



# Spreading Excellence and Widening Participation Impact Report

H2020 Results and Outlook to Horizon Europe

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# **Spreading Excellence and Widening Participation Impact Report**

H2020 Results and Outlook to Horizon Europe

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## List of Abbreviations

CSA – Coordination and Support Actions  
CORTEX – Core Text Mining  
CoE – Centre of Excellence (within Teaming projects)  
D&E – Dissemination and Exploitation (of project results)  
EC – European Commission  
EEA – European Economic Area  
EFRD – European Fund for Regional Development  
ERA – European Research Area  
ERASMUS+ – EU programme for education, training, youth and sport  
ERA-NET – Horizon 2020 funding instrument supporting public-public partnerships associated  
ERC – European Research Council (Executive Agency)  
ESIF – European Social and Investment Fund  
F2P – Feedback to Policy  
FET – Future and Emerging Technologies  
HE – Horizon Europe – The Framework Programme for Research and Innovation  
HRP – Horizon Results Platform  
H2020 – Framework Programme for Research and Innovation ‘Horizon 2020’  
IPA – Instrument for Pre-Accession  
KPIs – Key Performance Indicators  
MSCA – Marie Skłodowska-Curie Actions  
OA – Open Access (to scientific publications)  
REA – European Research Executive Agency  
RRI – Responsible Research and Innovation  
RIS3 – Research and Innovation Smart Specialisation Strategy  
R&I – Research and Innovation  
SEWP – Spreading Excellence and Widening Participation  
SDGs – Sustainable Development Goals  
S3 – Smart Specialisation Strategy

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## Executive summary

The Spreading Excellence and Widening Participation (SEWP) Impact Report aims at capturing the key impacts of Widening projects throughout Horizon 2020 emerging from Teaming, Twinning and ERA Chair Actions. It is a unique report offering a complete overview of various aspects, results and impacts emerging from H2020 actions and is intended to make a valuable contribution not only for future programming activities and policy making, but also for a better understanding of the overall Widening context and emerging trends. The current study focuses on all the H2020 SEWP Calls and includes a project portfolio analysis, in the form of clusters linked to Horizon Europe (HE) missions taking into account country data to the maximum extent possible.

Project portfolio analysis carried out through 2020-2021 includes identification of thematic clusters using descriptors of scientific domains. As a result, 22 clusters of scientific domains and 9 scientific areas were identified for the Widening portfolio including explanation of cross-disciplinary fields. The current report also features country profiles with key scientific domains emerging from the clustering work. The EC corporate IT tools are used to further verify Widening data and to link the scientific domains to HE Missions. The aspect of Smart Specialization Strategies is as well embedded in the report as an important component of the Widening Programme.

This Widening Impact Report includes a reflection upon and analysis of Economic, Social and Scientific Impacts. The study of impacts is illustrated following the corporate HE Framework structure on impact pathways. Key impacts detected for Teaming, Twinning and ERA Chair Actions, supported with data obtained from surveys are presented in the report and main messages are captured in the conclusions and final recommendations.

Examples of outstanding Widening projects - success stories – are also illustrated in the report, highlighting the major achievements of Teaming, Twinning and ERA Chair Actions in terms of best practices. The Dissemination and Exploitation (D&E) impacts are featured focusing on Excellence, Participation and Systems areas stemming from SEWP Work Programme objectives.

Finally, the effects of COVID-19 in Widening projects as well as COVID-19 related activities in the scientific content of projects are tackled. Unique added value of the report are lessons learned throughout H2020 and the conclusions and suggestions for follow-up reflecting the transition from H2020 to HE.

## 1. Introduction

Europe is playing a prominent role in the global research and innovation landscape, yet significant internal disparities in terms of research and innovation performance are present.

Based on significant evidence pointing to the fact that the pathway to economic growth and competitiveness is largely connected to research and innovation, Horizon 2020 Programme for research and innovation introduced the ***Spreading Excellence and Widening Participation (SEWP) actions***. As stated in the H2020 SEWP Work Programme for 2018-2020, the main objectives of these actions are to support less advanced R&I countries to strengthen their R&I intensity and performance, to increase their participation in transnational networks and, overall, to obtain greater research outcomes in low performing Member States<sup>1</sup> and Associated Countries<sup>2</sup> to improve their research and innovation systems and policies. Through these processes, the SEWP actions are aiming to deliver important structural effects at national level and synergies with other EU programmes. The upgraded research excellence in the research institutions of Widening countries will allow the entire EU to further advance and to strengthen the European Research Area (ERA).

Five years after the first SEWP action started, it is time to assess whether the SEWP Programme contributed to the realisation of the research and innovation potential in all parts of Europe and whether they generated the expected impacts as foreseen by the Work Programme through the following SEWP actions:

- **Teaming actions** create new or update existing centres of excellence (CoE) in Widening countries through a coupling process with a leading scientific institution. Their main aim is **institution-building**. The Teaming Phase 2 projects have received financial support to implement a business plan of the future centre of excellence in line with the host region's Smart Specialisation Strategy (S3).
- **ERA Chair actions** aim to create the appropriate conditions and bring high quality researchers and managers (the ERA Chair holder and his/her team) to universities and other research organisations in the Widening countries to boost research excellence. In order to achieve this, institutions should **implement structural changes** to achieve excellence on a sustainable basis.
- **Twinning actions aim to enhance networking activities** between the research institutions of the Widening countries and internationally leading counterparts at EU level (i.e. 'advanced' partners). As result of the Twinning Action, Widening Country institutions should enhance their scientific and technological capacity and help raise the research profile of the institution and its staff.

Policy analysis is a complex process that must take into account a wide variety of data sources, way beyond obvious outcomes/results like the number of publications produced or the number of patent applications. This report analyses all SEWP actions together, also outlining specificities of Teaming, Twinning and ERA Chair Actions and further contributing to improvements in terms of programming activities and policy developments within Horizon Europe.

This report conveys a novel assessment based on project portfolio analysis combined with tailored EU surveys carried out by the European Research Executive Agency (REA). It is based on the compilation of data analysis emerging from different small studies, all targeting SEWP portfolio. Therefore, it presents unique insights and lessons learnt from all projects,

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<sup>1</sup> Widening Member States: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

<sup>2</sup> Widening Associated Countries: Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, North Macedonia, Georgia, Moldova, Montenegro, Serbia, Tunisia, Turkey and Ukraine.

revealing the tangible impact that research policies triggered in terms of research activity, capacity building and other objectives.

It is expected that conclusions and suggestions for follow-up resulting from this Impact Report can provide an input for future programming activities in the framework of Horizon Europe and other programmes funded by the European Union, to deliver on EU objectives and serve EU citizens in a more effective manner. Several structural components taken from Horizon Europe Framework Programme (e.g. such as HE Missions or Scientific, Societal and Economic Impacts) are used in the current report to link the H2020 results to the future framework.

The analysis contained in this report also leverages on the wealth of information that REA has at its disposal by virtue of its role in managing these actions during their entire lifecycle: from contributions to Work Programme development, to organising proposal evaluations, signing grant agreements and monitoring the implementation of projects. Furthermore, REA staff hold regular contacts with project coordinators, national contact points and other key stakeholders in the research and innovation community. The synergy of all these inputs places REA in a truly unique position to contextualise the findings of this analysis, formulate evidence-based conclusions and bring added value to the policy making in the EU and beyond.

## 2. Methods

This section includes a brief overview of the methodology. More details on specific methods used for the analysis presented in the report are included in the relevant sections. The methodology descriptions mainly refer to project portfolio (clustering) analysis, identification of HE Missions in Widening projects, analysis of Smart Specialisation Strategies in the SEWP portfolio and EU surveys (SEWP Policy Feedback surveys and a dedicated Dissemination and Exploitation (D&E) survey).

### 2.1. Project Portfolio Analysis

Project portfolio analysis, so-called clustering analysis, in this study has involved manual work. The overall 295 H2020 SEWP projects were grouped into 22 scientific domains and categorised into 9 scientific areas. This analysis involved work with key words using the EC system of scientific descriptors. Two groups of projects were identified, namely (1) projects having multi-disciplinary nature and (2) projects including multiple domains in one proposal. More details on this work are given in Section 3.2.

### 2.2. Horizon Europe Missions and Text-mining

A semantic text analysis tool (the EC corporate tool called CORTEX<sup>3</sup>) has been used to extract and group the projects into the five topics of Horizon Europe Missions, which include (1) Cancer, (2) Adaptation to Climate Change, (3) Healthy oceans/seas/ inland waters, (4) Smart cities, (5) Soil health and food. For the analysis of HE Missions, the main topics and sub-topics relevant to each mission were identified in the text-mining search strategy. With the help of the text-mining tool, Grant Agreements (Annex I) and deliverables of projects were scanned for presence of relevant keywords. Search formulas tailored to each HE Mission have been developed on the basis of these keywords and the sets of projects were extracted. More details on this strategy and its outcomes are provided in Section 3.3.

### 2.3. Smart Specialisation Strategies

According to the definition<sup>4</sup> by the European Parliament and of the Council, the 'Smart specialisation strategy' (S3) implies the adoption of national or regional innovation strategies, which set priorities by matching research and innovation own strengths to business needs in order to address emerging opportunities in a coherent manner'. This policy concept was addressed in the current Impact Report by mapping the total project budget managed in the coordinating widening countries matching the national Smart Specialisation Strategy domains. This result is captured for H2020 SEWP projects. In the context of HE outlooks, the S3 is also presented for the two new HE Calls which have closed at the time of writing this report, namely Teaming (HORIZON-WIDERA-2022-ACCESS-01-two-stage) and Twinning - Western Balkans (HORIZON-WIDERA-2021-ACCESS-06). A presentation of findings is included in the Section 3.5.

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<sup>3</sup> EC internal corporate tool under constant development to respond to the evolving policy environment, to broaden and ease the access to our R&I programmes' data and to improve user experience.

<sup>4</sup> Regulation (EU) N° 1303/2013 of the European Parliament and of the Council.



## 2.4. EU Surveys

Semi-structured online questionnaires using EUSurvey<sup>5</sup> tool, designed by REA and DG Research & Innovation, were used to assess if there are measurable and significant improvements in the participating institutions, owing to the Teaming, Twinning and ERA Chair projects. The part on scientific, societal and economic impacts (Section 4) includes the key highlights from various SEWP surveys covering the three aforementioned Widening Actions:

- In **Teaming**, the key components covered in the questionnaires relate to the legal status of Centres of Excellence (CoE), autonomy, recruitment, states of premises, complementary funding, generation of revenues, sustainability strategies, Key Performance Indicators (KPIs), impacts in terms of research excellence and benefits from and to the internationally leading institutions (the also called 'advanced partners').
- **Twinning** surveys focused on impacts on raising research profile, excellence and reputation and attractiveness of the coordinating institution. It also tackled topics such as competitive research funding, institutional, regional and national structural changes in the R&I systems, and recruitment, including main measures for impacts and difficulties experienced.
- **ERA Chair** questionnaires targeted ERA Chair holders and coordinators and focused on topics such as recruitment, benefits for ERA Chair holders and coordinating institutions, difficulties experienced, autonomy, sustainability, impacts on the research excellence and profile as well as institutional structural changes.

The **D&E data** were obtained from a dedicated survey also using the EUSurvey tool. As most of the results are delivered towards the end of a project's lifetime and the full impact of a project can be better evaluated at that stage or if not sometime after its end - a set of mature and finalized projects of the Widening Programme were selected for the D&E survey and analysis. The structure of the survey was divided into three parts: Excellence, Systems and Participation, which reflect the objectives of the SEWP Work Programme. More detailed information is provided in the Section 5 of the report.

Additionally, aiming to support the results of D&E survey, a small analysis was carried out to understand the status of publications and Open Access choices in Widening projects. The data used for this exercise was extracted from EC database sources and, similarly as in D&E report, focused on finished and more mature SEWP projects (more details about the selected calls are provided in Section 5.1)

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<sup>5</sup> EUSurvey is a web application for online survey creation and publication developed and maintained by the Directorate-General for Informatics of the European Commission. The tool is free for users and is available in 23 official EU languages.

### 3. SEWP Project Portfolio Analysis

Portfolio analysis is one of the key Feedback to Policy (F2P) activities in REA and for the Widening Programme, which provides important information about the thematic content and country data.

The SEWP Calls considered in this analysis are comprised of 295 Twinning, Teaming Phase 2 and ERA Chair projects. Table 1 details in a nutshell the numbers in the portfolio, including the participation rates, budget (requested in the proposal), number of countries overall and number of Widening countries in particular. However, this table does not include Teaming Phase 1 projects as these concern initial business plans and their continuation is reflected in Teaming Phase 2 – development of Centres of Excellence.

**Table 1. SEWP projects portfolio in a nutshell**

Action	Number of projects	Total requested budget (M EURO)	Number of participant countries	Number of Widening countries
Twining	211	195.5	42	23
Teaming-phase 2	25	364.1	23	11
ERA Chairs	59	151.0	14	14
<b>Total</b>	<b>295</b>	<b>710.5</b>	<b>42</b>	<b>23</b>

#### 3.1. H2020 Country participation

As illustrated in Figure 1, a wide range of countries participated in the SEWP calls (Source: Horizon Dashboard). The top participants include Germany, Portugal, UK and Italy. Among the Widening countries Portugal, Cyprus, Poland and Estonia clearly are emerging as the most successful ones.

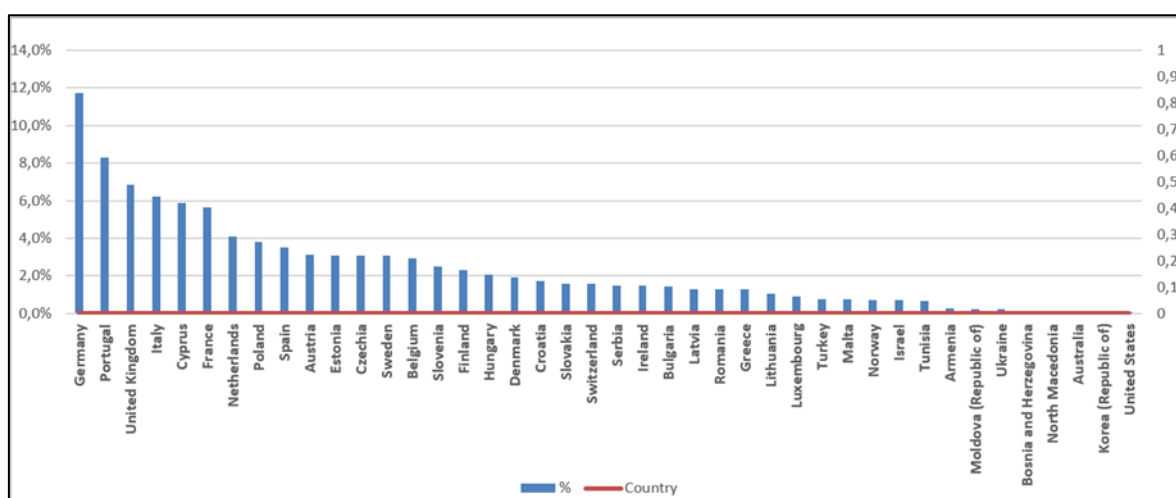


Figure 1. Top participating countries in SEWP calls

In terms of acquired budget in SEWP Calls, the highest EU contributions by Widening countries (Member States and Associated Countries as indicated in Annex D) have been obtained by Portugal, Cyprus, Poland, Estonia and Czech Republic. Other EU countries remain less successful in securing funds from Widening Programme (e.g. Romania, Croatia, Lithuania, Malta) (Figure 2).

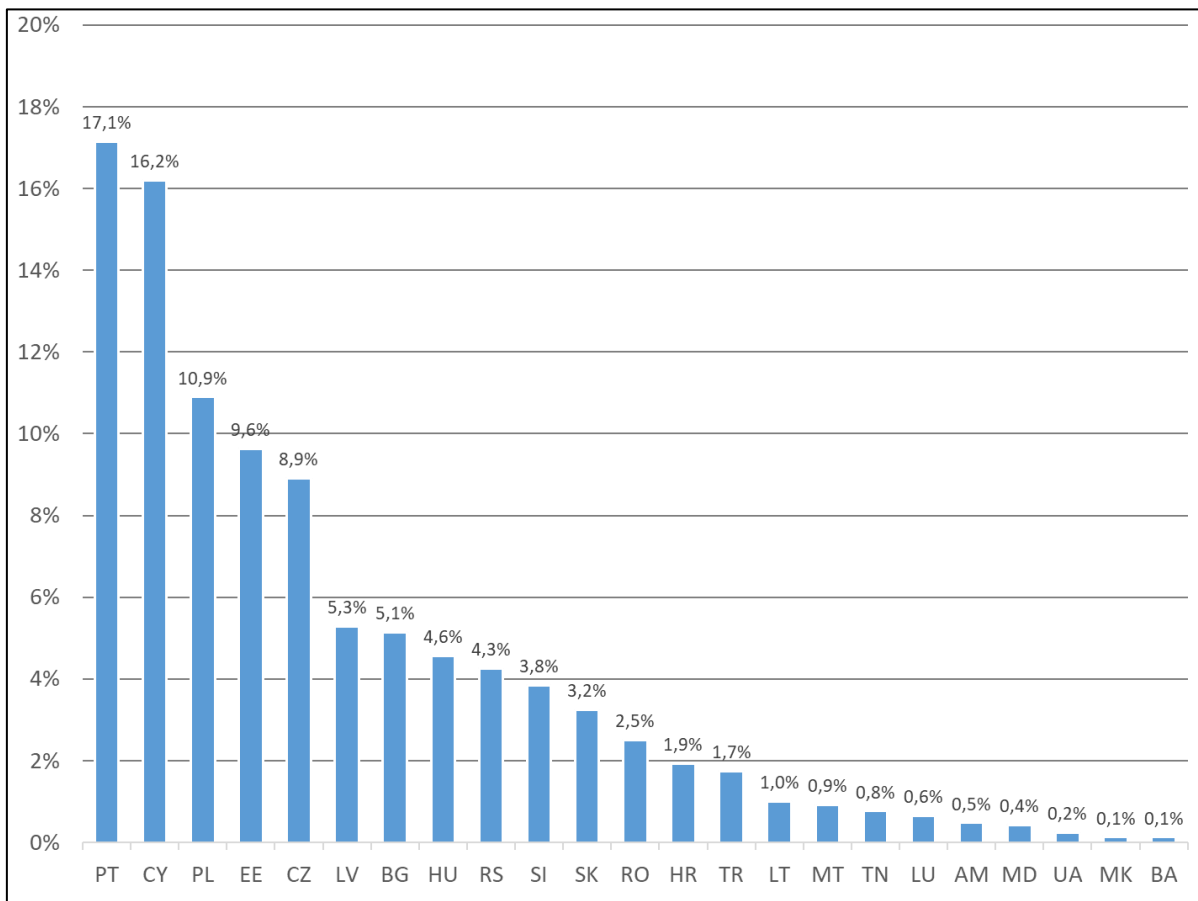


Figure 2. H2020 SEWP requested budget managed by coordinating Widening countries (total requested budget 710.5 Million Euro)

Consistent with the information already provided above, Widening countries such as Luxembourg, Estonia, Cyprus, Portugal and Luxembourg appear as highly successful in terms of success rate of the proposals submitted and grants obtained (Figure 3). However, it must be noted that for Luxembourg, compared to the other top Widening countries such as Portugal, Cyprus and Estonia, the total number of submitted proposals is significantly lower (see Table 2). Moreover, in the new HE Programme, Luxembourg is not characterised as a Widening country. The new addition to the Widening family in HE is Greece.

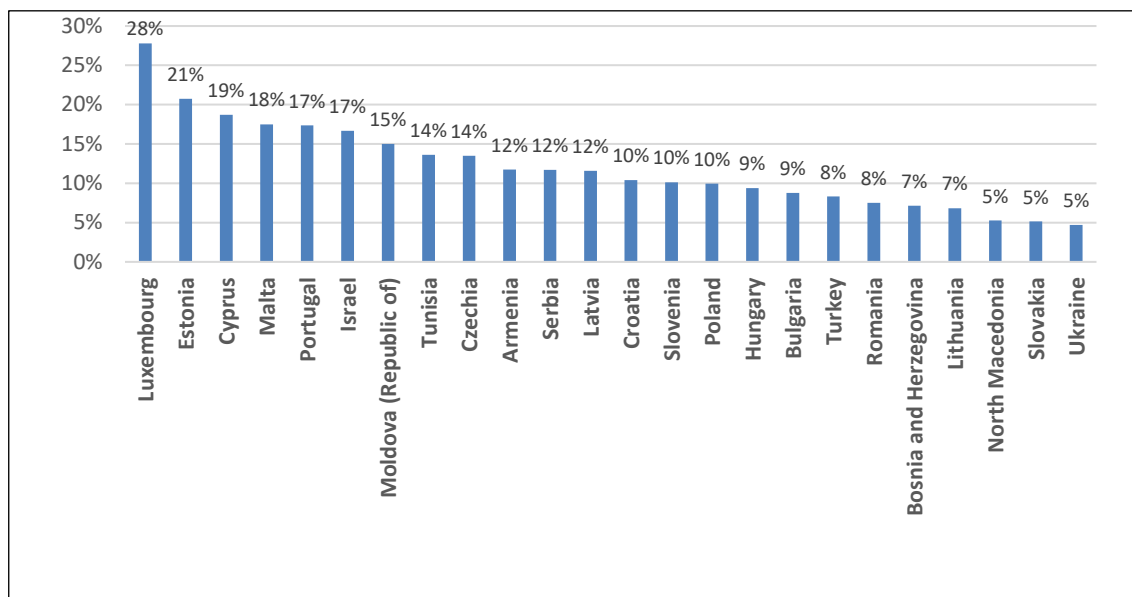


Figure 3. Success rates of Widening countries in submitted proposal

Table 2 shows a more detailed picture of overall country participations per Widening Action (coordinating institutions and partners in the consortia) and total requested budget. It is evident that the Widening champions are Portugal with 80 projects in total, followed by Estonia (37 projects), Cyprus (35 projects) and Poland (34 projects). Table 2 confirms the earlier mentioned trends that among non-Widening countries, the most active participations are observed from Germany (120 projects), UK (81 projects), Italy (80 projects) and France (52 projects). To be noted that the data provided in Table 2 are split into coordinators and partners.

Figure 4 shows in a map the number of projects coordinated in the Widening countries. The number of Twinning actions is far higher than the other two actions and the total budget for Teaming Phase 2 projects is highest among the actions. The number of coordinated projects per Widening country varies widely, from 58 in Portugal to 1 in North Macedonia. As already outlined in the previous sections, Portugal, Estonia, Cyprus, Poland and Czech Republic stand out from the other Widening participating countries in terms of the total number of SEWP projects. However, in terms of success in launching Teaming projects, which are the flagships of SEWP Programme, Cyprus, Bulgaria, Hungary, Poland and Latvia are among the most successful Widening participants. Figure 5 indicates the budget dedicated to Widening countries for each SEWP Action. As Teaming and ERA Chair projects have significantly higher budget compared to Twinning projects, this is accordingly reflected in the representation of budget shares.

Table 2. Overview of the countries participation in the SEWP calls of H2020

Country	Country code	Twinning coord.	Teaming coord.	ERA chair coord.	Twinning partners	Teaming partners	Total participation	Total budget
<b>Widening countries: Member States</b>								
Bulgaria	BG	4	2	1	3	3	13	29.275.889 €
Croatia	HR	9	0	2	6		17	9.418.501 €
Cyprus	CY	13	6	5	2	9	35	84.823.852 €
Czechia	CZ	15	3	4	4	2	28	45.967.965 €
Estonia	EE	20	1	14	1	1	37	52.555.094 €
Hungary	HU	7	2	0		6	15	22.831.970 €
Latvia	LV	8	2	0		3	13	27.164.262 €
Lithuania	LT	5	0	1	1		7	4.515.583 €
Luxembourg	LU	2	0	1	6		9	4.149.254 €
Malta	MT	7	0	0	2		9	2.832.995 €
Poland	PL	18	3	6	3	4	34	56.545.867 €
Portugal	PT	39	3	16	14	8	80	95.105.985 €
Romania	RO	13	0	2			15	9.878.469 €
Slovakia	SK	6	1	1			8	17.251.583 €
Slovenia	SI	5	1	3	4	7	20	23.884.709 €
<b>Widening countries: Associated countries</b>								
Albania	AL						0	0 €
Armenia	AM	4	0	0			4	1.513.831 €
Bosnia and Herzegovina	BA	1	0	0	1		2	426.550 €
Faroe Islands	FO						0	0 €
Georgia	GE						0	0 €
Moldova (Rep of)	MD	3	0	0			3	1.520.250 €
Montenegro	ME						0	0 €
Rep. of N Macedonia	MK	1	0	0			1	238.750 €
Serbia	RS	15	1	1	1	1	19	20.871.004 €
Tunisia	TN	6	0	0	2		8	2.273.924 €
Turkey	TR	8	0	2	1		11	8.366.061 €
Ukraine	UA	2	0	0	1		3	845.975 €
<b>Non-Widening: Member States</b>								
Austria	AT				30	4	34	9.908.383 €
Belgium	BE				37		37	6.581.769 €
Denmark	DK				23		23	4.287.036 €
Finland	FI				20	4	24	13.602.444 €
France	FR				49	3	52	15.593.693 €
Germany	DE				103	17	120	40.313.876 €
Greece	GR				16	1	17	5.295.338 €
Ireland	IE				17	2	19	5.734.348 €
Italy	IT				78	2	80	13.976.880 €
Netherlands (The)	NL				45	2	47	10.084.909 €
Spain	ES				42	2	44	8.373.503 €
Sweden	SE				28	4	32	11.431.396 €
United Kingdom	GB				73	8	81	33.649.580 €
<b>Non-Widening: Associated countries</b>								
Israel	IL				10		10	1.542.519 €
Norway	NO				10		10	1.795.030 €
Switzerland	CH				18	2	20	6.081.724 €
<b>Non-Widening: Third countries</b>								
Korea (Rep of)	KR				1		1	0 €
Australia	AU				1		1	47.125 €
United States of America	US				2		2	157.475 €
<b>Total</b>		<b>211</b>	<b>25</b>	<b>59</b>	<b>655</b>	<b>95</b>	<b>1045</b>	<b>710.515.327 €</b>

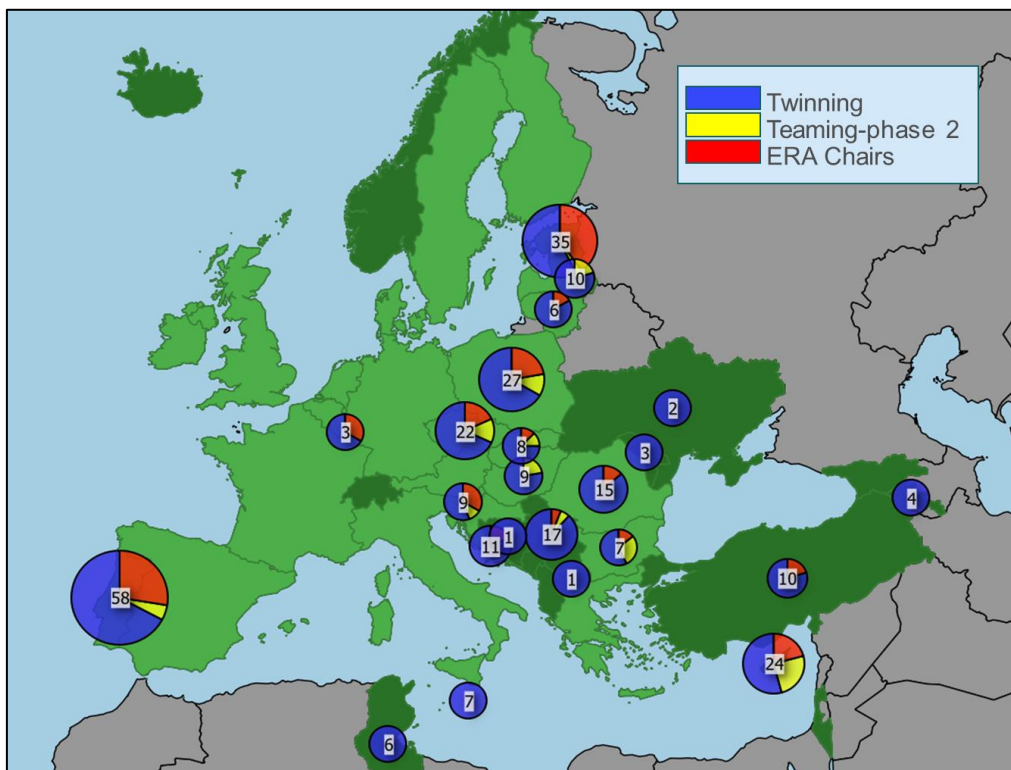


Figure 4. Number of SEWP H2020 projects coordinated in Widening countries by type of action

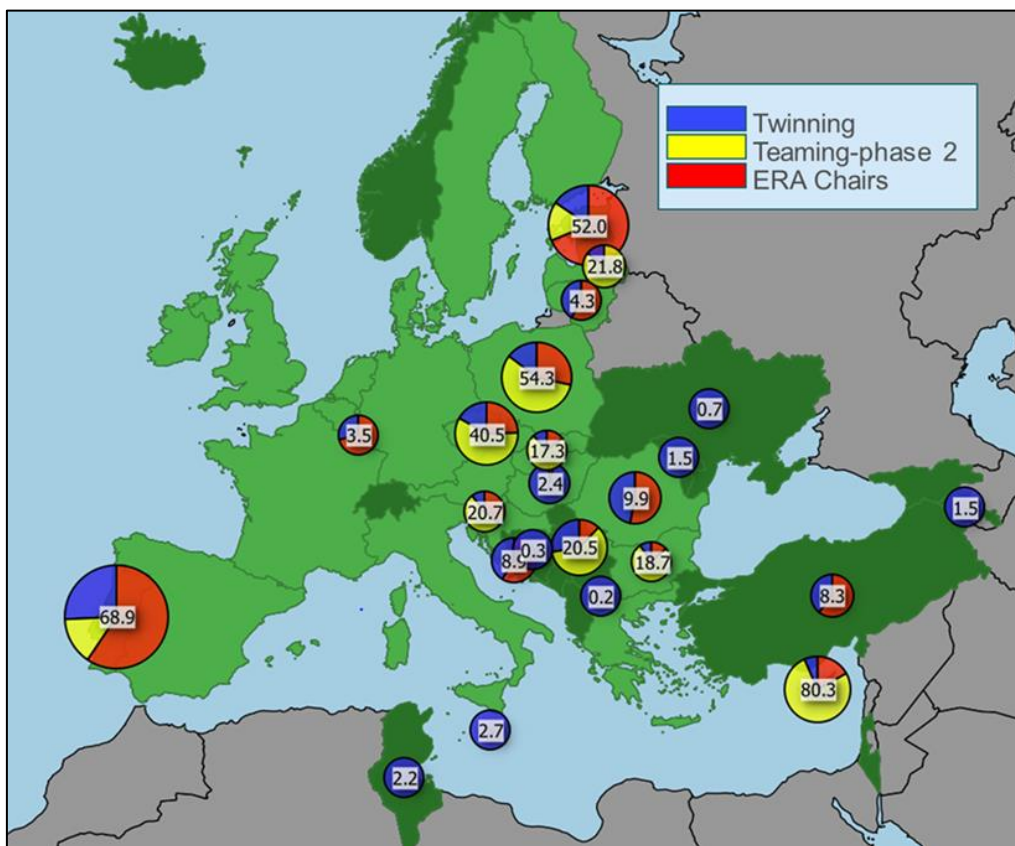


Figure 5. Budget requested by coordinators for SEWP H2020 projects in M Euro by type of action

## 3.2. Scientific domains SEWP projects

Projects in SEWP actions have been selected for funding based on the excellence of their proposals. Taking into consideration the bottom-up approach, the scientific domains and topics are not pre-defined and are entirely for the consortia to decide. This means that there is no obvious categorisation of projects across scientific domains. As described in the Widening Programme, it aims to raise the capacity of the coordinating institution, which also includes the scientific profile. It is considered that without a solid competitive scientific profile, the coordinating institution may not be in a position to attract competitive funding. In other words, it is of the interest of the Widening Programme that coordinating institutions can compete at international level to attract funding in their scientific domain.

Categorising projects in scientific themes may help the positioning of the coordinating institutions in Widening countries. It is expected to enable coordinators to create links with other institutions and partners for future collaboration. Further cooperation with partners and consortia in specific scientific domains may for example provide better opportunities to succeed in competitive calls within their scientific domain. This will be important for the sustainability of scientific activities in the coordinating institutions, after the project ends.

### 3.2.1. Methodology

In this portfolio analysis all H2020 SEWP projects are categorised using a taxonomy, which is used in the Future and Emerging Technologies Programme (FET open) programmes in the Commission. Originally, the FET taxonomy was based on the one proposed by the OECD<sup>6</sup>.

For SEWP calls from 2017 onwards, applicants have been requested to select up to 6 of the most relevant scientific domains using this taxonomy tree. Earlier SEWP calls did not request the applicants to define the scientific domains in their application. For these projects, REA staff has added up to 3 of the most relevant scientific domains based on the description of the action. This way, clusters of projects could be identified in specific domains and can be targeted, for example, for cluster meetings.

The taxonomy includes 3 levels, 22 main scientific domains, 105 sub-domains and 1090 specific descriptors. For the purpose of this analysis, only the main scientific domains have been used for the data presentation. Since 22 domains is still a high number, leading to a small number of projects in each domain, a simplification was applied to go from 22 to 9 scientific main domains to create logical categories with a critical mass of projects. Table 3 shows the result of the merging exercise and the 9 main scientific domains for the analyses.

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<sup>6</sup> [https://read.oecd-ilibrary.org/science-and-technology/frascati-manual-2015\\_9789264239012-en#page61](https://read.oecd-ilibrary.org/science-and-technology/frascati-manual-2015_9789264239012-en#page61)



**Table 3. Distribution of the scientific domains within each scientific area**

Scientific Area	Scientific Domains from Taxonomy tree
<b>Electric engineering/Computer science</b>	Mathematics
	Computer sciences, information science and bioinformatics
	Electrical and electronic engineering
<b>Engineering</b>	Materials engineering
	Civil engineering
	Mechanical engineering
<b>Biotechnology</b>	Biotechnology
	Medical biotechnology
<b>Health/medical</b>	Basic medicine
	Clinical medicine
	Health sciences
	Medical engineering
<b>Social Sciences</b>	Social sciences
	Humanities
<b>Environment</b>	Environmental sciences
	Environmental engineering
<b>Biology/agriculture</b>	Biological sciences
	Agriculture, Forestry, and Fisheries
<b>Physical/Chemical Sciences</b>	Physical sciences
	Chemical sciences
<b>Space</b>	Space
	Aeronautics

Figure 6 provides an overview of the size of the categories in terms of allocated budget to these scientific domains. It shows that some of the 22 scientific domains in the taxonomy were poorly represented, as main scientific domains; such as 'Mathematics', and 'Civil engineering'.



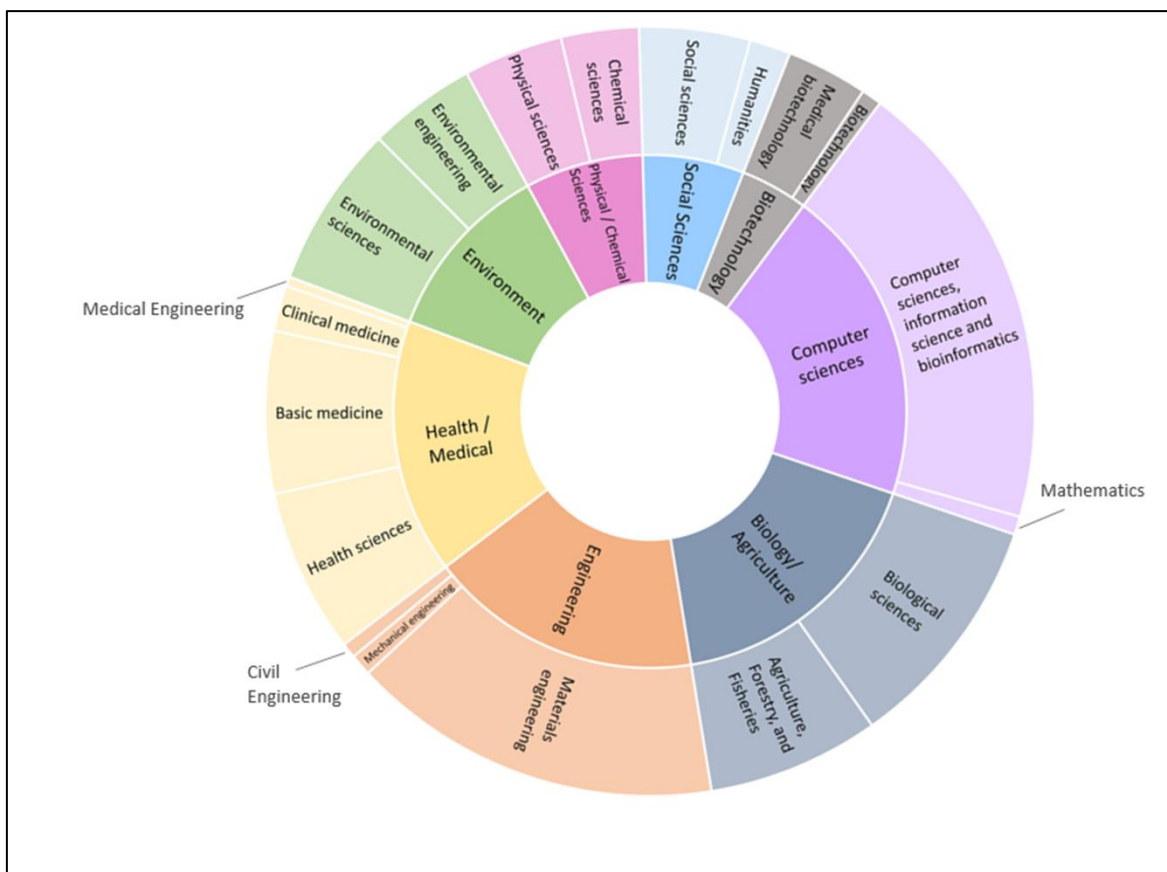


Figure 6. Scientific areas and domains by budget, based on 22 domains in the taxonomy (outer circle) and merged categories (inner circle)

Since most projects are interdisciplinary, the analysis focusses on two approaches: categorisation of projects in the **main scientific domain** of the project and the contribution of projects to the **different domains**. The main scientific domain reflects the first chosen scientific domain for the project. In this way, projects are exclusively assigned to one dominant scientific domain. The assumption is that there is a dominant scientific domain and that has been selected as the first domain; however, it has not always been possible to select a dominant scientific domain in multidisciplinary projects.

