor programme.

Oversubscription posed less of a challenge in Horizon Europe than in H2020, which is a positive development. As a result, the success rates for 2021 and 2022 were almost double those of the comparable years under Horizon 2020 (the success rate for the first 2 years of cluster 1 was 15%, while for the first 2 years of SC1 it was 9.6%, similarly, in cluster 2 it was 12.9%, compared to 5.1% in SC6 and 15% in CL3 compared to 9.7% in SC7). The improvement may primarily be driven by the increase in budget compared to Horizon 2020.
The costs of participating in the HE projects are considered *proportionate* to at least a moderate extent by 82% of HE applicants. A median project coordinator spends around 36 to 45 person-days to prepare the proposal; in addition, the median effort spent by consortium partners who contribute to a proposal is between 16 and 25 person-days. If the proposal is successful, the consortium also has an obligation to perform administrative tasks related to project reporting, financial management, and similar matters. Such tasks take around 6.0-10.0% of the project budget (reported as a median value of survey responses) but vary across the framework programme. According to the survey respondents, there was no significant shift in the workload load of proposal preparation or administrative burden during the project implementation stage between H2020 and HE.

The overall feedback and effort reported by applicants/beneficiaries does not mean that individual simplification measures under Horizon Europe have had no effect. The introduction of the lump sums was generally received in a positive light, suggesting its potential for simpler procedures (such as the development of a project work plan or reporting). Nevertheless, the scheme is very new to the Framework programme, and it is too early to draw definitive conclusions. Additionally, it is important to note that very few applicants received a lump sum funding even fewer (around 80 in total) responded to the survey questions.

Survey responses suggest that around 50% of successful and unsuccessful applicants received proposal preparation assistance from a dedicated department in their organisation to prepare their proposals. Just under 30% did not use any of the sources of application support and just under 20% received support from a National Contact Point. Around 17% of responding applicants used a consultancy firm/expert (inside or outside the consortium) to prepare their proposal. Corda data combined with survey responses suggest that proposals that passed the quality threshold had a slightly greater share of consultancies involved compared to proposals below the quality threshold, with a margin of 2 percentage points. Causal links were not investigated. An overwhelming majority of proposals (74-80%) under Horizon Europe's programme parts were written without the involvement of external consultancies.

Within Horizon Europe, Cluster 1 featured the highest use of consultancies (28%) slightly above Pillar 2, and well above the overall Horizon Europe share. Cluster 3 stood out in that it had a comparatively high share of respondents (around 46%) that did not use on any source of application support captured by the survey. This is presumably due to restrictions or a reluctance to share sensitive information on the proposed projects. Combined data from Horizon 2020 and Horizon Europe suggests that proposals for RIA and IAs have, on average, a consistently higher rate of involvement of consultancies in the application process than those for actions funded by CSAs.

252 Respondents were asked to share their experience on the following processes: proposal preparation and submission, grant preparation, project management and implementation, and financial management.

Were the assessed programme parts effective?

The assessment of the three Clusters within the programme highlights several positive trends. Flexibility and openness across all Clusters have generated general satisfaction among participants, yet beneficiaries express a desire for reduced administrative burdens during application processes. **While projects within these Clusters are ongoing, early indications suggest they are on track to meet their objectives**.

Each Cluster demonstrates unique potential and impact. For example, CL1 stands out for its pivotal role in shaping health research landscapes and fostering significant transformations. CL2, in its distinctive position, aims to address a wide array of societal issues encompassing democracy, governance, cultural heritage, socio-economic inequalities, and migration. Meanwhile, CL3 holds promise in addressing issues related to crime, terrorism, resilient infrastructure, and disaster management, contributing to societal resilience.

As regards international cooperation the re-admission of the UK as an Associate Member to Horizon Europe is observed as a necessary step, benefiting both parties.

Ethical considerations in health research have seen changes in delegation and approach within Horizon Europe, aiming to streamline processes and encourage subsidiarity and proportionality.

What was the EU added value of the assessed programme parts?