In order to provide insight in the scientific domains of multidisciplinary projects, the contribution of projects to the different scientific domains has been identified. In these analyses all domains are considered equally important in the project.

### 3.2.2. Main scientific domains

The first chosen scientific domains for each project per Widening country are presented in Figure 7. It illustrates the spectrum of scientific fields based on nine scientific domains emerging from the clustering analysis. The distribution of scientific domains in the Widening countries is often linked to their Smart Specialisation Strategies (more details on this in Section 3.3) and the top emerging fields vary greatly among the countries. For example, in Portugal, the highest shares of projects go to the fields of health/medical and biology/agriculture/fishery fields, followed by slightly lower shares in biotechnology, environmental field and computer sciences. However, when looking at the budget (Figure 8), it is clear that the highest share of SEWP budget is in health/medical field;

biology/agriculture as well as biotechnology. In Estonia, for example, three major scientific domains dominate in the SEWP actions, namely computer sciences, social sciences and biology/agriculture fields and the budget is also mainly concentrated on these three domains. In Cyprus, the top three areas are computer sciences, social sciences and environmental sciences; however, the budget is mostly consumed by two parts - computer sciences and environmental sciences.

Figure 7 and Figure 8, furthermore, show for Poland and Hungary that the largest share of projects deal with physical/chemical sciences among environmental sciences and biology/agriculture/fisheries, however the largest shares of budget go to slightly different domains - engineering and computer sciences in Poland and computer sciences and health/medical fields in Hungary. (1) Computer sciences, (2) health/medical fields and (3) biology/agriculture/fisheries appear to be among the dominating scientific areas in Widening countries – both in terms of thematic distribution and in terms of allocated budget.

In order to have an insight of the budget spent per country and the number of projects on a specific Scientific Area, please see in **Annex A** of the report.

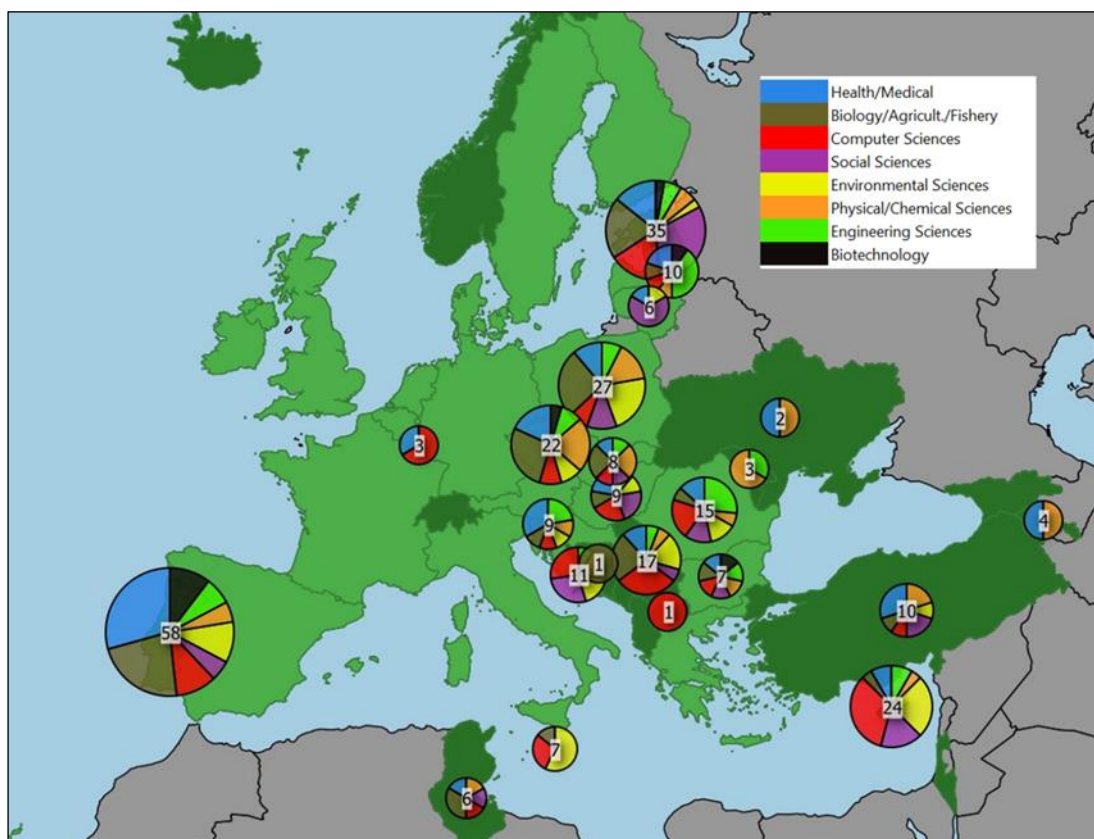


Figure 7. Number of SEWP H2020 projects coordinated in Widening countries by scientific domain

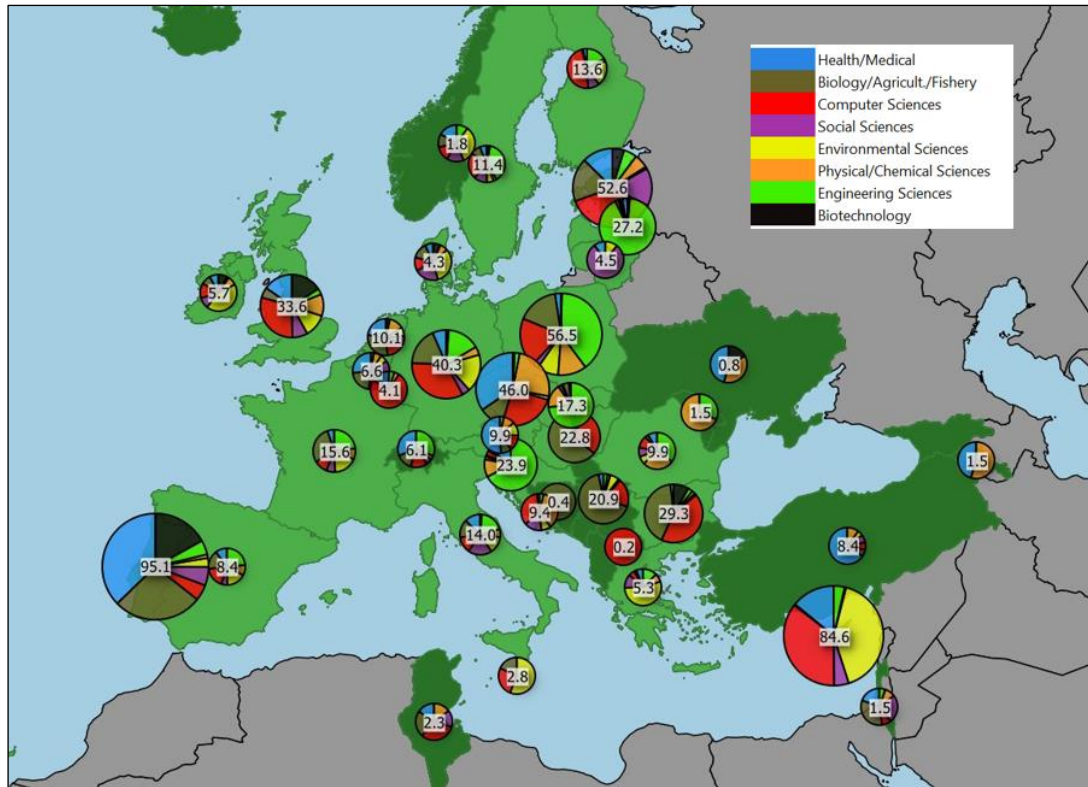


Figure 8. Requested budget for SEWP H2020 projects (coordinators and partners) in M EUR by scientific domain

### 3.2.3. Multidisciplinary scientific domains

The current analysis reveals that many projects are interdisciplinary (integrating knowledge and methods from different disciplines) or transdisciplinary (creating knowledge beyond the disciplinary perspectives). This means that projects cannot always be allocated to a single scientific domain, but to a combination of domains (see Figure 9 and Figure 10).

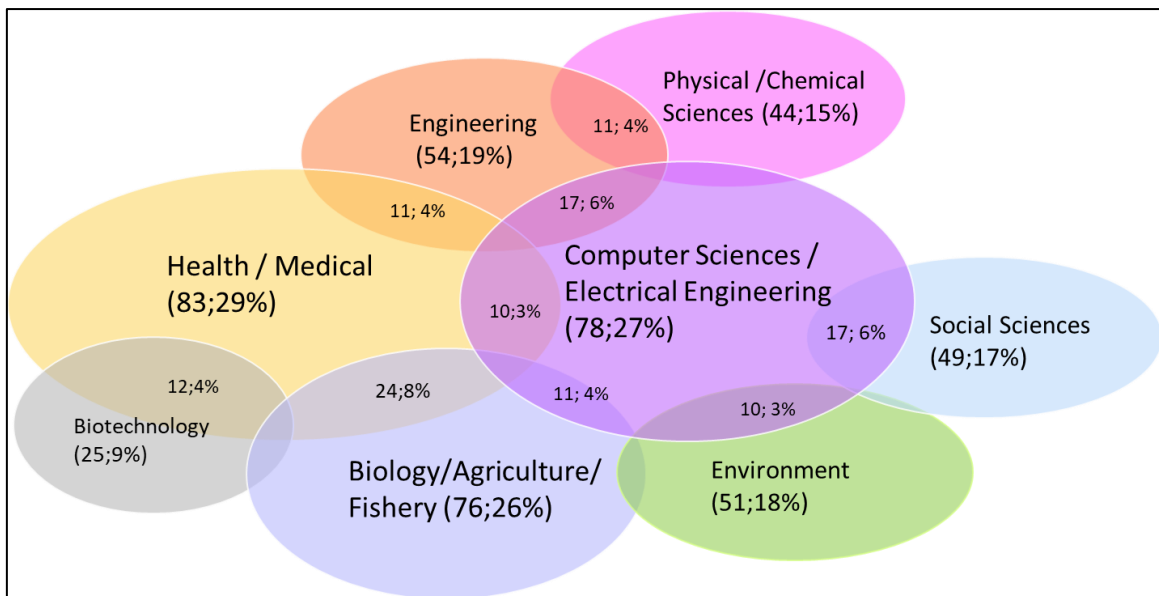


Figure 9. Overlap of the scientific areas by number of projects (overlaps with less than 10 projects are not shown).

The Venn-diagram in Figure 9 demonstrates the number and the percentage of projects contributing to one or more specific scientific domains. This shows that a single project may be represented in more than one category and that the numbers do not add up to the total number of projects and 100%. Please note that the figure can, therefore, not be interpreted as a regular Venn diagram with mutually exclusive assignment of each project to a category.

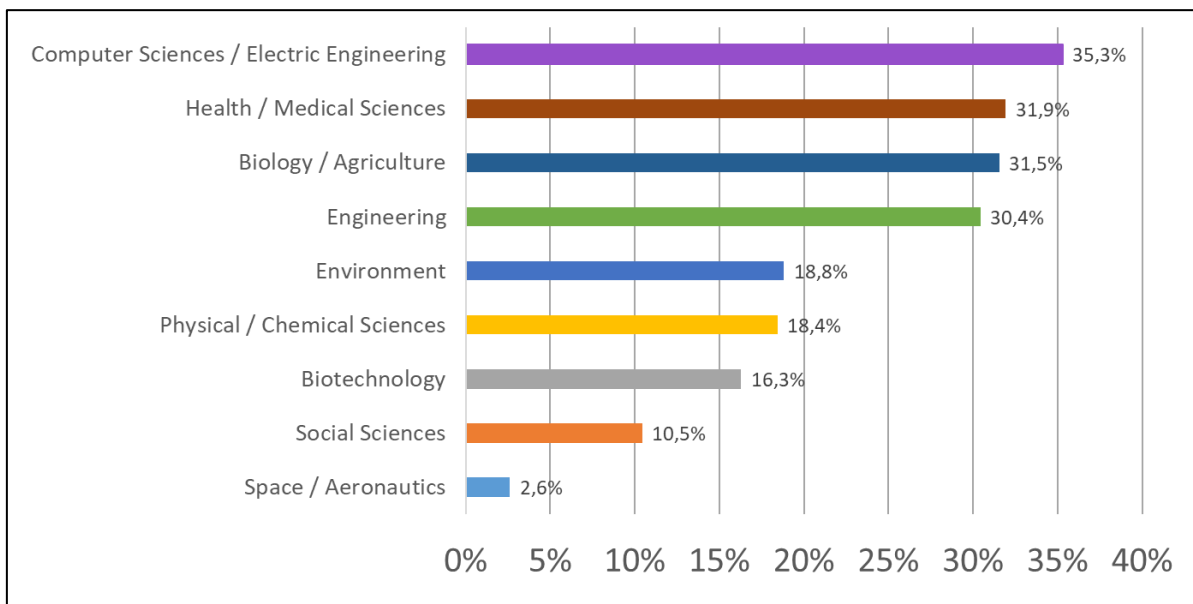


Figure 10. Percentage of budget contributing to the scientific domains in all SEWP H2020 projects.

As illustrated in Figure 10, a thematic analysis of SEWP portfolio indicates that that highest share of SEWP budget expenditure is dedicated to computer sciences/electric engineering (35.3%), followed by health/medical sciences and biology/agriculture (both around 30%). Also here, please note that the multidisciplinary approach has been used, where part of the projects contribute to more than one scientific category. The result is that the percentages in Figure 10 exceed 100%. The distribution of these three scientific domains by countries was further analysed by calculating the percentage of the budget for each given area spent by each Widening country. Figure 11, Figure 12 and Figure 13 show the budget expenditure distribution per country on each of the three areas.

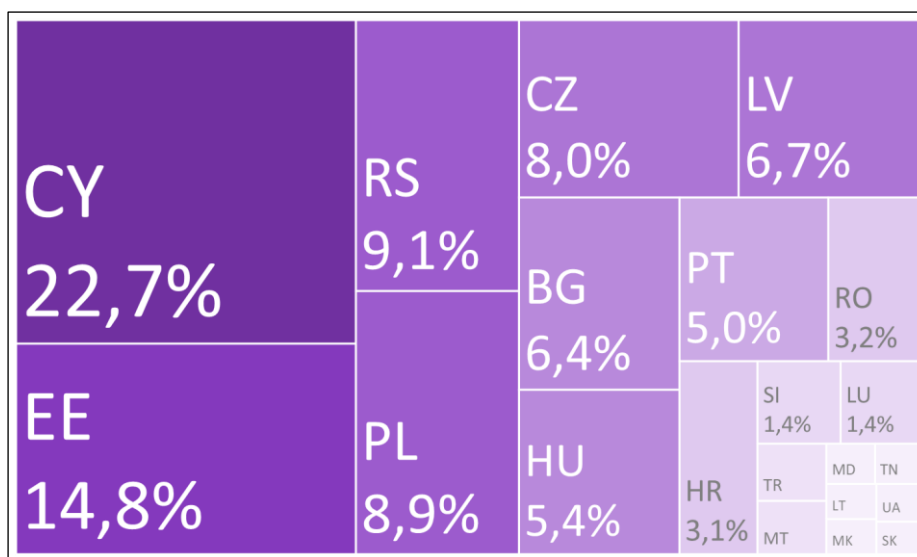


Figure 11. Percentage spent by country in the Computer Sciences and Electrical Engineering domain. Colour intensity and size is directly related with the share of budget spent by each country (lowest percentage 0,3%; labels of percentages <1% are not shown).

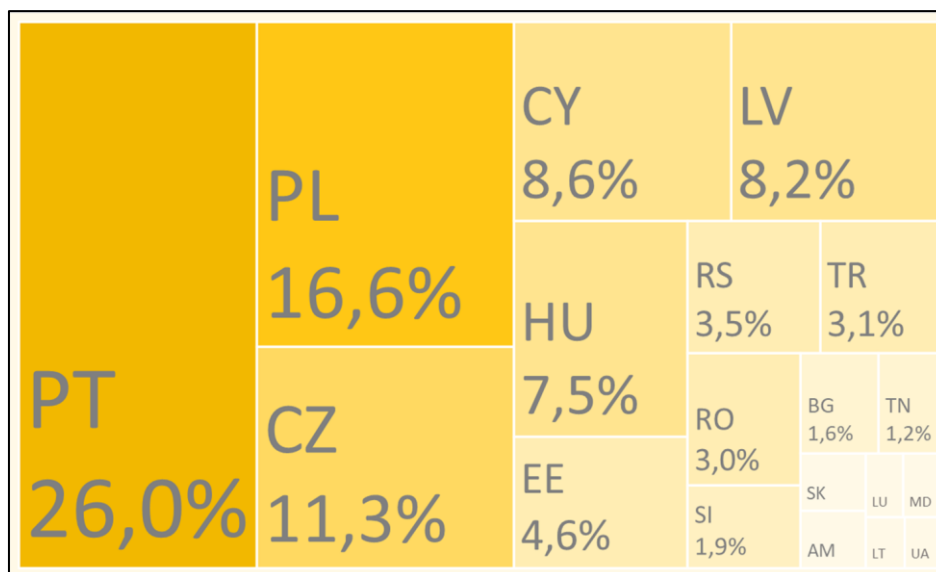


Figure 12. Percentage spent by country in the Health/Medical Sciences domain. Colour intensity and size is directly related with the share of budget spent by each country (lowest percentage 0,3%; labels of percentages <1% are not shown).

It is interesting to note that Cyprus, followed by Estonia, demonstrate the highest shares in terms of SEWP budget allocated to computer sciences and electrical engineering domain corresponding to 23% and 15% respectively (see Figure 11). In the domain of Health/Medical Sciences in terms of the share of budget spent, Portugal takes the lead (26%), followed by Poland (17%) and Czech Republic (11%) (Figure 12).

Finally, in the Biology/Agriculture domain, again Portugal takes the lead (Figure 13), reaching 33,3% of budget allocated to this domain, followed by Poland and Czech Republic. The two Widening countries that are further down in this categorization for the three domains are Slovakia and Lithuania.

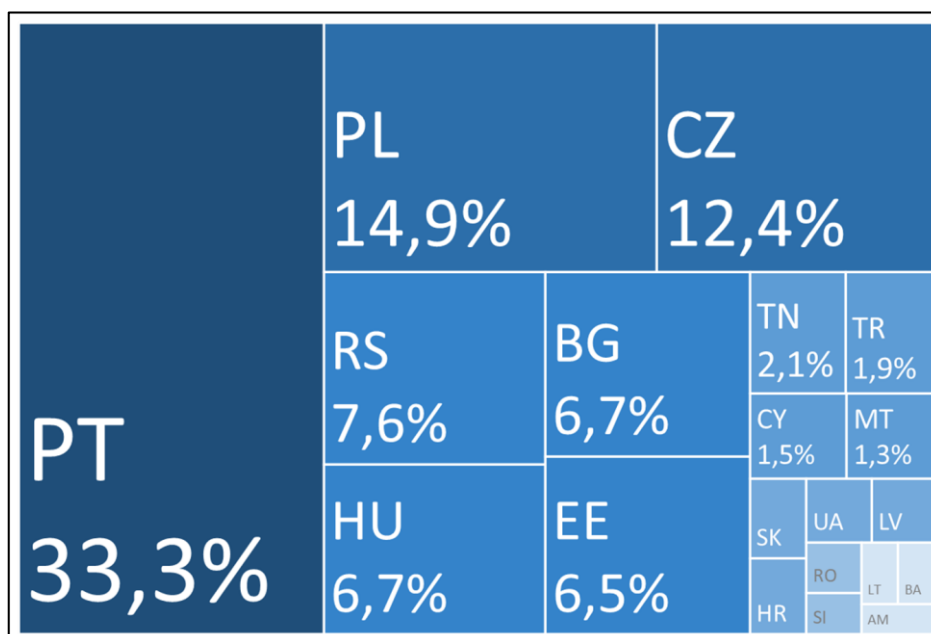


Figure 13. Percentage spent by country in the Biology/ Agriculture domain. Colour intensity and size is directly related with the share of budget spent by each country (lowest percentage 0,4%; labels of percentages <1% are not shown).



### 3.3. Horizon Europe Missions in Widening Portfolio

EU Missions are a novelty of the Framework Programme for Research and Innovation for the years 2021-2027, Horizon Europe and currently on the top of policy agendas of R&I. The missions were established to solve some of the major challenges and to support Commission priorities, such as the *European Green Deal and Europe fit for the Digital Age*. For instance, the Mission Climate is already a concrete element of the new *Climate Adaptation Strategy*, the Mission Cancer is part of the *Europe's Beating Cancer Plan* and the Mission Soil is a flagship initiative of the *Long-term Vision for the EU's Rural Areas*.

For the Widening portfolio, under each Mission's statement, a table shows the information concerning the projects that cover topics related to the respective Mission. In a broad sense, the Mission Cancer is the most represented with the higher share of projects that fall into Cancer topics, hence the one with the highest budget. As already mentioned in the section of Methodology, the data for this thematic analysis part was extracted using text mining tool (more details in the section 2).

The HE Missions in SEWP portfolio reveal that in terms of coordinating countries, Portugal is the most represented one: in four out of the five Missions (21% of the projects dealing with the Missions topics are coordinated by a Portuguese institution), with the exception of the Smart Cities.

The most relevant results concerning the scientific and technological domains tackled by the SEWP projects within each Mission are described below.

#### 3.3.1. CANCER

As provisioned in HE Framework Programme, there are certain targets established for each thematic Mission. For the Cancer Mission, the targets by 2030 are that more than 3 million more lives saved, living longer and better, achieve a thorough understanding of cancer, prevent what is preventable, optimize diagnosis and treatment, support the quality of life of all people exposed to cancer, and ensure equitable access to the above across Europe.

As shown in Table 4, within the SEWP portfolio, 28 projects deal with domains related to the Cancer topic. A deeper analysis of the fields on cancer research that SEWP projects are exploring shows that almost 40% of them deal with cancer therapy whereas the 32% are involved in the study of the risk factors and the ethology of the disease. The share of projects that tackle cancer diagnosis is 10% of the overall projects on cancer. Out of these 28 projects, 8 are coordinated by a Portuguese institution. Other countries with more than one project in this field are Estonia (3 projects) and Czech Republic (2 projects).



**Table 4. SEWP projects involved in the Horizon Europe Mission Cancer**

Project Number	Project Acronym	H2020 Call ID	Coordinator Country	Budget
692180	<a href="#">STREAM</a>	H2020-TWINN-2015 Twinning	PL	1.190.261,3 €
692202	<a href="#">CETM</a>	H2020-TWINN-2015 Twinning	EE	1.072.437,5 €
692293	<a href="#">VACTRAIN</a>	H2020-TWINN-2015 Twinning	LV	999.475,0 €
692298	<a href="#">MEDGENET</a>	H2020-TWINN-2015 Twinning	CZ	974.529,3 €
692322	<a href="#">ReTuBi</a>	H2020-TWINN-2015 Twinning	PT	999.975,0 €
810645	<a href="#">cGEM</a>	WIDESPREAD-03-2017-ERACHairs	EE	2.500.000,0 €
810653	<a href="#">QuantOCancer</a>	WIDESPREAD-03-2017-ERACHairs	PT	2.498.900,6 €
807281	<a href="#">ACORN</a>	WIDESPREAD-05-2017-Twinning	PT	1.000.000,0 €
810652	<a href="#">NanoMedTwin</a>	WIDESPREAD-05-2017-Twinning	MD	999.692,5 €
668983	<a href="#">FoReCaST</a>	H2020-WIDESPREAD-2014-2 ERA Chairs	PT	2.499.755,0 €
668989	<a href="#">TransGeno</a>	H2020-WIDESPREAD-2014-2 ERA Chairs	EE	2.409.700,0 €
857122	<a href="#">CY-BIOBANK</a>	WIDESPREAD-2018-01	CY	14.999.975,0 €
857470	<a href="#">NOMATEN</a>	H2020- WIDESPREAD-2018-01 Teaming 2	PL	14.985.682,5 €
852985	<a href="#">SIMICA</a>	H2020-WIDESPREAD-2018-03 Twinning	PT	800.000,0 €
857119	<a href="#">RiboMed</a>	H2020-WIDESPREAD-2018-03 Twinning	PT	799.750,0 €
857203	<a href="#">IMpaCT</a>	H2020-WIDESPREAD-2018-03 Twinning	PT	800.000,0 €
857381	<a href="#">VISION</a>	H2020-WIDESPREAD-2018-03 Twinning	SK	787.465,0 €
857491	<a href="#">REMODEL</a>	H2020-WIDESPREAD-2018-03 Twinning	PT	799.647,5 €
857502	<a href="#">MaNaCa</a>	H2020-WIDESPREAD-2018-03 Twinning	AM	798.112,5 €
856620	<a href="#">Chaperon</a>	H2020-WIDESPREAD-2018-04 ERA Chairs	CZ	2.487.241,3 €
856871	<a href="#">TRANSTEM</a>	H2020-WIDESPREAD-2018-04 ERA Chairs	BG	2.499.936,3 €
857418	<a href="#">COMBIVET</a>	H2020-WIDESPREAD-2018-04 ERA Chairs	EE	2.468.750,0 €
952390	<a href="#">ESEI-BioMed</a>	H2020-WIDESPREAD-2018-2020-6 ERA Chairs	RO	2.500.000,0 €
952259	<a href="#">NANOFACTS</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	899.823,8 €
952304	<a href="#">NEXT_LEVEL</a>	H2020-WIDESPREAD-2020-5 Twinning	PL	899.525,0 €
952417	<a href="#">ARICE</a>	H2020-WIDESPREAD-2020-5 Twinning	AM	877.363,8 €
952438	<a href="#">TREL</a>	H2020-WIDESPREAD-2020-5 Twinning	LT	898.927,5 €
952583	<a href="#">MICAfrica</a>	H2020-WIDESPREAD-2020-5 Twinning	TN	896.885,0 €
<b>Total</b>				<b>66.343.853,6 €</b>

### 3.3.2. CLIMATE CHANGE

In terms of Climate Change Mission, the target by 2030 is to prepare Europe to deal with climate disruptions, accelerate the transition to a healthy and prosperous future within safe planetary boundaries and scale up solutions for resilience that will trigger transformations in society.

Concerning this Mission, 11 projects in the SEWP portfolio develop technical and scientific solutions towards the mitigation of climate change. Out of these eleven projects, three are coordinated by Cyprus and two by Portugal. Some of the topics tackled in this mission overlap with Healthy Waters and Soil missions, as shown below in Table 5.

The main domains (not an exhaustive list) in which those projects focus are the following: Forest Resilience, Climatology, Soil Management, Freshwater Ecology, Solar Thermal Energy and Agriculture.



**Table 5. SEWP projects involved in the Horizon Europe Mission Climate Change**

Project Number	Project Acronym	H2020 Call ID	Coordinator Country	Budget
809943	<a href="#">GeoTwin</a>	H2020-WIDESPREAD-05-2017-Twinning	HR	996.717,5 €
810176	<a href="#">Clim4Vitis</a>	H2020-WIDESPREAD-05-2017-Twinning	PT	999.988,8 €
810812	<a href="#">FASTER</a>	H2020-WIDESPREAD-05-2017-Twinning	TN	998.250,0 €
667942	<a href="#">CySTEM</a>	H2020-WIDESPREAD-2014-2 ERA Chairs	CY	2.500.000,0 €
856612	<a href="#">EMME-CARE</a>	H2020- WIDESPREAD-2018-01 Teaming 2	CY	14.944.913,8 €
857510	<a href="#">EXCELSIOR</a>	H2020- WIDESPREAD-2018-01 Teaming 2	CY	15.000.000,0 €
951963	<a href="#">TREICLAKE</a>	H2020-WIDESPREAD-2020-5 Twinning	EE	899.750,0 €
952051	<a href="#">SOILdarity</a>	H2020-WIDESPREAD-2020-5 Twinning	PT	899.976,3 €
952314	<a href="#">ASFORCLIC</a>	H2020-WIDESPREAD-2020-5 Twinning	CZ	895.000,0 €
952384	<a href="#">EXtremeClimTwin</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	889.336,3 €
952396	<a href="#">SMARTWATER</a>	H2020-WIDESPREAD-2020-5 Twinning	BA	891.757,5 €
<b>Total</b>				<b>40.934.405,0 €</b>



### 3.3.3. HEALTHY OCEANS/ SEAS/ INLAND WATERS

The targets of the Healthy Oceans/ Seas/ Inland Waters Mission by 2030 are cleaning marine and fresh waters, restoring degraded ecosystems and habitats, decarbonizing the blue economy in order to sustainably harness the essential goods and services they provide.



[SMARTWATER](#) (BA), [TREICLAKE](#) (EE), [CySTEM](#) (CY), [GeoTwin](#) (HR), [FASTER](#) (TN) and [EXtremeClimTwin](#) (RS) projects are also included in the Climate Change cluster of projects, as both topics share a wide range of technological fields.

An overall of 12 SEWP projects deal with improving the health of oceans and waters. Among the represented countries, Portugal has three projects in this topic and Cyprus – two projects. The most represented domains are Hydrology, Marine Engineering and Energy, Fuels and Petroleum Engineering (Table 6).

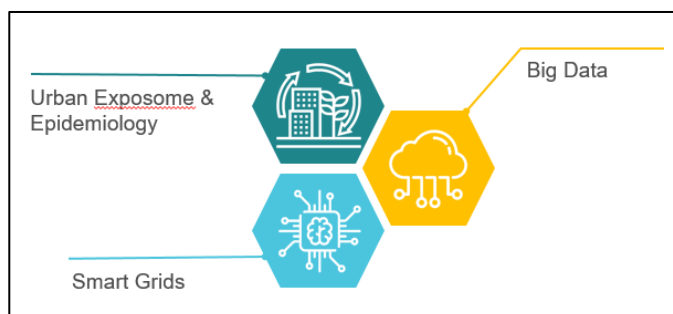
**Table 6. SEWP projects involved in the Horizon Europe Mission Healthy Oceans, Seas, Inland Waters**

Project Number	Project Acronym	H2020 Call ID	Coordinator Country	Budget
809943	<a href="#">GeoTwin</a>	H2020-WIDESPREAD-05-2017-Twinning	HR	996.717,5 €
810139	<a href="#">PORTWIMS</a>	H2020-WIDESPREAD-05-2017-Twinning	PT	997.626,3 €
810812	<a href="#">FASTER</a>	H2020-WIDESPREAD-05-2017-Twinning	TN	998.250,0 €
810980	<a href="#">ENeRAG</a>	H2020-WIDESPREAD-05-2017-Twinning	HU	999.038,8 €
667942	<a href="#">CySTEM</a>	H2020-WIDESPREAD-2014-2 ERA Chairs	CY	2.500.000,0 €
857586	<a href="#">CMMI - MaRITeC-X</a>	H2020- WIDESPREAD-2018-01 Teaming 2	CY	14.999.735,0 €
857552	<a href="#">REPARES</a>	H2020-WIDESPREAD-2018-03 Twinning	CZ	781.856,3 €
857631	<a href="#">TWIND</a>	H2020-WIDESPREAD-2018-03 Twinning	PT	795.825,0 €
951963	<a href="#">TREICLAKE</a>	H2020-WIDESPREAD-2020-5 Twinning	EE	899.750,0 €
952384	<a href="#">EXtremeClimTwin</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	889.336,3 €
952396	<a href="#">SMARTWATER</a>	H2020-WIDESPREAD-2020-5 Twinning	BA	891.757,5 €
952593	<a href="#">Waste2H2</a>	H2020-WIDESPREAD-2020-5 Twinning	PT	899.718,8 €
<b>Total</b>				<b>26.649.611,3 €</b>

### 3.3.4. SMART CITIES

The Mission of Smart Cities has also a target by 2030 to support, promote and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 and turn these cities into innovation hubs for all cities, benefiting quality of life and sustainability in Europe.

This Mission is the least represented within the SEWP portfolio (Table 7), however, the nine projects that cover technological fields to make our cities smarter, are developing the following areas of interest: Smart Mobility, Smart Grids, Urban Exposome and Pollutants, Landscape and Urban Ecology. Czech Republic has two projects linked to the topic, focusing on public health.



**Table 7. SEWP projects involved in the Horizon Europe Mission Smart Cities**

Project Number	Project Acronym	H2020 Call ID	Coordinator Country	Budget
809965	<a href="#">LAMBDA</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	984.952,0 €
809988	<a href="#">RENATURE</a>	H2020-WIDESPREAD-2020-5 Twinning	MT	995.885,0 €
664605	<a href="#">Smartpolis</a>	H2020-WIDESPREAD-2014-1 Teaming 1	HU	388.688,0 €
856602	<a href="#">FINEST TWINS</a>	H2020- WIDESPREAD-2018-01 Teaming 2	EE	15.000.000,0 €
857155	<a href="#">GATE</a>	H2020- WIDESPREAD-2018-01 Teaming 2	BG	14.999.497,0 €
857340	<a href="#">URBAN X</a>	H2020-WIDESPREAD-2018-03 Twinning	CZ	772.606,3 €
857592	<a href="#">TODO</a>	H2020-WIDESPREAD-2018-03 Twinning	HR	799.988,8 €
857487	<a href="#">R-Exposome Chair</a>	H2020-WIDESPREAD-2018-04 ERA Chairs	CZ	2.494.150,0 €
952140	<a href="#">SINERGY</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	892.500,0 €
<b>Total</b>				<b>36.939.578,0 €</b>

### 3.3.5. SOIL HEALTH AND FOOD

Regarding the Soil health and Food Mission the targets by 2030 indicate that at least 75% of all soils in the EU are healthy for food, people, nature and climate. The proposed mission combines research and innovation, education and training, investments and the demonstration of good

practices using “Living labs” (experiments and innovation in a laboratory on the ground) and “Lighthouses” (i.e. places to showcase good practices).



This mission covers a broad range of domains. This is reflected in the cluster of 22 projects within our portfolio that relate to technological and scientific fields that have, to some extent, an impact on soil and food quality. Moreover, the improvement of EU soils would positively affect the climate change, illustrating their interdisciplinary nature. In accordance with the aforementioned, 7 out of the 11 SEWP projects on Climate Change are also included in the Soil Health and Food mission ([GeoTwinn](#) (HR), [Clim4Vitis](#) (PT), [FASTER](#) (TN), [TREICLAKE](#) (EE), [ASFORCLIC](#) (CZ), [EXtremeClimTwin](#) (RS), [SMARTWATER](#) (BA)). It is pertinent to remark that the projects [SMARTWATER](#) (BA), [TREICLAKE](#) (EE), [GeoTwinn](#) (HR), [FASTER](#) (TN), and [EXtremeClimTwin](#) (RS) touch upon the Waters Health mission as well.

The most represented domains within this portfolio cluster (10 projects) are Agronomy and Geosciences. The following domains are heterogeneously distributed among 12 out of 22 projects: Soil Science, Forestry, Meteorology, Hydrology, Biotechnology, Biodiversity Conservation, Horticulture and Geotechnics (Table 8).

**Table 8. SEWP projects involved in the Horizon Europe Mission Soil Health and Food**

Project Number	Project Acronym	H2020 Call ID	Coordinator Country	Budget
739570	<a href="#">ANTARES</a>	H2020-WIDESPREAD-01-2016-2017-TeamingPhase2	RS	14.003.473,8 €
810630	<a href="#">VALORTECH</a>	H2020-WIDESPREAD-03-2017-ERACHairs	EE	2.498.625,0 €
809943	<a href="#">GeoTwin</a>	H2020-WIDESPREAD-05-2017-Twinning	HR	996.717,5 €
809988	<a href="#">RENATURE</a>	H2020-WIDESPREAD-05-2017-Twinning	MT	995.885,0 €
810176	<a href="#">Clim4Vitis</a>	H2020-WIDESPREAD-05-2017-Twinning	PT	999.988,8 €
810775	<a href="#">DRAGON</a>	H2020-WIDESPREAD-05-2017-Twinning	RS	962.750,0 €
810812	<a href="#">FASTER</a>	H2020-WIDESPREAD-05-2017-Twinning	TN	998.250,0 €
857251	<a href="#">BIOPOLIS</a>	H2020- WIDESPREAD-2018-01 Teaming 2	PT	14.988.525,0 €
857612	<a href="#">GATHERS</a>	H2020-WIDESPREAD-2018-03 Twinning	PL	796.050,0 €
854248	<a href="#">TROPiBIO</a>	H2020-WIDESPREAD-2018-04 ERA Chairs	PT	2.496.545,0 €
952594	<a href="#">DRIFT-FOOD</a>	H2020-WIDESPREAD-2018-2020-6 ERA Chairs	CZ	2.487.625,0 €
952601	<a href="#">WELCOME2</a>	H2020-WIDESPREAD-2018-2020-6 ERA Chairs	PL	2.499.887,5 €
951963	<a href="#">TREICLAKE</a>	H2020-WIDESPREAD-2020-5 Twinning	EE	899.750,0 €
952051	<a href="#">SOILdarity</a>	H2020-WIDESPREAD-2020-5 Twinning	PT	899.976,3 €
952111	<a href="#">EOTiST</a>	H2020-WIDESPREAD-2020-5 Twinning	PL	896.875,0 €
952303	<a href="#">AgriFoodBoost</a>	H2020-WIDESPREAD-2020-5 Twinning	HR	899.315,0 €
952314	<a href="#">ASFORCLIC</a>	H2020-WIDESPREAD-2020-5 Twinning	CZ	895.000,0 €
952327	<a href="#">HES-GEO</a>	H2020-WIDESPREAD-2020-5 Twinning	PL	898.250,0 €
952330	<a href="#">STARGATE</a>	H2020-WIDESPREAD-2020-5 Twinning	PT	899.221,3 €
952337	<a href="#">MycoTWIN</a>	H2020-WIDESPREAD-2020-5 Twinning	TR	899.806,3 €
952384	<a href="#">EXtremeClimTwin</a>	H2020-WIDESPREAD-2020-5 Twinning	RS	889.336,3 €
952396	<a href="#">SMARTWATER</a>	H2020-WIDESPREAD-2020-5 Twinning	BA	891.757,5 €
<b>Total</b>				<b>53.693.610,0 €</b>

### 3.4. Synergies from Cluster Events

Based on the project clustering results described above, it is possible to organize cluster meetings that bring together different actors of a cluster. Typically, the participants are project beneficiaries and stakeholders from the funded institution, REA and the Commission.

Cluster meetings can take different forms: they can be organized by REA and the Commission through the fruitful collaboration between EC and Agencies with participants from different programmes, or they can be linked to an existing event, for instance, a scientific conference, where funding opportunities and EU funded projects can be displayed towards a broader audience.

Cluster meetings serve multiple purposes:

- Support the Widening/ERA objectives displaying efforts and achievements of the beneficiaries; thus, increasing their reputation. This brings also an increase of the institution's attractiveness for researchers.
- Provide information on funding opportunities and help create new networks and partnerships that can become durable.
- Provide recommendations for policy makers that contribute to shaping programmes and legislation. The presence of policy makers also helps young scientists to relate to them.
- Contributes to the creation of new cooperation among institutions and universities.
- Help identify innovation and help bridge the gap between academia and industry.
- Help identify emerging topics and knowledge development needs in specific research fields.
- Have a positive impact on bringing the EU institutions closer to the citizens they serve.

#### *Sustainable Agriculture and Natural Resources - REA.C3 first cluster meeting*

With these synergies in mind, REA.C3 has organized its first independent cluster meeting on *Sustainable Agriculture and Natural Resources*, which took place online on 20 May 2021. The clustering analysis showed that the topic of agriculture and natural resources is rather prominent in SEWP portfolio and also has close links to the Mission of Soil Health and Food.

The relevant R&I policy context for this event is mainly reflected in Societal Challenge 2 of the Horizon 2020 Framework Programme (Food security, sustainable agriculture and forestry, marine/ maritime and inland water research, and the Bioeconomy) and in Cluster 6 and the Mission on Soil Health and Food of the new Horizon Europe Framework Programme. In particular, the topics in sustainable agriculture and management of related natural resources are directly relevant for some of the strategies in the European Green Deal, such as the "Biodiversity" strategy and "Farm to Fork" strategy.

In total, 50 projects participated in the meeting: 27 projects from the Widening programme, 3 COST actions and 20 projects managed in other relevant programmes including projects in the domains of Societal Challenge 2 (H2020) and Cluster 6 (HE). Besides the project representatives, the cluster meeting has been attended by Commission staff, REA staff and external speakers.

Overall, the Cluster has provided an interesting overview of EU policies and demonstrated complementary knowledge and expertise across projects: before the meeting, a survey was sent to the participants who expressed both their needs for knowledge and expertise and also the knowledge and expertise that they are willing to share. This resulted in a 'mapping' exercise, which revealed important matches between knowledge needs in one project and

existing knowledge and experience available in other projects demonstrating real opportunities arising from such a cluster meeting.

In particular, the wish to expand contacts with stakeholders, the wish to have access to specific scientific knowledge/techniques and access to knowledge on implementation and impact, have been mentioned frequently by projects (Figure 14).

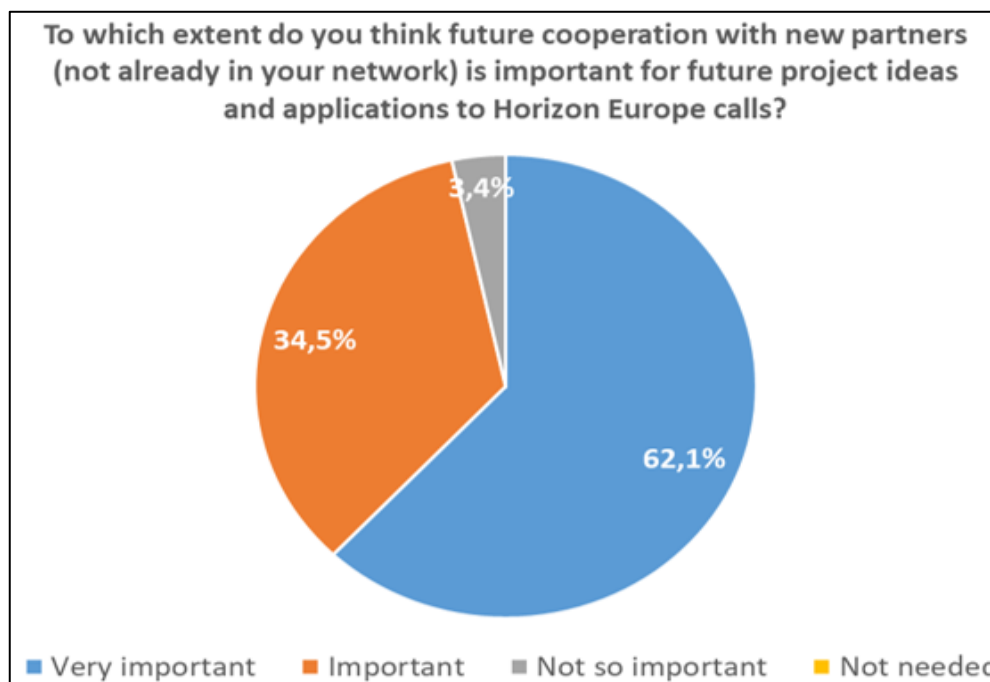


Figure 14. Importance of cooperation in clusters

After the meeting, an anonymous survey has been carried out, which reveals that the meeting has been a positive experience for the participants. In particular, 92% of the respondents declare to have received useful information, 66% declare to have been/have the intention to be in contact with other participants. Finally, 96% consider future cooperation important to very important.

Both the discussion in the cluster and the survey put forward the need to further support networks and the discussion on future research topics. Cluster events are considered ideal venues for networking. In SEWP this is also built on very good experiences from the Teaming Club, where all funded Teaming 2 projects meet on a regular basis to discuss upcoming challenges and, hence, discover new ways for collaboration.

Participants also suggested adding on the value of networking by mapping existing networks and further developing them. Ideally, there should be a common platform to effectively build upon new ideas, create consortia for new calls and cross-fertilise topics and regions. The current tool in the Funding and Tenders Portal of Horizon Europe to find partners, is rather general and may not be as effective as creating a community of projects with direct interaction around a specific subject. The suggestions put forward by the participants of cluster event are illustrated in Figure 15 which clearly shows their wish to have more of these types of participatory meetings on specific scientific topics, as well as enhancement and creation of dedicated e-platforms where the material to support projects in their endeavour towards cooperation and exchange is made available. Moreover, projects also emphasised the need of interactions and regular meetings involving businesses and

enhancing their linked activities with projects. It is evident, that such types of events are highly appreciated by the beneficiaries and the Commission plays an important role in supporting such initiatives. It is important to note that these events should also serve as a starting point for the projects to proactively develop their own interactions, exchanges and regular meetings with the networks and contacts made at such cluster meetings. The Commission provides the initial opportunity for such interactions and it is the responsibility of the projects themselves to build upon these first discussions.

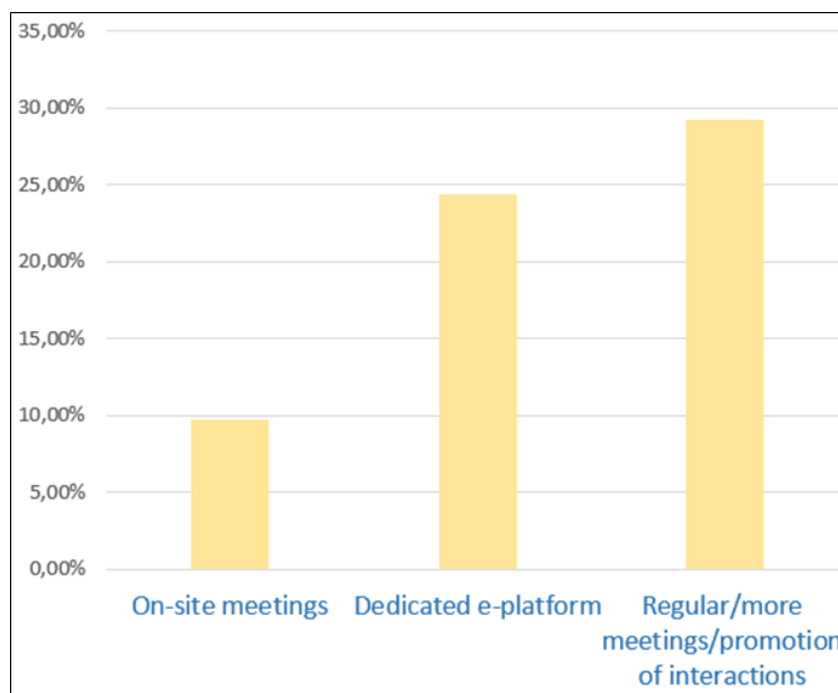


Figure 15. Suggestions from participants after the cluster event

### 3.5. Smart Specialization Strategies

Conceived within the reformed Cohesion policy of the European Commission, Smart Specialisation is a place-based approach characterised by the identification of strategic areas for intervention.<sup>7</sup>

Smart Specialisation Strategy (S3) is defined in the context of Research and Innovation Smart Specialisation Strategies (RIS3) which aims to contribute to the Europe 2020 objectives of smart, sustainable and inclusive growth by enhancing EU regional and national potential in research and innovation. In the context of Horizon Europe Programme, Smart Specialisation Strategies are highly emphasized for Widening Actions stating that “reinforcing the networking interconnecting geographically or thematically, the ecosystem actors on the basis of smart specialisation and other strategic considerations, such as value chains, will consequently stimulate excellence and complete the coverage across Europe.”

It is clear that Smart Specialisation is linked to innovation policy concept that aims to boost regional innovation, contributing to growth and prosperity by helping and enabling regions to focus on their strengths, which is pertinent for Widening projects. The core of this concept is to nurture the partnerships between businesses, public entities and knowledge

<sup>7</sup> <https://s3platform.jrc.ec.europa.eu/what-we-do>



institutions. In the Widening Programme this agenda should support the economic transitions and smart specialisation strategies, as well as job creation and skills development to better absorb talent in a country or region.

### 3.5.1. Smart Specialisation Strategies in H2020 SEWP Projects

Table 9 shows some preliminary results on the percentage of total project budget managed by the Widening countries that matches with the national formulated Smart Specialisation Strategy (S3) domains in H2020 projects.

Malta, Cyprus, Bulgaria, Latvia and Slovenia are the countries that seem to align best their Smart Specialisation priorities to the domains of their funded projects in the Widening Programme.

The results in Table 9 should be handled with caution. Not all the Widening countries are included in this table as this is based on information available in the S3 platform (see earlier reference) in which not all countries are represented. Some countries have very limited number of SEWP projects in H2020 which makes the percentage less informative. Next to this, the description of the S3 in each country varies, for example in the level of detail with very broad topics or very narrow fields of interest. Therefore, a match between the projects' domains and the defined areas for S3 may be more likely in a country with broadly defined S3 areas as compared to countries with very specific S3 descriptions. Lastly, it should be noted that S3 priorities are not necessarily defined as scientific domains (for example 'tourism') which makes a smooth match not always possible.

**Table 9. Percentage of total project budget managed in the coordinating Widening countries matching the national Smart Specialisation Strategy Domains (H2020)**

Widening country	% SEWP budget within S3 domain
MT	100%
CY	95%
BG	92%
LV	90%
SI	84%
EE	69%
SK	69%
RS	67%
LT	60%
RO	55%
HR	53%
HU	48%
PT	44%
PL	38%
CZ	16%



### 3.5.2. Smart Specialisation Strategies in HE Widening Proposals

As already explained earlier, Smart Specialisation is an approach that aims at identifying each region's own strengths and comparative assets. This way research and innovation investments can be focussed on the selected competitive areas creating an advantage for those regions.

**Annex B** shows the Smart Specializations chosen by European countries of the Widening area and of the Western Balkans based on the JRC database that can be consulted following this link: <https://s3platform.jrc.ec.europa.eu/where-we-are>.

It would be interesting to know if the countries have implemented this Smart Specialization approach in reality. As the Widening Programme represents only one part of overall investments, it cannot be considered as a full representation of S3 implementation. However, some empirical evidence can be provided in projects and also in proposals. The evaluation of proposals is very competitive and the number of proposals is approximately nine times higher than the number of successful projects, and thus, an analysis of the proposals' topics may provide a broader empirical view about what the different applicants are working on in relation to S3.

The first two calls of Horizon Europe managed by REA.C3 (Teaming: HORIZON-WIDERA-2022-ACCESS-01-two-stage) and Twinning - Western Balkans (HORIZON-WIDERA-2021-ACCESS-06) included 217 proposals. Their topics have been matched with the Smart Specialization chosen by the participating countries. It is interesting to see that for most of the countries the match is high both in terms of number of proposals and of budget. Figure 16 and Table 10 show this trend: for instance taking the example of Portugal, 80% of proposals presented to the call by Portuguese applicants match one of the Smart Specializations chosen by Portugal. Besides, these proposals comprise 88% of the budget requested by all applicants from Portugal.

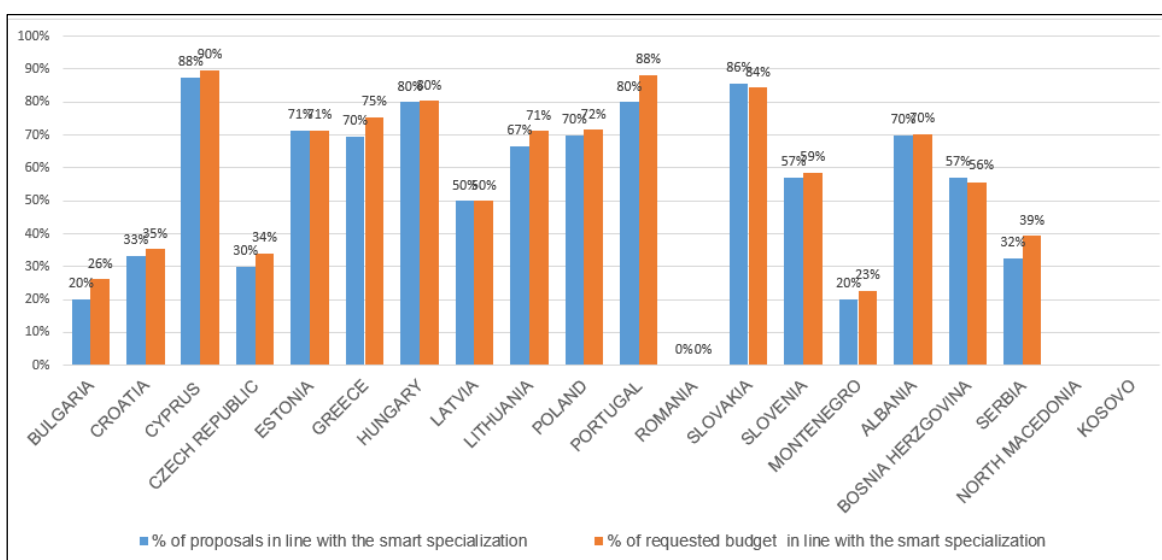


Figure 16. Percentage of submitted proposal and of budget in line with the smart specializations of each country

The results shows that the highest match, both in terms of number of proposals and budget, is implemented by **Cyprus, Portugal, Hungary and Slovakia** (Table 10).

The analysis also shows that not all specializations are matched by the submitted proposals. In addition, Annex B indicates how many proposals are presented per Smart Specialization. For example, in Cyprus, proposals are presented with topics matching 3 out of the 8 Smart Specializations and most of the proposals are dedicated to the specialization of ICT and biomedical application.

**Table 10. HE Proposals and budget within the S3 domains.**

Widening Country	Submitted Proposals	% of proposals within S3 domain	% of budget within S3 domain
BG	5	20%	26%
HR	3	33%	35%
CY	8	88%	90%
CZ	10	30%	34%
EE	7	71%	71%
EL	23	70%	75%
HU	5	80%	80%
LV	2	50%	50%
LT	3	67%	71%
PL	10	70%	72%
PT	10	80%	88%
RO	3	0%	0%
SK	7	86%	84%
SI	7	57%	59%
ME	5	20%	23%
AL	11	70%	70%
BA	14	57%	56%
RS	77	32%	39%

## 4. Scientific, Societal and Economic Impacts

Horizon Europe Framework highlights three groups of indicators focusing on **Scientific, Societal and Economic Impacts**. They are referred to as Key Impact Pathways and they are the essential part of the Horizon Indicator Framework (Figure 17).

Although in the current report we apply the structure of these three groups of impacts as an outlook to Horizon Europe, the results presented here show the impacts emerging from H2020 SEWP Actions. The results and key messages presented in the sections below are based on the outcomes of D&E survey and dedicated surveys to Teaming, Twinning and ERA Chair Actions.

In this section the word “pathways” is not used as here we are not referring to the length of achieving these impacts, but rather highlighting the key outputs so far obtained in terms of scientific, societal and economic dimensions. The structure of 9 impacts falling into the three groups (Figure 17) is used as an orientation to demonstrate the impacts of EU funding for R&I (to citizens, legislator, budget authority) in the context of SEWP Programme.

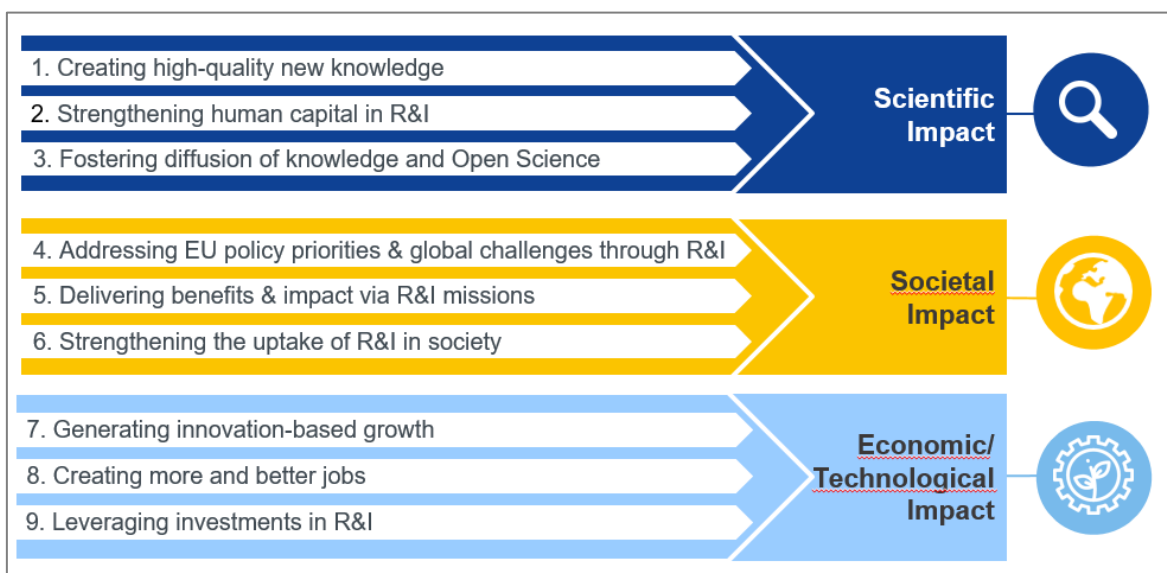


Figure 17. Structure of Key Impacts in HE Framework Programme

### 4.1. Scientific Impact in Widening Projects

As highlighted in the HE Framework, **scientific impacts** are there to create and diffuse high-quality new knowledge, skills, technologies and solutions to global challenges. In particular, as highlighted in the HE scheme, scientific impacts here refer to (1) generation of high-quality new knowledge, (2) strengthening human capital in R&I and (3) fostering diffusion of knowledge and Open Science. In the current study these aspects are addressed in the context of SEWP projects, highlighting the main scientific impacts evolving from Teaming, Twinning and ERA Chairs.

### 4.1.1. High quality new knowledge

Generation of new knowledge is a characteristic of human effort, which is of utmost importance for the future of our world in solving most challenging problems and it is a vital element of research excellence. The D&E survey shows that the results of projects under the SEWP Work Programme reveal a certain degree of innovation and this is especially explicit for the Teaming Action, which is a flagship of the SEWP Programme (Figure 18). This is an interesting result, given that the CSAs in SEWP are not directly targeting innovation. Therefore, the analysis of this aspect was deepened in this study. More details on this aspect are given in the D&E section.

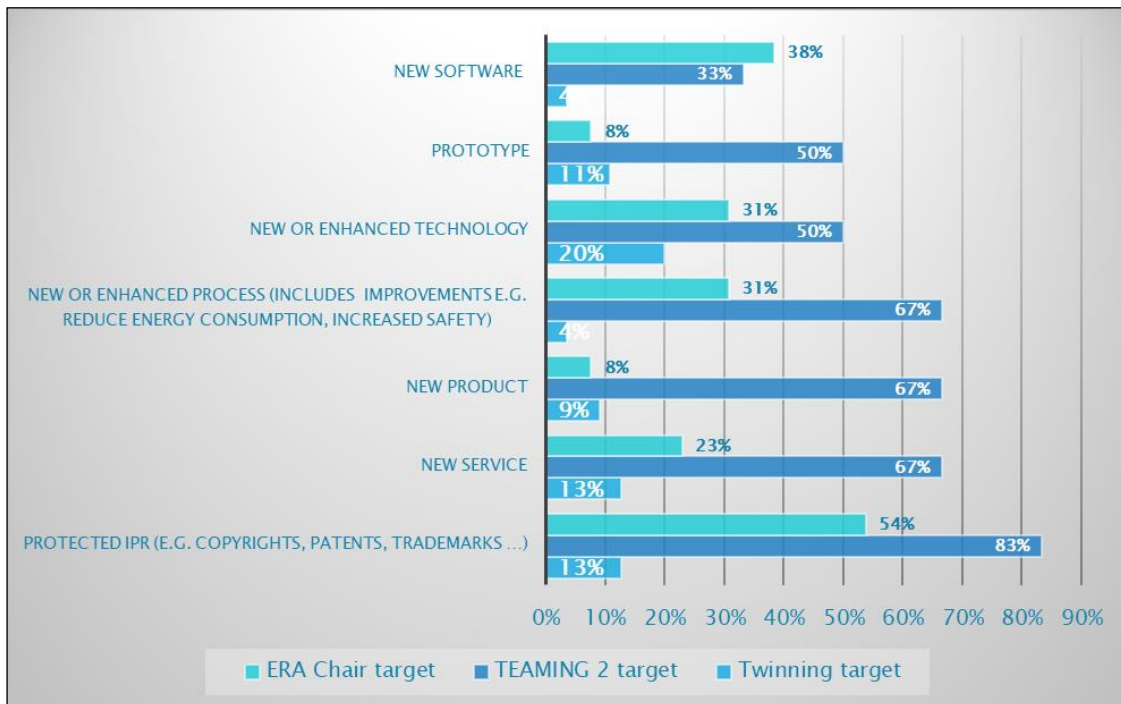


Figure 18. SEWP WP reveal a certain degree of innovation

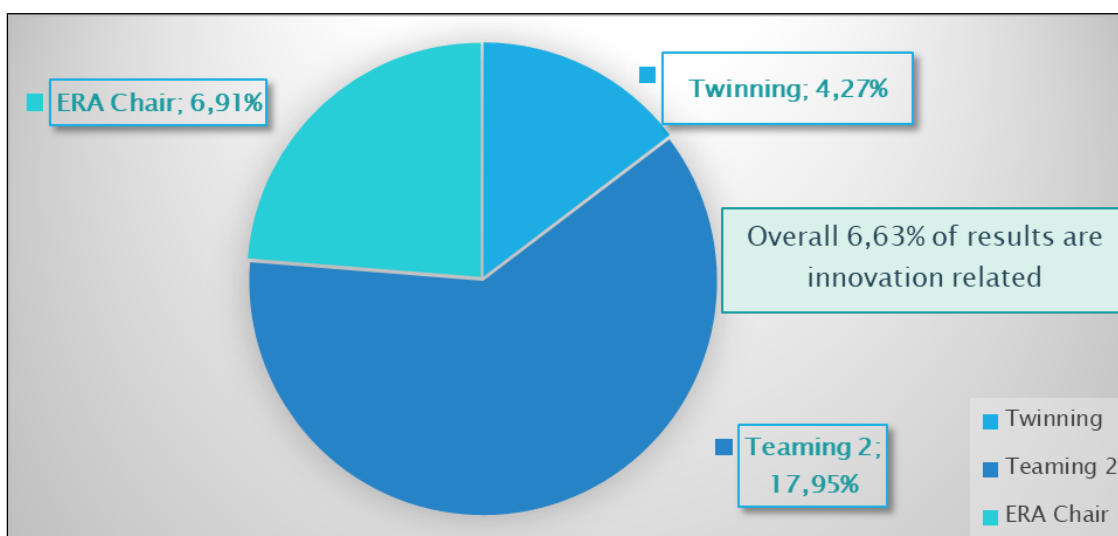


Figure 19. Percentage share of innovation in SEWP projects

Figure 19, further illustrates the SEWP results that can be considered as affecting innovation. Overall, innovation results for Widening are almost 7%. As already mentioned above, the highest share of innovation is observed in Teaming 2 with almost 18% of innovation related results, and this is followed by ERA Chair action with nearly 7% and Twinning – being the lowest actor in terms of innovation with around 4%. The emerging innovation aspect in Widening Programme is a good sign of generating new knowledge and contribution to the scientific excellence.

#### 4.1.2. Strengthening human capital and reaching excellence in R&I

One of the core of objectives of Widening Programme refers to strengthening the human capital part of European research infrastructures. In this context, human capital includes strengthening the skills, training, experience, education, knowledge, know-how, and competencies to reach excellence in R&I systems of Widening countries and to diminish the disparities across the whole European Union in terms of research and innovation performance. Recruitment plays a key role because a new talent, high level professionals are essential in granting success and aspects such as knowledge and expertise can be drawn on and developed when required.

In the below sections, some of the major highlights emerging from the SEWP Programme in terms of international recruitment and main measures in reaching excellence, enhancing research profile and attractiveness of coordinating institutions in Widening countries are presented.

##### *Recruitment of international staff*

International recruitment is very important for visibility, for raising the research profile and attractiveness of Widening institutions and can act as a catalyst for more significant and welcomed change. It may contribute not only in terms of expanding the talent pool and enriching workplace culture at the institutions, but also may help to foster novel ideas and contribute to research excellence. Although the international recruitment is not a binding requirement of SEWP, it is, however, strongly encouraged and supported by the objectives of the Work Programme and takes on a stronger role in the HE Work Programme.

##### *Teaming projects*

As illustrated in Figure 20 below, recruitment of international staff was prominent in the projects of Teaming calls. The results from Teaming 2018/2019 Call showed that lower international recruitment could be attributed to the COVID-19 crisis, which has severely delayed project implementation. This is arguably less evident for the projects from the Teaming 2016/2017 Call whereby at the end of Reporting Period 3 (RP3) most of the staff had been already recruited.

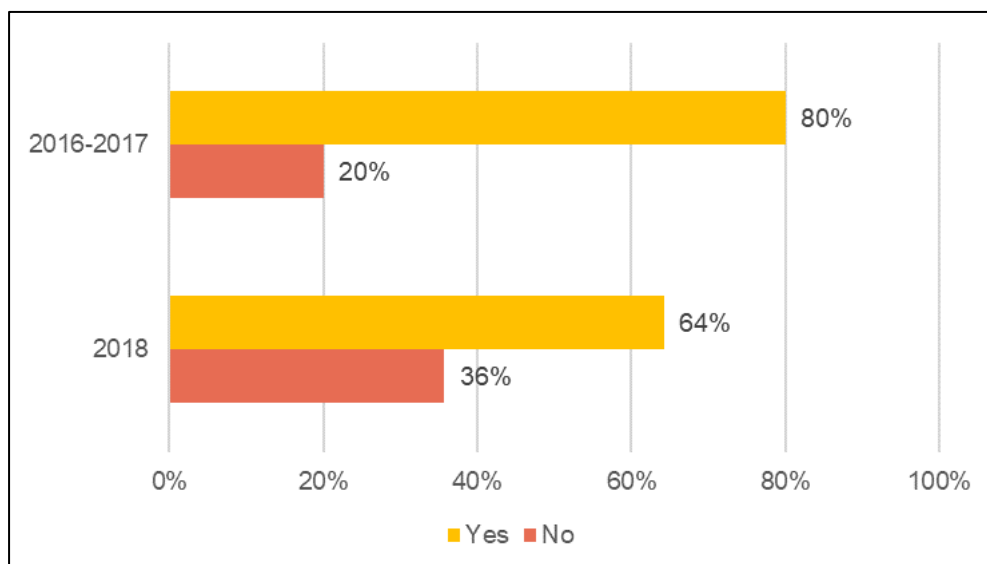


Figure 20. Recruitment of international staff in Teaming Action (2016/2017 and 2018/2019 Calls)

### ERA Chair projects

The results of the ERA Chair survey indicate (Figure 21) that the application of the ERA principles in the recruitment of the ERA Chair (open/international competition, merit-based and transparent) is frequently a common practice (accounts for around 80% and more in all the three calls). Only very few projects regarded this as a novelty in the institution (up to 23%).

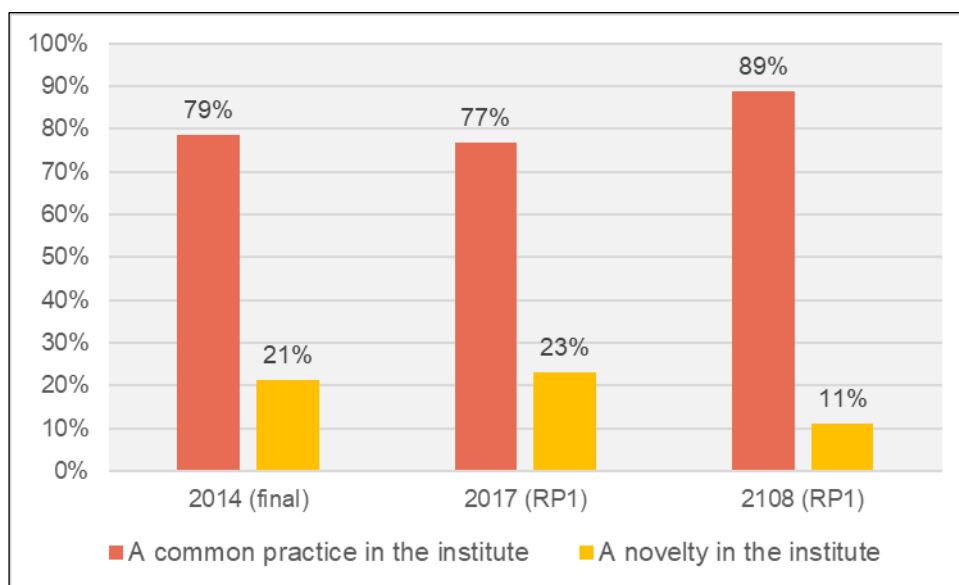


Figure 21. Application of the ERA principles in the recruitment of ERA Chair holders

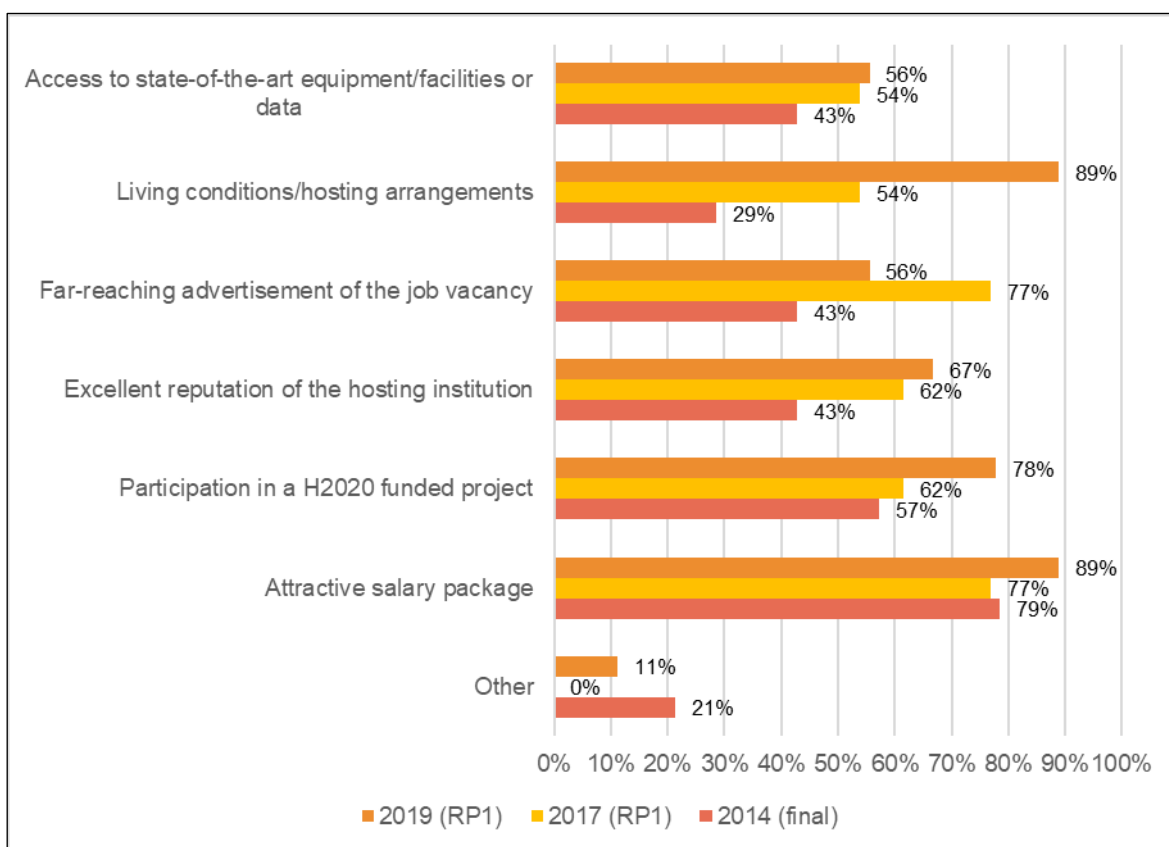


Figure 22. Key factors in successful recruitment (ERA Chair Calls)

In terms of key factors in successful recruitment, all the three ERA Chair calls similarly highlighted attractive salary package (from 77% to 89%), participation in a H2020 funded project (from 57% to 78%) and excellent reputation of hosting institution (from 43% to 67%) (Figure 22). In addition, for the ERA Chair 2019 Call also living conditions/ hosting arrangements played a highly significant role in recruitment and this factor together with attractive salary package both accounted for 89%.

The recruitment of ERA Chair holders can be a challenging process as confirmed by the results from H2020 ERA Chair Calls. Fortunately, this is not required anymore under the HE ERA Chair Calls, as the ERA Chair holder is already identified and included in the proposal. Figure 23 shows that among the main difficulties in attracting suitable candidates the Coordinators noted the lack of long-term commitment the ERA Chair position implies and that candidates did not want to give up positions with previous employers. These results are especially pronounced for 2019 and 2014 ERA Chair Calls. In addition, 36% of projects in the 2014 Call remarked that Widening countries may be an unattractive place to develop a competitive scientific career; however, this is not specifically emphasised by the 2017 and 2019 ERA Chair coordinators.