The evaluated programme segments within the EU exhibit significant added value across various dimensions. **CL1 significantly contributes to the EU by fostering collaborative research, breakthrough health technologies, and advancements in citizen well-being** through transnational collaboration and pioneering health research. Moreover, partnerships like THCS, ERA4Health, PARC, GH EDCTP3 JU, IHI, and EIT Health further enhance the EU's health and research sectors by fostering cross-border collaborations, conducting advanced clinical studies, enhancing African capacity, and bridging public-private funding.
In CL2, beneficiaries highly appreciate its cross-sectoral collaboration, multidisciplinary approach, and substantial financial support that often surpasses other national and EU programmes, providing explicit EU added value, especially considering the shortcomings in consortium size, project scope, and duration observed in SSH research outside Horizon Europe.

CL3's EU added value is evident through platforms like CERIS, which facilitate collaboration and knowledge exchange beyond what national funding mechanisms typically offer. Additionally, its cybersecurity research addresses Europe's fragmented landscape by promoting collaboration among European actors, fostering EU Open Strategic Autonomy in global cybersecurity efforts.

Lessons learned

Relevance

- For CL2, some room for **further improvement remains in understanding target groups' needs** and the extent to which project results effectively reach them. **The relevance and engagement of target groups** differ **based** not only **on** the different topics but also based on **geographical considerations**.

- While private for-profit organisations are important actors within this destination, CL2 needs to support and promote **more community-based actions under the destination's cultural heritage**.
- For the second half of the programme, CL2 needs to place more focus on R&I activities addressing **academic freedom and freedom of scientific research (if the WIDERA actions on this issue leave scope for further actions), intangible cultural heritage,** and **cultural heritage landscapes** (OPC position papers; interview programme with CL2 officials).
- **International cooperation is also indicated as an area for further reinforcement in the upcoming** half period of the Horizon Europe **programme**, especially for cultural heritage destination.
- The involvement of public bodies that represent security practitioners and end users in the security domain has remained more or less on the same level in Cluster 3 of Horizon Europe as in its predecessor, Societal Challenge 7 (SC7) of Horizon 2020. **Stakeholders, such as public bodies, not only participate in the Cluster 3 actions as partners but also play a role in the governance structures of actions** (e.g. acting as work package leaders). This is particularly common in the actions contributing to Destination on “better protection of the EU and its citizens against crime and terrorism” (FCT). However, **Cluster 3 beneficiaries foresee difficulties in ensuring professional end user contributions supporting innovation uptake throughout the action lifecycle** since the end user representatives often change.

Coherence

- Essentially, once the partnership is established, there is no **continuous monitoring of the programme’s synergies and coherence** between partnerships. Interview insights suggest that this could be an important area to monitor; however, the current resources do not allow for active monitoring.
- CL2 should seek and **enhance synergies and collaborations with** Pillar I, particularly the European Research Council **(ERC)** and **Marie Skłodowska-Curie Actions** (MSCA). The rationale behind this lies in the fact that these programmes also address topics related to Social Sciences and Humanities. The enhancement of synergies between these programmes could be achieved through the organisation of exchange sessions where beneficiaries can share information about the research topics that they are engaged in.
- While the EU is a major funder of AI and cybersecurity R&D, **the collaboration between different actions and initiatives remains limited** despite efforts for more cooperation.
- Similar to Societal Challenge 7 (SC7) of Horizon 2020, **the exploitation of the research results in follow-up or complementary actions funded under the Internal Security Fund (ISF) is likely to continue in Cluster 3.** There are indications that the Digital Europe Programme (DIGITAL) will play a significant role in the exploitation of research results, as well. **The importance of the Community of European Research and Innovation for Security (CERIS) is highlighted for collaboration between Cluster 3 actions and beyond**. However, building connections into and integrating with relevant stakeholder communities, networks, and EU agencies, including CERIS, requires significant efforts from newcomers in civil security research.