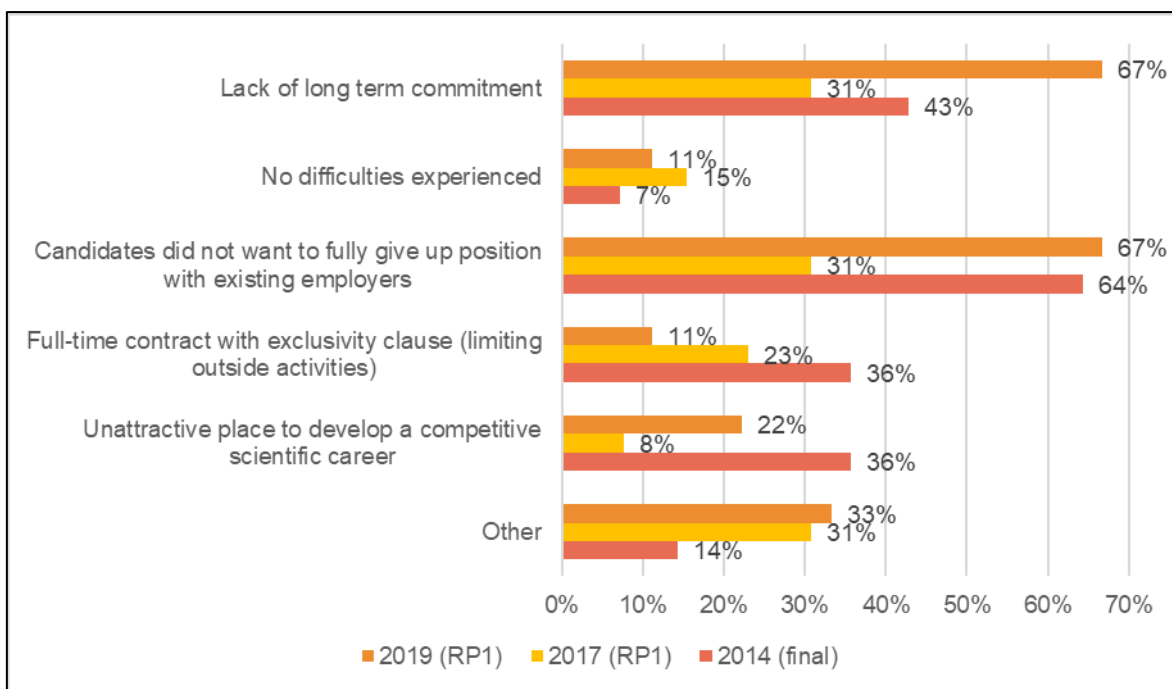


Figure 23. Main difficulties in recruitment of ERA Chair holders

With regard to the origin of ERA Chair holders, the majority (41%) come from non-Widening EU countries, followed by ERA Chair holders originating from Widening countries (36%) and then – from other countries (23%).

A large part (20%) of ERA Chair holders originating from Widening countries are returning nationals and among the Widening countries, the most prominent numbers of ERA holders are originally from Greece, Portugal, Poland and Czech Republic.

In terms of non-Widening countries – the largest flows of ERA Chair holders come from Sweden, Germany and France. Among other countries, the most frequent ERA holders are from India and Iran (Figure 24).



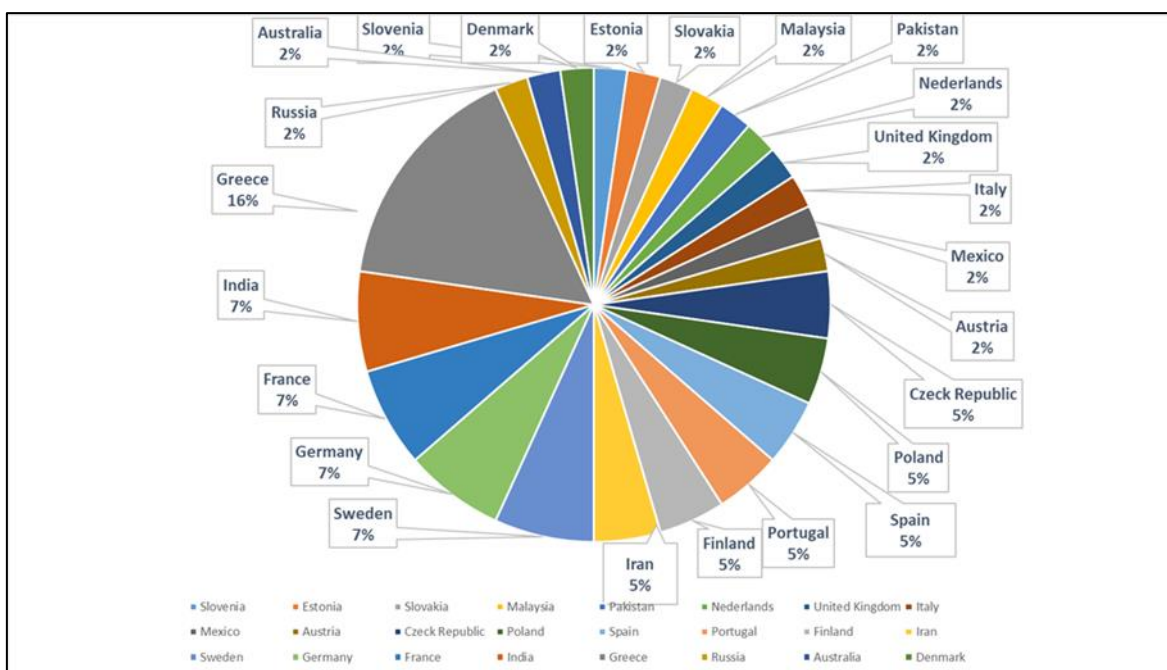


Figure 24. Range of ERA Chair holder nationalities

### Twinning projects

In nearly half (13 projects - 43%) of the projects of the Twinning 2018 call, recruitment from abroad by the coordinator's institution as a follow up of networking activities was observed. Moreover, there were on average between 1-4 persons recruited from abroad at the coordinators' premises.

Where it was not possible to recruit through Twinning networking, the reasons were related to unattractive salaries in the Widening institute, restrictions of national employment law in terms of increasing the number of faculty staff, or recruited staff was already residing in the country. Other projects highlighted that it was not planned to hire staff from abroad, as it was not an explicit goal of the Twinning Action. Some projects indicated that at first reporting period it is still too early to have conclusions on the recruitment of staff from networking partners.

A new point added in the survey of 2017 and 2018 calls, compared to the questionnaire of Twinning 2015 Call, was to see whether there was some recruitment of staff by non-Widening partners from Widening partners. As can be seen in the Figure 25 below, only 17% of projects from the 2017 call and 8% of projects from the 2018 Call reported such recruitment.

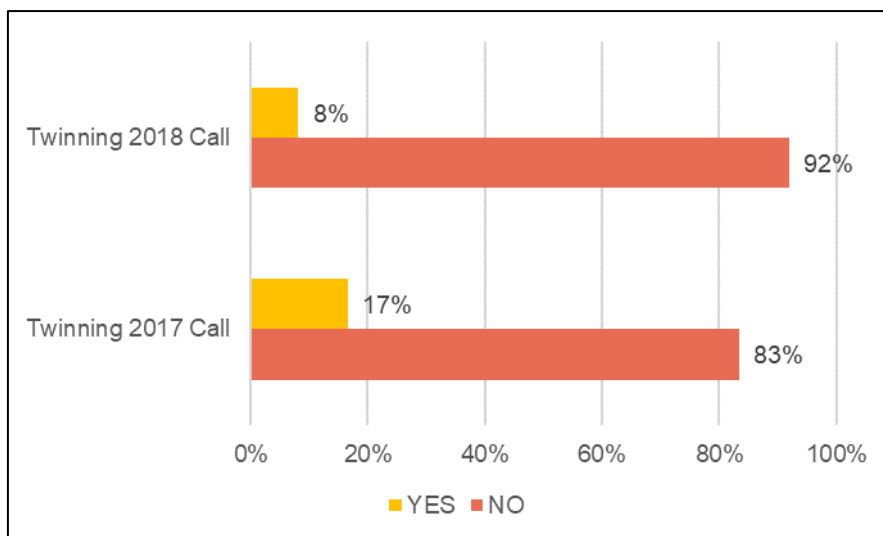


Figure 25. Recruitment of staff by non-Widening partners from Widening institutions in Twinning Action

### Research excellence, profile and attractiveness of research institutions

#### Teaming projects

Strengthening human capital in R&I is one of the important aspect in Widening actions, directly contributing to such scientific impacts as research excellence, profile and attractiveness of research institutions. SEWP survey results indicate that in Teaming, the highest impacts on research excellence are linked to strengthening skills originating from new international activities and R&I collaborations, as well as from publishing in high impact journals and developing new research topics (Figure 26).

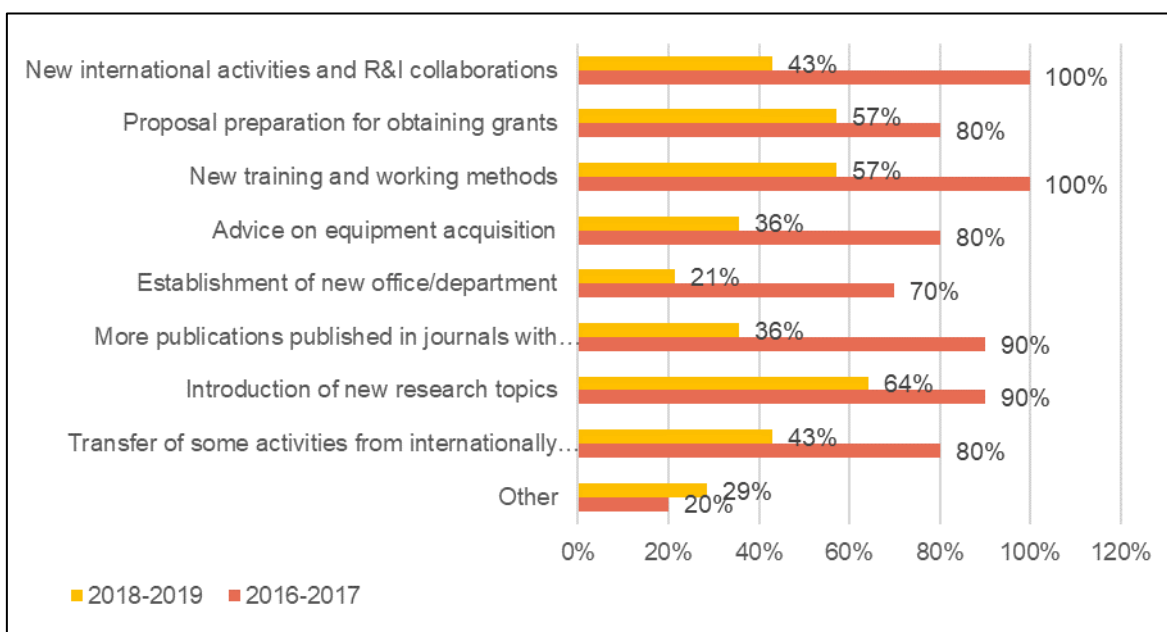


Figure 26. Research Excellence, Teaming Phase 2 Call 2016/ 2017 vs Call 2018/ 2019 [%]

A different share of relevant indicators of two Teaming Calls is illustrated in Figure 27 and these differences are a reflection of different level of maturity of the projects. Teaming 2016/2017 Call projects ended the third reporting period of their project lifetime, while 2018/2019 Call are just starting their second interim stage reporting period (Teaming projects of 84 months normally have five reporting periods). In terms of raising the research profile and visibility of the coordinating institutions, communication, dissemination and publications play a prominent role for all Teaming Phase 2 projects.

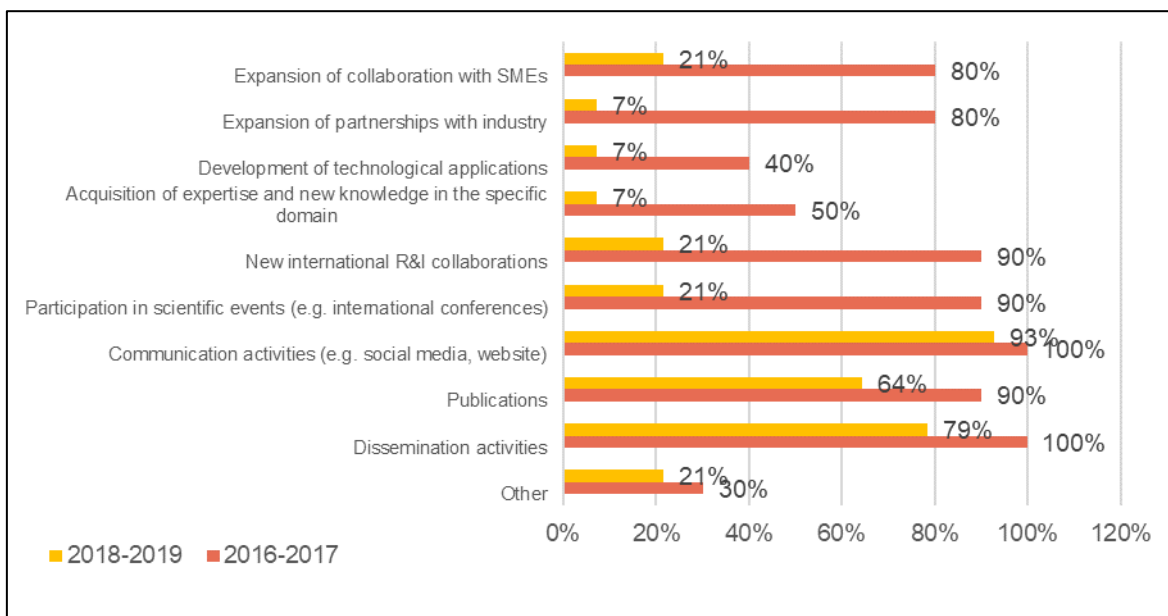


Figure 27. Research profile and visibility, Comparative analysis Teaming Phase 2 Call 2016/ 2017 vs Call 2018/ 2019 [%]

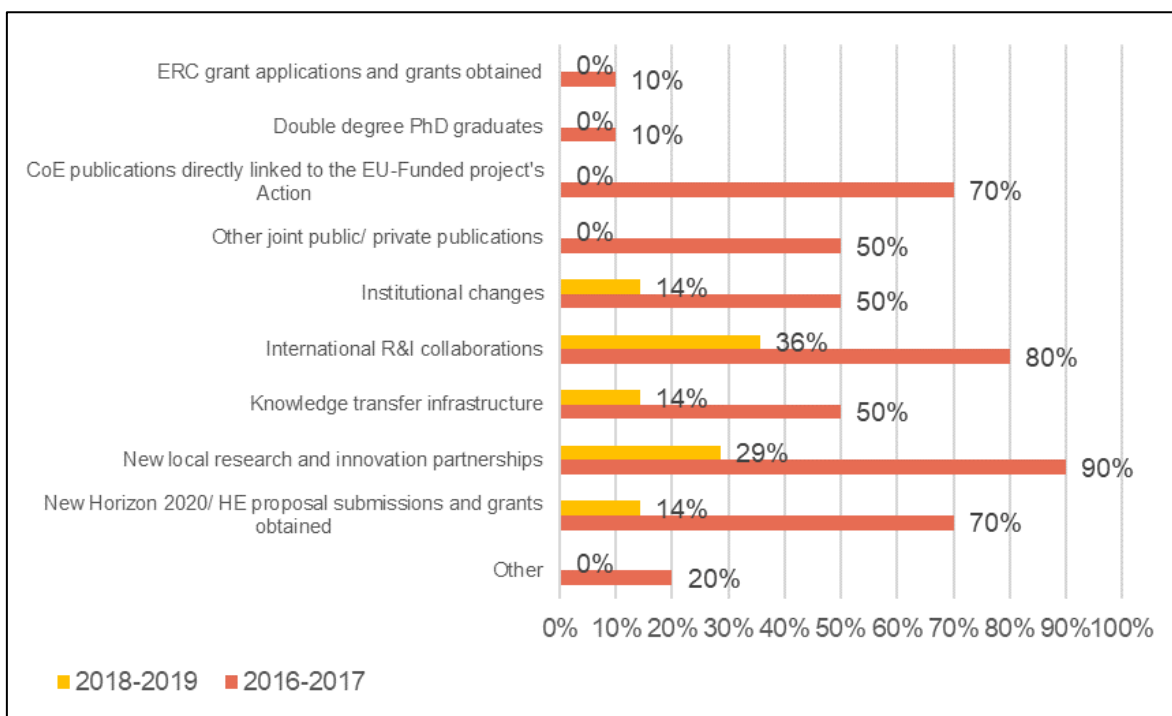


Figure 28. Most relevant and advanced KPIs, Teaming Phase 2 Call 2016/ 2017 vs Call 2018/ 2019 [%]

For more mature Teaming projects, new international R&I collaborations, expansion of partnerships with SMEs and industry are highly important, closely linked to sustainability aspects of Centres of Excellence.

In terms of Key Performance Indicators (KPIs), as reported earlier, the results are stronger for more mature Teaming Call (2016/ 2017 Call), highlighting the importance of local research and innovation partnerships, international R&I collaborations, new grants obtained and new publications developed (Figure 28).

### *Twining projects*

The survey results of 2017 and 2018 Twining Calls indicate that Twining projects have been significantly affected by COVID-19 crisis. In fact, projects of 2017 Twining Call reported higher impacts in nearly all measures compared to 2018 Call. The reduced magnitude of impacts for 2018 Call may be due to COVID-19 pandemic as this reason appeared to be frequently mentioned by projects of 2018 Call (COVID-19 crisis was still in its beginning at the interim stage of 2017 Call).

As illustrated in Figure 29, the main measures for strengthening HR skills and reaching research excellence reported by Twining actions include training (including virtual), invited lecturers and conferences. These typical Twining activities like staff exchanges, conferences and expert visits have, in most of the cases, been converted to on-line mode due to the COVID-19 pandemic.

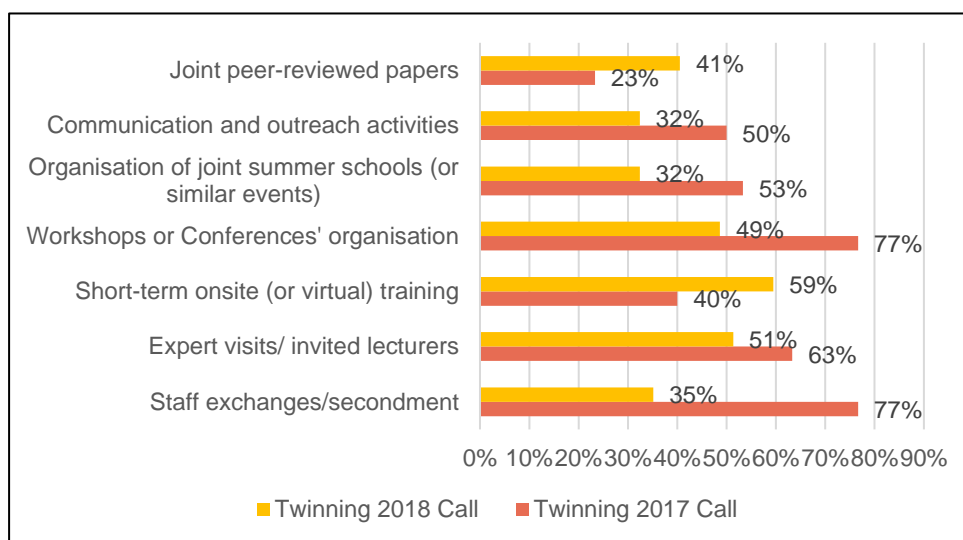


Figure 29. Main measures enhancing impact in Twining Calls (2017 and 2018 Call)

In terms of raising the research excellence, similarly as in the case of research profile, projects from both 2017 and 2018 Twining Calls confirmed that Twining Programme had positive impacts. Research excellence was raised in 100% projects from 2017 Call and in 89% project cases from 2018 Call (Figure 30).

Organisation of summer schools/conferences/workshops, trainings and enhanced skills show highest impacts for both Calls (Figure 31). Survey results reveal that publications, new grants also play an important role for both Calls. Staff exchanges appear much more impactful for 2017 Call compared to 2018 Twining Call. In general, again 2017 Call reported more impact in all measures compared to 2018 Call. COVID-19 pandemic mentioned often in relation to 2018 Call may be considered as a viable reason.

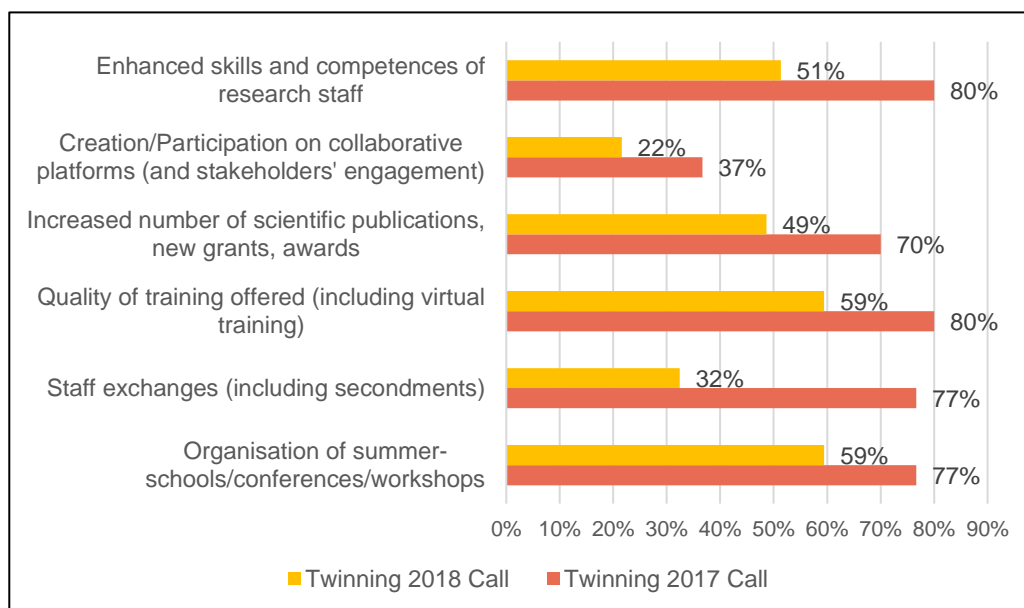


Figure 30. Research excellence in Twining 2017 and 2018 Call projects

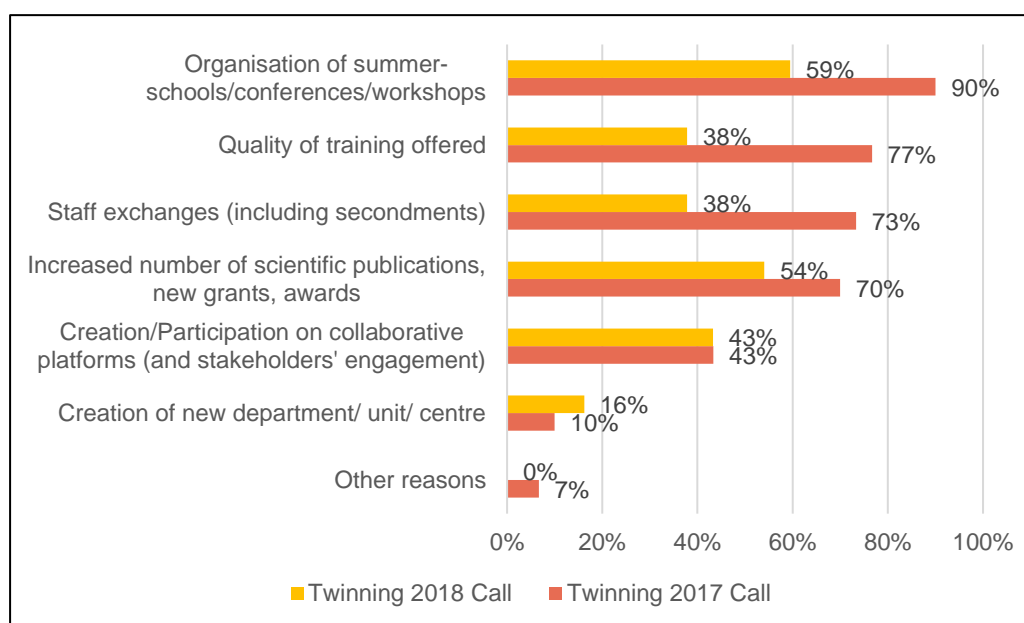


Figure 31. Impact on raising research profile in Twining 2017 and 2018 Calls

### ERA Chair projects

As shown by the results of survey among the main expected impacts from the ERA Chair Action for the hosting institution are the raising of the research profile and of the visibility and attractiveness of the coordinating institution within the country and abroad. This also includes an increase of the research excellence that would also result into attracting more competitive research funding.

Thanks to the ERA Chair Action, the overall benefits for the coordinating institution show the increased research capability (new scientists and new way of thinking), wider scientific network, implementation of cutting edge research topics and enhanced reputation for the host institution (e.g. awards, better position in institutions' ranking). As illustrated by Figure 32, the top most prominent measures in all calls in ERA Chair actions are acquisition of

expertise and new knowledge in the specific domain (accounting for between 78% and 100%) and new R&I collaborations thanks to ERA Chair network (reported by 67% up to 79%). Also, especially for 2017 and 2014 Calls, participation of the ERA holder in scientific events played a major role, while for 2019 this aspect was less pronounced possibly relating to COVID-19 period and limited travelling. Communication and dissemination activities also strongly contribute to key impacts emerging from ERA Chair Action.

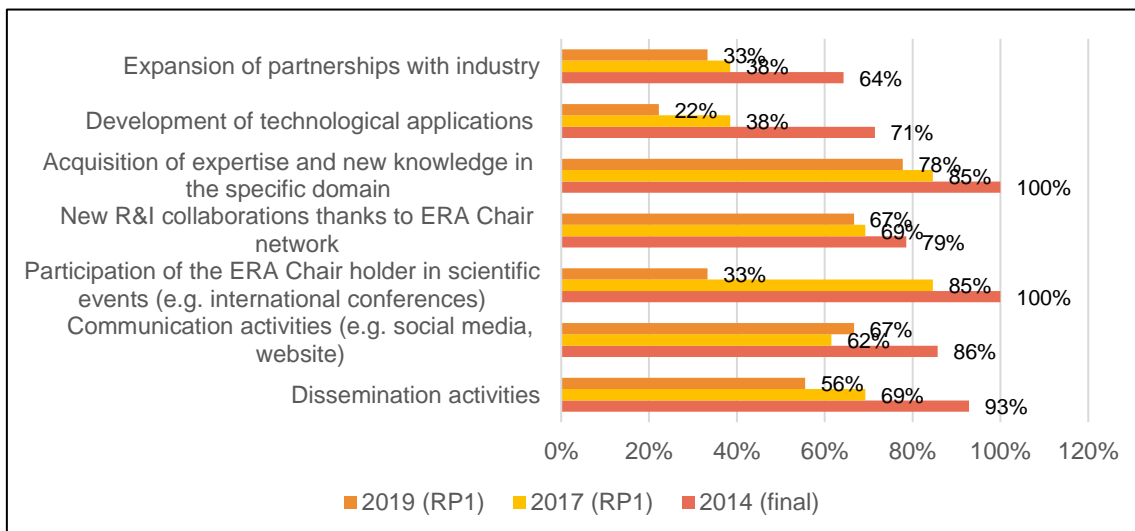


Figure 32. Main impacts emerging from ERA Chair Action (2014, 2017 and 2019 Calls)

In terms of impacts on research excellence attained by ERA Chair actions (Figure 33), all the projects strongly highlighted that the introduction of new research topics has strong effects on research excellence (reported as 100% by all the calls). Another important aspect of how the ERA Chair holder impacted research excellence relates to new international activities and collaborations (reported from 77% to 93%). Yet another three winners strongly impacting research excellence in ERA Chair calls are the proposal preparation for obtaining grants, the scientific publications in high impact journals and new training and working methods.

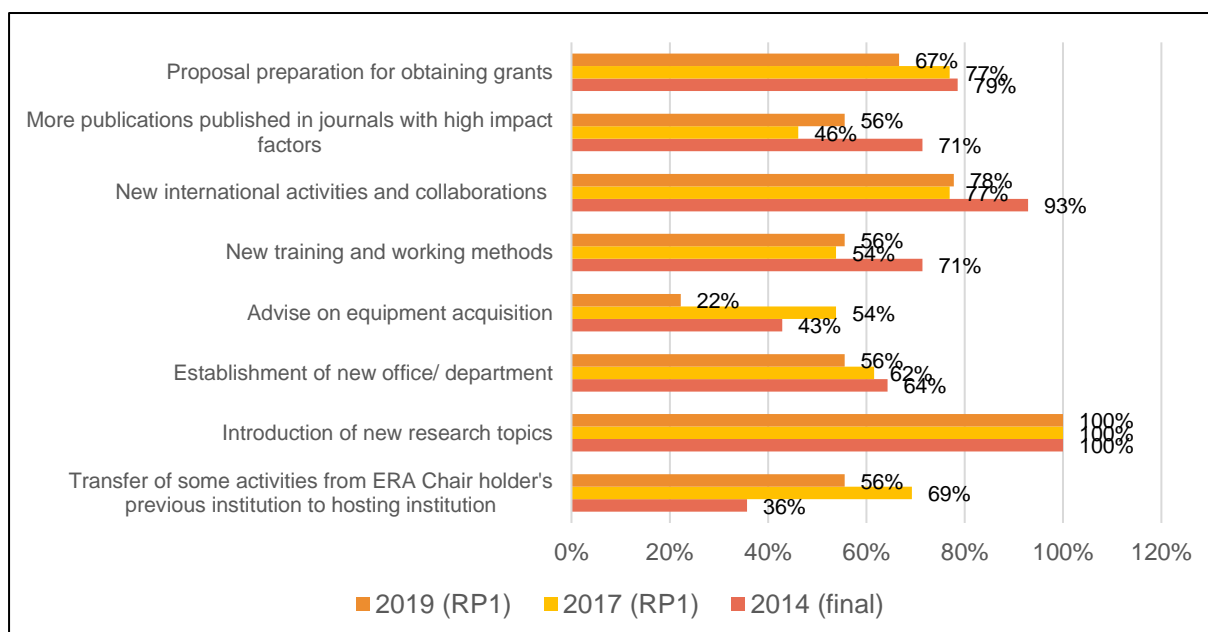


Figure 33. Research excellence in ERA Chair projects (2014, 2017 and 2019 Calls)

### 4.1.3. Fostering diffusion of knowledge and Open Science

Open Science<sup>8</sup> is a policy priority of EC that focuses on spreading knowledge as soon as it is available, using ICT tools and collaborative technology. This includes broad topics such as expert groups, publications, news and events, etc.

Publications are among the most important Key Performance Indicators (KPIs) in Widening: they are considered as a strong measure of scientific excellence. As already mentioned under Methodology (Section 2), the data on SEWP publications presented in this Report is extracted from EC database sources.

As indicated in Figure 34, the highest number of publications in five selected Widening Calls is in the Twinning action, followed by the ERA Chair and Teaming actions. This is understandable, since Twinning has also the highest number of projects in Widening and also includes historical publications (KPI for Widening) in the IT tool used for reporting (Compass)<sup>9</sup>.

Under Horizon 2020, each beneficiary must ensure Open Access (OA) to all peer-reviewed scientific publications relating to its results (Article 29.2 H2020 AGA). There are two ways to ensure Open Access to peer-reviewed publications:

- a) Self-archiving (Green Open Access) – the published article or the final peer-reviewed manuscript is archived (deposited) in a valid OA online repository before, alongside or after its publication, with a maximum delay of 6 months after publication (embargo period);
- b) Open Access publishing (Gold Open Access) – the article is immediately provided in open access mode (on the publisher/journal website). The article must also be made accessible through a repository upon publication.

Since, all the H2020 Widening projects are CSAs, research activities are not funded as such; therefore, the data cannot be entirely attributable to the SEWP Programme funding. They also depend on the funding the projects receive from other sources (i.e. research funding) in terms of OA publishing. This may not be possible if, for example, data have commercial value (e.g. for patents), or if data are sensitive and/or need IP protection.

Figure 34 demonstrates that Teaming has the highest number of publications in OA (99.9%), then the ERA Chair actions (69.7%) followed by Twinning (56.8%). Most of the peer-reviewed publications coming from Teaming and Twinning have followed the Green Open Access route, while most of the ERA Chair publications are in Gold Open Access.

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<sup>8</sup> [https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/open-science\\_en](https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/open-science_en)

<sup>9</sup> When looking into the percentage of OA peer-reviewed publications (especially for Twinning and ERA Chair Calls) it should be kept in mind that this data also includes the “**KPI for Widening**” (publications before the project start date), which are encoded by the Coordinating Legal Entities from the Widening countries.

The so-called KPI for Widening requires the encoding of publications for the last three years preceding the start date of the H2020 EU funding projects under the ERA Chair and Twinning Action calls, since 2015. The KPI reads as follows:

“To evaluate the impact of activities in Horizon 2020 Key Performance Indicators (KPI) are required. For this reason the Commission services developed the following Widening KPI: “Evolution of the publications in high impact journals in the relevant research fields”.



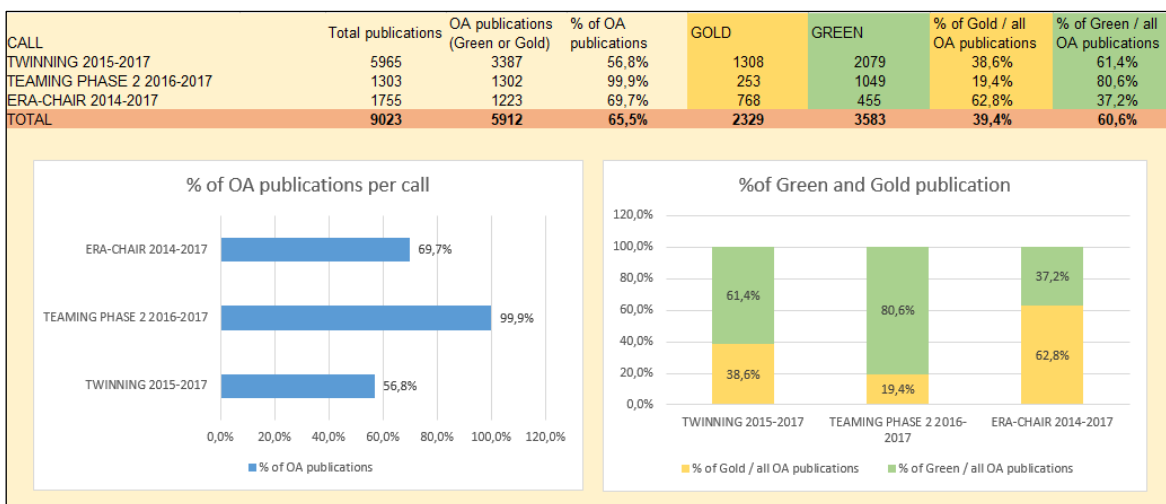


Figure 34. Publications in Widening Actions

As illustrated by Figure 35 most of the publications are peer-reviewed for all the three actions, with only small numbers of non peer-reviewed publications for Twinning and Teaming.

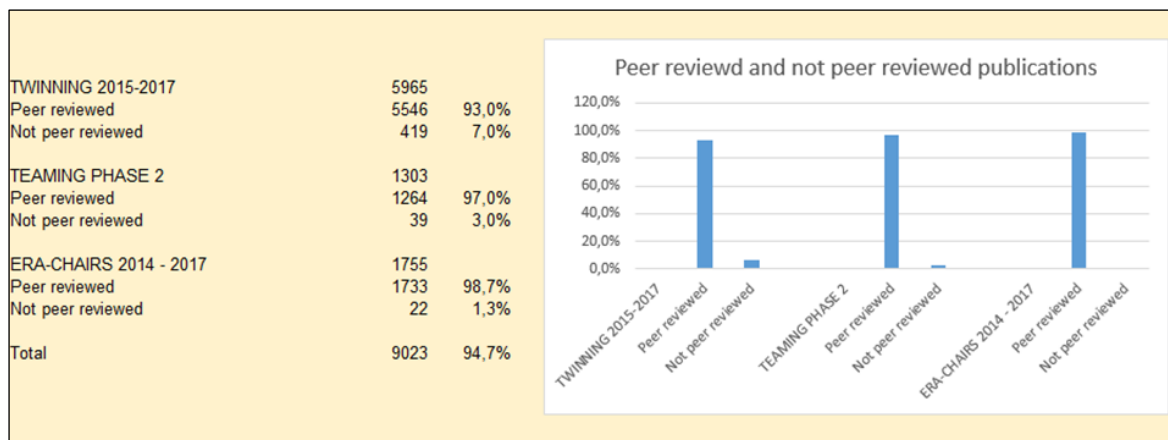


Figure 35. Peer-reviewed versus not peer-reviewed publications in Widening Actions

In terms of types of publications, as shown in Figure 36, it is clear that in all the three Widening Actions the majority of publications relate to scientific articles, followed by conference proceedings and a minor parts are book chapters.



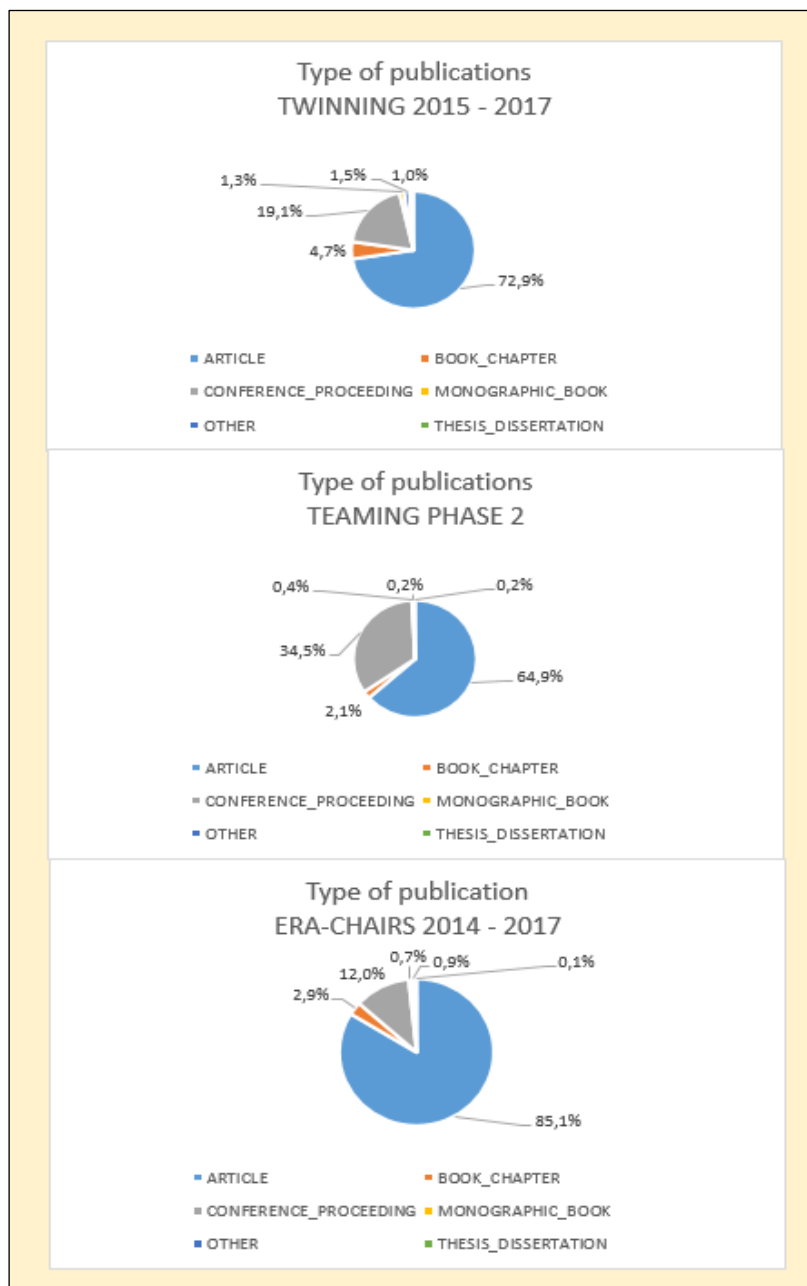


Figure 36. Types of publications in Widening Action

Finally, for the wider picture in terms of publications in all the H2020 Widening Calls: Figure 35 illustrates that the highest number of grants signed is for the Twinning action, followed by Teaming and then the ERA Chair actions. Therefore, Twinning also has the highest number of peer-reviewed publications, which are almost equally distributed in Green and Gold Open Access. The ERA Chair action has a higher number of peer-reviewed publications compared to Teaming in H2020 Calls, and most of the ERA Chair publications are Gold Open Access, while for Teaming they are more prominent in Green Open Access.

Interestingly, Table 11 also features the percentage of peer-reviewed publications in high-impact journals<sup>10</sup>. Similarly for all the three Widening Actions, around 50% of peer-reviewed publications are featured in high-impact journals. This aspect deserves further analysis and monitoring in the future D&E Surveys or via Web of Science.

**Table 11. Publications in all H2020 Widening Calls**

Action	Signed grants	Peer-reviewed publications	GOLD Open Access peer-reviewed publications	GREEN Open Access peer-reviewed publications	Peer-reviewed publications in high-impact journals
ERA chairs	59	1.137	693	272	636 (56%)
Teaming	87	961	317	630	429 (45%)
Twinning	211	3.683	1.244	1.237	1.923 (2%)

## 4.2. Societal Impact in Widening Projects

**Societal Impact**<sup>11</sup> is one of the three key impacts identified in the Framework of Horizon Europe and aims at generating knowledge, strengthening the level of R&I, supporting the uptake of innovative solutions in industry, notably in SMEs, society to address global challenges and Sustainable Development Goals (SDGs).

From this angle, it captures the three main components such as (1) better contribution of R&I to tackling societal challenges, (2) stronger role of EU in tackling global societal challenges and (3) better societal acceptance of science and innovative solutions.

### 4.2.1. Strengthening the impact of R&I: structural changes

The most relevant way to demonstrate the societal impact in the SEWP programme is through the objective of strengthening the impact of R&I. In order to strengthen the impacts of R&I, the SEWP instruments have been designed to generate, amongst others, structural changes in the Widening countries. These structural changes and impacts can be triggered at three different levels: (1) at institutional level, (2) regional level, (3) national level.

<sup>10</sup> [What is an impact factor? Definition and explanation \(oxford-review.com\)](https://www.oxford-review.com/)

[Journal Impact Factor: Its Use, Significance and Limitations \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/26111111/)

<sup>11</sup> [https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/evaluation-impact-assessment-and-monitoring/horizon-europe\\_en](https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/evaluation-impact-assessment-and-monitoring/horizon-europe_en)

The key question is whether the SEWP instruments can trigger changes at these different levels and to which extent they can be substantiated. As required by the SEWP Work Programme, one of the main anticipated impacts is that SEWP actions will stimulate reforms in the national and regional R&I environment of the Widening countries as well as triggering changes at the coordinating institution.

A recent D&E study illustrated the exploitation impacts of the Widening actions in terms of Excellence, Systems and Participation. The relevant part of "Systems" included **changes at the level of institutions and systemic reforms at national/regional level**. These impacts can be substantiated through institutional and/or systemic reforms at national/regional level and triggering of reforms at the coordinating institution. Concrete results of these achievements can be reported results of ongoing actions in terms of long-term structural changes, recommendations for policy makers, amendment of rules/legislation at regional or national level, etc.

Further down, Figure 39 illustrates the impacts targeted and obtained by the three Widening actions. Projects were asked to indicate their areas of contribution and if these impacts were achieved or not, in particular, in the context of Excellence, Systems and Participation.

In general, the results obtained in the survey emphasise that among all Widening actions, Teaming Phase 2 is the most successful (effective) in all identified areas of exploitation. This is not surprising given the generous budget and long duration of Teaming projects; however, it is remarkable that Teaming projects appear to be so successful in spite of the fact that none of the analysed projects are yet finished. Twinning projects appear to be overambitious and less successful even though 54% of projects used in the survey are already finalized.

The concrete societal impact by strengthening the impact of R&I is most obvious for the Teaming and ERA Chair actions while for Twinning actions it is less evident as detailed below.

### Teaming projects

Stimulating reforms in the national and regional R&I environment of the Widening countries as well as triggering reforms at the coordinating institution is a clear priority, especially for Teaming, but also ERA Chair Actions. **Teaming Phase 2 achieves their intended impact on the institutional level**, but they seem to be **less effective at regional and national level**.

These findings, however, cannot be considered as final because the number of finished SEWP projects in the D&E survey (31%) is not sufficient to draw the definitive conclusions. It is still too premature to look into the effects of Teaming projects in transforming the overall science system in the country. It remains also to be seen whether the individual projects represent a new way of performing science in the country (e.g. recruitment of researchers, applying funding criteria for researchers, links with local industry, etc.). These aspects will certainly be taken into consideration in future policy surveys as they could lead to interesting policy recommendations, both for having example of how "reforms" could work, and for potentially structuring future Teaming programmes.

### Twinning projects

The Twinning survey results indicate that in terms of institutional changes and triggering reforms influenced by the Twinning projects (for 2017 and 2018 calls) **more than 50% of the projects managed to trigger institutional reforms** (Figure 37).

The analysis of data in terms of institutional changes in Twinning calls is relatively new, it will be further explored in the future surveys. Based on the data available, examples of institutional changes in SEWP projects are illustrated in Figure 38. It indicates that among the most successful institutional changes were creation of Research Support Services (reported by 24% of projects), creation of the new laboratory/research department/cross faculty research teams and substantial increase in peer-reviewed publications in high-impact journals (both changes reported by 14% of projects) (Figure 38).

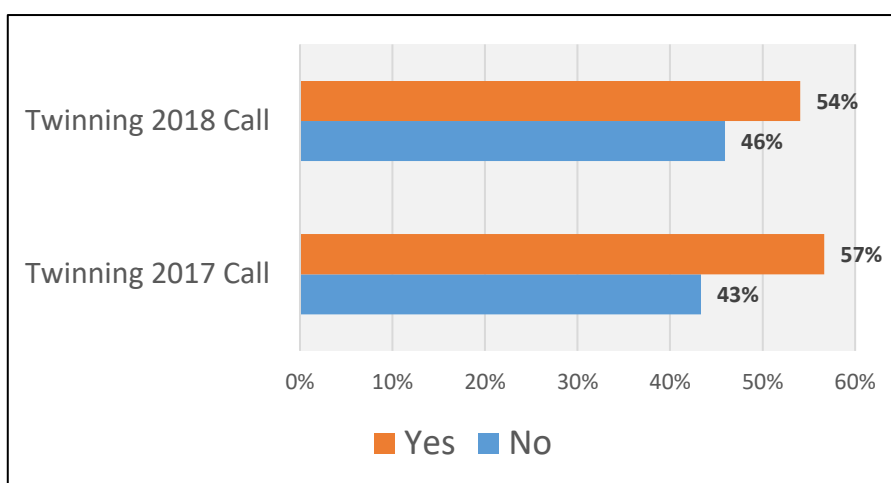


Figure 37. Reforms triggered within coordinating institution in Twinning Action (2017 and 2018 Call)

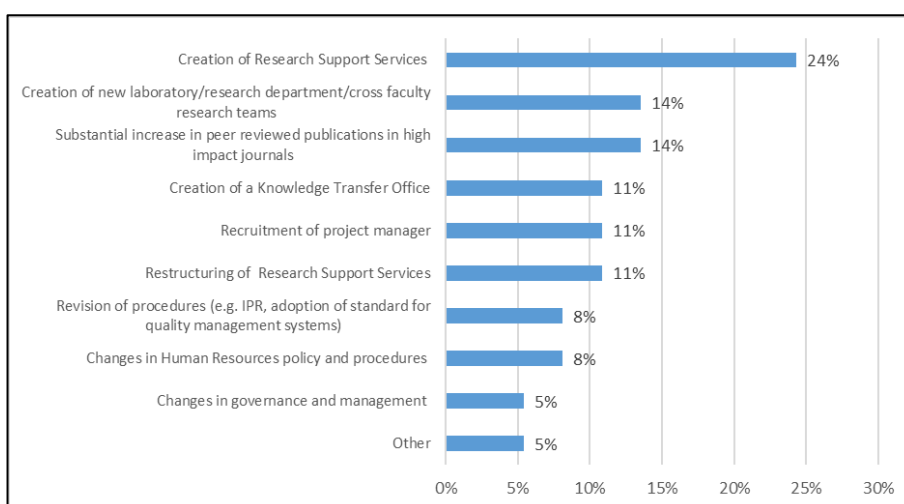


Figure 38. Reforms triggered within coordinating institution in Twinning Action (2018 Call)

The influence of triggering any change on national legislation was not very prominent for both 2017 and 2018 Twinning Calls, it **accounted for only 5-10 % changes escalated at the level of national legislation**. The majority of Twinning projects did not have such impacts. This is also in line with the 2015 Call final reporting Twinning survey, which indicated that there was no visible effect on national legislation. This specific aspect needs

further understanding and will be readdressed in the future surveys to re-confirm already obtained results.

For Twinning 2017 Call, only in few cases (3 projects), the coordinator reported a direct impact on national legislation: for the [LAMBDA](#) project (RS) - the drafting of the Artificial Intelligence (AI) Strategy for Serbia; for the [KEEN](#) project (LT) - a White Paper to provide insights and recommendations for the policymakers of Lithuania based on the best practices and project outcomes to Entrepreneurship Network and innovation; for the [SPINTECH](#) project (MLD) - the contribution to a national program on research and innovation.

Similarly for Twinning 2018 Call, only in few cases (2 projects), the coordinator reported a direct impact on national legislation: for the project [NEUROTWIN](#) (UA) that is referred to the close contact with policy makers and for the project [VENTuRE](#) (MT) it is related to the close link with the National Contact Point (NCP).

### ERA Chair projects

It is expected that ERA Chair projects provide a contribution towards measures aimed at facilitating structural changes in the institution (e.g. costs for trainings, meetings, publications and managing Intellectual Property Rights (IPR)). The SEWP Programme also indicates that institutional changes can trigger different reforms, restructuring support services and procedures and they are at the core of ERA Chair actions. These impacts are observed at the institutional level, but can also influence R&I changes at regional and national levels.

The D&E analysis revealed that for ERA Chair Actions **the area of “Systems” (comprising R&I changes at instructional and national levels) is less prioritized than the area of “Excellence” and “Participation”** (see more on this topic in Section 5). However, these are rather new findings and the aspect of changes at institutional and regional/ national levels for the ERA Chair Action will require further analysis and new surveys to better understand the identified trends.

For what concerns the **changes at the level of institutions** (as depicted by D&E survey results), **it can be noted that 85% of ERA Chair projects target this impact** (Figure 39). Our analysis notes that there is a big gap between the targeted and obtained results. Future surveys, based on higher number of finalized projects once data is available, will reveal if this trend is confirmed. A separate, more recent survey dedicated to ERA Chairs Actions indicated that **86% of the finalized projects (2014 call) had a strong impact on the institutional structural changes** upon the completion of project, which is a very positive result.

Below there are some examples of institutional changes that were reported by completed and ongoing ERA Chair actions:

- First successful departmental expansion of the host organisation ([BIORISE](#), CY)
- New research curricula, new dynamics of publication, speed up of networking and collaboration national and international ([SupraChem Lab](#), RO)
- New research topic, contribution to support functions, enhancement of education activities, better communication and dissemination ([R-Exposome Chair](#), CZ).

Concerning systemic reforms at **the national/regional level, ERA Chair projects target this aspect by 62%, however only 15% of the projects achieve results** (see Section 5 on D&E for more details). This indicates that there is a substantial gap between targeted and achieved results and, thus, more effort is needed from coordinating institutions to reach higher impact at this level. Since this is the first time that this aspect is addressed in the Widening surveys, it will also need further analysis, especially focusing on the achievements of already finalized projects.

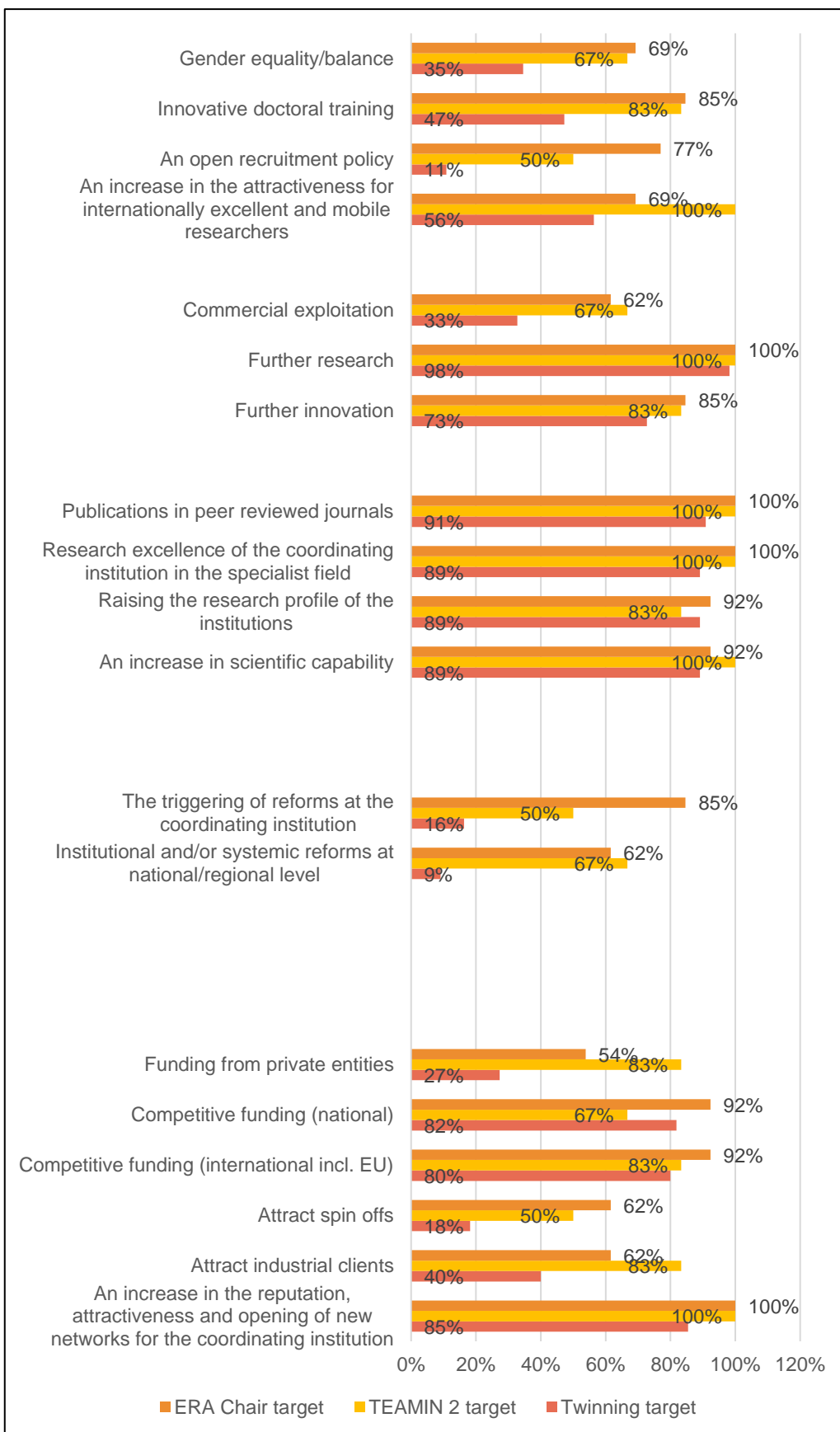


Figure 39. Exploitation Impacts in Widening Actions

## 4.2.2. SEWP generating new knowledge and innovation enhancements

The SEWP Programme is funding Coordination and Support Actions (CSA) that generate knowledge by covering the coordination and networking of research and innovation projects, programmes and policies. Normally the funding for research and innovation per se is covered by other programmes and projects. Concrete examples of the new knowledge that is generated at the Widening institution through the SEWP actions are new research data, improved management and proposal writing skills, development of research roadmaps, etc. These results impact at large various communities connected to the Widening institution. The aspects of generating new knowledge and innovations have also been covered in the previous section (Section 4.1) on scientific impacts.

The SEWP Actions, especially **Teaming has the potential to generate large-scale societal impacts** through academic enhancements but also towards industry and innovation advancements. Here below we highlight few Teaming projects generating important societal impacts.

The engagement to reach societal impact is embedded in the Centres' missions. For example for [RISE](#) (CY) (Teaming 2016), the vision of the Centre is twofold: support the social, cultural and economic development of the island through scientific excellence, multi-disciplinary collaboration, innovation and entrepreneurship and, ultimately, establish itself as an internationally renowned Research Centre of Excellence in its field. In addition, [RISE](#) (CY) strives to achieve excellent research, promote innovation, stimulate economic growth and cultivate an entrepreneurial culture across Cypriot society. Furthermore, the CoE is well positioned to build links with industry by providing commercial and innovation related services to local business and SMEs. In this way they can have an impact locally, regionally and internationally by providing cutting edge and innovative solutions with a meaning full impact on citizens' lives.

One more example of projects that have contributed in generating a direct societal impact: [InnoRenew](#) (SI) (Teaming 2016) states that the various scientific and economic benefits of the Centre's research will lead to broader gains for society. Enhancing the wood value chain will lead to increased use of renewable materials and products. This in turn generates environmental benefits and supports rural communities.

Another project - [HiLASE CoE](#) (CZ) increases the prospects for the Czech Republic and Europe to keep its position in a competitive world as one of the most developed knowledge-based societies for laser development. The project demonstrates significant impacts in terms of scientific and technological excellence, and for valorisation and exploitation benefiting society at large, including private sector enterprises and industrial competitiveness which also include applications for medical purposes and the use of lasers in space.

Large scale societal impacts are developed by Teaming project [FINEST TWINS](#) (EE) on sustainable smart and clean city development, connecting two related cities - Tallinn and Helsinki by ICT technology in five key domains such as mobility, energy and built environment glued together by governance and urban analytics & data management. Unique smart city large scale piloting programme targets 15 cities aiming at important developments and technological advancements accessible to citizens.



### 4.2.3. SEWP addressing Global Societal Challenges and Sustainable Development Goals

The SEWP Programme, through its bottom-up approach, covers a wide range of thematic fields that broadly contribute to address global challenges. Based on a wide range of topics addressed by SEWP portfolio analysis, it can be considered that Widening Actions also fully cover the research topics of **EU Societal challenges** incorporating all the key impacts benefitting the citizens:

- Health, demographic change and wellbeing
  - Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
  - Secure, clean and efficient energy
  - Smart, green and integrated transport
  - Climate action, environment, resource efficiency and raw materials
  - Europe in a changing world - inclusive, innovative and reflective societies
- Secure societies - protecting freedom and security of Europe and its citizens.

The extent to which the SEWP programme covers the societal challenges is reflected in Section 3 of this report on SEWP Project Portfolio Analysis. As explained therein, the largest portfolio of SEWP projects relates to Computer sciences, health/ medical fields and biology/agriculture/fisheries – both in terms of thematic distribution and in terms of allocated budget. As such the SEWP actions generously cover also the EU Missions linked to the Commission's priorities which are a novelty of the Horizon Europe Research and Innovation Programme for the years 2021-2027.

Moreover, **Sustainable Development Goals** (SDGs) also represent important global challenges where the Widening Programme has its say too. As part of the TOSSD reporting exercise (Total Official Support for Sustainable Development), an inventory is made each year of the contribution of projects to one or more of the 17 Sustainable Development Goals. This data collection activity is coordinated by DG INTPA (International Partnerships, previously DG DEVCO). All projects receiving funding in a particular year are included in this analysis.

For the year 2020, SDGs have been assigned to all 151 SEWP projects receiving funding in 2020. The main SDG for all SEWP projects is based on the main objective of the Widening Programme, being the enhancement of scientific research, as defined in SDG 9.5 (Table 12).

Secondary to the main SDG for the 2020 SEWP projects, SDGs have been assigned to 18 projects following specific topics of the projects (see Table 12). It must be noted that the Coordination and Support Actions (CSA) funded by the SEWP programme may not always fit smoothly with the topic-based categorisation of the SDGs. The description of the assigned SDGs only partly applies to the content of the projects.



**Table 12. Sustainable Development Goals in SEWP projects.**

SDG Code	SDG Description	SEWP projects 2020
<b>Main SDG</b>		
9.0	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	151
<b>Secondary SDG</b>		
2.0	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	3
4.0	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	1
5.0	Achieve gender equality and empower all women and girls	1
6.0	Ensure availability and sustainable management of water and sanitation for all	1
7.0	Ensure access to affordable, reliable, sustainable and modern energy for all	1
10.0	Reduce inequality within and among countries	10
13.0	Take urgent action to combat climate change and its impacts	1

### 4.3. Economic Impact in Widening Projects

Economic Impacts as defined in the HE Framework foster all forms of innovation, including break-through innovation and strengthen market deployment of innovation solutions. All these and related aspects are addressed in the report in the context of Widening Actions.

The first results are emerging with sustainable partnerships, observed throughout H2020 - --e.g. Twinning projects growing into ERA Chair projects, ERA Chair projects growing into Teaming. Furthermore, we observe that the Widening Programme serves as a stepping-stone – many new collaborations and new grants are emerging thanks to networking opportunities established within the Programme.

#### 4.3.1. Achievements in terms of new competitive research funding through new partnerships

##### *Teaming projects*

Out of the surveys from the Teaming Calls 2016/2017 and 2018/2019 respectively, more than 70% of running projects managed to attract new, competitive research funding. However, 20% of the 2016/2017 call and 28% of 2018/2019 Call are yet to acknowledge success at the end of RP1 and RP3 respectively (Figure 40).

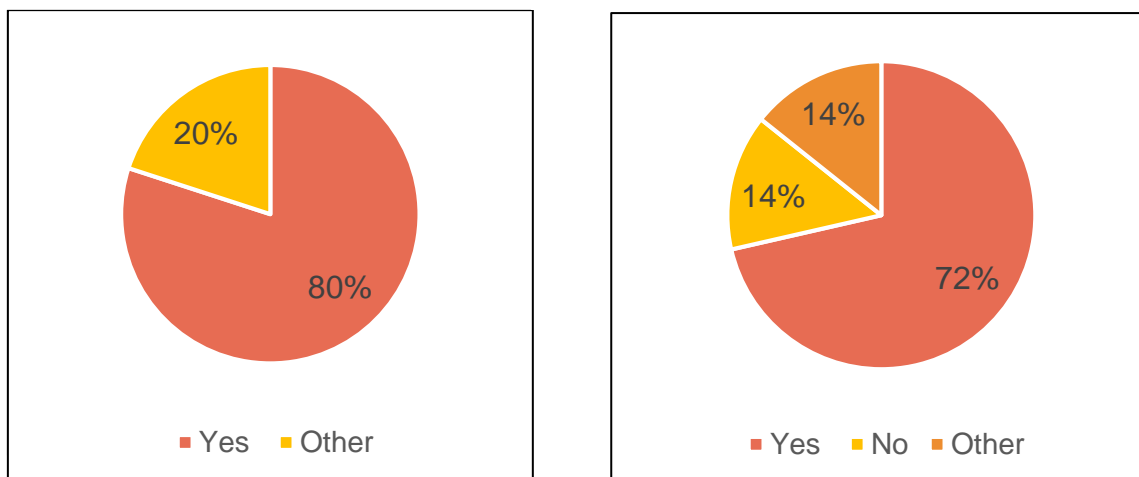


Figure 40. Competitive research funding attracted in Teaming Calls 2016/2017 and 2018/2019

The following funding sources have been used so far within the two Calls, approximately in this order of magnitude:

- EU funds (e.g. Framework Programme Horizon 2020, including ERA-NET, ERC, MSCA, etc.; European Social and Investment Fund ESIF; European Regional Development Fund ERDF; ERASMUS+; etc.)
- National Research Programmes/Funds
- Private funding (e.g. pharmaceutical companies)
- International funding (e.g. World Bank, EEA Norway Grant)

### *ERA Chair projects*

In terms of funding secured via competitive research grants, 2014 Call, which included the finalised ERA Chair projects, shows much more prominent impacts (Figure 41). Although all the three calls show the improvements in secured funding mostly at medium level (5% - 25% of increase), 10% of 2014 Call projects show increase also at very high level (more than 50% of increase) and 20% - at high level (between 25% and 50% of increase). At the interim stage (2017 and 2019 Calls) show that most of their secured funding remain at low and medium levels. These results will most likely evolve when projects are at their final stages.

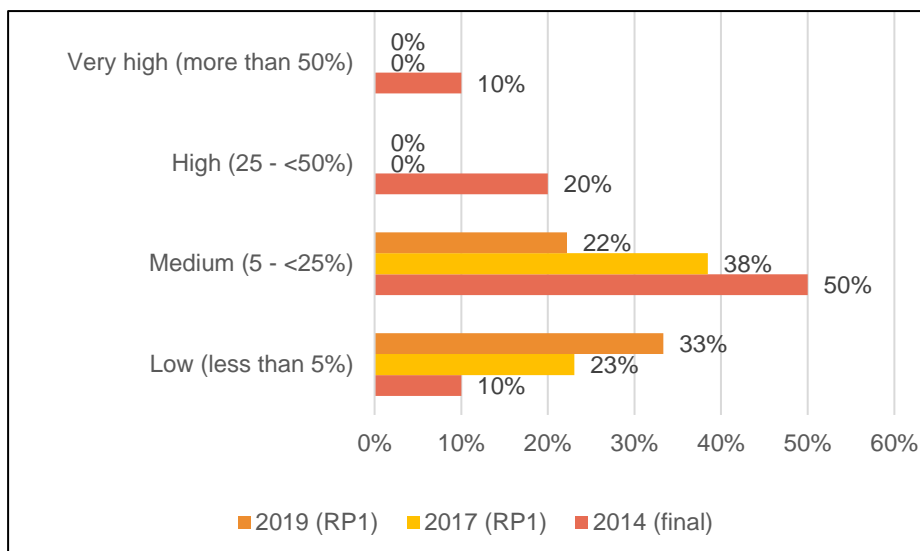


Figure 41. Levels of secured funding per Call in ERA Chair Action

### Twinning Projects

When comparing the results of two Twinning Calls (2018 and 2019, respectively) in terms of new grants obtained, we can see similar results (Figure 42). The level of new funding obtained thanks to Twinning projects remains at rather medium level. There are several reasons provided by both calls explaining why this aspect is not sufficiently pronounced. Some projects indicated that they have applied for funding for several research projects (at national and European level), but the outcomes of the evaluation are pending for many. Some proposals were not successful in the first attempt and consortia are planning for re-submission. For other Twinning projects, intermediate results are encouraging, further applications are under preparation. Overall, coordinators consider premature to measure progress and impact. COVID-19 pandemic was often mentioned as a major hindrance in particular in relation to 2018 Call.

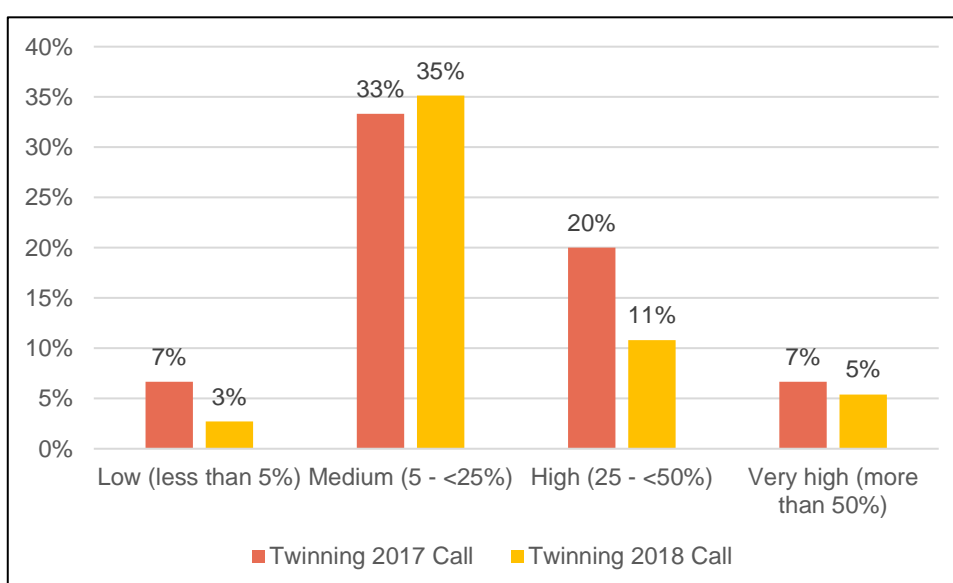


Figure 42. Level of new research funding in Twinning Action (2017 and 2018 Call)

### 4.3.2. Generation of own revenues

#### *Teaming projects*

As defined in the Widespread Work Programme, the Horizon 2020 funding for the Centres of Excellence (CoEs) established within Teaming Projects will stop after 5-7 years (i.e. Teaming project duration). Thus, it is expected that the new Centre will be able to achieve the maximum degree of financial sustainability in the long run once the Horizon 2020 funding will finish after 5-7 years. Concrete measures towards self-sustainability of the Centre therefore need to be convincingly elaborated in the proposal.

In order to ensure that the EC investment will reach its expected impact, so that the Centres of Excellence will last, they should start to generate their own revenue, during the project implementation.

The question in the survey of the 2016/2017 Call projects was if the CoE is able to generate any revenue if the national and EC funds were to be excluded. The feedback of about half of them was that generation of income is a critical activity for every business including the CoE, and are confident they are and will be able to generate revenue.

The most common types of revenues the CoE coordinators see are:

- income acquired through competitive funding both at national and European level;
- income generated through agreements with industrial partners (for a sustained engagement with industry innovators).

Income of selling – commercial revenue - products or services only represents a minor part of the income; however it is expected this will increase steadily over the next years. This could also be attributable to the fact that most of the CoE are still at an early stage in identifying the CoE's financial and innovation strategy, which is critical to the long-term financial and operational sustainability.

Figure 43 includes the information on revenues for projects from 2016/2017 Teaming Call. The Coordinators ascertained that if the EC and national committed funds were to be excluded, at least 50% of CoE would be able to generate the revenue, while 40% stated that at this stage this would not yet be possible.

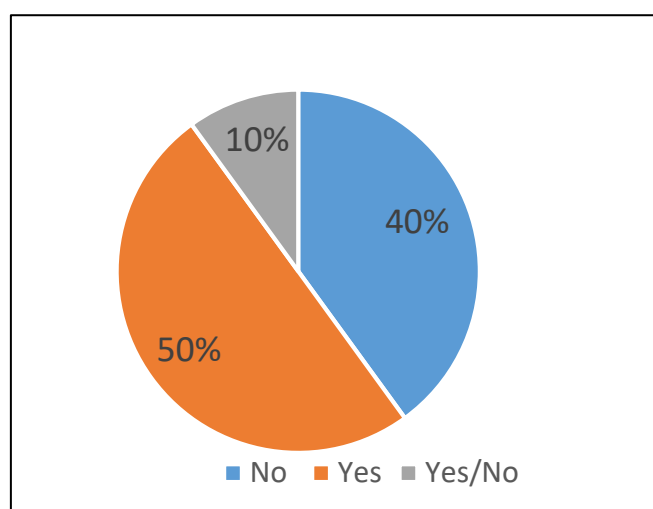


Figure 43. Generation of revenues at the current stage (Teaming 2016/2017 Call)

Figure 44 below illustrates the possible sources of revenues for the Call 2016/2017. In the majority of cases these would come from national projects (32%), agreements with industrial partners (26%) and the EU-funded projects (26%). A smaller part would be acquired through competitive funds (15%) and core products/ services delivered to target clients.

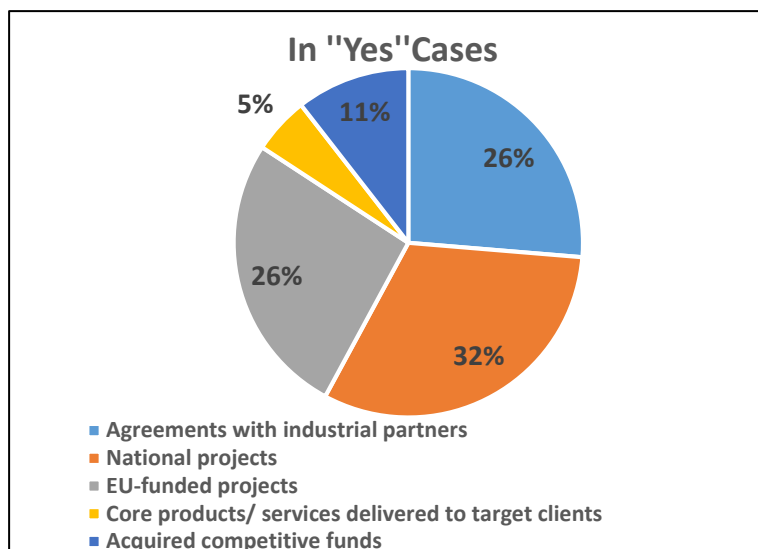


Figure 44. Sources of revenues (Teaming Call 2016/2017)

### 4.3.3. Funding Sources for Covering Research Costs

#### Teaming projects

As defined in the Work Programme, since Teaming projects are Coordination and Support Actions (CSA), infrastructure costs, the majority of equipment costs and consumables, as well as research projects cannot be funded from the Horizon 2020 grant. Therefore a considerable amount of funding needs to come from other sources. The survey showed that for both Teaming calls the most frequently used source of funding for research (90% for 2016/2017 Call and all projects (100%) for 2018/ 2019 Call) is national funding (for example competitive National Research and Innovation Funds or Operational Programmes). This was followed by the host organization's own resources and other EU funding (Figure 45). Interestingly, support coming from industrial partner side is important too. A less popular financing source for research costs, in both calls, is international (non-EU) funding.