Efficiency

- **Ensuring a final version of the Annotated Grant Agreement (AGA) is available as early as possible in the FP.** AGA is used as the main guiding source for their applicants. Having a final version would alleviate some of the application and project administration burdens, possibly decrease the pressure to hire external experts to be successful, and increase the chances of submitting eligible and successful proposals.
- **Applicants could benefit more from the help of NCPs (National Contact Points).** Around a quarter of survey respondents said that they relied on help from the National Contact Points (NCPs). NCPs were established as part of the H2020 Framework to provide guidance, practical information, and assistance on all aspects of participation in Horizon Europe[253]. It is worth noting that the FP already allocates a specific budget for NCPs through pertinent National Authorities. The beneficiaries' survey revealed that applicants who used the help of NCPs experienced higher success rates than those who did not. Encouraging more participants to utilise these already-funded NCPs could enhance resource efficiency, benefiting both the applicants and the broader Framework and reducing the need to spend resources on external consultants.
- The analysis shows the cost-saving potential of lump sums, suggesting that the funding model should be continued. This scheme is especially supported for small-scale projects, higher TRL and projects originally funded via the CSA funding instrument.
- Some difficulties are reported due to the **workload stemming from the research tasks** within the CL2 projects. This pattern was more **prevalent among women**. Other challenges during implementation were reported regarding **the ethics and freedom of research**, especially in non-democratic settings or societies at war or armed conflicts, potential risks originating from **anti-gender movements** in Europe and the role of researchers and the recent changes in some **social media** regarding **access to free data** (i.e. Twitter).

Effectiveness

- In **socio-political contexts beyond the EU**, such as in some European Neighbourhood Instrument (ENI) countries, **an alternative R&I terminology is proposed** during the project dissemination and communication activities. Project coordinators propose a shift in the terminology applied to R&I activities in regions beyond the EU, transitioning from "promoting democracy" to actively "supporting democracies" by taking into account their local characteristics across regions.
- Dissemination and communication activities should not be seen only through the lens of the current FP. **CL2 dissemination activities should also prioritise SC6 projects that have already been completed**.
- **Gender equality should be integrated under an umbrella term** (intersectionality) that encompasses wider meanings, such as diversity and inclusion of minorities and population groups with multiple social identities (age, gender, class, disability, ethnicity, LGBTQI+, etc.).
- Difficulties have been reported concerning **the involvement of the UK partners** in Horizon Europe projects. This has led to legal complexities, where lawyers working with coordinators imposed conditions not aligned with the grant agreements, insisting on English documentation, **creating hurdles for project execution**. Furthermore,

253 https://horizoneuropencpportal.eu/

financial risks loomed due to **uncertainties surrounding UK and Swiss partners**, posing potential budget constraints and administrative issues.

- End user representatives often change during the lifecycle of an action since persons move into other positions within public bodies. This creates **difficulties in ensuring professional end user contributions supporting innovation uptake throughout the action lifecycle in the case of security research**.
- **More support and guidance are called for actions in finding new funding opportunities for taking the project results to a higher TRL level in security-related research** (from TRL 5-6 to TRL 9, for example). Although there are EU initiatives in this regard, such as the EIC Accelerator or Horizon Results Booster, their eligibility requirements may be too strict for many actions to benefit from them (e.g. an applicant must be an SME).

EU added value

- For those **CL2 projects that were able to secure alternative funding, this amount was more than half** – specifically, 64.0% – of what they had originally requested under CL2. Therefore, financial funding under CL2 plays a key role in ensuring the successful implementation of long-term impacts, effectively surmounting the limitations of short-term funding options available at the national/regional level.
- Cluster 3 actions bring in valuable academic partnerships, industry, public authorities, and practitioners while aligning them for the same objectives, which illustrates the benefits of the European funding mechanisms. In contrast, resource limitations present in many Member States restrict the scope and expected outcomes of national projects**. Cluster 3 contributes to European security research by enabling the formation of research consortia with ambitious objectives and unique composition of partners across Member States**, which would not be possible to achieve with national funding instruments.

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This final report provides the results of the ‘Resilient Europe study’ implemented in the period between January 2023 and January 2024.The study was completed by a consortium consisting of PPMI Group, Prognos, VTT and Maastricht University. Using a wide range of qualitative and quantitative methods, the study covers Horizon Europe activities that contribute to building a more Resilient Europe in terms of addressing the following global challenges: Cluster 1; Cluster 2; Cluster 3. In parallel, the study also assesses the following partnerships: IMI2/IHI, EDCTP2/EDCTP3, EIT Health, THCS, ERA4Health and PARC.

Studies and reports

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