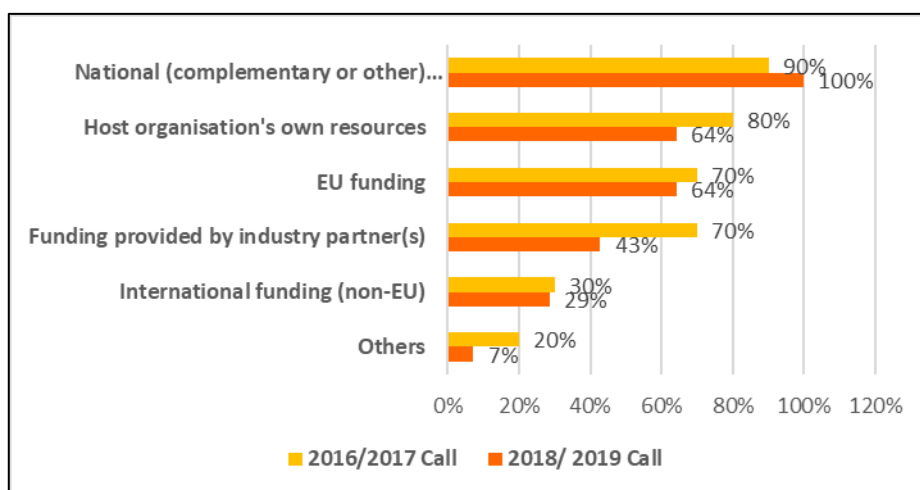


Figure 45. Sources for covering research costs in Teaming Action (Call 2016/2017)

### ERA Chair projects

The objective of the ERA Chair Action is to bring excellence to institutions through the activities of an appointed ERA Chair Holder. The overall budget is meant for developing activities under ERA Chair actions towards improved capability of the institution to succeed in competitive research funding and to strengthen the sustainability strategy of the project.

The results are consistent for both 2014 and 2019 Call indicating that a group of other/ EU Structural Funds comprises the major sources of additional funding, followed by national funds and then regional support (Figure 46). The funds reported by 2014 Call amount to higher percentages compared to 2019 Call and this is not surprising given the maturity level of projects (2014 represent finalized projects, while 2019 are at their interim stage).

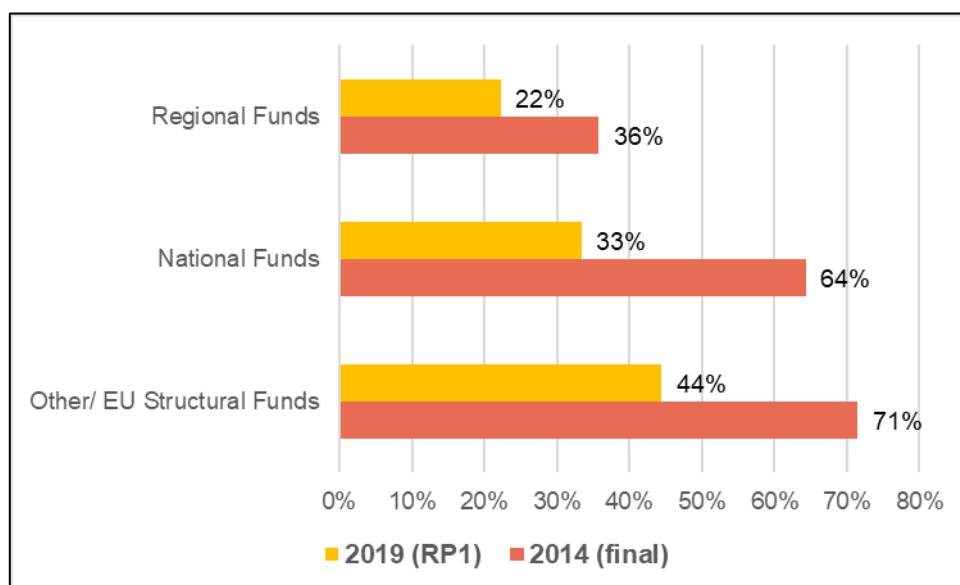


Figure 46. Other financial support obtained by ERA Chair actions

#### 4.3.4. Teaming Complementary Funding Sources & Timing

The engagement of national and regional authorities is a mandatory requirement of the Work Programme, and is of vital importance for Teaming actions. The nature of the commitment, the source, its legal form, the amount and its impact on the objectives and ultimate results of the action as defined in the Description of Action need to be complied with during the project's implementation.

The Complementary Funding could come from a relevant Operational Programme (OP) of the European Structural and Investment Funds (ESIF) (be it sectorial, national or regional). In this case, a national 'matching' contribution needs to be foreseen. When ESIF/IPA (Instrument for Pre-accession Assistance) or any other type of EU funding sources are used, the principle of avoiding double funding from the EU budget applies, according to Article 129 of the Financial Regulation, meaning that costs which would be reimbursed from these other EU sources shall be different from costs supported under Horizon 2020. Alternatively, other sources of funding may be used (public or private). The Work Programme foresees that the complementary funding can be frontloaded/back loaded for a limited period (i.e. during the first/last 3 years of the project).

With regard to the sources of the Complementary Funding, the survey revealed that for both calls the most common sources for providing financial commitments are traditionally national funds and ESIF funds: 17 out of 24 Teaming projects (Figure 47). Very often, the Coordinators mentioned that the host institutions are providing equipment or infrastructure as in-kind contribution.

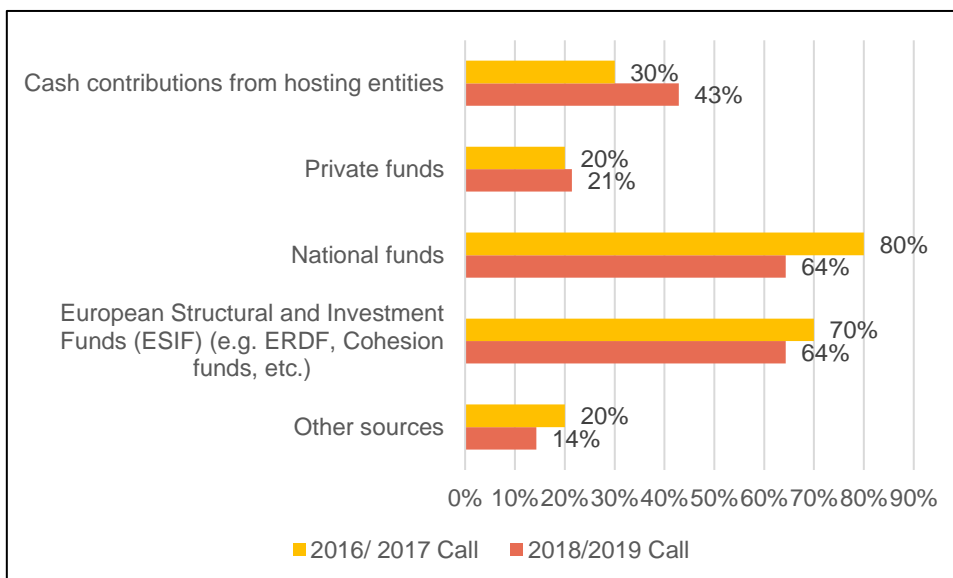


Figure 47. Sources of Complementary Funding in Teaming (Call 2016/2017 and Call 2018/2019)

As for the timing, the survey shows that 60% in 2016/2017 Call and 72% of projects in 2018/2019 Call have timely received the complementary funding as it was foreseen in the Grant Agreement (in accordance with the Letters of Commitment). However, 40% and 28% in the respective calls reported problems in timely receiving the complementary funding, for reasons such as:

- Delays related to the pandemic context;
- Delays pertaining to public administration procedures;
- Major cut/reduction of governmental financial support for relevant programmes, which has an impact on financing of the CoE;

### 4.3.5. Sustainability beyond the Project Life-time

#### Teaming projects

It is expected that significant effort will be required from the partners to continue supporting the new CoEs established through Teaming projects to achieve financial and scientific sustainability in the long run and ability to successfully compete for European and international funding programmes.

The survey results are very similar for both 2016/2017 and 2018/2019 Teaming Calls, revealing that among the top three strategies for sustainability are applications for new grants, enhanced connections with industrial stakeholders and diversification of research portfolio/ services (Figure 48). The achievements of the research units within the CoE will pave the way for obtaining exploitable outputs for industry which will undoubtedly trigger a reinforced commercialization.

A gradual decrease of Horizon 2020 funding should be planned for the final years of the Teaming project and ideally any other type of funding should be available after the completion of Horizon 2020 grant to sustain the long-term operation of the new CoE.

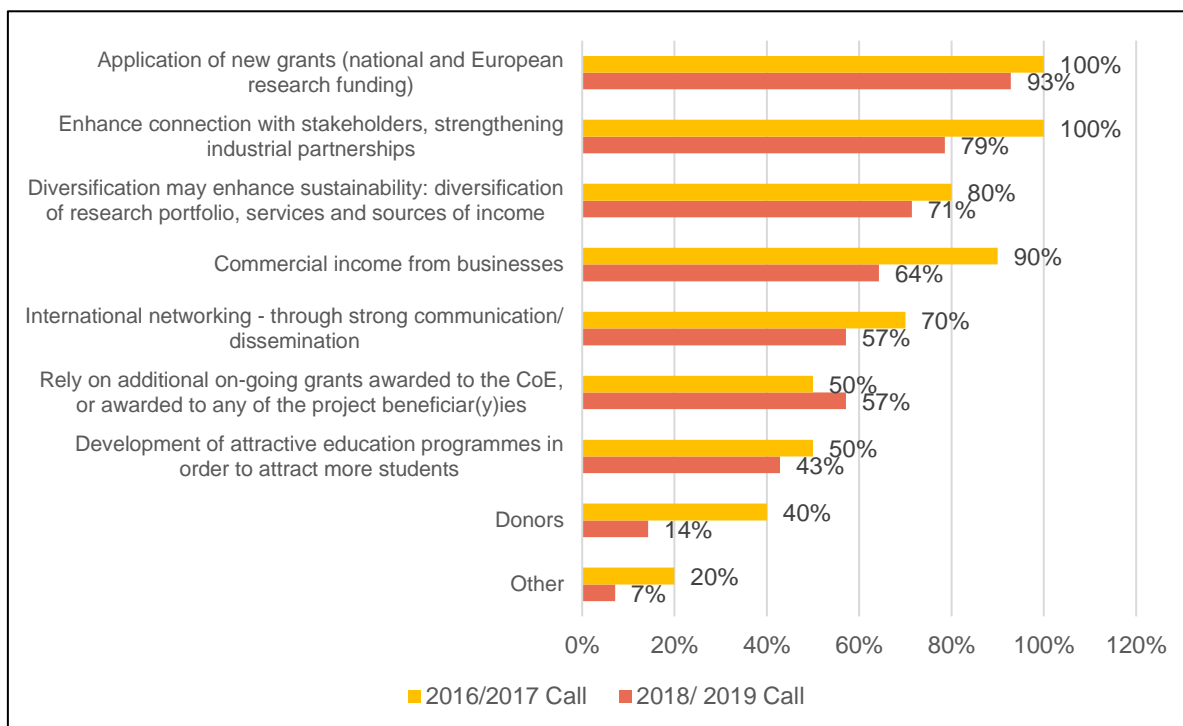


Figure 48. Financial sustainability strategies In Teaming (Call 2016/2017 and Call 2018/2019)

#### ERA Chair projects

Continuation of ERA Chair holder in the coordinating institution after the project ends is a very positive aspect of sustainability in ERA Chair projects. The results of the survey indicate (Figure 49) that the ERA Chair position in the organigram of the coordinating institution in most of the cases is a head of the teams. This is the most prominent for all the three calls accounting for 89% for 2019 Call, 62% for 2017 Call and 86% for 2014 Call. A small percentage (around 20% for all the three calls) indicates that ERA Chair holder is appointed as a Head of Department/ Faculty.



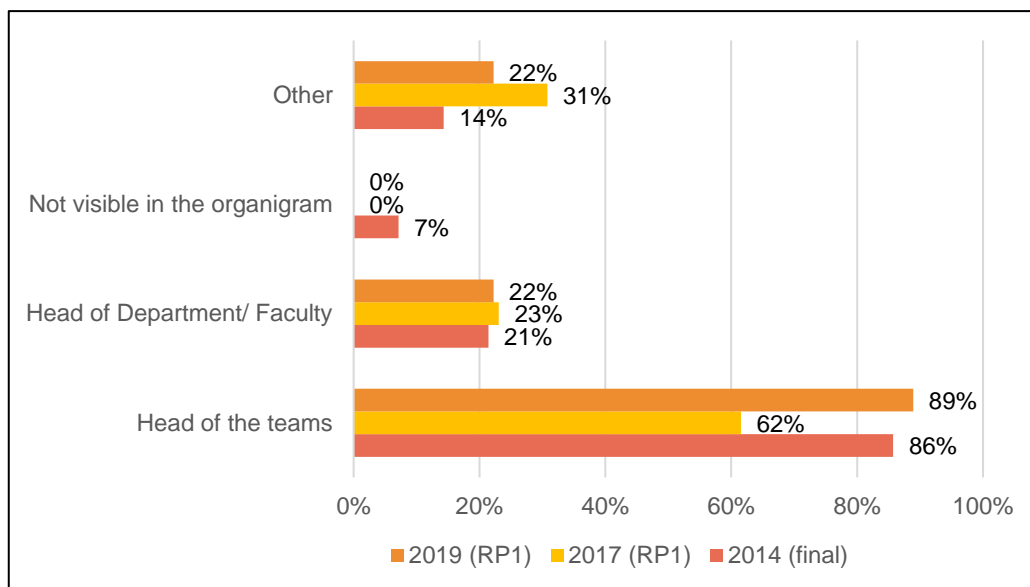


Figure 49. ERA Chair position in the organigram of the institution

Moreover, the survey asked if in view of sustainability the ERA Chair holder will be offered a long-term tenure position and the results confirm that such position will be offered (Figure 50).

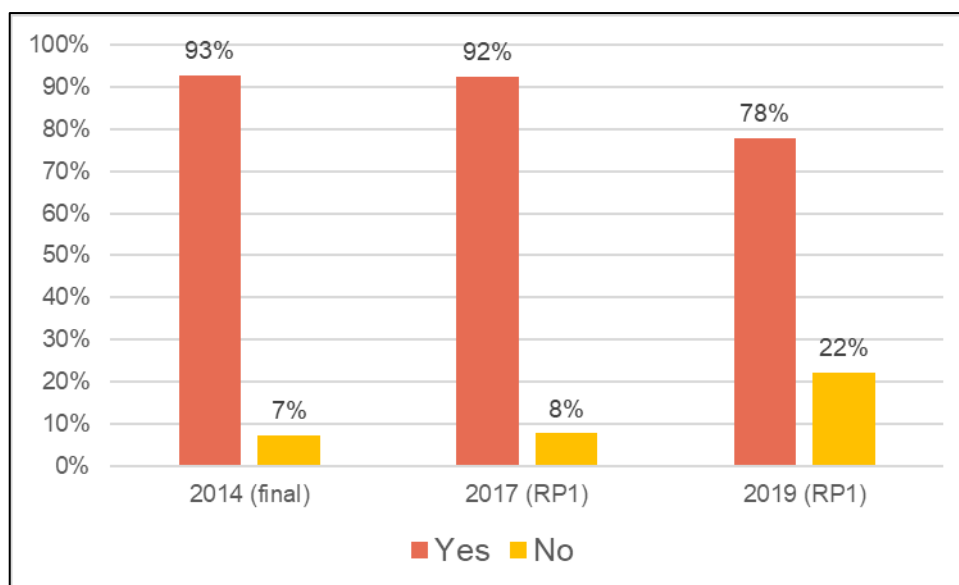


Figure 50. Possibilities for tenure position for ERA holder after the project ends

#### 4.3.6. Exploitable foreground, during and beyond the project

Commercial exploitation of foreground in the Widening Programme is more of a feature for Teaming projects than for ERA Chairs and Twinning, foremost due to the larger duration and scope of the former. Amongst the factors hindering the exploitation of project outputs during the project lifetime put forward by the ERA Chairs are the traditional value chains limitedly inclined for this type of activity and limited funding, and for Twinning projects, their

limited duration and scope. One specific barrier identified for the Teaming action is the regulatory framework hindering innovation. Nevertheless, what stand out in the survey as desideratum for all type of projects are the protected IPR such as patents, copyrights or trademarks.

As for the period after the project closure, the main limiting factor for commercial exploitation of results for all type of projects remain funding. While it is premature to assess the capacity of Teaming projects to generate income out of this activity (the 2016/2017 Call projects are still to conclude), the prospects based on results at the end of the first reporting period shows that this is realistic (e.g. [InnoRenew](#) (SI) has applied for a European patent on wood modification process before the end of second reporting period).

## 5. D&E in SEWP

### 5.1. D&E of H2020 results

The analysis of project results and their dissemination represent an intelligence about the outputs of the projects and therefore the basis for the assessment of the impacts of the Work Programme.

In H2020 the information on D&E provided to the coordinators is at times scattered among different guidelines and different portals such as FTOP, the IPR helpdesk or the D&E Wiki. For this reason, the reporting on dissemination and exploitation does not always allow for a structured and complete analysis of the activities. Moreover, the D&E related questions that monitors must address in the review reports are rather superficial.

REA therefore decided to carry out an analysis of D&E activities via a 19 questions survey to form a more complete picture on this aspect. Below we summarize the main findings of this D&E study.

The following calls have been analysed:

- ERA CHAIR - H2020-WIDESPREAD-2014-2
- ERA CHAIR - H2020-WIDESPREAD-03-2017
- TWINNING - H2020-TWINN-2015
- TWINNING - H2020-WIDESPREAD -05-2017
- TEAMING - PHASE 2H2020-WIDESPREAD-01-2016-2017

The projects belonging to these five calls are mature or finalized and therefore provide a good overview of the achievements. The picture below (Figure 51) shows the participation levels in the survey. Overall, 55% of projects answered.

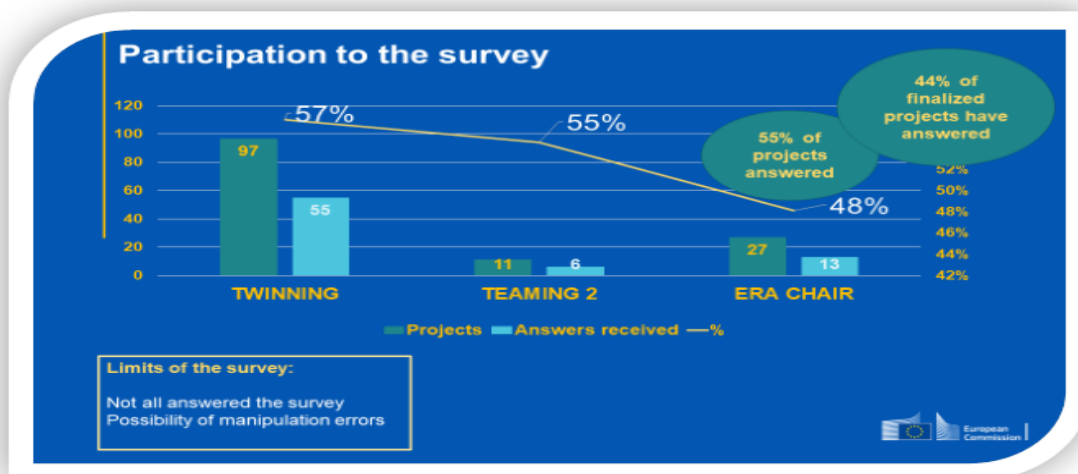


Figure 51. Participation rates in the D&E Survey

The 19 multiple-choice questions were predicated on the aspects illustrated below. The questions investigate both actual and targeted activities, in order to identify if there are gaps between the impacts expected and achieved. Where relevant a comparison between actions is provided. Figure 52 illustrates the basic structure of the survey focusing on composite parts of dissemination and exploitation.

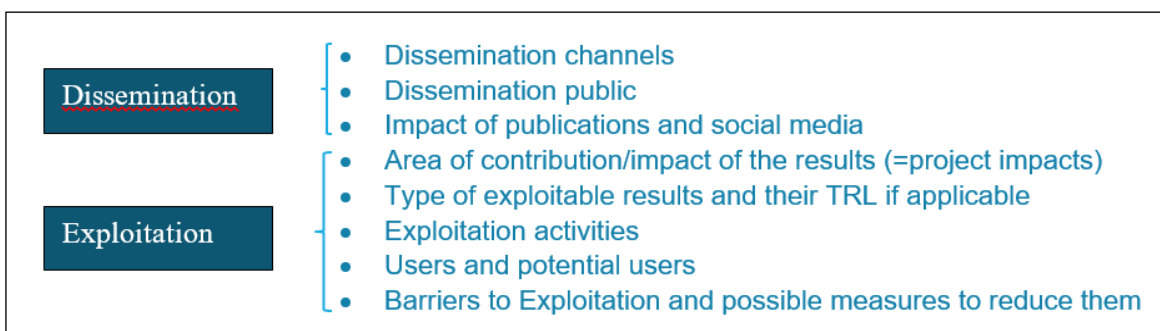


Figure 52. The structure of Dissemination and Exploitation in the Survey

For the scope of this analysis, the objectives of the H2020 “Spreading Excellence and Widening Participation” (SEWP) WP are structured into Excellence, Systems and Participation as follows:

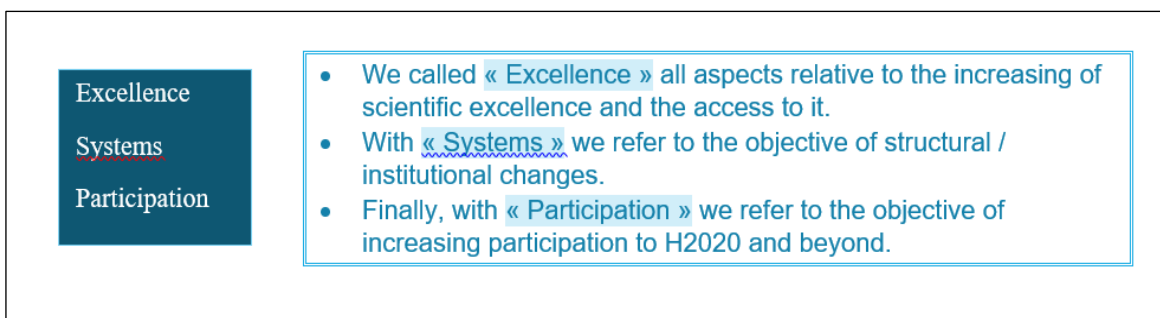


Figure 53. Data analysis structure based on WP objectives

This approach becomes particularly interesting for the analysis of the results related to exploitation activities. The table below shows the Work Programme objectives and the impacts as well as the results used to achieve them in the three identified fields of Excellence, Systems and Participation (Figure 53 and Table 13). Based on this distinction the study evaluates which results and activities the projects prioritize to achieve their impacts and how effective they are.

Table 13. Structure of the D&amp;E analysis based on WP Objectives

IMPACTS		RESULTS used to achieve the impact
<b>EXCELLENCE</b>		
<b>Excellence, reputation and attractiveness</b>	<ul style="list-style-type: none"> <li>• Raising the research profile of the institutions</li> <li>• Increase scientific capability</li> <li>• Research excellence of the coordinating institution in the specialist field</li> <li>• Publications in peer reviewed journals</li> </ul>	<ul style="list-style-type: none"> <li>• New knowledge</li> <li>• New data</li> <li>• Enlargement of research scope</li> <li>• New infrastructure (ineligible cost, but still part of the project)</li> <li>• New skills</li> <li>• Administration skills</li> <li>• Increased management skills</li> <li>• Increase of proposal writing skills</li> <li>• Research roadmaps</li> <li>• Pre-standards/standards</li> </ul>
<b>Innovation</b>	<ul style="list-style-type: none"> <li>• Further innovation</li> <li>• Further research</li> <li>• Increase Commercial exploitation</li> </ul>	<ul style="list-style-type: none"> <li>• Protected IPR (e.g. copyrights, patents, trademarks ...)</li> <li>• New software</li> <li>• New or enhanced technology</li> <li>• New product</li> <li>• New service</li> <li>• Prototype</li> <li>• New or enhanced process (includes improvements e.g. reduce energy consumption, increased safety)</li> </ul>
<b>Aspects relative to human resources</b>	<ul style="list-style-type: none"> <li>• An increase in the attractiveness for internationally excellent and mobile researchers</li> <li>• Use of open recruitment policy</li> <li>• Set up of Innovative doctoral training</li> <li>• Striving for gender equality/balance</li> </ul>	<ul style="list-style-type: none"> <li>• Increased mobility of researchers</li> <li>• Special initiatives for Early Stage Researchers</li> <li>• Educational materials</li> <li>• Codes of conduct</li> </ul>
<b>SYSTEMS</b>		
<b>System and institutional reforms</b>	<ul style="list-style-type: none"> <li>• Institutional and/or systemic reforms at national/regional level</li> <li>• The triggering of reforms at the coordinating institution</li> </ul>	<ul style="list-style-type: none"> <li>• Long term structural changes</li> <li>• Recommendations for policy makers</li> <li>• Modification of rules/legislation at regional or national level</li> </ul>
<b>PARTICIPATION</b>		
<b>Participation</b>	<ul style="list-style-type: none"> <li>• Increase in the reputation, attractiveness and opening of new networks for the coordinating institution</li> <li>• Attractiveness for industrial clients</li> <li>• Attractiveness for spin offs</li> <li>• Competitive funding (international incl. EU)</li> <li>• Competitive funding (national)</li> <li>• Funding from private entities</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of Collaboration platforms</li> <li>• Creation of durable partnership with other research organization</li> <li>• Enlargement of research partnership</li> <li>• New joint research projects</li> </ul>

## *Main results of the analysis*

### **1) Focus on Excellence and Participation**

Both dissemination and exploitation activities show that **all Widening actions are strongly focused on excellence**, in particular on the scientific excellence, reputation and attractiveness of the institutions. Depending on the actions, 89% to 100% of the projects prioritize impacts that contribute to this WP Objective: in particular, impacts like scientific capability and raising the research profile (Figure 54).

The projects appear to be effective in this endeavour: finalized projects show a very small gap between targeted and achieved impacts (in the range of ca. 3 to 10 percent points, depending on the activity). In particular, impacts like scientific capability, raising the research profile of the institution and excellence in the specialist field are targeted and achieved by almost 90% of all the finalized projects (see figures below).

The analysis shows that among the dissemination channels, the academic publications, conferences, trainings and networking events are targeted and achieved by all actions by almost 100% of the projects. The target audiences reached are mainly scientists, universities and research organizations.

Also the aspect of **Participation is strongly targeted by all SEWP actions**. The analysis of finalized projects (see Figure 54) shows that among the impacts, more than 80% of the projects declare that they target the achievement of competitive national and international funding. Less importance is given to the achievement of funding from private entities. Opening of new networks is also an impact targeted by around 80% of the projects while less importance is given to spin offs and industrial clients. The analysis shows that efficacy in the achievement of these impacts is high in all finalized project (with gaps in the range of 4% to 10% in the highly targeted impacts).

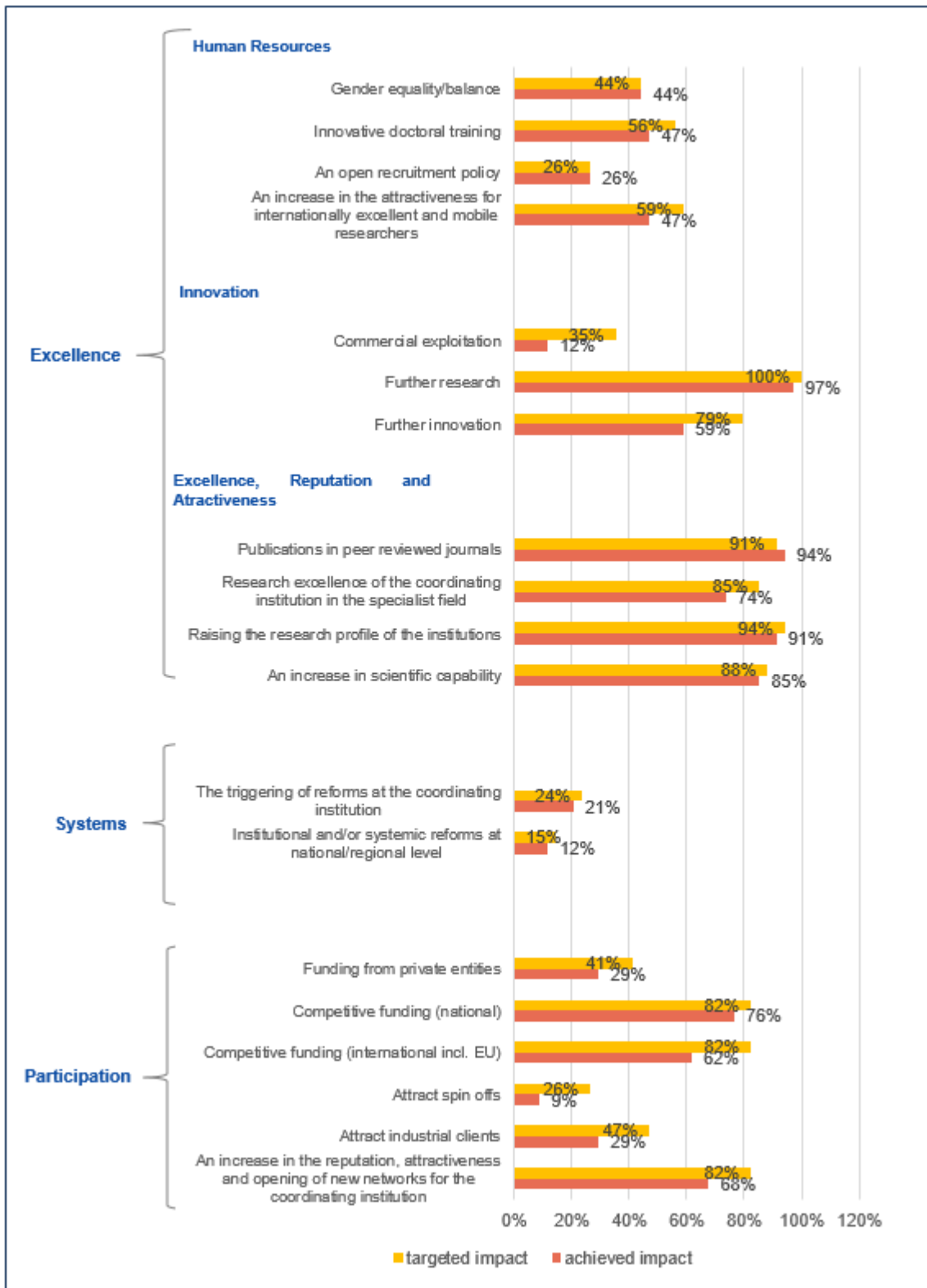


Figure 54. Achieved vs. targeted impacts in finalized projects in SEWP Actions

## 2) Emerging Aspect of Innovation

Given the CSA nature of SEWP projects, they are not expected to be innovative; however, innovation related exploitable results are present and are especially pronounced for Teaming Phase 2 Call. The highest share of innovation is observed in Teaming Action with almost 18% of innovation related results, followed by the ERA Chair Action with nearly 7% and Twinning – being the lowest actor in terms of innovation with around 4% (Figure 55). In addition, the analysis shows that the largest gaps between achieved and targeted results are observed for ERA Chair Action, followed by Teaming Phase 2 and Twinning Actions.

Concerning the **industrial users, small and medium business play an important role for the majority of the Widening projects**. Big industries and start-ups are not as prominent.

The technology readiness level of innovative results appear to be middle with most levels around 6 and 7 in a scale that goes from 0 to 9, where 9 indicates that the innovation is near to the market launch.

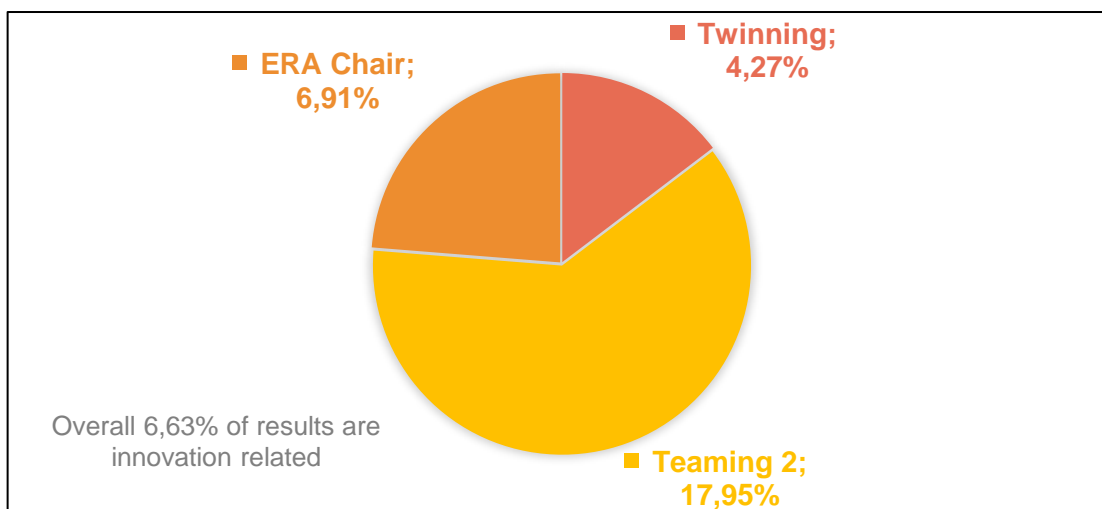


Figure 55. Innovation related results in the Teaming Action

## 3) Less targeted area of Systems

The figure below shows a comparison of impacts and results targeted by the three Widening actions in the area of Systems. **ERA Chair and Teaming Actions do indeed highly prioritize this area much more than Twinning** and this is to be expected given the nature of these actions.

However, the analysis also shows that for ERA Chairs and Teaming Actions **the area of Systems is less prioritized than the area of Excellence and Participation** where impacts and results are targeted by 100% of projects, while here the maximum reaches



85%. The Figure 56 captures the key comparisons among the three Widening actions indicating the outcomes mentioned above.

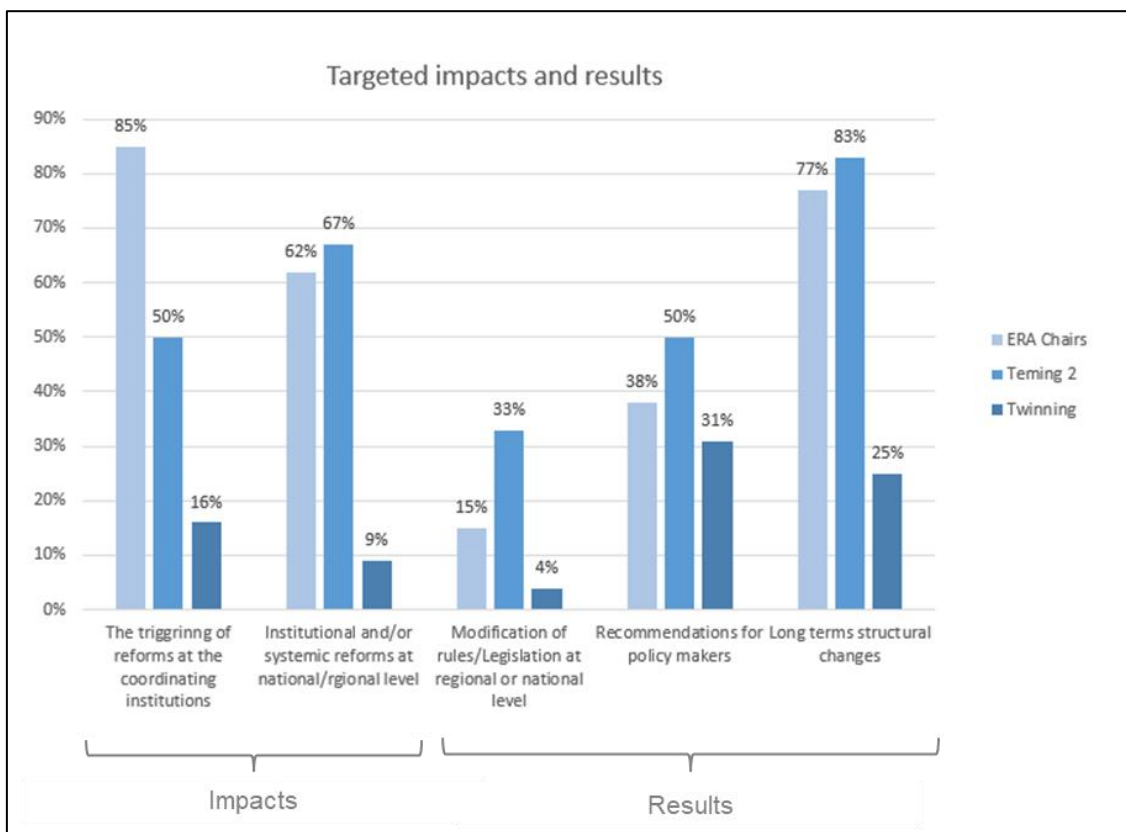


Figure 56. Main targeted D&E impacts and results of SEWP Actions

Teaming projects show a high level of efficacy at the level of Systems, in particular, at the level of institutional changes where the gap between achieved and targeted impacts is 0%. This is a remarkable result since none of the Teaming projects is finished yet. However, the gap between achieved and targeted impacts at national and regional level is around 33% indicating that this aspect needs to be further strengthened and may refer to more long-term targeted impact which is more evident at a later stage of project lifetime. ERA Chair actions, however, show a gap between targeted and achieved results in the area of Systems between 30% and 50% (referring to changes at institutional and national levels). The comparatively low efficacy may depend on the fact that only 31% of the analysed projects are finalized. Additionally, changes at System level can only be achieved in the long-term. Some more recent results on ERA Chair survey show that 86% of finished projects from the 2014 Call have achieved impacts on the institutional changes. Thus, the aspect of changes at institutional and regional/ national levels, especially for the ERA Chair Action, will require further analysis in the next surveys to confirm and specify the identified trends.

Figure 57 shows the efficacy in the area of Systems for all the three Widening actions, further confirming that these aspects deserve further attention in terms of targeted and achieved results.

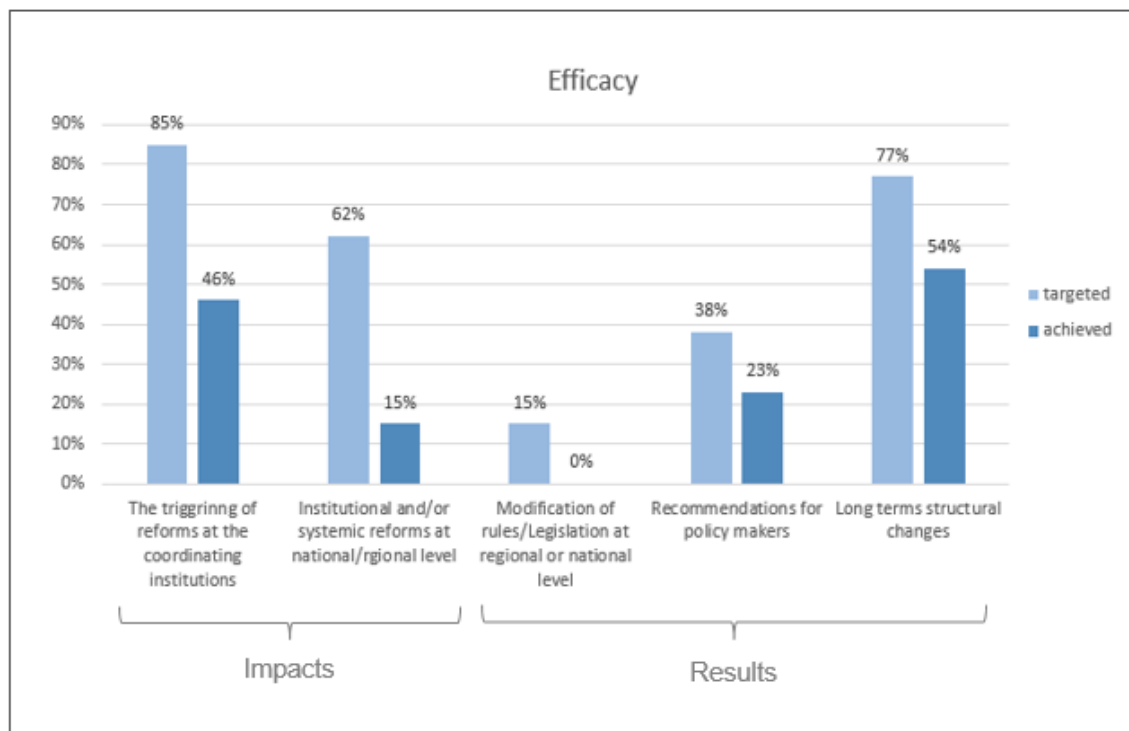


Figure 57. Efficacy of D&E outputs in SEWP Actions

#### 4) Inclusive Societies and RRI

Interestingly, cultural actors, civil society organisations, various associations as well as the public, are targeted by all three Widening actions. In particular, the general public represents a target for 78% to 92% of the projects depending on the action. This shows that the concept of inclusive society is gaining lots of importance and citizen participation in dissemination and communication activities of projects are important for the projects in the three SEWP Actions.

#### 5) EU dissemination channels

Dissemination channels offered by the EU like Euronews, or Horizon Magazine play a very marginal role in the dissemination strategy of the projects.

#### 6) Lack/inadequate funding as main barrier to exploitation

The analysis of barriers in exploitation also show interesting results, revealing that for all the Widening actions the main barriers are limited access to/ inadequate funding after the end of the project (more pronounced for Twinning and ERA Chairs). One specific barrier identified for the Teaming action is regulations that hinder innovation. Similarly, for ERA Chair Action among the main barriers are the traditional value chains that are less keen to innovate.

## 6. Widening Achievements and Success Stories

From the portfolio analysed in this report, 22 projects emerged as particularly successful (see Annex C)<sup>12</sup>. These are outstanding projects that are included in the [success stories](#) database of DG RTD. To be featured in the database, a project should have reached a breakthrough or tangible results, should have media appeal and sound project management. The geographical coverage of these projects is relatively wide, as they are from 12 different Widening countries.

In this context the most represented countries are Poland and Romania, each with four success stories. One project, [ANTARES](#) (RS) (“Centre of Excellence for Advanced Technologies in Sustainable Agriculture and Food Security”, Grant Agreement 664388, coordinated by Serbian University of Novi Sad), is presented in two different articles. The projects featured in this selection work in different fields, from women’s and foetal health to laser ignition, from sustainable agriculture to breast cancer, and many more. The full list of projects is available in the table in **Annex C**.

It is worth noting that these successful projects also work with distinguished scientists. For example, the ERA Chair Holder Prof. Maciej Wojtkowski ([CREATE](#) (PL), Grant Agreement 666295) is a holder of an individual prize for eminent researchers for their outstanding achievements or discoveries, the [Prize of the Foundation for Polish Science](#).

[FINEST TWINS](#) (EE) (Grant Agreement 856602) Advisory Board member Michael Batty from University College London was awarded with the [Vautrin Lud Prize in 2013](#) (also known as Nobel Prize for Geography).

In addition, among other Widening projects, a team from [CEITER](#) (EE) (Grant Agreement 669074) was awarded with [Estonian National Research Award 2020](#) and a research team from the coordinating institution of [RICAIP](#) (Grant Agreement 857306) has received the [European Citizen’s Prize](#) for 2020 by the European Parliament. Finally, [InnoRenew](#) CoE (SI) director Andreja Kutnar has been featured in [#EUwomen4future campaign](#) in 2020. This prestigious campaign, announced by Mariya Gabriel, European Commissioner for Innovation, Research, Culture, Education and Youth, is of high importance as it draws attention to outstanding women working in research, innovation, education, culture and sport.

To promote the Widening Programme and projects’ results, in 2021 REA launched a new [website](#) (Figure 58) and a Widening [newsletter](#) (Figure 59). In 2020, REA contributed to two issues of the NCP\_WIDE.NET project's newsletter ([May](#) and [December](#)) to share results of particularly successful projects, and to show how Widening projects took part in the global combat against COVID-19.

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<sup>12</sup> The list of success stories is continuously updated and coordinated between REA and DG RTD. More project success stories may become evident by the end of their project life time.



Figure 58. REA Widening website



Figure 59. REA Widening newsletter

## 7. COVID-19 Effects and Activities in SEWP Actions

### 7.1. Projects with COVID-19 research

As a response to our common challenge in the current COVID-19 pandemic, a number of initiatives are on-going worldwide. Among the EU coordinated efforts in terms of research and innovation actions, the Research Executive Agency (REA) has activated its network of projects that could contribute to addressing COVID-19 from various perspectives such as biomedical research, social, environmental sciences, engineering or informatics. Already in April 2020, R&I Director General Mr. Jean-Eric Paquet in his letter to project beneficiaries emphasised the importance of projects to contribute to the fight against the ongoing pandemic and its devastating effects. He encouraged these specific projects to include their exploitable results in the Horizon Results Platform under the COVID-19 section. Currently the EU Research and Innovation Family has identified 655 projects linked to COVID-19 activities and 338 exploitable results which have already been captured in this context. The contribution of EUR 465 million from EU to address COVID-19 challenge covers major categories such as 1- clinical management and treatment, 2- preparedness and crisis management, and 3- basic science, including biology of SARS-Cov-2 virus. Additionally, to fight the COVID-19 crisis the EU projects support health system resilience, diagnosis, public health measures and research on vaccines.

In the **Spreading Excellence and Widening Participation (SEWP)** Programme, there are currently **13 projects** carrying out activities in relation to COVID-19 (contributions in fighting COVID-19 crisis/ research on COVID-19): four Twinning, seven Teaming 2 (i.e. more than 1/3 of all running projects), two ERA Chairs and this number is likely to grow. Interestingly, five coordinating institutions from this list of projects are based in the Czech Republic, and others are in Portugal, Hungary and Cyprus. Figure 60 illustrates country participants (project coordinators and partners) in COVID-19 related projects in SEWP Programme. Below we briefly present the main highlights of Teaming, Twinning and ERA Chair SEWP Actions and their contributions in fighting COVID-19 crisis.

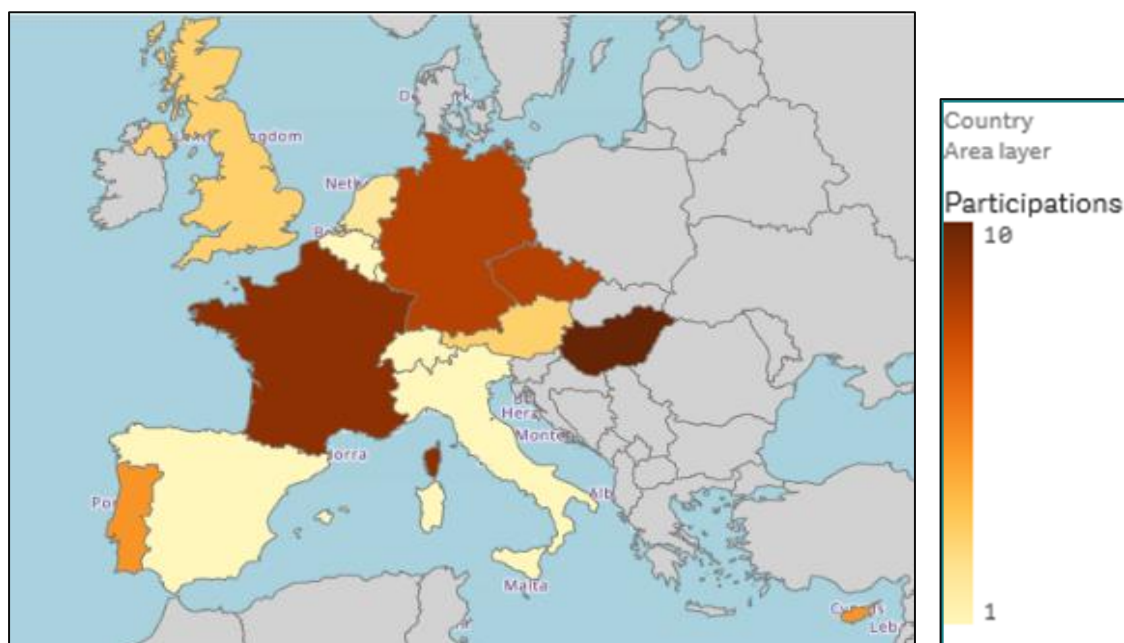


Figure 60. Country Participants in COVID-19 related projects (source: Horizon Dashboard)



In addition, Figure 61 shows the share of SEWP projects by category/ sub-category in relation to COVID-19 topic. Majority of SEWP projects deal with theme of preparedness and crisis management, followed by work in basic science and clinical management/ treatment.

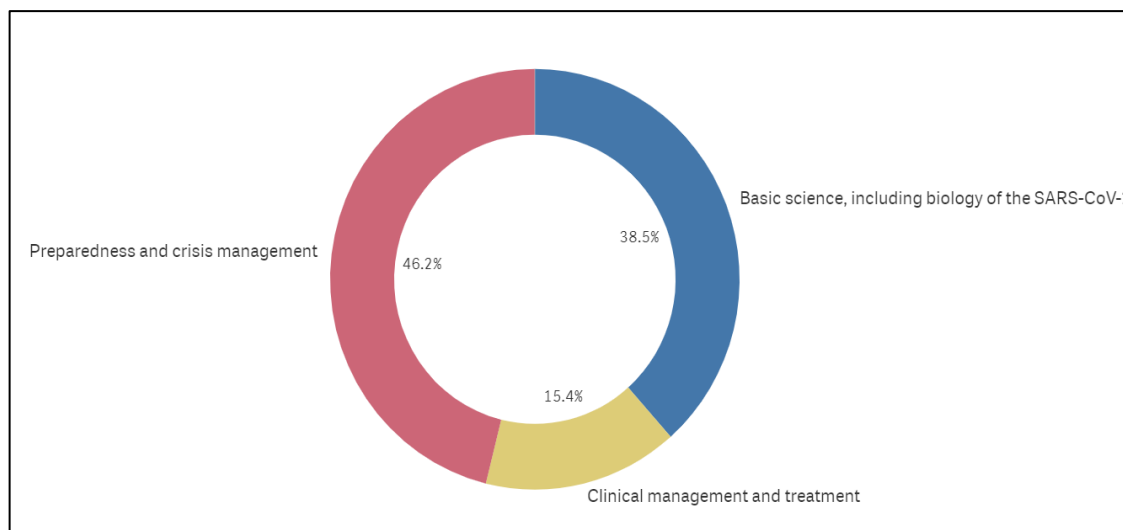


Figure 61. Share of SEWP projects by category/ sub-category in relation to COVID-19 topic

### COVID-19 Topic in Teaming Action

Within the Teaming Actions focused on development of Centres of Excellence there are several projects having activities linked to COVID-19. One of them is the **CETOCOEN Excellence** (CZ) H2020 Teaming project, which aims to the upgrade of the existing RECETOX Centre at Masaryk University (MU) and re-building it into a European Centre of Excellence (CoE) in Environmental Health and Exposome Sciences. One of the current tasks of CETOCOEN Excellence is the development of real-time information system for predictive management of COVID-19 pandemic, with 100% nation-wide coverage. The system will integrate data from multiple sources to predict risks of individual COVID-19 patients, support the large scale management of future pandemic crisis and include on-line visualisation. The in-house software tool CaverDock (<https://loschmidt.chemi.muni.cz/caverdock/>) can be applied for virtual screening of potential drugs against protein targets identified in the context of coronavirus pandemic. Additional information on the latest study at MUNI-RECETOX centre that investigates the immune system's response to COVID-19 is available at <https://www.recetox.muni.cz/en/about-us/news/an-extensive-study-will-investigate-the-immune-systems-response-to-covid-19>

Another Teaming project **RICAIP** (CZ), coordinated by Czech Technical University in Prague, is also entering the fight against COVID-19. The RICAIP Centre of Excellence supported by EU resources is developing a brand new respirator prototype under the name "CIIRC RP95". The goal is to make a prototype that can be produced anywhere in the world on the principles of distributed production. Distributed production allows to compensate the local lack of production capacities or resources. The aim is to have the safety device not only be printed on 3D printers (type „CIIRC RP95-3D“), but also be manufactured by injecting plastic into ready-made moulds. The result should be approved and patented.

Also given the international situation in relation to COVID-19, changes occurred in yet another Teaming project **EPIC** (HU), coordinated by the Hungarian Academy of Sciences (MTA SZTAKI). This refers to activities on the redefinition of supply chains and their

operations. In particular, the study focuses on the virus impact on the reconfiguration of supply chains, a dedicated industrial pilot, and the use of their own cloud computing capacity to facilitate Covid-19 related data-intensive projects.

The Research Center in Biodiversity and Genetic Resources (CIBIO) of the Teaming project **BIOPOLIS** (PT), coordinated by the University of Porto in Portugal is collaborating with the national COVID-19 SCI-TASK FORCE. BIOPOLIS is contributing with the much-needed equipment, material and human resources required for a massive testing of population – the fast possible strategy to mitigate the infection. In the context of its Mission and Vision, BIOPOLIS is in a unique position to address the pressing social challenges associated with viral pandemics such as the current COVID-19 crisis, by focusing on its root causes related to wildlife diseases and human-wildlife interactions. The CIBIO has had major achievements in this field, contributing for instance to (i) gain a better understanding of mechanisms of resistance and of jumps across vertebrate species of RNA virus, (ii) conceiving wildlife epidemiology surveillance networks, and (iii) creating on-site conditions for wildlife management and wildlife diseases in Africa and other tropical countries.

The Hungarian Center of Excellence for Molecular Medicine **HCEMM** (HU) intends to launch a new line of research and include COVID-19 in their research agenda. Several affiliated researchers in the Center are already collaborating with some hospitals and other related initiatives in Hungary on individual level. It is a partnership with EMBL (European Molecular Biology Laboratory), the Europe’s flagship laboratory for the life sciences – an intergovernmental organization with more than 80 independent research groups covering the spectrum of molecular biology.

Yet another Centre of Excellence **RISE** (CY) coordinated by Cyprus Municipality, has created the CovTracer app, which should stop the COVID19 pandemic in Cyprus by facilitating tracing of infected patients and accelerating action-taking. The CovTracer is a private secure location log to help combat the COVID19 epidemic in Cyprus. The CovTracer application can aid towards halting the COVID19 pandemic. The application builds on on the Massachusetts Institute of Technology project [safepaths](https://safepaths.org). The application is currently available on Google Play <https://covid-19.rise.org.cy/en/#>

Similarly, in terms IT tools to fight COVID-19, the Teaming project **KIOS CoE** (CY) is focusing on technological challenges of critical infrastructures coordinated by the University of Cyprus. A KIOS CoE team of volunteers in collaboration with the Cyprus Ministry of Health and the Deputy Ministry of Research, Innovation and Digital Policy, set up an “Emergency Management System for Handling COVID-19 Cases” (Figure 62).

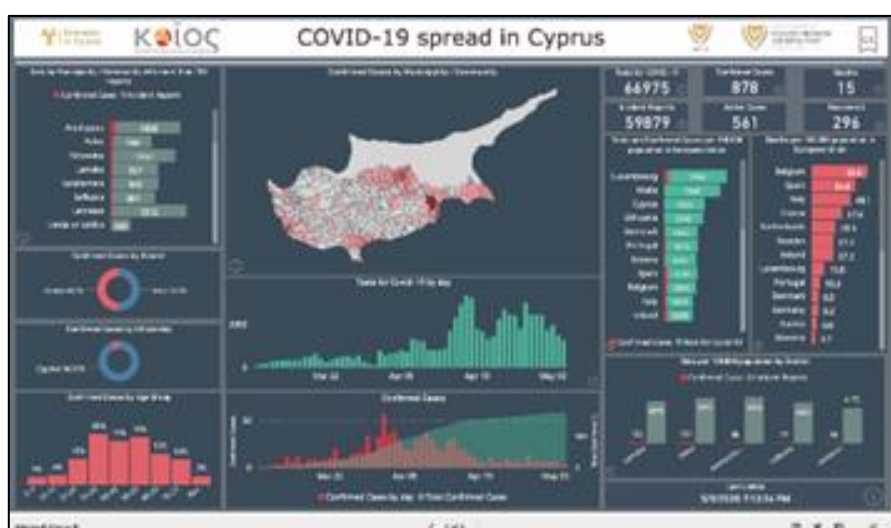


Figure 62. Emergency Management System for Handling COVID-19 Cases (KIOS CoE)

The developed system is a vital tool for the Ministry of Health in managing the spread of COVID-19 and is used for recording, analyzing and managing all suspected and confirmed COVID-19 cases in Cyprus. The KIOS CoE team has also developed an interactive “Web Portal for Information on the Spread of Covid-19 in Cyprus”. This portal is used on the official site of the Government of Cyprus to display statistics on the spread of the virus. This initiative provides additional motivation for the KIOS Center of Excellence to further translate its research and innovation outcomes conducted at the Center into practical tools that can be used for the safety and well-being of citizens.

### *COVID-19 Topic in Twinning Action*

Several Twinning projects have also managed to make important contributions in terms of the COVID-19 battle. The Twinning project [MiCoBion](#) (CZ) coordinated by Charles University in Prague deals with biomedical research on complex microbial communities including the new pathogens, such as viruses and looks at impact on health and environment. Project partner Catholic University of Leuven (KUL) with well-known scientist, the virologist Prof. Marc van Ranst, is actively involved in helping to manage the Coronavirus pandemic as part of the emergency committee on COVID-19 in Belgium (<https://www.biocev.eu/en/about/news/virologist-marc-van-ranst-it-might-take-years-before-we-shake-hands-again.234>). Virologists and cell biologists involved in the Twinning MiCoBion project established RT-PCR based test in Biocev (<https://www.biocev.eu/en/about/projects/micobion.2>) and Biocev was granted the licence to the COVID-19 diagnostics. In parallel, project is developing new test strategies to avoid time-consuming PCR amplification and shorten the test duration. Project coordinator is in close contact with their MiCoBion partner (KUL, Belgium), to exchange experience, particularly with new antigen test such as 15 minutes test developed by Cordis BioConcept and LHUB-ULB. Moreover, as serologic tests for the SARS-CoV-2 are not yet widely available, although processing them is simpler and technically less complicated than molecular tests, MiCoBion team directs their research also to this line. Serologic tests could help identify essential healthcare workers who are immune to the disease and could work safely without protective equipment, or can return to their jobs.

The H2020 Twinning project [URBAN X](#) (CZ), coordinated by Masarykova University in Czech Republic, is studying the interactions between various aspects of urban environment (social stratification, living standards, traffic, air quality, etc.) and human health. Available data from the environmental and human monitoring networks is used for the statistical and geographical modelling providing results (e.g. maps of the air pollution, traffic load, greenness, or socioeconomic deprivation) for subsequent epidemiological studies of factors affecting human health. Chronic diseases (including cardio and respiratory diseases) rather than acute conditions are the main focus of the project. For the COVID-19 outbreak the most vulnerable population group are the people with cardiorespiratory diseases and therefore, an improvement of the urban air quality would also result in more resilient populations. The project team closely collaborates with the policy-makers at the local level to translate the research findings to policy and regulation, and to contribute to the implementation of the smart and healthy city policies and public awareness rising.

The Twinning project [Clim4Vitis](#) (PT), coordinated by University of Tras-os-Montes and Alto Douro in Portugal, is dealing with climate change impact mitigation for European viticulture. The project has considered that a knowledge transfer for an integrated approach could form a new task in the project concerning COVID-19 impact mitigation on European Viticulture. The main objectives are the assessment of the likely economic impacts of the COVID-19 infection in the viticulture and winemaking sector in Europe, particularly regarding trade and labour force constraints and delineating measures to overcome them.



A Twinning project [EpiViral](#) (PT), coordinated by the University of Aveiro (UAVR), in the Institute of Biomedicine (iBiMED-UAVR) in Portugal is expected to directly contribute to COVID-19 research activities as it is linked to the fields of virology and epitranscriptomics and is expected to contribute in the context of viral infections.

### *COVID-19 Topic in ERA Chair Action*

There are two ERA Chair projects that are expected to contribute to COVID-19 research activities. The new H2020 ERA Chair [R-EXPOSOME](#) (CZ) project coordinated by the Masaryk University (MU) in their established RECETOX centre with their newly appointed ERA Chair will focus on the development of a capacity for assessment of extensive multidisciplinary (environmental, social and health) data and new data mining, analytical, and modelling tools for more advanced epidemiology and risk assessment. Such capacity is urgently needed in the region of Central and Eastern Europe, in order to exploit and enhance the value of existing regional data from monitoring programmes, longitudinal cohorts and national health registers. This is directly linked to management of the pandemic outbreak of COVID-19 by analysing, interpreting and modelling available population data needed for development of population-protecting strategies and IT tools.

Finally, for the project [EXCELLtoINNOV](#) (PT) in light of the COVID-19 pandemic, the ERA Chair holder has led two successful proposals in two “RESEARCH4COVID-19” calls from the national Fundação para a Ciência e a Tecnologia that have found immediate translation to practical solutions, namely: i) to setup a large-scale assay accurately detecting and monitoring the population for SARS-CoV2 immunity ii) to deliver a high-throughput assay that is able to identify donors with high levels of neutralising anti-SARS-CoV-2 antibodies, in collaboration with the Instituto Português do Sangue e da Transplantação to develop a National Programme for Convalescent Plasma Therapy. The setup of the COVID-19 work (serology and neutralisation assays) was done in the ERA Chair’s lab where team members were granted special permission to work during the lockdown (published in European Journal of Immunology). These successful grants leveraged IMM’s scientific position within the immunity and infection field, through the ERA Chair holder directly addressing this enormous societal challenge. At the national level, the ERA Chair is a key element of various task forces that IMM is currently driving together with health authorities, governmental bodies, and civil organizations, to scale-up of diagnostic capacity.

The REA SEWP team closely follows the COVID-19 related results in these projects and their developments in the Horizon Results Platform. In the context of the current sanitary crisis all the activities aimed to tackle the COVID-19 crisis are very important and welcome. Unfortunately, health related and socio-economic effects of COVID-19 could be felt for a long time to come in our society. Therefore, the continuation of joint efforts, solidarity, new ideas, positive developments and collaborations among our projects will be of key importance in the fight against COVID-19.

## 7.2. Effects of COVID-19 on Widening projects

COVID-19 pandemic had a noticeable negative impact on projects, which included multiple delays, needs for extensions, and certain project activities suspended, postponed or converted to the online format. Projects tried to be creative as much as possible to manage the effects of COVID-19, however, in many cases smooth continuation was not possible and certain measures had to be taken.

The data on COVID-19 effects in SEWP projects was collected aiming to get an overview of how many projects are affected and in what ways (quantitative and qualitative analysis). This information is highly important as it directly affects REA’s work on projects

management. In relation to COVID-19 this analysis included the statistics on project extensions, delays of activities, change of format of tasks/ deliverables (on-site to online; changes in substance) and budgetary changes (e.g. underspending).

### COVID-19 Effects on Teaming Action

In Teaming (all Calls combined) over a third asked for extensions which are still being discussed (70% of 2016/17 Call; 0% of 2018/19 Call). For Teaming Phase 2 2016/17 Call - out of 10 running T2 projects, 70% (7 projects) are in discussions regarding extension (6 for 12-14 M; 1 for 6 M) and all of them already had their 3rd periodic review and are at the beginning of their 4th reporting period (see Figure 63). It is a common practice that the extensions are discussed with experts at the reviews, but the final decision is then made by European Commission and REA.



Figure 63. Extension in Teaming projects due to COVID-19 crisis (as of June 2021)

Figure 64 illustrates the types of changes that mainly occur in Teaming projects due to COVID-19 situation. In both Teaming calls, these relate mainly to delays in tasks and deliverables as well as change of format of activities from on-site to online. As already noted earlier, the requests were more prominent for Teaming 2016/2107 Call as these actions are in their last periods of project lifetime.

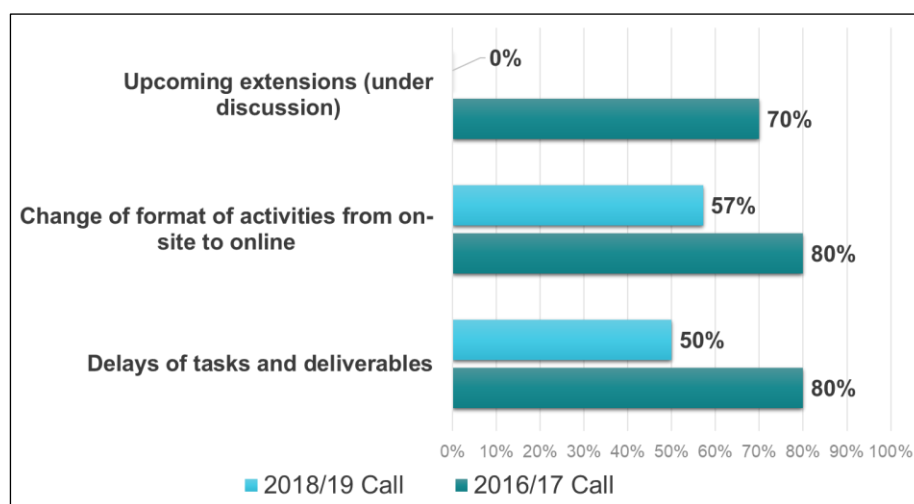


Figure 64. Teaming Phase 2 - Effects of COVID-19 on projects (as of June 2021)

### COVID-19 Effects on Twinning Action

Twinning, having active networking, training, and staff exchanges at the very core of the Action, was highly affected by the COVID-19 crisis. For the Twinning Action in all calls combined, more than 1/3 of the projects asked for extensions and this is an on-going situation which is likely to continue. As shown in Figure 65 the amendments for extension requested by Twinning projects are either already processed, on-going or upcoming.

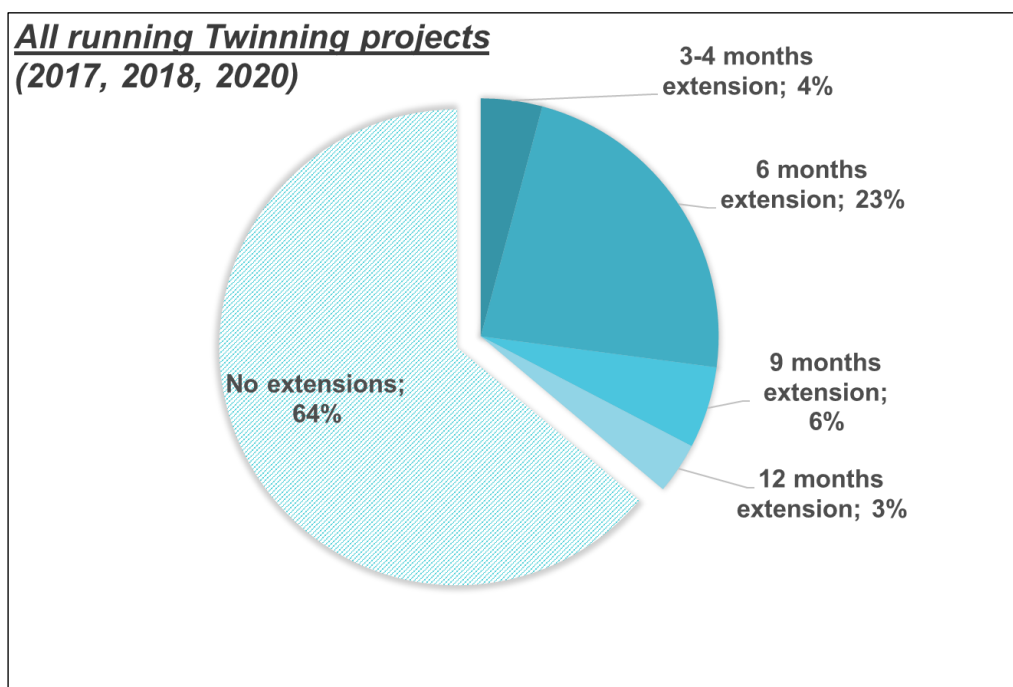


Figure 65. Twinning Action - Project extensions due to COVID-19 (as of June 2021)

The need for extensions are regularly discussed with the expert monitors during the reviews process, who assess if such an extension is adequate for the project situation. The final decision regarding extensions is taken by REA. Similarly as in Teaming, Twinning projects mainly experience delays on tasks and deliverables, but also they go through the significant change from on-site to online/ hybrid format for trainings, exchanges and summer schools (Figure 66).

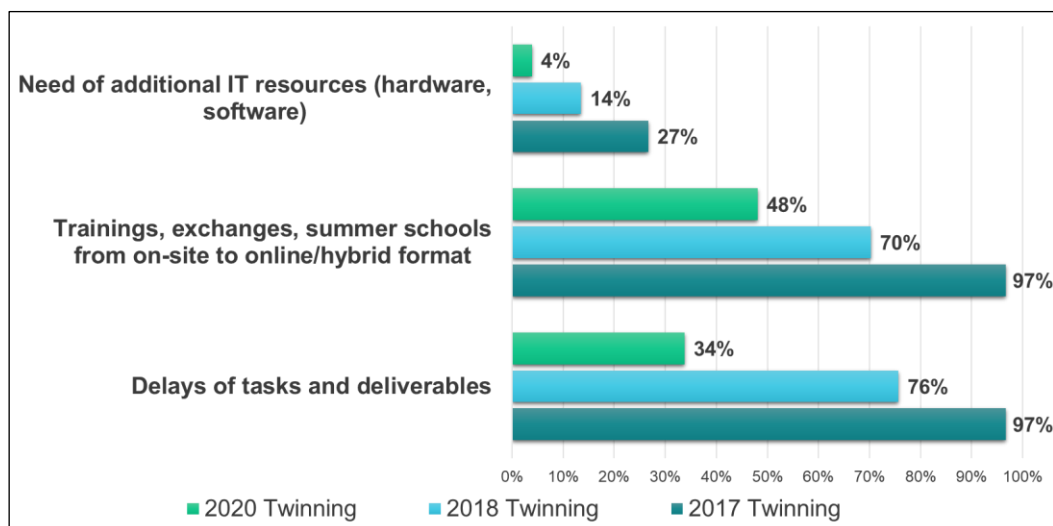


Figure 66. Twinning Action - Other effects of COVID-19 on projects by call

It is, however, important to note that these figures are evolving rapidly as it still needed to see the developments of newer projects (extensions were taken into account mainly for projects in the second part of their project life cycle). Moreover, many projects are adjusting their work plan in view of the continuing pandemic.

### COVID-19 Effects on ERA Chair Action

The ERA Chair actions, where the start of the H2020 projects highly depend on the timely recruitment of the ERA Chair holder and the team, were also strongly affected by COVID-19 crisis. In 2021, so far 35% project extensions in total have been requested by the ERA Chair actions (19 out of 55 running ERA chair projects). As already mentioned for Teaming and Twinning, the reviews are gradually changing this situation – and this analysis reveals a snapshot of mid-2021. The requests of extensions illustrated in Figure 67 relate to amendments either already processed, on-going or upcoming. Figure 68 shows the requests for extensions by ERA Chair Call and it is clear that for the 2014 Call all projects (100%) were affected.

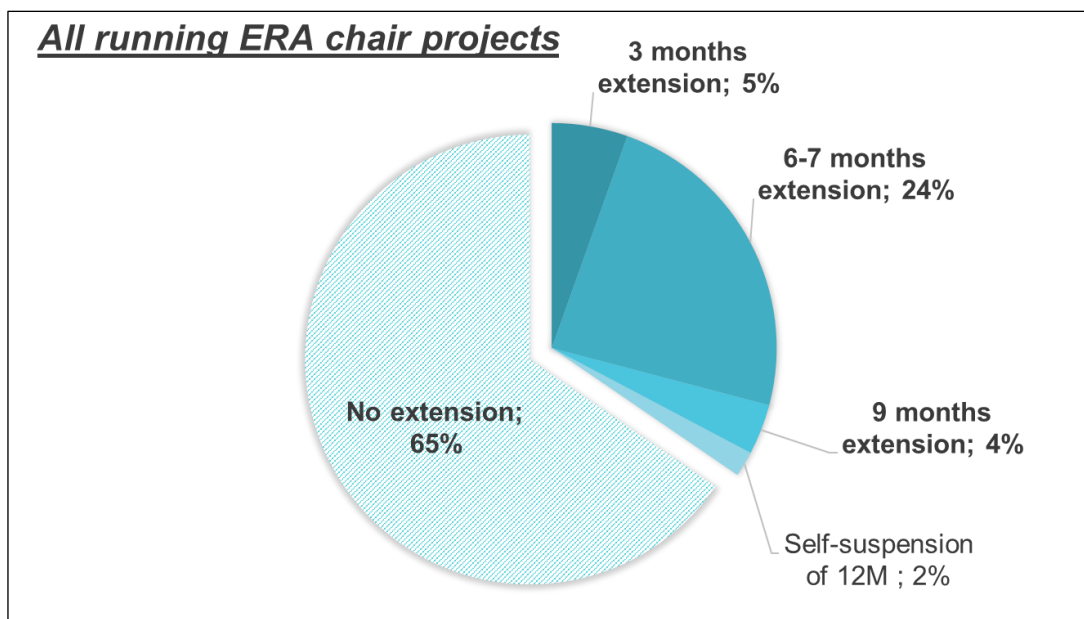


Figure 67. ERA Chairs - Project extensions due to COVID-19

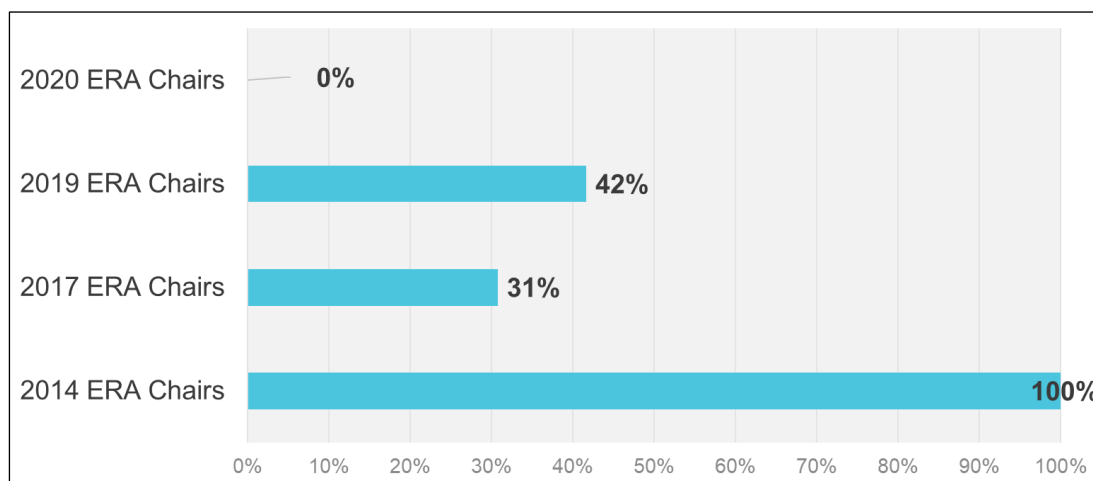


Figure 68. ERA Chairs - Project extensions due to COVID-19 by call

Finally, it should be mentioned that the biggest effects in ERA Chair projects included projects extensions, delays in tasks and deliverables, change from on-site to online/ hybrid format in terms of trainings and other types of exchanges. The need for additional IT Resources (hardware, software) was not among the most prominent effects/ needs due to COVID-19 (Figure 69). The delays in recruitment of the ERA Chair holders were also observed and this was confirmed by the ERA Chair survey results too (see Section 4 on Scientific, Societal and Economic Impacts)

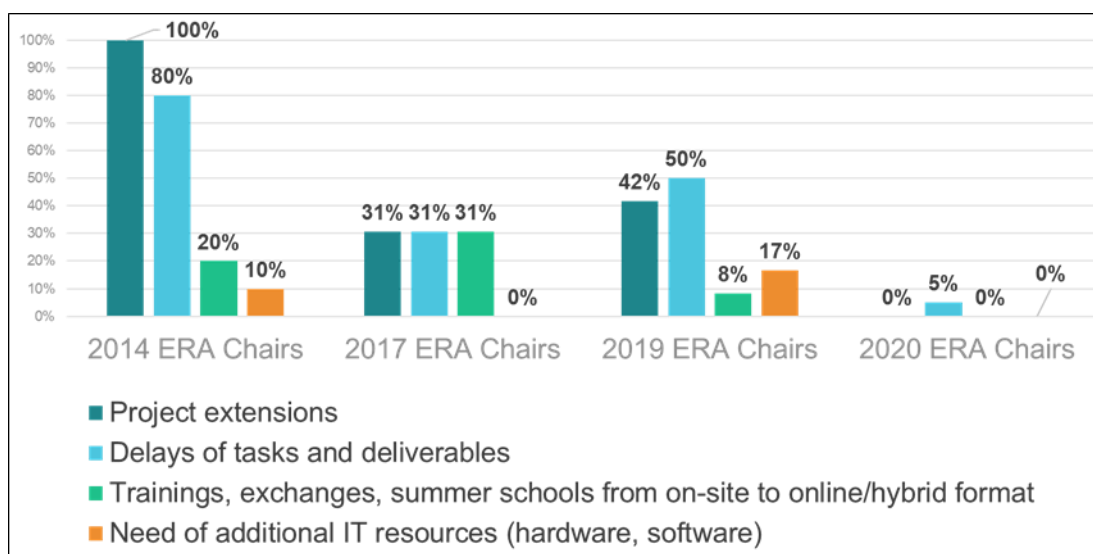


Figure 69. ERA Chairs - Effects of COVID-19 on projects by call

In conclusion, there is an important **increase in extensions during the pandemic**. Figure 70 testifies this jump in increase of extensions in the SEWP projects.

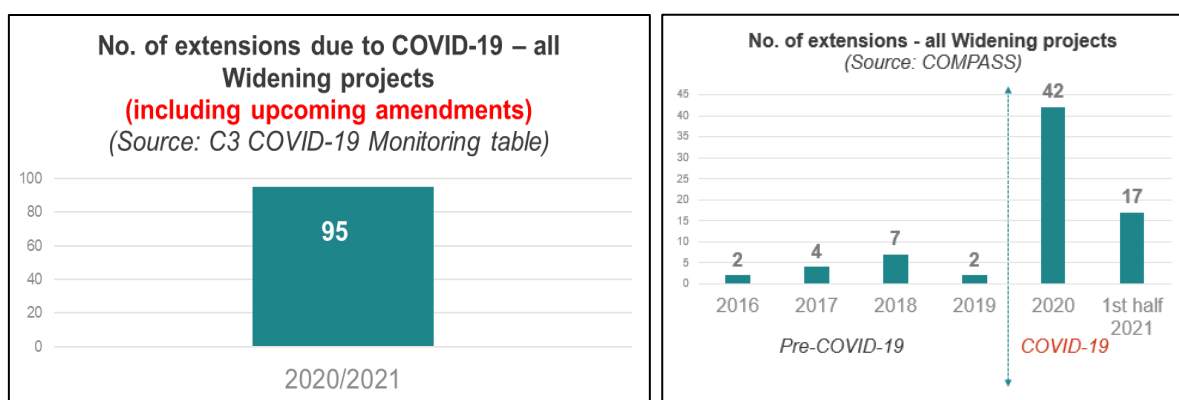


Figure 70. Increase in extensions in SEWP projects due to COVID-19 pandemic

### Different results by call

The current analysis indicates that there are different results in terms of COVID-19 effects by calls. The 'older calls' (2017 and earlier) are more affected as they are more advanced in time. For projects from the more recent calls, no extensions have been discussed yet, as a large number of reviews are coming up and figures will evolve. The total number of extensions processed by June 2021 (COMPASS) is **59**. Taking into account the forecast for the coming months, this number may raise to **95** (i.e. more extensions are still to come). Most of projects proactively switched format of activities, looked into creative solutions and tried to avoid delays to the maximum extent possible.

### Delays in the implementation of activities

In some Widening projects delays in recruitment were observed, as there were no options to receive new staff and sign contracts. 'Maturity' of tasks and deliverables are currently behind expectations for many projects and it is evident that contingency planning is needed.

It must be emphasised that for Teaming Phase 2 Calls, the delays are observed in the planned upgrade of the facilities/construction of new buildings (related to complementary funding). These observations also come from the Teaming, Twinning and ERA Chair surveys conducted in 2021.

### *Budgetary issues*

In terms of budgetary issues, the COVID-19 had clearly strong negative effects. Underspensing was observed in many Widening actions, for some projects this is still in early in process, especially for Teaming Phase 2 2018/ 2019 Call and the results will be seen at a later stage. As already referred to earlier, extensions might have important budget repercussions. Some Teaming Phase 2 projects already requested reallocation of complementary funding beyond the project lifetime. There are also many cases of budget transfers: travelling **budgets underspent** versus requests to shift to personnel costs.



## 8. Conclusions

The current Impact Report presents a wide range of Spreading Excellence and Widening Participation (SEWP) actions, results and impacts that can be considered for future programming activities and other policy developments. Horizon Europe (HE) Framework novelties are used here to connect H2020 and thus, paving the way toward a better understanding of future and emerging impacts. A number of conclusions highlighted in this complex study are laid out in the following paragraphs and the country perspective is emphasised to a maximum extent possible.

### *Project Portfolio Analysis*

Statistics show that the top successful applicants in the SEWP Programme are Germany, UK and Italy and **among the Widening countries** (Member States and Associated Countries as detailed in **Annex D**) **Portugal, Cyprus, Poland and Estonia** are the most successful participants in terms of project numbers. The highest EU contributions among Widening countries have been obtained by **Portugal, Cyprus, Estonia and Czech Republic**. The Widening Programme is a bottom-up programme by its design, thus in terms of scientific topics and portfolio analysis presented in this report, the 295 SEWP projects were grouped into the thematic clusters of 22 scientific domains, 9 scientific areas and into five HE Mission Areas. This work aims to provide a **better understanding of the thematic content in the SEWP project portfolio**. The outcome of the clustering work proved to be useful also in terms of **boosting synergies among the Widening projects**, as promotion of networking opportunities has been demonstrated in the first Widening cluster event.

The analysis of the thematic content of the SEWP portfolio reveals that Widening projects are highly focused on the three major areas **(1) Computer sciences, (2) health/medical fields and (3) biology/agriculture**. **Cyprus**, followed by **Estonia** demonstrate the highest shares of SEWP budget allocated to computer sciences and electrical engineering domain. **Portugal** is the leader, followed by **Poland** and **Czech Republic** in the Health/Medical Sciences and Biology/Agriculture domains.

The **five Horizon Europe Missions** currently featured at the top of political agendas have also been analysed within the Widening portfolio. The results show that, in a broader sense, the **HE Mission Cancer** is the most represented with the highest share of projects and budget in the SEWP portfolio. In terms of coordinating Widening countries, **Portugal** is the most represented one, being in four out of the five Missions.

It is a pleasure to note that the SEWP clustering work has served as an inspiration for the first Widening **Cluster Event** organised on the topic of Sustainable Agriculture and Natural Resources, closely linked to the **HE Mission on Soil Health and Food**. In the dedicated **post-cluster event survey** nearly all of the respondents declared to have received useful information and consider future cooperation as very important. Around 2/3 of participants have been or have the intention to be in contact with other participants. Overall, projects wish to have **on-site meetings** on specific scientific topics and propose an **enhancement and creation of dedicated e-platforms** towards cooperation and exchange. The **role of EC and REA** in supporting beneficiaries **was highly appreciated**. This positive experience will be further continued with hopefully more tangible results and impacts emerging from thematic synergies in the near future.

Addressing **Smart Specialisation Strategies** is not a novelty in the Widening Programme. This policy concept aiming to boost regional innovation, contributing to growth and prosperity by helping and enabling regions to focus on their strengths, has been pertinent for Widening projects since the beginning of H2020. The results of the analysis presented in this report indicate that several Widening countries align best their Smart Specialisation priorities in terms of project budget and thematic distribution and these are **Malta, Cyprus, Bulgaria, Latvia and Slovenia**. To give a flavour on how Smart Specialisation Strategies are developed in the first Horizon Europe Widening calls (Teaming Stage 1 and Twinning -



Western Balkans) a snapshot analysis is prepared. The results show that the highest match, both in terms of the number of proposals and budget, is implemented by **Cyprus, Portugal, Hungary and Slovakia**. The aspect of Smart Specialisations deserves further analysis in terms of better understanding the context and further impacts.

### *Scientific, Societal and Economic Impacts*

As an outlook towards Horizon Europe, the indicator structure from HE Framework based on **Scientific, Societal and Economic Impacts** was used in the current study, featuring the impacts of the SEWP Programme focusing on Teaming, Twinning and ERA Chair Actions.

**Scientific excellence** is one of the key criteria in the evaluation process of Widening proposals. Linked to this, generation of high quality new knowledge is directly related to innovation and excellence. The D&E survey capturing mature and finalised Widening projects revealed that there is an **emerging degree of innovation** in SEWP Programme, explicit in particular for Teaming Action. This is an interesting result given that the CSAs in SEWP are not directly targeting the innovation.

**Strengthening human capital in R&I** is a measure that plays a major role in contributing to research excellence, profile and attractiveness of research institutions. The Widening surveys reveal that all three H2020 SEWP Actions (Teaming, Twinning and ERA Chair) have prominent impacts in this context. In **Teaming**, the highest impacts on research excellence are linked to new international activities and R&I collaborations, publishing publications in high impact journals and developing new research topics. Teaming projects demonstrate the importance of partnerships with SMEs and industry which are vital for sustainability of Centres of Excellence. **Twinning projects**, based on networking and training activities, although heavily affected by COVID-19 crisis, indicate that the main measures to excellence are training, conferences and expert visits. In the **ERA Chair Action** the scientific impacts relate to acquisition of expertise and new knowledge in the specific domain as well as new R&I collaborations. Participation of the ERA Chair holder in scientific events plays a major role, however in more recent ERA Chair calls this aspect was far less pronounced, due to the COVID-19 pandemic and the limited ability to travel.

**Fostering diffusion of knowledge and Open Science** is also one of the key scientific impacts. Widening surveys indicate that publications are among the most important Key Performance Indicators (KPIs). Analysis of SEWP data indicates that the **highest number of publications is in Twinning Action**, followed by ERA Chair and Teaming Actions. In terms of publications with Open Access, **Teaming has the highest number of publications in OA**, in the second place comes ERA Chair actions and the third – Twinning. In all the three Widening Actions the majority of publications are scientific articles, followed by conference proceedings and minor part are book chapters. **Similarly, for all the three Widening Actions, around 50% of peer-reviewed publications are featured in high-impact journals**. This aspect deserves further analysis/ monitoring in the future D&E Surveys or via Web of Science.

**Societal Impact in Widening Projects also requires more research** to better understand the results obtained so far. In HE Framework Programme societal impacts relate to multiple aspects and capture the three main components, as follows: (1) better contribution of R&I to tackling societal challenges, (2) stronger role of EU in tackling global societal challenges and (3) better societal acceptance of science and innovative solutions.

**The Impact of R&I** in Widening can be assessed via the **structural changes** that can be triggered at institutional, regional and national levels. As required by the SEWP Work Programme, one of the main anticipated impacts is that SEWP actions will stimulate reforms in the national and regional R&I environment of the Widening countries and will also trigger reforms at the coordinating institution. The recent D&E survey on H2020 Widening projects illustrated a wide range of exploitation impacts. The concrete societal impact by

strengthening the impact of R&I is most obvious for the Teaming and ERA Chair actions while for Twinning actions it is less evident.

Among other societal impacts there are **innovation enhancements** in SEWP Actions, which are observed especially for Teaming and ERA Chair and have the potential to generate large-scale societal impacts through academic enhancements towards industry and innovation advancements. In particular, in Teaming the engagement to reach societal impact is embedded in the missions of Centres of Excellence.

The SEWP project portfolio analysis illustrated that the Widening Programme generously addresses the topics of the **EU Societal Challenges**. In terms of Global Societal Challenges, Widening Actions also thematically contribute to Sustainable Development Goals (SDGs). **The key SDG for all SEWP projects** is based on the main objective of the Widening programme, namely the **enhancement of scientific research**.

Beside scientific and societal impacts, **economic impacts are aptly addressed in Widening actions** and relate to aspects such as innovation, including break-through innovation and strengthening market deployment of innovation solutions, new competitive research funding through new partnerships, generation of revenues, and cooperation with business sector to guarantee sustainability of projects.

The results of the SEWP surveys show that **more than 70% of running Teaming projects manage to attract new, competitive research funding** mainly from EU Funds and National Research Programmes. While the general level of attained funding in SEWP projects is **mostly at the medium level (5%-25% of increase)**, more mature SEWP projects show improvement in secured funding at very high levels. The generation of own revenues is especially interesting for the Centres of Excellence (CoE) of the Teaming actions. In fact about 50% of CoE indicated that the generation of income is a critical activity and the most common sources are (1) **income acquired through competitive funding both at national and European level**; and (2) **income generated through agreements with industrial partners** (for a sustained engagement with industry innovators). It is nice to see half way through the project duration 50% of H2020 Teaming actions would be able to generate the revenue. For these cases the revenues come mostly from national projects and EU-funded projects, but also from agreements with industrial partners. A smaller part would be acquired through competitive funds and core products/ services delivered to target clients. **Sustainability strategies in SEWP projects** include applications for new grants, commercial incomes, diversification strategies and additional government funding. **Commercial exploitation of foreground in the Widening Programme** is more of a feature for Teaming projects than for ERA Chairs and Twinning, foremost due to the larger duration and scope of the former. The main limiting factor for commercial exploitation of results for all type of projects remains funding.

Timely assurance of **Complementary Funding Sources is one of the key financial aspects** of successful Teaming projects whereby the most common sources of funding are traditionally **national funds and ESIF funds**. Unfortunately, the survey results indicate that in 40% (2016/2017 Call) and 28% (2018/2019 Call) cases of two Teaming Calls **complementary funding is delayed** mainly due to the pandemic context, public administration procedures or major cut/reduction of governmental financial support. Problems in receiving complementary funding are reported in particular for Cyprus and Portugal. This aspect needs to be better controlled by the EC in the frame of programming activities. A more concrete commitment from national governments towards Teaming projects needs to be requested at the proposal stage.

### *Communication, Dissemination and Exploitation*

The analysis of project results and their dissemination represent an intelligence about the outputs of the projects and therefore the basis for the assessment of the impacts of the Work Programme. The analysis of the H2020 “Spreading Excellence and Widening

Participation” (SEWP) projects was structured according to Work Programme objectives, in the three main fields: **Excellence, Systems and Participation** (as explained in Section 5). The results of the **D&E Survey** show that that all Widening Actions are **strongly focused** on **Excellence**, in particular on the scientific excellence, reputation and attractiveness of the institutions. Depending on the actions, 89% to 100% of the projects prioritize impacts that contribute to this Work Programme objective. Similarly, the aspect of **Participation** is also highly targeted by all SEWP Actions: more than 80% of the projects declare that they target the achievement of competitive national and international funding and opening of new networks. For what concerns the industrial users, **small and medium business play an important role for the majority of the Widening projects**, implying that big industries and start-ups are not that prominent. Innovation related exploitable results, as already captured under the scientific and societal impacts are especially pronounced for Teaming Calls.

Less targeted area is the one of **Systems** (which includes **Institutional and/or systemic reforms at national/regional level and the triggering of reforms** at the coordinating institution). ERA Chair and Teaming Actions do indeed highly prioritize this area much more than Twinning, given the nature of these actions. However, the analysis also shows that for ERA Chairs and Teaming Actions the area of Systems is still less prioritized than the area of Excellence and Participation. The aspect of changes at institutional and regional/ national levels, especially for the ERA Chair Action, require further analysis and new surveys to confirm and to better understand the identified trends.

The concept of **inclusive society** and Responsible Research Innovation (RRI) is gaining importance: citizen participation in dissemination and communication activities of projects are important for SEWP Actions as shown by the D&E survey.

While trying to understand the impacts, it is also important to identify the **barriers to exploitation**. The D&E survey results indicate that **a lack or inadequate funding** are the main barriers to exploitation for the Widening actions (more pronounced for Twinning and ERA Chairs which have smaller overall budget than Teaming). Other prominent barrier, especially for Teaming and ERA Chair Actions, is **regulations that hinder innovation**.

**Communication** plays a key role in detecting **projects flagships** and bringing up **success stories** that can inspire other actions. The SEWP portfolio currently features **22 projects from 12 Widening countries that emerge as particularly successful**: they reached a breakthrough or tangible results, having media appeal and sound project management.

### *COVID-19 Effects and related Activities*

Another aspect worth bringing up in the current report relates to COVID-19 topic that poses continuous challenges to SEWP actions. In response to the current COVID-19 pandemic SWEP Programme identified **13 projects carrying out activities** making contributions in fighting and research on COVID-19. Interestingly, five coordinating institutions from this list of projects are based in the **Czech Republic**, and others are in **Portugal, Hungary and Cyprus**. This is actually quite consistent with fact that these countries are also among the top participants in SEWP Programme in terms of project numbers and budget.

In the context of the **effects brought by COVID-19 pandemic** the negative impact on in SEWP projects is evident. These effects include delays, requests for project extensions or suspensions, activities postponed or converted into the online format. For example, in Teaming, **nearly a third of projects asked for extensions**. Twinning, based on active networking, training, and staff exchanges, was also highly affected by COVID-19 crisis. ERA Chair actions, where the start of the H2020 projects highly depend on the timely recruitment of ERA Chair holder and the team, also suffered from COVID-19 crisis. The ‘older’ SEWP calls (2017 and earlier) seem to be more affected as they are more advanced in time and the extensions by EC-REA are mainly granted in the last periods of project life-time.

In terms of budgetary issues, **underspending** due to COVID-19 activities is observed in many Widening actions. A number of Teaming projects requested **reallocation of**

**complementary funding** beyond the lifetime of the project. There are many cases of **budget transfers** in SEWP projects such as travelling budgets underspent requested to be shifted to personnel costs. Finally, all these effects have growing **impact on EC-REA work** implying longer duration of projects and, thus, more projects and higher workload for REA staff at later periods.

## 9. Suggestions for follow-up

The SEWP Impact Report touches upon certain novelties and structure of Horizon Europe Framework Programme while analysing mainly H2020 data. The compilation of suggestions for follow-up gathered hereunder targets future Widening Programme and potential policy developments that may be considered (Table 14).

**Table 14. Specific process/ programme related recommendations**

Key Aspect	Specific Process/ Programme related Recommendations
Geographical distribution	Within H2020 SEWP portfolio, there is an <b>uneven geographical distribution of beneficiaries</b> as a consequence of a competitive proposal evaluation mainly based on “excellence”. The SEWP country statistics reveal that specific Widening countries are very successful in securing funding from the SEWP programme (e.g. Portugal, Cyprus, Poland, Estonia) while other EU countries remain less successful (e.g. Romania, Croatia, Lithuania, Malta). In order to ensure a more widespread distribution of EU funds some steps should be considered for future programming activities under Horizon Europe. Examples <b>could include targeted calls restricted for those less successful countries</b> to help them catching up and/or the <b>first priority for the ranked list could be geographical</b> (i.e. first ranked proposal per country could be proposed for funding, then the second and so on).
Sustainability	The surveys reveal, particularly for the Teaming and ERA Chair Actions that projects find it, or will find it difficult to ensure the sustainability of their actions once the EC funding has come to an end. <b>It is crucial that proposers are super proactive in taking this aspect into account</b> at the design stage of their application and already start preparing a clear pathway to sustainability.
Portfolio Analysis	Future work could focus on <b>more automated process in clustering analysis, using text mining tools with clustering features</b> . Further developments on project portfolio analysis will be focused on CORTEX text mining tool and a new feature which covers CORDIS results and Horizon Results Platform information.
Outputs of clustering work	REA experience shows that cluster events are highly useful in terms of supporting beneficiaries and finding synergies among the topics and projects. Citizens and the economic community have the right to discover what Europe does for the people and how to enhance these collaborations. Importance of thematic <b>synergies emerging from Widening Programme and usefulness of cluster events could be more emphasised in the programming activities and other policy initiatives</b> .
HE Missions	Further analysis of <b>HE Missions and finding overarching topics in Widening</b> is a need. Widening projects can contribute to reaching the HE Mission goals for 2030.
Smart Specialisation Strategies	SEWP S3 analysis is mainly relevant for Teaming projects and shows how countries look after their specific thematic strengths and how they match these topics in submitted proposals. This aspect needs to <b>be further explored in the policy developments and programming</b>

	<p><b>activities as well as in discussions with NCPs.</b> An analysis of submitted proposals is one way to help understand if the smart specializations are really put into practice.</p>
Scientific Impacts	<p>Although being CSAs, <b>SEWP projects show the evidence of contributing to innovation and generation of new knowledge</b>, however <b>further surveys</b> need to be conducted to confirm this emerging trend. Perhaps stronger consideration of the <b>Innovation Radar</b> in Widening actions could be taken into account.</p>
Societal Impacts	<p>The societal impacts of Widening projects needs more attention especially in terms of <b>structural changes in R&amp;I systems at institutional, regional and national levels in H2020 SEWP and HE Widening Actions</b> and more specific recommendations could be proposed for future programming activities. Further surveys are recommended to verify the observed trends.</p>
Economic Impacts	<p>SEWP projects generate a high variety of economic impacts. Future <b>surveys could dedicate more attention to verifying and quantifying the impacts emerging from collaborations with industries and businesses.</b> This aspect could be further strengthened in the programming activities.</p> <p><b>Complementary funding</b> in Teaming projects shows delays in delivery (between 28% and 40% of cases depending on the call). This aspect needs more attention from the EC side in terms of call design, but also more concrete commitment from national governments at the proposal stage in order to guarantee the successful implementation of Teaming projects and the growth of the first generation of Centres of Excellence in Widening countries.</p> <p><b>Sustainability</b> aspect needs to be monitored closely in Teaming projects as there is no evidence yet if the first generation of Centres of Excellence will remain autonomous and sustainable after the project life time (first concrete results will be seen in 2023).</p>
D&E	<p>The latest D&amp;E survey results reveal that, while areas of “Participation” and “Excellence” are very well addressed in SEWP actions, <b>the area of “Systems” shows lower impacts</b> and targeted scale: this will be further verified in the future D&amp;E surveys. In addition, projects should be pro-active in making use of the tools available to help them disseminate and communicate about their projects (e.g. <a href="#">Horizon Results platform</a>, <a href="#">Innovation radar</a>, <a href="#">Dissemination booster</a> etc.).</p>
Communication	<p>Communication is a pathway to project visibility and information flow and has a very powerful effect via the social media and other sources. <b>Stronger and more public promotion of success stories in Widening programme could generate good examples</b> for many institutions and countries. This would also support the policy of synergies and networking for beneficiaries – the aspect where EC-REA are extending their efforts with cluster events.</p>
COVID-19 topic	<p>SEWP projects have been heavily affected by COVID-19 crisis. The number of project extensions has reached a high peak and a common EC strategy could be proposed on how to mitigate these effects on projects in the future. A dedicated survey to all the SEWP actions could be conducted, verifying the magnitude of COVID-19 effects and finding a common strategy/ facilitation to address these challenges. <b>A platform collecting data on the COVID-19 effects could be established</b>, sharing the statistics of these effects, but also <b>best project practices</b> in different scientific fields linked to the management of the COVID-19 crisis.</p>



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## Annex A. Maximum EU contribution (Budget) per country and the number of projects on a specific Scientific Area

Country	Computer Sci./Electric Eng.		Biological/Agriculture Sci.		Engineering		Health/Medical Sci.		Environment		Physics/Chem Sci.		Sociological Sci.		Biotechnology		Total		
	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	Projects	Budget (MEuro)	
<b>Widening Member States</b>																			
Bulgaria	1	14,99	1	14,94	1	1	1	1			1	0,9	1	0,9	1	2,5	7	36,23	
Croatia	3	4,3			1	1				2	2,01	2	3,43	3	2,89			11	13,63
Cyprus	8	38,09	1	1	2	3,4	2	15,86	6	49,52	1	1	4	5,36			24	114,23	
Czechia	2	15,77	6	7,25	2	2	4	20,05	2	1,58	5	15,41			1	0,74	22	62,8	
Estonia	6	25,79	7	11,12	2	3,3	5	7,78	1	0,9	2	3,5	11	13,06	1	2,5	35	67,95	
Hungary	2	11,88	1	15	1	0,9	2	1,8	1	1			2	1,68			9	32,25	
Latvia	1	1	1	0,8	4	31,89	2	1,7			1	0,9			1	1	10	37,29	
Lithuania							1	0,9	1	0,9			4	5,28			6	7,08	
Luxembourg	2	3,5					1	1,06									3	4,56	
Malta	2	1,9	1	1					4	3,56							7	6,46	
Poland	2	16	7	11,44	2	29,99	3	2,98	6	6,89	4	6,77	3	2,8			27	76,86	
Portugal	6	7,06	13	31,97	4	5,4	17	39,65	6	5,69	3	2,7	3	5,78	6	22,67	58	120,92	
Romania	3	3,11	1	1,1	4	5,29	2	1,7	2	2,07	1	2,47	2	1,88			15	17,61	
Slovakia	1	0,78	2	1,79	1	15	1	0,79			2	3,48	1	1,03			8	22,88	
Slovenia	1	1,02	1	0,9	2	17,5	3	4,2	1	0,98	1	2,5					9	27,09	
<b>Widening Associated Countries</b>																			
Armenia							2	1,68				2	1,7					4	3,37
Bosnia Herzegovina			1	0,89														1	0,89
Moldova					1	1						2	2					3	3
Rep. of N. Macedonia	1	0,9																1	0,9
Serbia	5	5,95	4	16,9	1	0,88	2	1,78	3	2,68	1	1	1	0,8			17	29,99	
Tunisia	1	0,99	2	1,9			1	0,8			1	0,9	1	0,8			6	5,38	
Turkey	1	0,9	1	0,9			3	6,11	1	0,8	2	1,78	2	1,78			10	12,27	
Ukraine							1	0,78			1	0,9					2	1,68	
<b>Total</b>	<b>48</b>	<b>153,92</b>	<b>50</b>	<b>118,89</b>	<b>28</b>	<b>118,54</b>	<b>53</b>	<b>110,62</b>	<b>36</b>	<b>78,57</b>	<b>32</b>	<b>51,33</b>	<b>38</b>	<b>44,03</b>	<b>10</b>	<b>29,41</b>	<b>295</b>	<b>705,32</b>	

## Annex B. Smart Specialization Strategies in HE proposals of Widening countries

<b>EL</b>	<b>GREECE</b>	
	Agrifood-nutrition	1
	Health and pharmaceuticals	7
	Informatics and telecommunication services	4
	Energy and its cross-cutting implications (transport, industrial production, etc.)	
	Environment and sustainability	4
	Transport and logistics	
	Materials and Construction	
	Culture, Tourism and Creative economy	
<b>HU</b>	<b>HUNGARY</b>	
	Advanced technologies in the vehicle and other machine industries	
	ICT and information services	2
	Sustainable environment	1
	Agricultural innovation	
	Clean and renewable energies	
	Healthy society and wellbeing	
	Inclusive and sustainable society	
	Healthy local food	
<b>LV</b>	<b>LATVIA</b>	
	Knowledge intensive bio-economy	
	Biomedicine, medical technologies and biotechnology	1
	Smart materials, technology and engineering	
	Advanced ICT	
	Smart Energy	
<b>LT</b>	<b>LITHUANIA</b>	
	Agricultural innovations and food technologies	
	Energy and sustainable environment	2
	New production processes, materials and technologies:	
	Health technologies and biotechnologies:	
	Transport, logistics and ICT:	
	Inclusive and creative society:	
<b>LU</b>	<b>LUXEMBOURG</b>	
	Clean & ecotechnologies	
	Health technologies	
	Digitisation of industry (IND 4.0)	
	ICT	



<b>PL</b>	<b>POLAND</b>
	Healthy Society 4
	Bio-economy comprising agri-food, forestry and environment
	Innovative technologies and industrial processes 3
	Sustainable energy
	Natural resources and waste management
<b>PT</b>	<b>PORTUGAL</b>
	Energy
	Raw materials and materials
	Production technologies and Process Industries 1
	Automotive, aeronautics and space
	Information and Communication Technologies
	Transport, Mobility and Logistics
	Agro-food 1
	Forestry
	Blue growth - Ecosystems and renewable energy resources 3
	Water and environment
	Health 3
	Tourism
Cultural and creative industries	
Habitat	
<b>RO</b>	<b>ROMANIA</b>
	Safe, accessible, nutritionally optimized
	Analysis, Management and Security of Big Data
	Increasing end-use energy efficiency.
	New-generation vehicles and ecological
	Service and process innovations
	Development of innovative space
	Education Cultural and Creative Industries
<b>SK</b>	<b>SLOVAKIA</b>
	Cars for the 21st century 2
	Industry for 21st century
	Digital Slovakia and creative industries 2
	Healthy food and the environment 1
	Public health and medical technology 1
<b>SI</b>	<b>SLOVENIA</b>
	Smart Cities and Communities
	Smart buildings and homes
	SI_ ndustry 4.0 - Smart Factories
	Health / Medicine 1
	Networks for the Transition to Circular Economy
	Sustainable Food Production 1
	Sustainable Tourism and Creative Cultural and Heritage based Services
	Development of Materials as Products 2
Smart Mobility	

## Annex C. Success stories from SEWP portfolio

Project Number	Project Call Id	Project Acronym	Project Title	Coordinator country	Success stories on Europa.eu published in
664331	H2020-WIDESP READ-2014-1	<b>InnoRenew CoE</b>	Renewable materials and healthy environments research and innovation centre of excellence (InnoRenew CoE)	SI	<a href="#">2017 (March)</a>
664388	H2020-WIDESP READ-2014-1	<b>ANTARES</b>	Centre of Excellence for Advanced Technologies in Sustainable Agriculture and Food Security	RS	<a href="#">2017 (March)</a> <a href="#">2019 (October)</a>
692103	H2020-TWINN-2015	<b>eHERITAGE</b>	Expanding the Research and Innovation Capacity in Cultural Heritage Virtual Reality Applications	RO	<a href="#">2018 (August)</a>
692197	H2020-TWINN-2015	<b>SuPREME</b>	Twinning for a Sustainable, Proactive Research partnership in distributed Energy systems planning, Modelling and management	PL	<a href="#">2019 (June)</a>
691681	H2020-TWINN-2015	<b>ENHANCE</b>	Building an Excellency Network for Heightening Agricultural economic research and Education in Romania	RO	<a href="#">2019 (June)</a>
691688	H2020-TWINN-2015	<b>LASIG-TWIN</b>	Laser Ignition - A Twinning Collaboration for Frontier Research in Eco-Friendly Fuel-Saving Combustion	RO	<a href="#">2021 (March)</a>
691829	H2020-TWINN-2015	<b>EXCELL</b>	Actions for Excellence in Smart Cyber-Physical Systems applications through exploitation of Big Data in the context of Production Control and Logistics	HU	<a href="#">2018 (October)</a>
692031	H2020-TWINN-2015	<b>TwinPV</b>	Stimulating scientific excellence through twinning in the quest for sustainable energy (TwinPV)	CY	<a href="#">2017 (November)</a>
692065	H2020-TWINN-2015	<b>WIDENLIFE</b>	Widening the Scientific Excellence for Studies on Women's and Fetal Health and Wellbeing	EE	<a href="#">2020 (March)</a>
692097	H2020-TWINN-2015	<b>MaXIMA</b>	Three dimensional breast cancer models for X-ray Imaging research	BG	<a href="#">2018 (May)</a>
692162	H2020-TWINN-2015	<b>FOWARIM</b>	FOSTERING WATER-AGRICULTURE RESEARCH AND INNOVATION IN MALTA	MT	<a href="#">2017 (November)</a>
692199	H2020-TWINN-2015	<b>ENGHUM</b>	Engaged humanities in Europe: Capacity building for participatory	PL	<a href="#">2019 (January)</a>

			research in linguistic-cultural heritage		
692293	H2020-TWINN-2015	<b>VACTRAIN</b>	TWINNING ON DNA-BASED CANCER VACCINES	LV	<a href="#">2021 (March)</a>
692322	H2020-TWINN-2015	<b>ReTuBi</b>	Towards outstanding research and training in tumour biology at IMM	PT	<a href="#">2018 (August)</a>
692427	H2020-TWINN-2015	<b>STRONGMAR</b>	STRengthening MARitime Technology Research Center	PT	<a href="#">2019 (September)</a>
692145	H2020-TWINN-2015	<b>ePerMed</b>	Rise of scientific excellence and collaboration for implementing personalised medicine in Estonia	EE	<a href="#">2019 (June)</a>
667387	H2020-WIDESP READ-2014-2	<b>SupraChem Lab</b>	SupraChem Lab - Laboratory of Supramolecular Chemistry for Adaptive Delivery Systems - ERA Chair initiative	RO	<a href="#">2019 (June)</a>
669062	H2020-WIDESP READ-2014-2	<b>BioEcon</b>	New Strategies on Bio-Economy in Poland	PL	<a href="#">2017 (May)</a>
666295	H2020-WIDESP READ-2014-2	<b>CREATE</b>	The CREAtion of the Department of Physical Chemistry of Biological SysTEms	PL	<a href="#">2019 (September)</a>
668983	H2020-WIDESP READ-2014-2	<b>FoReCaST</b>	Forefront Research in 3D Disease Cancer Models as in vitro Screening Technologies	PT	<a href="#">2020 (January)</a>
809943	H2020-WIDESP READ-05-2017-Twinning	<b>GeoTwinn</b>	Strengthening research in the Croatian Geological Survey: Geoscience-Twinning to develop state-of-the-art subsurface modelling capability and scientific impact	HR	<a href="#">2021 (April)</a>
810708	H2020-WIDESP READ-05-2017-Twinning	<b>INEX-ADAM</b>	INCREASING EXCELLENCE ON ADVANCED ADDITIVE MANUFACTURING	HR	<a href="#">2021 (April)</a>

## Annex D. List of Country Codes (referring to SEWP H2020 WP)

Country	Country code
<b>Widening countries: Member States</b>	
Bulgaria	BG
Croatia	HR
Cyprus	CY
Czechia	CZ
Estonia	EE
Hungary	HU
Latvia	LV
Lithuania	LT
Luxembourg	LU
Malta	MT
Poland	PL
Portugal	PT
Romania	RO
Slovakia	SK
Slovenia	SI
<b>Widening countries: Associated countries</b>	
Albania	AL
Armenia	AM
Bosnia and Herzegovina	BA
Faroe Islands (the)	FO
Georgia	GE
Moldova (the Republic of)	MD
Montenegro	ME
Republic of North Macedonia	MK
Serbia	RS
Tunisia	TN
Turkey	TR
Ukraine	UA
<b>Non-Widening: Member States</b>	
Austria	AT
Belgium	BE
Denmark	DK
Finland	FI
France	FR
Germany	DE
Greece	EL
Ireland	IE
Italy	IT
Netherlands (the)	NL
Spain	ES
Sweden	SE
United Kingdom	UK
<b>Non-Widening: Associated countries</b>	
Israel	IL
Norway	NO
Switzerland	CH
<b>Non-Widening: Third countries</b>	
Korea (the Republic of)	KR
Australia	AU
United States of America (the)	US

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